

Digital Creativity

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Abstract—The concept of digital creativity is the most recent wave of creativity. It has emerged from the diffusion of digital technologies such as the Internet. It comes naturally when people are using the digital technologies that surround them. Digital creativity affects the way individuals, groups, and organizations operate in the digital age. This paper provides a brief introduction to digital creativity.

Keywords—*Digital Creativity, Technology-Enhanced Innovation, Creative Thinking*

I. INTRODUCTION

Creativity plays a crucial role in our life, culture, education, and workforce. The Internet and related digital technologies have made a profound influence on creativity at the personal, group, and organizational levels. They have changed all aspects of creativity. For example, by using digital technologies, companies are more creative locating loyal customers. The corporate performance can be improved using digital creativity. Digital technologies allow one to create imagery that is not possible with any other medium.

Digital creativity is all forms of creativity enabled by digital technology [1]. Digital creativity is using digital technologies or computer-based tools to support creativity in various areas of human activities such as brainstorming, creative problem solving, gaming, arts and design, to mention just a few. Digital creativity cannot exist without digital technology.

II. CREATIVITY

Defining creativity can be challenging and elusive, but you can recognize it when you see it. Creativity is found in the creative person, the creative process, and the creative product. It has become a valuable resource. The traditional psychology regards creativity as consisting of originality and functionality. It may also be defined as a mental process of generating new ideas from existing ones. It may include ability to solve problem and adapt to change.

Creativity has different influences on individuals, teams and organization. This leads to three kinds of creativity [2,3]:

- *Individual Creativity*: This relates to individuals using creative minds to solve problems. This kind of creativity can be seen as a function of the personal characteristics which include the personality and the cognitive style. It is the basis of team creativity and organizational creativity since individuals often work in teams in organizations.
- *Team Creativity*: In this type, a number of individual creativity levels are merged by appropriate leadership and culture. This results in ideas and inventions not possible by just individual creativity. This is also known as social creativity.
- *Organizational Creativity*: This refers to employee creativity in industries. This can be a measure for indicating how multiple agents can effectively solve a

problem. Creativity by individuals and teams is a starting point for organizational creativity.

Creativity is one of the major critical management resources needed to remain competitive. The development of creativity is vital in providing a wide range of talents needed to create intellectual property and wealth in any nation. Higher education should equip students for their current and future lives in response to the rapidly changing digital technologies [4].

III. APPLICATIONS

Digital creativity is being applied in education, nursing computer music, generative art, digital humanities, affective computing, game-based learning. Digital creativity has been applied in caring for people with dementia.

Some people in many sectors of society have expressed their concern about a lack of creativity in the curriculum. Creativity should be regarded as an essential life skill, which needs to be embedded in the educational process. Learners and teachers can use ICT to support imaginative expression and creative thinking. Applying digital creativity in education can make learners to be creative and produce work that has originality and value to individuals, peers and society [5]. Digital creativity can be used to unlock learners' interests and have a positive effect on students with behavioral and social difficulties, including those deemed hard to reach [6].

Creativity is crucial to individual success as well as corporate success. Applying digital creativity in the workplace results in the creation of valuable new products, services, ideas, procedures, or processes [7]. Many organizations have now regarded creativity as the basic building block for innovation in a global competitive environment.

IV. CHALLENGES

Digital creativity is still not clearly defined, and the line between digital and traditional media is blurred. As a field, digital creativity is less influenced by computer scientists and still lacks a specific canon. Attempts to produce assessment procedure for creativity or digital creativity have not been easy.

To those who are not digital natives, the digital world poses challenges to in adapting and embracing digital technologies. Educators cannot ignore how students operate in the digital culture. Effective teaching today requires creative approach to the dynamics of content, pedagogy, and technology [8].

Including digital creativity into an educational curriculum requires that the teacher/educator think through the possibilities of exploiting the resources to achieve targeted objectives. Students should not allow technology to replace their own creativity [9]. The training needs of teachers should be addressed. Digital creativity should be integrated within existing structures and courses of teacher education.

CONCLUSION

Digital creativity is basically the creativity that is driven by digital technologies. It is using technology in fostering creativity since the technology itself is a product of creative thinking. It is a dynamic field of research due of its novelty and rapid growth. It is an evolving, growing discipline with a lot of potential [10]. Corporate performance is influenced by digital creativity. Digital creativity helps developing nations to compete in the global arena.

References

- [1] K. C. Lee (ed.), *Digital Creativity: Individuals, Groups, and Organizations*. New York: Springer, 2013.
- [2] K. C. Lee, *Digital Creativity Model and Its Relationship with Corporate Performance Emphasis on Agent-based Modeling Approach*. New York: Springer, 2016.
- [3] K. Järvi and I. Fiegenbaum, "Where does creativity come from?" *Proceedings of the XXV ISPIM Conference*, June 2014.
- [4] A. Hugill and S. Smith, "Digital creativity and transdisciplinarity at postgraduate level: the design and implementation of a transdisciplinary masters programme and its implications for creative practice," *Digital Creativity*, vol. 24, no. 3, 2013, pp. 191-207.
- [5] A. Loveless, "Literature Review in Creativity, New Technologies and Learning," A NESTA Futurelab Research Report - Report 4, 2002.
<https://hal.archives-ouvertes.fr/hal-00190439/document>
- [6] T. Russell and L. McGuigan, "An exploration of digital creativity used to engage and motivate 'hard-to-reach' learners in behavioural, emotional and social difficulties (BESD) schools," July 2007, <http://www.becta.org.uk>
- [7] S. Chung, K. Y. Lee, and J. Choi, "Exploring digital creativity in the workspace: The role of enterprise mobile applications on perceived job performance and creativity," *Computers in Human Behavior*, vol. 42, 2015, pp. 93–109.

- [8] M. Tillander, "Creativity, technology, art, and pedagogical practices," *Art Education*, vol. 64, no.1, January 2011.
- [9] B. Wands, *Digital Creativity: Techniques for Digital Media and the Internet*. New York: John Wiley & Sons, 2002.
- [10] M. R. Lee and T. T. Chen, "Digital creativity: Research themes and framework," *Computers in Human Behavior*, vol. 42, 2015, pp. 12–19.

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