Maker-based Serious 3D Game Authoring Tool for Cultural Heritage Education

A 3D Game Authoring Tool for Non-Experts to make games and share Cultural Heritage story conforming to the Maker Movement to engage younger generations for better cultural inclusion

**BACKGROUND**

Cultural Awareness is an essential aspect in a diverse community as culture plays a significant role in personality and behaviour [1]. Cultural Heritage preservation is a must as internationalization is taking place.

A good form of preserving cultural heritage is by educating the younger generations. As younger generations are more interested in immersive digital technologies, such tools can be utilized for the benefits they provide.

Serious games have a potential to engage young individuals and a serious 3D game authoring tool, an innovative way conforming to the maker movement can be suggested where anybody can share their story in an engaging way[2].

**PROBLEM STATEMENT**

1. Despite much focus being on the United Nation’s 17 Sustainable Development Goals to reduce inequalities, not much action is being taken for better inclusion.[3]

2. To reduce inequality among countries, and communities, cultural awareness is required to preserve and educate each other about an individual’s unique culture.

3. With an immersive serious game authoring tool, anybody can share their cultural story as a game in a first-person mode while playing a game to support maker movement[2,4].

4. However, not much research has been conducted utilising serious 3D game authoring tool where non-experts can make games sharing cultural heritage. Furthermore, more research needs to be done for appropriate guidelines for such a tool to be used in museums or classrooms.

**METHODS**

1. Gather design requirements from a developed serious 3D cultural game with IoT for Malacca and conducting a study [5].

2. Develop the serious 3D game authoring tool prototype based on the study conducted for the cultural IoT game. Determining the features with interviews with cultural experts

3. Utilize other interactive technologies such as Internet-of-Things (IoT), LEAP motion and conduct studies to understand the best way to integrate IoT with the serious 3D game authoring tool.

4. Finally evaluate the effectiveness in cultural inclusion and user-friendly aspect of the developed serious 3D game authoring tool with a case study for 3 months. Additionally, a STEM related study will be conducted with this tool.

**NOVELTY**

A Novel Serious 3D Game Authoring Tool where Non-Experts can easily design a game sharing their own cultural story whilst personally being in a virtual environment and designing the scenes.

**OBJECTIVES**

1. Gathering appropriate design guidelines for a serious 3D game authoring tool from a serious IoT cultural game focusing on Malacca.

2. Developing a prototype of a serious 3D game authoring tool for cultural heritage education and awareness based on the guidelines.

3. Validating the prototype further and gathering more suggestions from interviewing cultural experts.

4. Including the suggestions as features into the serious 3D game authoring tool such as an inventory of intangible historical artefacts, virtual AI assistant, story guides, geographical facts, background sound.

5. Evaluating the developed serious 3D game authoring tool with a 3 months case study with a school and a museum.

**SIGNIFICANCE**

- Ultimately, this research aspires for a better cultural inclusion and reduce inequality.

- Gain respect for each other’s culture and immerse in a cultural journey thereby preserving culture.

- Individuals can share their unique experience to others in a world where rapid globalization is taking place.

**REFERENCES**


5. Abdulrazic, Mostafa Osama Mostafa and Sanzana, Mirza Rayana and Ng, Kher Hui and Maul, Tomas and Wong, Jing Ying, Maker Education for Cultural Awareness With a Serious 3D Game Authoring Tool: Design Considerations