Can Virtual Pottery Become The New Norm and Replace The Ceramic Studio?

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Introduction

The demand for practising physical activity for training and educational purposes has increased globally. This paper presents the evaluation of using creative technological and fabrication innovation as fundamental alternative to reality in a safe space. The new normal era is about using collaboration technologies to the maximum[1], by developing skills and improving self-production of virtual collaborative work[2],such as artwork using virtual pottery as an example. This is inevitable today and has been introduced as a global platform and as an urgent call that has been initiated during pandemics and natural disasters to access knowledge, interaction and creation skills[3].

Objectives

The ultimate goal is to address the evaluation of the advantages and challenges of the impact on using creative technology in virtual space and fabrication during Covid-19. The need arises from three key factors: (i) virtual learning- having a real-time collaborative experience that improves and develop new skills by using creative technology tools and devices, (ii) interaction- real-time visualisation using VR devices to enable complex virtual and physical interaction in a virtual safe online environment. (iii) making - realise it by physical making fabrication through using rapid prototyping. To address these challenges, over main objectives are:

- Virtual learning: To develop an effective strategy through online platform to this process to maintain training engagement and learning with available creative technology tools.
- User interaction: to develop user collaborative interaction skills that simulate real physical interaction in traditional pottery making and other making skills using VR devices and tools.
- Making/ fabricating: The objective is to develop the physical activity of virtual physical making central to this process and examine 3D printing fabrication, which in turn influences the above two objectives.

Background

The research background on analysis and evaluation focuses on creative technologies such as virtual reality tools/devices and 3D printing creating Art forms during Covid-19. During the

last decade technologies have emerged, with art showing how it is starting to catch basic non-professional users' interests. Pottery making is one of the art fields that got the attention of games developers to create a simulation of the experience and the output of 3D digital graphics using Rapid Prototyping[4]. This is due to challenges that may occur in the real world, e.g., having a workshop, changing material characteristics, tools and devices. The developers have created a virtual space with sculpting tools and digital clay using real-time physical activity[5,6], to experience a three-dimensional object making process as shown in Figure 1. This method recreates the the physical motion activity in virtual space with real position of virtual tools and devices to get the whole traditional and physical experience.

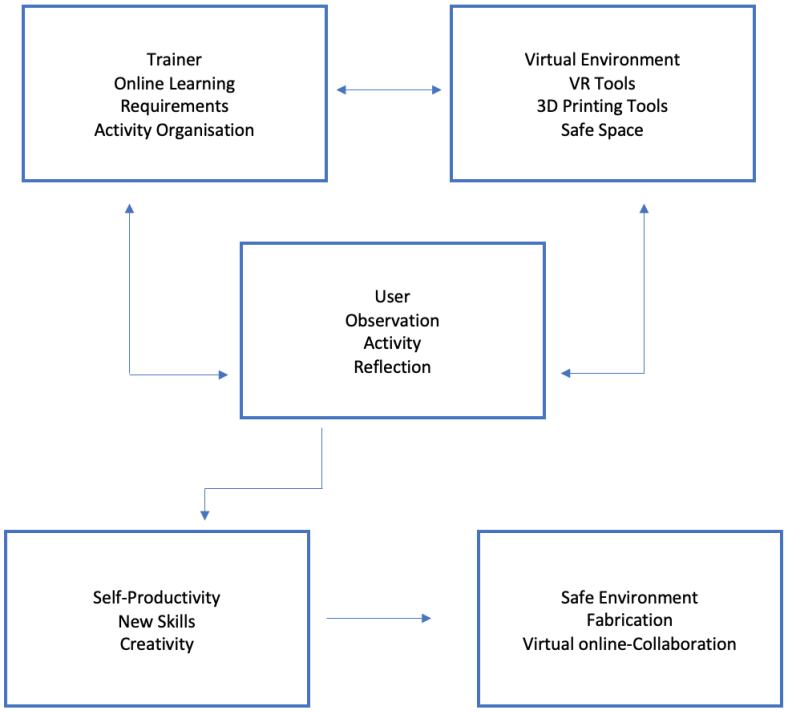

Figure 1: Virtual pottery making - the learning and fabrication process.

However, the documentation possibilities of traditional pottery-making for going digital have not been fully explored, to fill the gap of knowledge and apply it as a reliable method for developing real skills through Physical-Virtual learning[7]. The realistic experience and quality of deformation of real clay are the main goal of object digital transformation, among physical interaction remains to dominate the field of real-time computer graphics. The research investigates the skills development and the outcome of virtual making and fabrication. Also, we need to evaluate how stable is this method to be considered a competitive and an alternative tool to traditional pottery making.

In the early 2020, the world was led to a global shutdown, most of the viable sectors faced unprecedented challenges. In response, other than emergencies, training and educational sectors showed a creative growth of using creative technologies in virtual space to adapt to the new environment due to the rules and restrictions to safeguard health and to stop the spread of the virus. The global

pandemic appears to raise the bar for creative technologies evolving to the maximum limits of physical and learning activities, to show in the short-term to accomplish it in-home space. Individuals are searching for ways to absorb new ways of learning and developing new skills to mitigate this situation.

Research approach

The research approach focuses on creating a learning system, process and the evaluation method for creative technologies tools in virtual space, comparing the development of VR and traditional physical skills in a virtual studio, and the access to such experiment is provided in virtual workshops through a platform group using communication models in a large-scale network.[8].

For this paper, we chose Virtual pottery as an example for virtual learning and training, replacing traditional making. It is an interactive virtual physical 3D modelling that is chosen as a way of extending ceramic artist creativity of making, scaling up the boundaries of creative making and developing a physical-virtual experience that captures real-world deformable pottery making (addition/ subtraction), using tangible hand and finger transformation in a safe environment as shown in Figure 2.

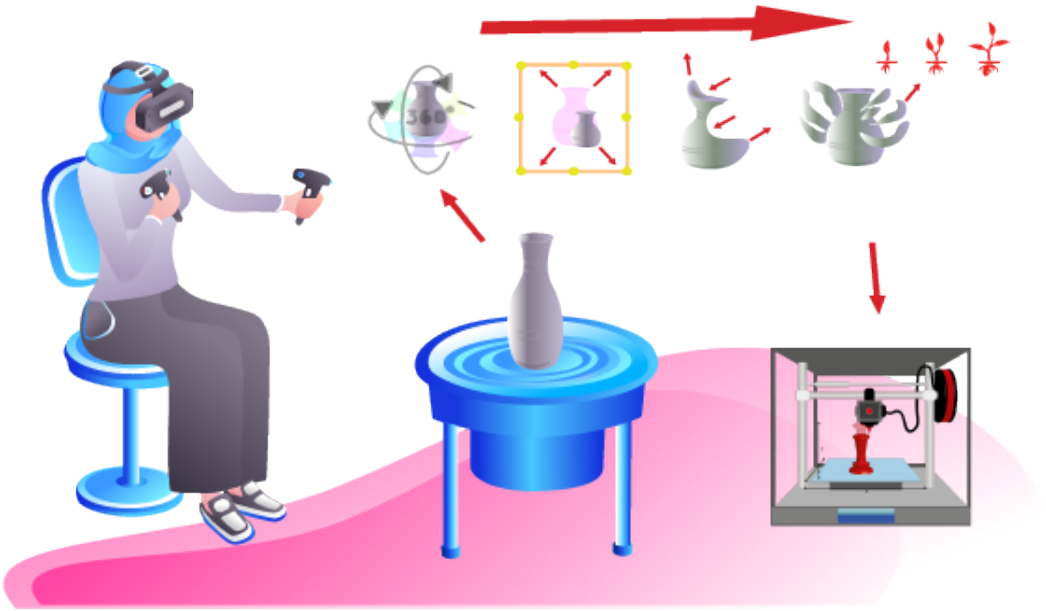

Figure 2: Virtual pottery making and fabrication.

Results and Discussion

The experimental system process, in theory, relying on research related to the field, shows a qualified proposed system model to examine the comparative evaluation of the virtual pottery practice during Covid-19 and the liability of using this method, not only as a replacement but as a reliable making method of physical and visual modelling in a virtual communication group network. In addition, this approach opens the gates for developing necessary skills in many fields in case of global pandemics and natural disasters and self-learning tool and is adaptable to environmental changes.

Conclusion

We have presented a proposed virtual pottery system model for Physical-virtual learning in a virtual studio utilising creative modelling and digital fabrication in a safe environment. Now innovative technologies have shown a promising breakthrough to new norm for the future, having a significant impact on developing physical and visual skills. Virtual space skills can show novel learning and improvement, competing with traditional methods and adapting to current health restrictions rules of Covid-19. We will show a video of the whole process during the conference presentation.

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