CREATIVITY AND LEARNING IN THE VIRTUAL SPHERE: PERSPECTIVES FROM DOCTORAL STUDENTS

By

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ABSTRACT

The purpose of this article is to analyze the perspectives of doctoral students on creativity and learning in the virtual environment. The researchers investigated the following central research question: to what extent is creative thinking fostered in virtual environments? In addition, the paper also examined how creativity is practiced in virtual environments. The paper will share the results of a 10 item anonymous survey distributed to doctoral students and doctoral faculty regarding their experiences with virtual learning environments and their creative thinking activities. Descriptive statistics and open coding were used to analyze the survey results and to make recommendations for innovative doctoral-level virtual pedagogies meant to build and enhance creative thinking. The results provide educators with further insights about how to structure learning environments with a view toward fostering creativity.

Key words: Creativity, Virtual Learning, Doctoral Students, and Innovative Pedagogies.

INTRODUCTION

Doctoral education, like all higher education, is undergoing change due to the influence of virtual technologies. The research was undertaken at two U.S. universities located in the Midwest, in order to collaborate to shape innovative pedagogies for doctoral students. Recently the researchers have been investigating the concept of creativity as it is experienced by those involved with doctoral education. This paper describes and analyzes the lived experience of doctoral students and their perspectives on creative thinking and virtual learning environments.

Purpose of the Study

The purpose of this study was to examine doctoral students' perspectives on creativity and learning in virtual environments. The research was used in order to better understand how to encourage and support creative thinking by doctoral students and to ascertain to what extent creative thinking is, or can be, fostered in virtual environments. In addition, the researchers also examined how creativity is currently thought about and practiced in virtual environments by doctoral students.

Virtual Environments and Creative Thinking

In higher education, creativity has become a central issue as industry entrepreneurs and scientists alike have emphasized the need for individuals in society who are independent thinkers, innovative and self-directed. As Sternberg (2010) pointed out these qualities require that higher education classrooms "teach creativity, not memorization." With large numbers of students enrolling in online courses, (Allen & Seaman, 2010), virtual environments need to be examined for fostering creativity. In the last ten years, courses in higher education have increasingly included a virtual component (blended courses) or have been taught completely online (Hollenbeck, 2005). As a result, significant advances have been made in the area of online pedagogies and learning. However, it is also true that the question of whether or not such online course offerings represent quality (Dellana, 2000) and in addition whether or not they foster creative thinking remains partially answered. Despite the increasing numbers of online courses, the research regarding online education has largely been on the categories of student perceptions, student learning, the differences between online and face-to-face education and on the benefits or problems of online education (Powell, 2007). Since the role of creativity in doctoral education has been considered key to the higher education experience (Jackson et.al., 2006), it is important

that we find out to what extent creativity is fostered in virtual environments. Researchers in online education (Muirhead, 2007; Horng, 2005) have pointed out that creativity is typically fostered by instructors. If instructors have the primary responsibility for developing creativity in students, and yet receive little feedback in this area, it is important to understand what students and faculty mean by creativity and how they perceive its application in virtual environments. In order to address this gap in the literature, this study examined two questions from the perspective of doctoral students:

i) To what extent is creative thinking fostered in virtual environments for doctoral students?

ii) How is creativity thought about and/or practiced by doctoral students in virtual environments?

Creativity has long been an area of interest and researched by various scholars (Rhodes,1961; Rogers, 1959; Osborn, 1953), yet most recently it has been reexamined by educational philosophers and psychologists often looking for ways to elevate a broader array of potential learning in the midst of complex social and political arrangements. Creativity research has moved from focusing on personality traits of creative people to studying mental processes and most recently to understanding the multidimensional nature of creativity (Sawyer, 2006). Scholars have been re-analyzing the concept of creativity for educational purposes leading to new calls to action (Csikszentmihalyi, 1996; Greene, 1995; Robinson, 2006). Csikszentmihalyi, has concentrated on the concept of 'flow' as the state of being fully engaged so that the sense of time disappears while Greene erases the divide between arts-based education and all other forms of education as she connects humanity to creative activities by way of nurturing the imagination. And Robinson explains creativity as being associated with several debilitating misconceptions, such as the purview of a only a few gifted people or being associated with only the arts. Furthermore he posits, "Creativity involves putting your imagination to work. In a sense, creativity is applied imagination." (Robinson, 2011). Creative thinking engages the imagination (Greene, 1995), involves the ability to accept change, and requires being open to learning. Creative thinking can be divergent or holistic. Examples of approaches to creativity can involve imagining oneself in different roles; for instance Edward de Bono's lateral thinking which involves two strategies: thinking hats and Positive-Minus- Interesting (PMI) methods. (deBono, 1985) In these strategies, one is encouraged to examine an issue from various points of view engaging and differentiating between thoughts and feelings. Van Oech's Creative Whack Pack (1992) offers strategies to help one get out of habitual thinking by adopting different roles. Other strategies to foster divergent thinking or holistic thinking are reframing or mind mapping. Reframing involves asking questions such as - What other meaning can this situation have? What is humorous about this? Or where is the silver lining? Or what does this look like from a different person's perspective? Mind- mapping, and other forms of creative cognition (Welling, 2007) allow for associative thinking that can lead to understanding the big picture. According to Amabile (1998), there are three components to creativity. They are expertise, creative thinking skills and motivation. Descriptions of creativity formulas (Noller and Parnes, 1972) and creative problem solving approaches (Isaksen, Dorval and Treffinger, 1994) include the centrality of critical thinking by arguing that creativity is the function of the interaction between knowledge, imagination and evaluation. To enhance creativity, it is believed that organizations such as institutions of higher education need to provide a combination of support, freedom and direction.

Data Collection and Research Instrument

A 10-item anonymous survey instrument (http://www.surveymonkey.com/s/SSNWS23) was created, tested, and IRB approved. It was distributed to doctoral students and doctoral education faculty primarily within the fields of education and social sciences regarding their experiences with virtual learning environments and their creative thinking activities.

Data Analysis of Survey Results

Descriptive statistics were used to analyze the demographic-related survey data. The word data, generated by way of the open-ended questions, were arranged and coded in order to produce a set of

meaningful themes connected to the original Research Questions (RQs). The survey resulted in a total of 40 respondents, 37 (94.9%) indicated they were doctoral students currently, 1(2.6%) indicated they were a faculty member who works with doctoral students, and 2(2.6%) indicated they were not currently a doctoral student but had been in the last 5 years. Eighteen of the 40 respondents indicated they were in the field of Education, 11 were in Social Sciences, and 7 were in the Sciences, and 4 in Other (i.e., 3 Nursing and 1 Telecommunications). When asked about specific types of virtual environment activities (Table 1) the respondents reported that 100% have a computer while only 70% have a smartphone and only 52.5% have a tablet device, such as an iPad, Kindle, and/or Nook, yet a very high percentage (i.e, 92.5%) of the respondents have used social media, such as Facebook, Twitter, and/or Pinterest. In addition, 85% have taken an online course and 37.5% have taught an online course. While only 37.5% have used Second Life, 60% have played video games. Overall, the types of virtual environment activities of the respondents is quite robust.

Open-Ended Questions

Due to the distribution of the respondents' profiles it was decided to analyze only the results provided by the current doctoral student demographic for the open-ended questions because they represented 94.9% of the total respondents. The respondents were asked to describe their understanding of the term "creative thinking" and provide one example where they have been involved in a process of creative thinking. It was interesting to note that some of the most often used words/phrases used to describe creative thinking included "new," "out-of-the-box," "combining two or more previously unrelated ideas," and frequent references were made to "problem-solving" activities. Some respondents referred to the term "divergent thinking" while others mentioned "challenging limits." In their overall responses, doctoral students were consistent in identifying the new or unusual as an essential element of creative thinking. A second element identified by students was the movement away from habitual thinking through connecting previously unrelated ideas. The respondents perceived creative thinking as thought, which is original, not habitual, perhaps surprising and often bringing forward a new perspective. In other words, creative thinking involved a contribution or a value added to what already exists.

VEA	%	n
Taken an online course	85%	34
Taught an online course	37.5%	15
Used social media (e.g., Facebook, Twitter, Pinterest, etc.)	92.5%	37
Have a Computer	100%	40
Have a Smartphone	70%	28
Have a tablet device (e.g., iPad, Kindle, Nook, etc.)	52.5%	21
Used Second Life	37.5%	15
Played Video games	60%	24

Table 1. Virtual Environment Activities (VEA)

The respondents were also asked to describe the most creative thinker they knew and how they thought the person learned to be a creative thinker. In their responses they referred to characteristics or qualities of those they identified as the most creative thinker they knew. For example, one respondent said, "the most creative thinker I know is a person who is open to diverse opinions and perspectives." And similarly some connected it to a person's ability to be agile when analyzing information: "The most creative thinker I know is able to analyze information at a high rate and process it any number of ways depending on the situation at hand and produce a variety of results depending on the appropriate audience and purpose." And others emphasized the cognitive over other skills,: "Creative thinking likely comes from cognitive exploration . . ." While some believed the ability to be a creative thinker was "innate" or as one respondent said, " . . .not all people can be creative. I think it tends to be a personality trait" most of the respondents either believed it could be taught or hoped for nurturing educational environments where their creativity could be further developed. Many linked creative thinking to early life experiences and the influence of parents, teachers and other adults surrounding children. For example, one respondent said, " I believe upbringing plays a good deal into being a creative thinker - encouragement from parents, educators, etc." and another respondent shared their belief that creative thinking emerged " . . . by trying out conventional processes, finding them inadequate, and being encouraged (by parents, teachers, peers, etc) to question those conventional processes." Others described

creative thinking as cultural and related to the person's exposure to diversity: "I am fairly certain that people learn to be creative thinkers based on their cultural environment as they grow up . . ., and what types of goals they have for themselves as far as continuous learning. I also believe that creative thinkers have had experience in working closely with other people in diverse types of settings and can therefore appreciate various perspectives, needs, and lenses." One person summarized their understanding of creative thinking by emphasizing that "Creativity lies in being able to think about a situation in many different ways without constraints. Boundaries can squelch creative thinking, but could also shape and cultivate it if many different ideas or topics need to be integrated. Creative thinking is cultivated in environments that have less scaffolding and structure to allow ideas to follow their flow, wherever they might go." The relationship between creative thinking and freedom versus boundaries was a recurring theme.

When asked to describe the most memorable creative moment they have experienced as a doctoral student they shared instances when they used different ways to further their understanding. For example, they described using interpretive dance to understand theoretical concepts or using art to express their educational journeys. One respondent shared the following: "... we started doing interpretive dance to some of our philosophical readings...While we could not stop laughing it was a creative stretch to physically interpret "being" and "ontology" and other 5 syllable words." Another respondent shared the importance of autonomy and the freedom to express oneself in a variety of ways as the defining creative moments of learning. In addition, the learning was shared at a professional conference, taking the learning further with a group outside of the course context. The respondent pointed out, "We created a variety of projects, some text based, but most for my group were digital media - photos, movies, soundtracks, etc. The culminating project was a trip to an international conference where we presented our own stories and people actually listened!"

The respondents were asked to describe the types of creativity that virtual learning environments inspire or make possible for them. The respondents reported mixed reactions to the connection between creative thinking and virtual environments. While some touted these environments as the very ground where they flourish and creativity abounds, such as, "The virtual environment with its removal of rules of learning make all types of creativity possible" and " I feel that they allow me to avoid certain kinds of discomfort (shyness, fear of immediate judgment) that tend to discourage me from thinking creatively." and "Virtual learning environments can allow the ability to practice/simulate situations prior to attempting them in the real-world. They also allow for environments that can be adapted a number of different ways, just can allow for new ideas/ applications to be utilized." and "They also provide critical thinking skills as well as problem solving - sometimes without the students knowledge of learning these." Others lamented the unrealized potential for such environments, for example, "Virtual learning environments, as I have experienced them, were not conducive to creative thinking whatsoever--they were tedious and monotonous." And another respondent shared, "When I think about virtual learning environments I think about two things: D2L classes and TEDtalks.com. I personally see myself as thinking creatively and I dread D2L classes. I believe that more media resources and a design that was more appealing and that led to a feeling of interconnectivity would help. TED.com is the type of virtual learning environment that inspires me. There are conferences, space for us to have a profile (a face) and comments are welcome. We can also create our own discussion threads and connect with people with the same interests." A few respondents were highly skeptical about a positive relationship between creative thinking and virtual spaces, for example, "Not sure it is positive. I think virtual learning environments allow people to hide and also fly below the radar," and "Learning curve was too high to use the virtual environment, so I did not."

When asked to describe the best and the worst aspects of virtual learning spaces they indicated that, at times, their imagination exceeds the realities of the ways they are currently experiencing virtual learning spaces. One respondent shared the following: "There is a difficult

balance between too much and too little structure. 2nd Life was not good for me because of lack of structure and relevance to my life. I can see ways in which similar environments could make online learning through avatars very exciting, and I know that simulations through Kinect –type tech could be very useful. But I have yet to see really good integration of virtual learning environments in the university setting-and my final year of undergrad and entire masters program were done entirely online." Second Life (2L) is frequently held up in the literature as an effort to move gaming technologies productively into the world of education yet, without an intentional theoretical grounding, it often leaves learners frustrated (Evans, Mulvihill, Brooks, 2008). The current developments with technologies used for simulation based education (SBE) and Massive Open Online Courses (MOOCS) (Kop and Carroll, 2012), likewise represent realms of experimentation with virtual environments for educational purposes that will necessarily offer opportunities for refinements in thinking as to the best ways to utilize online technologies for creative thinking.

The respondents were asked to describe three ways they use online technologies for their writing, research and/or teaching activities. This prompt revealed quite an array of individual stories about the ways doctoral students interface with technologies. Some respondents reported a fully integrated experience whereby they were actively engaged with virtual learning spheres for writing, research and teaching. For example, this respondent shared the following: "[The] Internet is a lifeline for all of my writing, research, and previous teaching activities. Document sharing with colleagues (via Google), Skype for "attending" classes if I'm out of town due to a conference or bad weather, and accessing the [online] Lib[rary] System is essential for my coursework and dissertation work." Another respondent described using online technologies this way: "i) Writing - blogging about my experience as new faculty - stresses, findings, fun things students say ii) Research - Google Scholar is my best friend! Because of the interlinking available and the option to have GS email me recently published articles on my choice of topics, I can stay current with my research iii) Teaching - course management tools (Blackboard, LoudCloud, Angel, WebCT, etc.). These tools make managing course materials seamless and orderly. All information for a course is contained within a single site - I don't have to manage the publishing, linking, content, submissions, etc. Built in rubric tools allow students access and allow me to accept a variety of digital media for projects." And this respondent added a robust list of activities for each category: "For writing: online reading, constantly, to find out what others' have to say and how they say it. Auditioning my writing style and thoughts in blogs and social networking with family and friends. For research: searching online for references, statistics, institutions where the field of study is emphasized. Searching and applying for funding, presentations. Online testing centers for certifications and documentations. Joining and sharing discussion in affiliation organizations. For teaching: Videos/YouTubes that may explain a textbook concept in a better, more creative way. Blogs and websites of users who may be practicing the concepts that are trying to be taught in the classroom. Competitions that may stretch students who enter to show/complete their best work for a wider audience than their instructor and cohort." Other respondents, however, indicated that online technologies were not fully integrated into their doctoral student activities and their responses only warranted a few words/phrases to describe their activities, such as "journal searches video clips audio sound bites" or "Google, library searches, templates" or, as in the case of one respondent, one word was enough "searches."

And finally when asked if there is anything else you would like to share about virtual learning environments, creative thinking or the relationship between the two we learned the following: Some descriptions portrayed a positive relationship between the two while others struggled to understand the relationship. Overall, the data contained within the open-ended questions pointed toward both the potential for developing creative thinking by way of virtual learning spaces and a call for more inventive uses of online technologies related to doctoral education.

Discussion and Conclusions

The above analysis resulted in the following conclusions

- Virtual environments can present opportunities or constraints for creativity. Some doctoral students found

the virtual environment challenging and yet supportive while others found the barriers stifling. Independence in virtual classroom can represent freedom for some students and can generate a sense of discomfort in others. The unstructured possibilities of the web (YouTube; Google scholar, searches) allowed some students to innovate while others needed structure. The teaching and learning platforms such as BlackBoard and D2L were seen by many as limiting their imaginative possibilities. In order to ensure that virtual environments and teaching and learning platforms generate creative thinking, it is important to structure them in ways that allow for increased possibilities.

- Doctoral students think of creativity in virtual environments in terms of process and fulfillment. The process of creativity or satisfaction in creative projects utilizing virtual tools could be experiential or could be outcome based. Some students discussed the experience of producing art in classes where discussion is the norm as having stimulated their creative thinking. Other students reported on the products they created as having produced fulfillment.
- Virtual environments allow for a wider audience that can stimulate creativity in a variety of ways. For example, doctoral students can find like-minded communities across the globe. They can also disseminate or share results of their research and work to their peers through platforms such as YouTube videos and blogs. They can try on different personas, and create avatars, in virtual spaces such as Second Life.

These results may help educators working with doctoral students to structure learning environments to intentionally foster creative thinking that will assist them with a variety of intellectual tasks related to building the Research Imagination (RI) (Mulvihill & Swaminathan, 2012a). Like Sir Ken Robinson, Greene and Csikszentmihalyi the researchers take the view that everyone has creative capacities that need to be nurtured and developed. Creative thinking can be nurtured by educators and doctoral education ought to include more robust opportunities to use the emerging technologies to foster broader and deeper creative thinking that will influence research, writing and teaching activities.

Implications for Designing Innovative Virtual Pedagogies

While virtual environments offer the possibility of expanding creative thinking and engender creativity on the whole, it is currently underutilized for doctoral education. Developing goals for doctoral education that intentionally include building the capacity of doctoral students for creativity ought to involve the creation of virtual learning environments that are cognizant of the need for both freedom and loose boundaries within which doctoral students are encouraged to take risks in an effort to create and disseminate new knowledge. Innovative doctoral-level virtual pedagogies, that are designed to build and enhance creative thinking among doctoral students is ripe for further exploration (Mulvihill & Swaminathan, 2012b) Doctoral students, as seen from the results of this survey, are looking for online courses to be both meaningful and enjoyable. Faculty need to do more in terms of breaking free from the constraints of online teaching and learning platforms by exploring and going beyond the typical asynchronous discussion features to utilize other parts of such platforms. Faculty need to plan and prepare in order to accommodate the learning curve that accompanies handling new technology. From this study, and based on the researchers' teaching experiences, the researchers hold that creativity can be taught. Examining the responses provided by the respondents of this survey have deepened the researchers' understanding of the lived experience of doctoral students as it relates to creative thinking and virtual environments and the implications this knowledge might have for designing new innovative pedagogies for doctoral students.

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