Tess Styler

Defining Creativity Across Different Academic Majors: Unveiling the Multifaceted Nature of Innovation

INTRODUCTION

Creativity, the ability to generate novel and valuable ideas, is a concept that permeates various aspects of human endeavor. As an intersection of art, science, and humanities, creativity manifests itself in unique ways, shaped and molded by the distinct lenses through with different academic majors perceive and cultivate it. As scholars, educators, and students, it is imperative that we embark on a journey to comprehend how creativity is defines and nurtured across diverse fields of study.

The concept of creativity is inherently complex and multifaceted, defying a one-size-fits-all definition. Often associated with artistic endeavors, creativity finds its roots in fields such as fine arts, music, and literature. Here, imagination, originality, and aesthetic sensitivity intertwine to produce innovative works that captivate and inspire.

This research paper delves into the captivating question: “How do different majors define creativity?” Through this inquiry, we hope to foster a deeper understanding of the multidimensional nature of creativity and its implications for education, career development, and interdisciplinary collaboration.

However, creativity is not confined to the realm of the arts alone. Other majors, such as engineering, computer science, and business, embrace creativity as a vital component for problem-solving, innovation, and entrepreneurial success. These fields demand a unique blend of analytical thinking, adaptability, and inventive ideation, reflecting diverse interpretations of creativity.

By investigating the ways in which different majors define creativity, we will gain valuable insights into the nuances, similarities, and divergences in their approaches. This exploration will enable us to appreciate the interconnectedness of various academic disciplines, as well as foster interdisciplinary collaborations that can fuel innovation and advancement in our world. As well leading us to a richer and more holistic understanding of creativity as a whole.

This paper seeks to contribute to the existing body of knowledge on creativity, offering a comprehensive exploration of its multifaceted nature as defined within different majors. By gaining a deeper understanding of the diverse definitions of creativity can inspire new approaches to fostering innovation and creativity across academia and society.

Miller and Smith (2017) conducted a study focusing on high-ability college students and their creativity across academic disciplines. Their research delved into the variations in creative thinking and problem-solving strategies among students pursuing different majors. Additionally, Xurui et al. (2018) utilized voxel-based morphometry to investigate the mechanisms of creativity differences specifically between art and non-art majors. Their study examined the structural brain differences associated with creativity in these two distinct academic domains.

Also, through my research I found out that the connection between personality traits and creativity within different majors has been a subject of investigation. Kaufman, Pumaccahua, and Holt (2013) explored the relationship between personality and creativity among college students in realistic, investigative, artistic, social, and enterprising majors. Their research aimed to uncover the interplay between personality characteristics and the creative aptitudes exhibited within each major.

Through the findings from my research and the interviews of my peers, certain majors require more creative thinking and offer the space for said thinking, while others aren't as focused on wonders of creativity.

So, let us delve into the research findings and insights from these studies to shed light on the intriguing question: How do different majors define creativity? And why?

RESEARCH

The study conducted by Angie L. Miller and Veronica A. Smith, "Exploring differences in creativity across academic majors for high-ability college students" offers valuable insights into how different majors define and make room for creativity.

They defined creativity as an element of giftedness and noted early on in their study that some individuals have more of an advantage due to enhances skills such as problem definition, idea generation, and idea combination. With a debate arising over whether creativity manifests different in different domains or if it is a general set of skills that can cross content areas.

To conduct their study, Miller and Smith administered the Abbreviated Torrance Test for Adults (ATTA) to a sample of college students representing various majors, including STEM majors, humanities, and fine arts. The ATTA is a widely used "projective assessment of creative thinking abilities" with the ultimate goal to "provide an indicator of real-life creative achievement" (Goff). The researchers collected data on the students' creativity scores and then analyzed and compared the results across different majors.

Within the ATTA they referred to the Scale of Creative Attributes and Behaviors (SCAB) to assess dimensions of creative engagement, creative cognitive style, spontaneity, tolerance, and fantasy. What do those even mean?

According to Kathryn Kelly's study, which inspired Miller and Smiths, "A Brief Measure of Creativity among College Students",

"Creative engagement refers to enjoying creative activities and routinely spending time working on something creative. Creative cognitive style refers to the cognitive aspect of creativity which has often been linked with intelligence (divergent thinking and problem solving). Spontaneity is a style characterized by impulsivity and excitement seeking. Tolerance is the attitude of flexibility and openness to ideas and experience. And finally, fantasy is a mental activity of creativity, namely daydreaming and imagination."

The findings revealed significant variations in creativity among students from various majors. Not surprisingly, students majoring in fine arts and humanities exhibited higher levels of creativity compared to those in STEM majors. Suggesting that majors with a focus on artistic expression and critical thinking tend to prioritize and foster creativity to a greater extent. Moreover, those same students demonstrated more ideational fluency, originality, and elaboration in their creative thinking process. On the other hand, students in STEM majors showed greater levels of practically and problem-solving efficacy. These results imply that different majors define creativity in distinct ways, with some emphasizing imaginative and novel ideas, while others prioritize practical applications of creativity.

Overall, Miller and Smith's study suggests that different academic majors define and make room for creativity in diverse ways. While fine arts and humanities prioritize imaginative and original thinking, STEM majors' value practical problem-solving skills.

As this was my first source I found, I was surprised with the findings but had a feeling throughout my research I would come across similar conclusions.

Another study done by James Kaufman, Tessy T. Pumaccahua, and Ryan E. Holt, "Personality and creativity in realistic, investigative, artistic, social, and enterprising college majors" aimed to explore relationship between personality, creativity, and academic majors among college students.

Although this wasn't as vast as Miller and Smiths, Kaufman used the International Personality Item Pool (IPIP) to measure the Big Five personality factors: extraversion, agreeableness, conscientiousness, emotional stability, and openness. He used this model to classify different majors and how they relate to personalities and creativity. The results showed that artistic majors were more open and less emotionally stable as well as higher self-reporting of creativity compared to other majors. Investigative majors, particularly those in social science, were also more creative and open compared to non-artistic majors. The study found weak but significant correlations between the measures of creativity and personality traits. Yet openness was positivity correlated with both self-reported creativity and divergent thinking.

Kaufman's study lightly touches on the debate proposed by Miller Smiths, "…whether creativity manifests differently in different domains or general set of skills that can cross content areas" (Miller and Smith). Are individuals who have more applicable and relatable traits to those of creativity, more creative? Or is it the environment that produces the creativity?

This deep dive into the question of creative boundaries and opportunities in college academia must come to a concrete definition of what creativity is. According to, "Mechanisms of Creativity Differences Between Art and Non-art Majors: A Voxel-Based Morphometry Study", by Tan Xuri, et al. they see creativity as an ability to generate new ideas and behaviors, and it can happen within any of us. Yet some individuals possess a higher ability to neurologically produce the means to think and act creativity.

The neuroimaging technique VBM allows researchers to look at brain and behavior mechanisms associated with figural creativity using the Torrance Test of Creative Thinking (TTCT) (like that used in Miller and Smiths study). This assessment showed how art majors, where creative activities are required have a lower presence of gray matter in their brain structure. The results of the TTCT exhibit significant correlated with the gray matter volume of the left anterior cingulate cortex (which is responsible for cognitive functions of emotional expression, attention allocation, and mood regulation) and the left medial frontal gyrus (key role in the development of literacy). Art majors exhibited a marginal positive association with the left ACC and MFJ, while non-art majors exhibited significantly negative association with these regions.

The significance of this study is that it is less on the major and the curriculum but rather the abilities and activities that can stimulate creativity, produce creativity and are more relevant in those that actively seek creative measures. The results suggest that professional artistic programs or training may contribute to increased creativity skills through recognized intercortical connections.

CONCLUSION

The exploration of how different majors define creativity reveals a fascinating interplay between academic discipline and the manifestation of innovative thinking, while creativity is often associated with artistic field, it is important to acknowledge that creativity extends beyond the arts and find its place in diverse majors, including STEM and business.

Overall, these studies underscore the notion that creativity is not a uniform concept but rather one that is shaped by the requirements and objectives of different academic disciplines. While certain majors inherently demand more creative thinking such as art and design, creativity

manifests differently in other fields. Each major defines creativity within the context of its subject matter, cultivating unique skill sets and perspectives.

Understanding the diverse definitions of creativity across majors is essential for festering interdisciplinary collaboration and promoting innovation. This inclusive approach can help unleash the creative potential of individuals across disciplines and lead to breakthroughs in problem-solving, artistic expression, and entrepreneurial endeavors.

Moreover, the studies reviewed in this research paper demonstrate the need to further investigation into the interplay between personality traits, brain structures, and creativity.

Recognizing and appreciating the diversity in how different majors define creativity is crucial for creating an inclusive and innovative academic environment. Embracing the varied perspectives and approaches to creativity will contribute to comprehensive understanding of this essential human trait and its application in various fields. By nurturing creativity across disciplines, we can unlock the full potential of individuals and collectively address the compels challenges of our world.

CITATIONS

Goff, K. "Abbreviated Torrance Test for Adults." *Psychology Resource Centre*, 9 Oct. 2018, psycentre.apps01.yorku.ca/wp/abbreviated-torrance-test-for-adults-atta/#:~:text=The%20Abbreviated%20Torrance%20Test%20for,Torrance%20Tests%20of%20Creative%20Thinking.

Kaufman, James, et al. "Personality and Creativity in Realistic, Investigative, Artistic, Social, and Enterprising College Majors." *Libraries Database Access*, 21 Feb. 2013, www-sciencedirect-com.du.idm.oclc.org/science/article/pii/S0191886913000408.

Kelly, Kathryn E. "A Brief Measure of Creativity among College Students." *College Student Journal*, vol. 38, no. 4, Dec. 2004, pp. 594–96. *EBSCOhost*, search.ebscohost.com/login.aspx?direct=true&db=aph&AN=15493258&site=eds-live.

Miller, Angie L., and Veronica A. Smith. "Exploring Differences in Creativity Across Academic Majors for High-Ability College Students." *Gifted and Talented International*, vol. 32, no. 1, 2017, pp. 44–58, https://doi.org/10.1080/15332276.2018.1435355.

Xurui, Tan, et al. "Mechanisms of Creativity Differences Between Art and Non-Art Majors: A Voxel- Based Morphometry Study." *Frontiers in Psychology*, vol. 9, 2018, pp. 2319–2319, https://doi.org/10.3389/fpsyg.2018.02319.