PERCEPTIONS ABOUT THE RELATIONSHIP BETWEEN CURIOSITY AND THE DEVELOPMENT OF CREATIVITY IN POST SECONDARY EDUCATION

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Abstract

Post-secondary education has acted as a means to equip individuals with the knowledge and skills necessary to enter the real world, however, the foundations on which tertiary education curricula have traditionally been built, have yet to enhance students' creative ability in a demonstrable manner. It has become more important now than ever to tap into the innate ability rooted within each individual capacity for inquiry and curiosity. The research question *What perceptions are held by education stakeholders about the relationship between curiosity and the development of creativity?* guided this research. To address this, an exploratory qualitative approach was adopted and data were gathered through open ended, face-to-face interviews. Subsequently, the interview transcripts were thematically analyzed using the NVivo qualitative data analysis software. The diverse and insightful findings revealed that respondents agree that there is a relationship between curiosity and the development of creativity but that it still needs to be improved across universities in Dubai. Moreover, the findings revealed a range of elements that respondents believed are required to trigger curiosity and cultivate creativity which included autonomy, mentorship, trial and error, diverse thinking, and openness to change just to name a few. Finally, recommendations that the education sector should consider were made based on the findings and included piloting IBL, conducting creativity methods trainings or workshops for professors, and reassessing the role of the professor.

Keywords: creative ability; creativity; post-secondary; curiosity; inquiry-based learning

1 INTRODUCTION

The UAE National Innovation Strategy aspires to cultivate innovation within education systems to ultimately shift into a knowledge-based economy (UAE Government, 2015). Currently, the UAE is well on its way to achieving this feat by establishing a range of programs and launching initiatives that include the Mohammed bin Rashid Smart Learning Program, Emirates Foundation Think Science Program, and Emirates Skills Program. In addition, the UAE has placed efforts in driving innovation by initiating Innovation Week which is now an annual event that has extended to become a month. Moreover, UAE Innovation Month is a nationwide celebration of innovation whereby various entities around the UAE organize activities and showcase their current innovative achievements (Achkhanian, 2018). The UAE's future plans in the education sector consist of employing novel teaching techniques which has resulted in the establishment of the Education 2020 Strategy (Masudi, 2018). In fact, one of this strategy's main focus is to make sure that

high school graduates are better qualified for the post-secondary level of education both locally and globally (UAE Government, 2019). However, in the opening speech of the 2019 World Government Summit held in Dubai, H.E. Mohamed Al Gergawi, Minister of Cabinet Affairs and the Future, emphasized on the need to equip the future generation with the skill of creativity and imagination whereby he stated that the ability to imagine will become the nation's more prized asset. Additionally, Gergawi noted that 45% of jobs will be replaced by artificial intelligence, but the jobs that require creativity and imagination will remain and become highly demanded (World Government Summit, 2019). Similarly, Pistrui (2018) presented a study conducted by the prominent management consulting firm, McKinsey & Company, which noted that professions requiring creativity stand a slim chance of being replaced. Therefore, despite the efforts set forth by the UAE Government and Ministry of Education, there is yet a need to help students acquire these skills at a post-secondary level. Moreover, the results of a global survey conducted to generate future insights by targeting Generation Z and Millennials revealed that 81% considered education as a top priority area that the government should focus its efforts on which was followed by health (76%) and environmental protection (68%) (World Government Summit, 2018). Therefore, it is essential for the UAE government to address this gap by considering educational institutions as the platform that equips future generations with the ability to be creative if it aims to be at the forefront of celebrating creativity in this age of imagination.

2. OVERVIEW OF CREATIVE ABILITY

Cohen (2011) defined creative ability or creativity as the ability to develop anything that is original but beneficial which is both suitable and universally approved. Similarly, Livio (2017) described a creative individual as one who possesses numerous original ideas that have the potential to impact or reshape an existent sphere of knowledge. Runco (2014) indicated that oftentimes creativity is mistaken for intelligence, originality, innovation, or invention. However, these definitions affirm that creativity is not equivalent to these terms, but may take part in achieving them (Runco, 2014). In terms of creativity's significance, Puccio (2017) dubbed it as a skill needed to survive that has time and again proven its vital role in shaping humanity. The relationship between creativity and innovation has been explored in extant literature noting that creative ability is essential to bring about innovation and has been deemed as a necessary skill to survive the turbulent times of the 21st century (Puccio, 2017; Titus and Koppitsch, 2018). Indeed, Perry and Collier (2018) declared creativity as the most crucial skill to acquire in modern education. In the article titled "Fostering Creativity through Education – A Conceptual Framework of Creative Pedagogy," Lin (2011) asserted that two perceptions form the basis of cultivating creativity in education which include the belief that the ability to be creative can be developed and that it is possible for every individual to be creative. Yet, courses and trainings are still not readily available by educational institutions or organizations for individuals to attend (Puccio, 2017). Moreover, various reports and studies emphasized the importance of creativity including the IBM Center for Applied Insights' publication which indicated that employers globally consider creativity as a must-have skill rather than a nice-to-have one (Richardson, 2015). Puccio (2017) reported that despite 70% of employees in the Human Resources division in the US acknowledging creative ability's importance to their entity, there was still a lack of workshops and trainings that promote it. Furthermore, a survey carried out to understand 1,000 employees' opinion of creativity's importance in the US showed that 78% acknowledged the fundamental role of creativity in an organization and even wished that it was a skill they possessed while 82% believed that their education should have better equipped them to think creatively (Puccio, 2017). Another survey conducted in US universities to assess 658 faculty members' belief of creative ability's importance revealed that 87.8% agreed that creative ability was fundamental in the courses they taught, yet 55.1% did not list creative ability in their courses' learning outcomes and 79.3% felt that it was the university's responsibility to foster and encourage creativity among students (Puccio, 2017). Although the assertions provided by Puccio (2017) are based on US data, it still demonstrates a pattern which seems to indicate that there is indeed a need to promote creativity within educational institutions and organizations. Therefore, the UAE and particularly Dubai has the potential to employ this data to further convince government officials to consider individuals' creative abilities especially as it endeavors to shift to a knowledge-based economy. It is worth indicating that the development of creativity is improbable if the key players in the education sector fail to appreciate the need to endorse it among students. Mindes (2019) portrayed an ideal classroom as one that embraces creativity seeing as it develops an interest among students to express their ideas and interact with one another. Consequently, students manage to remain innovative due to their constant exposure to new concepts that not only strengthens their social and emotional skills, but also enables them to apply what they learned in real life (Kennedy, 2018). Hence, creativity causes students to emerge as excellent communicators and transforms how they perceive education which is why it is imperative to underline its development in higher education institutions across Dubai.

2.1 Barriers to Creativity in Post-Secondary Education

Alencar and Oliveira (2016) affirmed that there is a need to consider the development of creative capacity throughout the different levels of education and particularly at the post-secondary level where creativity has not received the necessary attention. Moreover, this implies that there may be barriers to unlocking creativity within the remit of higher education. Indeed, Jackson et al. (2006) acclaimed that higher education professors are not aware of the strategies that they can deploy to stimulate creativity whilst teaching. Dr. Marilyn Fryer, a psychologist and teacher as well as the founder of The Creativity Centre, conducted a study that examined the perceptions of 94 teaching fellows on several aspects pertaining to creativity in higher education (cited in Jackson et al., 2006). Subsequently, Fryer's study identified factors that hinder the development of creativity among students in post-secondary schools which include having inadequate preparation and class contact time as well as having excessive non-teaching workloads (cited in Jackson et al., 2006). Another study conducted by Alencar and Fleith (2010) also revealed various factors that inhibit students' creative ability which include professors not having enough time to neither exchange and discuss instructional strategies with one another nor practice it in the classroom in addition to the students' lack of interest in the content taught. In conjunction with that there are elements that exist among students which act as a barrier towards creative development such as shyness, lack of motivation, resistance to change and fatigue (Alencar and Fleith, 2010; Hosseini, 2011). Furthermore, post-secondary institutions' insufficient resources and resistance towards adopting new pedagogical practices also prevent them from fostering creativity among professors and students (Hosseini, 2011). Therefore, it is evident that higher education institutions are perhaps not incentivized enough to develop the students' creative ability. In fact, Hosseini (2011) noted this by stating that professors still tend rely on memory-based teaching methods which not only lowers the students' motivation levels, but also limits their creativity from reaching its full potential. Routine work, criticism from professors towards students' perspectives and more importantly the programs' rigidity are practices that also discourage creativity (Alencar and Oliveira, 2016). Hence, it is essential for both the higher education institutions and the professors to work hand in hand to create an environment that encourages creativity rather than inhibit it.

3. QUALITATIVE RESEARCH DESIGN

To gain insight into how various stakeholders view curiosity and its link to cultivating creative ability, an exploratory qualitative research approach was taken by conducting an exploratory study. As for the modes of exploratory research, the most prevalent ones have been either where an unexamined subject is looked at to establish an initial understanding and analysis or where a pre-existing subject is inspected to generate further concepts and propositions (Elman, Gerring and Mahoney, 2020). In this study, a pre-existing topic which has been examined in several countries on different levels of education is being looked at in the context of Dubai at a post-secondary level. Both primary and secondary data were collected by conducting semi-structured face-to-face interviews and by reviewing journal articles, respectively. face-to-face interviews were the only method used to collect primary data for this study because it helps researchers gain a deeper insight into the subject matter by asking open-ended questions (Creswell, 2014; Yin, 2014). The interview protocol consisted of the title, the introduction which welcomed the interviewee and described the interview in addition to the study's overall objective. The first two question elicited demographic information. This was followed by six open ended question relevant to the study's topic, and finally the conclusion which thanked the interviewee for their time and contribution to the study. Purposive sampling technique was employed whereby the interviewees were selected from three categories including policymakers in local education regulatory bodies, and faculty as well as students across higher education institutions in Dubai. Ten interviews were conducted for this study among participants who provided sufficient data for analysis by sharing their insightful stories and perspectives on the topic.

The data for this study were first transcribed and arranged into different folders based on the stakeholder category that the interviewee belonged to .NVivo software was used to identify thirteen top-level codes from the data to assess the relationship between curiosity and the development of creativity recurring patterns in the responses. These codes were categorized according to themes based on the literature review that was conducted as part of this study. Overall, three major themes and eight subthemes emerged during thematic data analysis (See table 1 below) to interdependently answer the research question.

Themes	Subthemes
1. Factors for Creativity	a. Curiosity leads to creativity

	b. Having freedom encourages creativity c. Having others' input and assistance encourage creative outcomes d. Repeated effort is part of being creative e. Listing creativity as a course learning outcome
2. Diverse Thinking	a. Expressing different ideas and concepts stimulate curiosity
3. Openness to Change	a. Willingness to experiment with ideas b. Willingness to encourage student engagement

Table 1- Themes and subthemes based on the literature review

4. STUDY RESULTS

At the post-secondary level, it can be noted that there are enabling and inhibiting factors which affect creativity as identified in the literature review. These are also consistent with the literature. Table 2 below captures the summary data that supports the themes identified in this research.

Themes	Main Findings
1. Factors for Creativity	i. Being aware of your interest and passion fuels curiosity which leads to creativity ii. Having freedom to decide how a project or task is completed encourages creativity iii. Having a mentor who offers advice can help you realize your interests which would inspire creative outcomes iv. Trying multiple times to achieve the results you are seeking and being willing to fail along the way is part of being creative
2. Diverse Thinking	i. Professors decide whether to include creativity in a course's learning outcomes or not ii. Engaging in diverse thinking to explore different perspectives improves creative thinking iii. Expressing and questioning different ideas as well as concepts stimulate curiosity
3. Openness to Change	i. Not embracing change influences students' satisfaction and puts universities at a disadvantage to their competitors ii. Being willing to experiment inside and outside the classroom encourages exploration which optimizes creativity iii. Professors decide whether to allow experimentation in the classroom or not iv. The physical space courses are taught in and the pedagogical practices used affect the levels of student engagement v. Acknowledging and adapting to different learning styles enhance student engagement as well as performance vi. Being willing to encourage student engagement is up to the professor

Table 2: Thematic summary of findings

4.1 Curiosity Leads to Creativity

In this study, respondents acknowledge that interest and passion motivated them to seek information and complete their projects. In other words, their responses entail that interest and passion fuel curiosity which leads to creativity. This subtheme is supported by previous studies done by the psychologist Mihaly Csikszentmihalyi (cited in Livio, 2017), Alzoubi et al. (2016), Hagtvedt et al. (2019), and Gino (2018) which confirmed that curiosity does lead to creativity. Moreover, this is consistent with the inference made by Silvia (2008) which stated that interested students put more time and effort into learning. Additionally, the literature contended that some barriers to creativity such as students' lack of interest and motivation are self-imposed but did not justify this assertion (Alencar and Fleith, 2010; Hosseini, 2011).

4.2 Diverse Thinking

Another prominent theme that was brought about in the interviews was diversity of thought and the ability to view a topic from different perspectives. Policymaker A stated: *"Well I think I would define creativity as first of all, an awareness that there are different perspectives that you can bring to any situation and creativity is a recognition that your instinctive response to a situation, to a problem A, is not the only one, and B, is not necessarily the correct one. Yeah, so, you know, so basically, I guess it's self-awareness in realizing that okay, I've got a problem here. My own educational experience and history is directing me to solve the problem from this perspective, but if you want to get a more holistic perspective, you have to approach that problem from different angles. So, creativity is both an awareness and, if you like, an activation of taking different perspectives to problem solve."* Faculty B concurred by saying: *"I don't like plain thinking. I like thinking to be three or four dimensional. I like students to really get out of their boxes and to try and see the world, and see the issues, and see the concepts from different angles."*

In response to this theme, Student A stressed the need to be both open minded and empathetic in almost any situation. *"Open mindedness, I think that's a huge thing that I learned was so crucial to almost anything... like the majority of our assignments and our tasks are research papers, they're essays, argumentative essays mostly ask you to take a stance. And I think a common theme between all of them is the ability to be open minded, I think, if you can't put aside your own biases, your own opinions about something then you won't be able to fully get the experience that you would have if you did. In our major we look at things like anthropology, politics and sociology so it requires you to understand what other people's experiences are. And I think if you still have this like lens of a bias, it's hard to fully empathize with the other person to fully understand what it must be like. And it also requires you to be culturally sensitive."*

When asked to describe creativity, almost all the participants' responses support the definitions provided by Cohen (2011) and Livio (2017)) which state that it is the development of an original idea. Although the literature did not particularly cover diverse thinking, features of this concept such as *"an awareness that there are different perspectives"* and "*an activation of taking different perspectives to problem solve"* have been reflected in the techniques used to stimulate creativity. Therefore, a skill such as diverse thinking should be promoted among students to ensure the most effective application of these creativity techniques. Policymakers and faculty tended to include having a unique or original idea in their definitions of creativity, but students went further by elaborating on its role. Student A stated that encountering other views often sparked curiosity: "*I think I would ask questions, I think it's always interesting to see what the person's motivations are behind their own opinion."* In a role-playing exercise that drew upon riots caused by fake news reports in India, Student A affirmed that the situation compelled them to be creative, although it was challenging: *"And it was hard because of my personal bias I would say, and I think what I had to do in that situation was really immerse myself in the role of a WhatsApp representative and try as best as I can to think about what their concerns would be, and how they would react in that situation and you know, try not to demonize them in my head so much."*

4.3 Openness to Change

In the literature, various authors listed students' resistance to change and post-secondary institutions' resistance to adopting new pedagogical practices as impediments to fostering creativity (Alencar and Fleith, 2010; Hosseini, 2011). Similarly, this study's results imply that there is a certain degree of resistance to change and adapting to students' needs which has influenced levels of creativity. Policymaker A emphasizes the importance of having and sustaining a competitive advantage *"in a social media driven world."* Several participants indicated situations which hinted at practices and views that need to be accepted and adopted in order to spark curiosity and cultivate creativity.

4.3.1 Willingness to Experiment with Ideas

Student B explains how exploring through experimentation satisfied their curiosity after the professor presented them with a set of computer programming rules. Student B's explanation is supported by the literature which described the orientation, investigation and conclusion phase of the IBL process (Pedaste et al., 2015). However, Student B's experiments took place out of classes when they *"went home."* Lack of class contact time (cited in Jackson et al., 2006) and professors not having enough time to practice different instructional strategies (Alencar and Fleith, 2010) could justify Student B's inability to experiment during class. On the other hand, Faculty A indicates that experimentation in the form of *"investigation of case studies"* is encouraged during classes. Hence, this could mean that ultimately it depends on the professor's willingness to allow students to experiment. In other words, students' creativity and interest in the subject rely on whether the professor embraces experimentation in the classroom or not.

4.4 Willingness to Encourage Student Engagement

The results did not exactly support other researchers who said that encouraging exploration increases student engagement (Taylor and Parsons, 2011). However, the results uncovered other elements that universities and professors should be willing to change to increase student engagement. For instance, Student C notes that the actual physical space in which courses are taught should have different types furniture and affirms that *"So, I feel like if we think of it, when we look at like kindergarten, the way they sit, they'd sit on the floor or they'd sit on like…Very like creative ways of putting the students, it's because you need to keep them engaged all throughout and it's very hard to engage children. But as we grow up, they kind of forget that we need to be engaged and the way we sit also affects the way we're engaged."* Additionally, Student F indicates that changing the current pedagogical practices is another way to ensure that students remain engaged *"They need to change the way they teach students, especially young students because this affects them, and if they put them in an environment where they are eager to learn and they want to learn and they're curious to learn. I think that it's gonna affect the future."*

The literature indicated that teachers should constantly ask students about their learning needs and modify their teaching methods and the learning environment accordingly (Hamblett, 2017). In this study, Student C also underscores the importance of acknowledging and adapting to students' learning styles. Pluck and Johnson (2011) asserted that there is a positive relationship between curiosity and motivation to learn. Likewise, Faculty A notes that motivation to learn is vital and adds that it *"must be supported, maintained and developed through supportive and imaginative instruction."* To achieve this, Faculty A states that *"it is necessary to establish an air of enquiry in the classroom with the use of a variety of teaching material and methodologies combined with appropriate assessment tools.". Concentrating on challenging areas of non-native English language speakers is essential. English language instruction and Academic Writing can be rather dry subjects if not taught with an imaginative flair. I have, for instance, found it useful to use songs as a means of teaching pronunciation to language students."* The approach explained by Faculty A is in line with the literature that presented the framework of education which stimulates creativity through creative teaching, teaching for creativity, and creative learning (Lin, 2011). This inquiry based approach to teaching which relies on the use of interactive methods, exploration and questioning, motivates students to learn whilst enhancing their creativity and interest (Lin, 2011).

5. CONCLUSION

The UAE has acknowledged the need to equip the future generation with the ability to be creative which will be one of the most sought-after skill in jobs (World Government Summit, 2019). Currently, the UAE Government and the Ministry of Education have devised various strategies as well as initiatives to promote innovation in education. However, there is still a need to encourage and incorporate creativity within the curricula especially at post-secondary institutions which are universally known to act as the stepping stone into the world of work because there is a gap between what the UAE aspires to achieve and the post-secondary education currently provided. The urgency of this change has been exacerbated by the COVID19 pandemic, which required a shift to distance learning for two years. As the Ministry of education undertakes a rethinking of the curriculum and how to personalize learning, certainly an approach grounded in inquiry based learning must be considered.

Although the stakeholders believed that there is a relationship between curiosity and the development of creativity, it still needs to be improved upon across universities in Dubai. Consequently, recommendations that the education sector should consider are made based on the findings. Ultimately, this study's findings and its interpretation could act as a reference point for future research on the subject matter.

- The study revealed that interest, passion, autonomy, guidance and practice are essential factors in encouraging creative outcomes. Since these factors are also featured in IBL, the education sector should consider piloting IBL across universities in Dubai with the goal of enabling these factors through an already existing pedagogical approach.
- Ongoing professional development trainings or workshops to make professors aware of the different creativity techniques will be a central enabler to shift the pedagogy toward more inquiry and creative approaches.
- A majority of the study's findings have in some way depicted the professor as the person who either inhibits or encourages creativity. Hence, the education sector should reassess the role of the professor and enable them to modify their teaching approaches to adapt to the students' needs.

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