Museum Interactive Edutainment Using Mobile Phone and QR Code

Tanti Octavia[1+], Andreas Handojo[2], Welly Tedja Kusuma[2], Timothy Christian Yunanto[2], Richard Lawrence Thiosdor[2], Daniel[2]

[1]Industrial Engineering Department, Faculty of Industrial Technology, Petra Christian University

[2]Informatics Department, Faculty of Industrial Technology, Petra Christian University

Abstract. People often regard the museum as a boring place, something old-fashioned, not interesting place to go, and do not have a correlation with the present. In fact the museum is a good place as a source of learning about human history and culture. This research try to build museum interactive edutainment (education and entertainment) application using mobile phone apps and QR code. This application will provide additional interactive information about the museum artefacts. Museum visitors could find this information by scan the QR code that attach to the museum artefact. The application will do the scanning process simply by using mobile phone camera. This QR code ID then sent to the server to receive artefact additional information such as text, image, sound, and video. This application already tested to 162 museum young visitors, the results is 75.9% respondents find that this application very interesting as a learning media.

Keywords: Museum, Education, Learning, Mobile Phone, QR Code

1. Introduction

The museum is a suitable place for learning about the history and culture of a nation. Beside as a tourism destination, the museum also provides an education role to its visitors. The problem that occurs is that museums are often considered a boring and uninteresting place, especially for young people. This negative perception is getting bigger nowadays where internet access is increasing. Young people of the current generation think that more interesting and easy to find information through the internet [1]. Especially in this disruptive era which the use of internet and mobile phones is massive. This technology very promising to use for the wider community, especially for young people.

Usually museum use text and picture that place near the museum artefact to give information about the artefact to museum visitors. This information have space limitation. The museum curator must choose which picture to display and text that must to write. This media limitation also prevent interactive information such as interesting videos and sounds for museum visitors. This problem lacks support the museum's interactive and interesting for visitors.

Based on this problem, this research tried to build an edutainment (education and entertainment) application using a mobile application, mobile phone camera, game, and QR code. Applications on mobile phones were chosen because they are relatively cheaper [2], have easy installation, and a large number of mobile phone users. By using this application, the visitor can search more information about the artefacts by scan (using mobile phone camera) the QR code that attach to the artefacts. The application give the detail information about that artefact. Museum visitors also could see pictures or videos about that artefact in this application by pressing picture or video button (connect to YouTube). By this information, museum visitors could digging more interactive information about museum artefact.

[+] Corresponding author. Tel.: +62 - 31 - 2983384

 E-mail address: tanti@petra.ac.id

2. Literature Review

Research on the use of technology for tourism development continues to evolve, such as [3] that uses mobile phone technology, QR code, Geographic Information System (GIS), and Global Positioning Systems (GPS) to build cultural heritage information. Lailasari et al. [4] that build tourism information application for Ciamis city Indonesia. Handojo et al. [5] that uses mobile phone technology and GPS to guide tourists in a visit history of independence war in Surabaya. Botturi et al. [6] create mobile games for learning cultural heritage. Handojo et al. [7] create Games for heroic battle of Surabaya using mobile phone and GPS feature. Chivarov et al. [8] and Handojo et al. [9] create an interactive presentation using mobile phone to create digital exhibits in the museum.

The number of research about education using mobile phone also increasing for example Setiawan et al. [10] that create culture learning using android. Kidi et al. [11] that create android based culture education game. O'Bannon and Thomas [12] research about mobile phones impact in the classroom. Keengwe et al. [13] research about challenges and opportunities for learning using mobile phone. Sarangapani et al. [14] that research about mobile phone technology in the cultural education. So we could conclude that this research have great opportunity to improve education in historical and cultural especially to young generation.

3. Design and Implementation

The design system from this research can be seen on Fig. 1. First museum visitor could install the application. User then could receive more information about the museum artefact (text, sound, image, and video) simply by scan QR code that attach on museum artefacts (Fig. 2). The application will run mobile phone camera to scan the QR code (Fig. 3). The QR Code ID then sent to the server through internet to collect additional information about the artefact (Fig. 4).
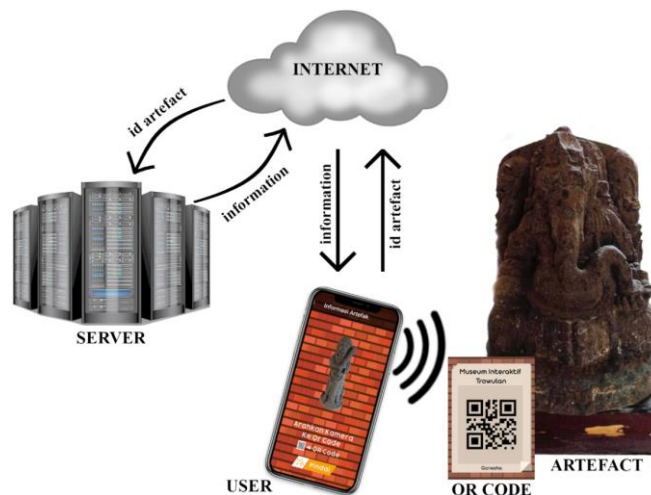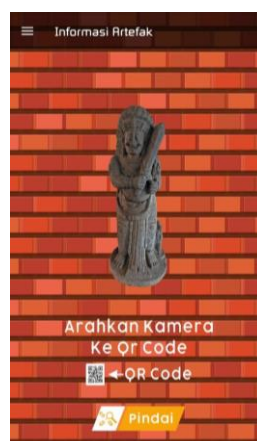

Fig. 1: Design System

Fig. 2: QR Code Scan Menu

Fig. 3: QR Code Scan using Mobile Phone Camera

Fig. 4: Additional Information for Artefact

If the user want to see the additional picure of the artefact, user can clicked the picture button located in right bottom (Fig. 4) and than the picture will be show up (Fig. 5). Museum organizer could add more pictures about the artefact. By this approach, museum visitors could have more interesting information about museum artefacts unhindered limitation of museum display information.

Fig. 5: Additional Image Information

User also can see video about that artefact by click the video button (Fig. 4). After the user clicked video button, the application will open YouTube Apps and show a video about that artefact (Fig. 6).

Fig. 6: Video Information

This application already tested to around 160 museum visitors that have age range 6 to 17 years old (Table 1). This questionnaire testing result that 75.9% this application very interesting to use as education tools. So we could conclude that this application meet the research goal.

Table 1: Respondents Testing Response

Age	Very Not Interesting	Not Interesting	Interesting	Very Interesting	Total Respondents	Percentage
06 - 09	0	0	4	30	34	21.0%
09 - 12	0	0	11	46	57	35.2%
12 - 15	0	0	15	27	42	25.9%
15 - 17	0	0	9	20	29	17.9%
Total Respondents	0	0	39	123	162	100.0%
Percentage	0.0%	0.0%	24.1%	75.9%	100.0%	

4. Conclusion

This research try to build museum interactive edutainment application. This application will provide additional information about museum artefact. Museum visitors could find this information by scan the QR code that attach to the museum artefacts simply by using mobile phone camera. This QR code ID then sent to the server to receive artefact additional information such as text, image, sound, and video. By this additional information museum visitors could dig more information and learn from that interactive way. This approach will provide additional information about the artefact in more interesting way for the museum visitors. This also could overcome the limitation information that could give by the museum display. Museum organizer could add more information about the artefact such as pages of information, photos, videos, and sound. This application already tested to 162 museum young visitors. 75.9% respondents find that this application very interesting as a learning media. For future research we could add the application with another interesting application such as games, virtual tour guide, virtual reality, augmented reality, etc. to increase the attractiveness of the museum especially for young generation.

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6. References

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