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## EXPLORING THE 360° PANORAMIC IN THE PRINTMAKING STUDIO THROUGH VIRTUAL TOURS

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### ABSTRACT

The printmaking in Malaysia encompasses various techniques, including relief print, intaglio print, screen printing and lithography. The technique of the printmaking artwork is conventional. According to the research produced, this focuses on the introduction of materials and equipment in printmaking through a 360 panoramic exploration of the printmaking studio through virtual tours. The objective of this research is to clearly understand the material and equipment information available in the printmaking studio. The method used in this research is through the development process using Pano2VR as well as the multimedia development model. The results of this study found that clearly obtained information about the materials and equipment available in the printmaking studio, knowing about the use of the machine more regularly, Meanwhile, the rules displayed through the virtual tour method are clearer. However, virtual tours offer benefits but cannot replace real experiences. Technology's continuous development makes them increasingly important in modern life, but they cannot replace real experiences.

**Keywords:** Exploring, Panoramic, Printmaking, Studio, Virtual Tours

### INTRODUCTION

Printmaking has been an integral part of Malaysia's artistic landscape for centuries. The earliest printmaking in Malaysia dates to the 1930s which has separated into pre-independence (1930-1957) and post-independence that starting from 1958 till now (Mat Isa & M. J. 2022). Traditionally, printmaking in Malaysia encompassed various techniques, including relief print, intaglio print, screen printing and lithograph. Printmaking is not considered isolated from other fine arts disciplines in Malaysia. It is a flexible medium that can be used to make a broad range of artworks and the fundamental methods are still frequently used by artists globally (Izwanna et al., 2020). Therefore, printmakers and artists are using a variety of techniques to create a wide variation of images in their artworks. Many artists are experimenting with digital intervention in their print work and have earned significant artistic recognition (Dutta & Bhowmik, 2023). This is a way for artists to express their creativity and share their stories with the world.

In recent years, traditional printmaking techniques have evolved alongside technological advancements and contemporary artistic influences. Artists in Malaysia have embraced digital technologies, combining traditional printmaking with digital printing and 3D printing to create innovative artworks that bridge the gap between tradition and modernity. Nowadays, both digital and traditional artists make their work using a variety of technological knowledge and applications (Rani,

A. 2018).

### **Printmaking Studios**

However, it can be difficult to experience printmaking firsthand, as it is often done in a studio setting. This can be due to several factors, including the need for specialized tools and materials, the time and effort required to create a print and the limited availability of printmaking studios. Nowadays, technology is rapidly evolving in response to the changing times, enhancing the way of processes and producing in both conventional and modern printmaking artworks (Muhamad et al., 2023). Using the precise technology through the process and producing artwork in a printmaking studio allows artists to create print artwork more efficiently and creatively.

### **Virtual Reality and 360° Panoramic Technology**

Virtual Reality (VR) technology experienced a lull in development in the early 2000s due to high costs and limited content. However, recent advances in technology have made VR more affordable and accessible, leading to a renewed interest in the medium. VR is a computer-generated experience that immerses the user in a simulated environment that closely resembles the real world. VR can be used to create realistic and engaging experiences for entertainment, training, or simulation. (Reyna, J., 2018). Meanwhile, 360° panoramic technology captures real-world surroundings from all angles, enabling immersive viewing through VR or conventional platforms.

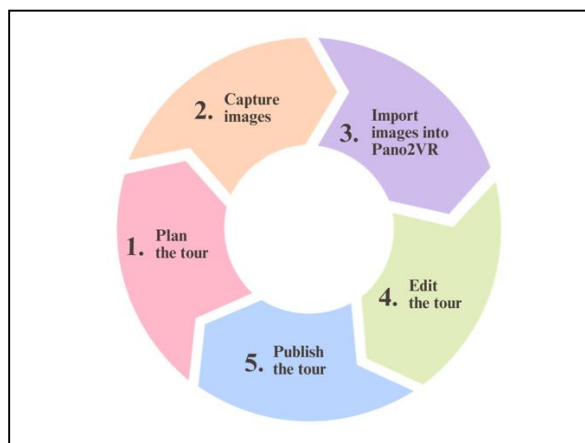
The emergence of VR and 360° panoramic technology has the potential to revolutionize the way we interact with the world. These technologies can be used for a variety of purposes and solutions tools to help provide information that visitors may need (Daniela, 2020). A virtual tour is a 360° simulation of a real-world location that allows the user to explore the space from predefined points. It is created by stitching together a series of 360° photographs or 3D models. Virtual tours are simulated experiences of real or imagined places, created using a sequence of images or videos (El-Said & Aziz, 2022). Visitors may observe the surroundings visually with a 360° panoramic perspective in this Virtual Tour application. Aside from that, users may experience the sense of walking to various spots across the place (Jubaedi & Dwiyatno, 2020).

The objective of this study is to implement the potential of virtual tours to provide access to printmaking studios for people who are unable to visit them in person. This is a relevant and timely topic, as virtual tours are becoming increasingly popular and affordable. The scope of the study will include a review of the literature on virtual tours and printmaking. This will help to identify the key challenges and opportunities associated with creating virtual tours of printmaking studios. The study will also develop a prototype virtual tour of a printmaking studio. This will allow the researchers to test and refine their approach, and to gather feedback from users.

## **METHODOLOGY**

### **Pano2VR Application**

In this study, the development process for a virtual tour using Pano2VR software involves planning, capturing images, importing images, editing and publishing the tour. Development process is essential for creating a virtual tour that is informative, engaging, and meets the needs of the target audience. Online viewers can freely navigate the virtual scenes by using the mouse and keyboard (Cao, K. 2022). Seen in diagram Figure 1.



**Figure 1.** development process using Pano2VR

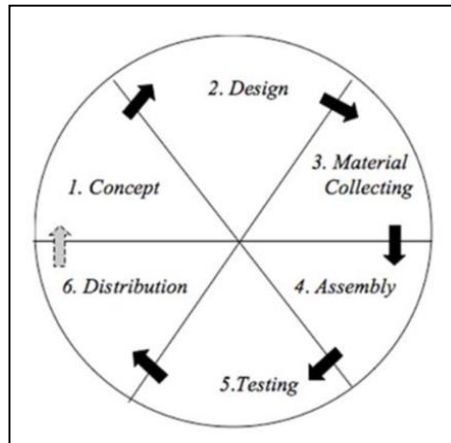
The actions of each of the stages in Figure 1 are described in full below:

- a. Plan the tour: the location for the tour was decided in the printmaking studio.
- b. Capture images: Using GoPro 360-degree cameras and smartphones to gather video and picture resources, notably by recording video and photographs of the printmaking studio. The quality of the images and the variety of shots will have a big impact on the quality of the tour.
- c. Import images to Pano2VR: Make a video and image conversion with Pano2VR. This software application allows to create and publish virtual tours.
- d. Edit the tour: Adding hotspots, text and other elements using Adobe software. Hotspots can be added to provide interactive elements and text can be used sparingly.
- e. Publish the tour: Using a mobile device as a platform. The tour will be tested before publishing.

### **Virtual Tour Development Methods**

The media development model is a method of comprehensive approach to multimedia development that can be used to create a variety of products, including games, simulations, and educational materials. In this study, the author employed the Luther-Sutopo version of the Multimedia Development Life Cycle (MDLC) and it contains six stages: concept, design, material collecting, assembly, testing and distribution (Aziz, M. A., & Agustian, B. 2023). Seen in diagram figure 2.

In developing the virtual tour application, the application is intended to leverage 360 panoramic visualisation facilities with graphics and audio, rather than just text. The Pano2VR application and the Luther-Sutopo multimedia development approach were utilised in the creation of the virtual tour 360° application. A virtual tour is a 360° simulation of a real-world location that allows the user to explore the space from predefined points. It is created by stitching together a series of 360° photographs or 3D models. Virtual tours are simulated experiences of real or imagined places, created using a sequence of images or videos (El-Said, O., & Aziz, H., 2022). It is believed that by creating this application, it would become a source of information on the Printmaking Studio's usage.



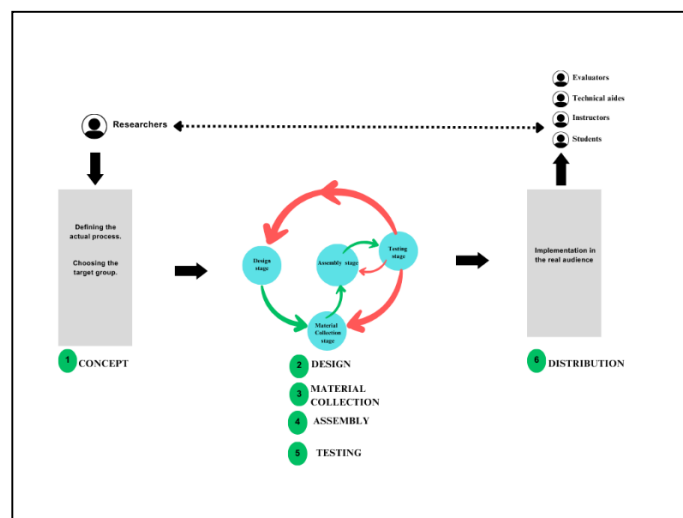
**Figure 2.** Luther Sutopo's Multimedia Development Model.  
(Source: Aziz, M. A., & Agustian, B. 2023)

## FINDING

### Concept

In this study, the researcher applies a method to simulate the teaching and learning process at the actual field (Figure 3). Therefore, the simulation will be conducted by using the fine arts department's printmaking studio based at Universiti Teknologi MARA Perak. Higher education institutions throughout the world are looking for ways to innovate in order to educate students for a rapidly changing world and the inescapable technological revolution in both education and industry (Chiao, H. M., Chen, Y. L., & Huang, W. H. 2018. Using technology for art education is a form of art learning that involves many disciplines and cross-domains. It is the connection between art creation and science and technology (Liu, Q., Chen, H., & Crabbe, M., 2021). This will involve by using various tools in hardware and software, such as database operating systems. Among the software used in this innovation is *Pano2VR* as a medium for mapping in the printmaking studio for the teaching and learning process. This software has been tested and found to be very effective.

By using this software, it has provided convenience to all individuals interested in the teaching and learning process, especially students, because it is easy to obtain information on the use of a systematic and quick printmaking studio by being able to observe it in a three-dimensional (3D) concept as shown in the diagram below.



**Figure 3.** concept of simulation process

## Design

This step involves creating a blueprint for the virtual tour, including the storyboard, the script, and the technical specifications.

## Material collection

This step involves gathering the necessary materials, such as images, audio, and video.

## Assembly

This step involves putting together the virtual tour, including editing the images, audio, and video, and adding the text and graphics. This step will be carried out using a mapping device; Pano2VR software, which will be carried out earlier during this project. Documentation of equipment and machines must be recorded to be entered into the Pano2VR software to make it easier for students to access with just one 'click' via desktop, laptop or smartphone.

## Printmaking Art Equipment (Intaglio)

The following is a listing of the printmaking equipment for the intaglio technique, which has been mapped out for each piece of equipment that is necessary for the manufacturing process. The process of mapping has been completed for each of these devices, which are referred to as "nodes" as active buttons that can be used to receive information about the many types of printmaking equipment and the functions that it performs for the intaglio printmaking technique.

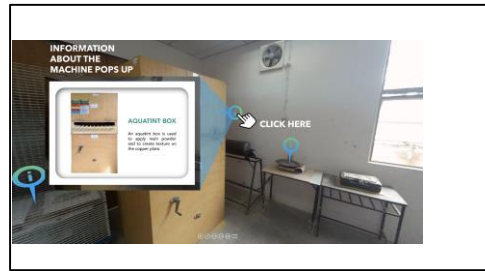


**Figure 4.** The mapping process is done for each piece of equipment in the printmaking studio.  
(Source: Design by Nur Muhammad Amin)

Equipment mapping needs to be done in this research so that students can repeatedly learn and memorize the types and functions of the equipment. This is because of the variety of various equipment such as brushes, Gloss Black Tire Paint, Plate (zinc, copper), Printmaking etching and drypoint Toolkit, Aerosol Paint, Printmaking Roller, Scraper, Linseed Oil, Oil Based Inks (Figure 4).

## Printmaking Art Machinery

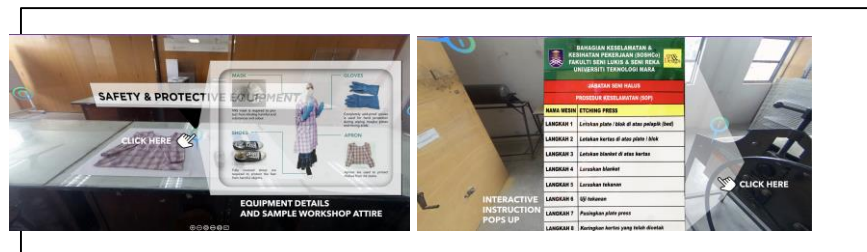
The Machines in the printmaking studio are also mapped. Its purpose is for students, lecturers, and technicians to know how to use it more effectively and safely. In addition, there are several machines that are used as tools to produce printmaking artworks. The machines that have been mapped in this virtual tour concept are Aquatint Box, Portable Stove, Spray Etching Machine and Etching press (Figure 5).



**Figure 5.** The mapping process is done for printmaking art machines.  
(Source: Design by Nur Muhammad Amin)

## Rules and Safety

The rules and safety of the printmaking studio are also mapped out before entering the studio (Figure 6). Students need to be aware and able to follow the guidelines in the studio to protect themselves from injury. Some printmaking techniques such as etching and lithograph require a high level of safety (Martin, J. 2018). Consequently, by means of this investigation, information provided to all relevant parties based on the concept of a virtual tour, with the goal of offering appropriate assistance.



**Figure 6.** The mapping process is done for rules and safety for the printmaking studio.  
(Source: Design by Nur Muhammad Amin)

## Testing

This step involves testing the virtual tour to make sure that it works properly and meets the requirements of the target audience.

## Distribution

This step involves distributing the virtual tour to the target audience.

## CONCLUSION

The research of virtual tours is an innovative and increasingly popular step in the education sector, especially in the context of technology and the digital environment. In conclusion, the researcher concluded some of the importance and benefits of running a virtual tour, such as the fact that the audience can feel the experience interactively through the use of virtual tours methods that have advanced technology, almost as if they were in that place. This increases engagement and understanding. In addition, this virtual tour method is used in this printmaking studio to take students to places relevant to their teaching and learning, either inside or outside the studio. However, it's also important to remember that although a virtual tour has many benefits, it cannot replace the real experience in many situations. Other than that, with the continuous development of technology, it has become an increasingly important tool in many aspects of modern life.

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