Architectural History Education: Students' Perception on Mobile Augmented Reality Learning Experience

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Introduction

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- New technology's adoption

Mobile Augmented Reality (MAR) technology could be a welcoming revolution, which could assist students in improving their **learning effectiveness**

Question to ask

To what extend **MAR** usage could benefit students to learn **architectural history** more **effectively**, as compared to using the **traditional teaching and learning** method?

Aim

To explore the usage of MAR application as a new innovative method for students to learn architectural history **actively** and **efficiently**.

Objective

To investigate **MAR current practice** on architectural history education and to **evaluate students' perception** of MAR in assisting their **learning experience.**

Educational technology in architectural history education

AR has drawn a public attention with its ability to allow learners to **visualise complex 3 Dimensional objects** at a very fast rate.

- **M-learning**, has become an efficient platform for students to have innovative technical assistance to enhance their learning process with **low cost** and **affordable mobile devices**.

Students learning experience via mobile learning

Conventional learning method of sitting in classrooms passively transformed to **M-Learning**, where students actively engage in the **learning process**.

- According to Farley, the majority of the students acknowledge the usage of **savvy smartphones** technology device in their day-to-day learning.

- the usage of M-learning as a tool could **enhance understanding** and **knowledge based skills** required by both students and instructors in architectural history education.

Students' technology acceptance on mobile learning

- **M-learning** in the educational sector has **facilitated teaching and learning** for both instructors and students.

- **M-learning devices**, either a **smartphone** or a **tablet**, are seen as promising pedagogical technologies and could be adopted easily in any **higher learning institution.**

- **MAR learning technology** would equip the students with the tool of reflection, and **learning contents** that they have developed could serve as a **database for students** to refer.

Mobile Augmented Reality (MAR) potential

- Pérez-López[7] accounts that **MAR is such a powerful tool** that it can bring another dimension to senses, such as touching, hearing and **locating computer generated information**.

- Students who use AR technology will have an **in-depth understanding** of a topic especially in the **teaching of historical buildings** and sites where they can **navigate through** and see themselves

- **MAR technology** application has been more **practical**, **user-friendly** and **adaptive** in this century's **architectural learning method.**

Research strategies

Mixed methods approaches

- **content analysis:** conducted through workshops

- **Survey questionnaire:**

conducted to produce an empirical outcome of the study quantitatively

USIM students experiencing with AR markers

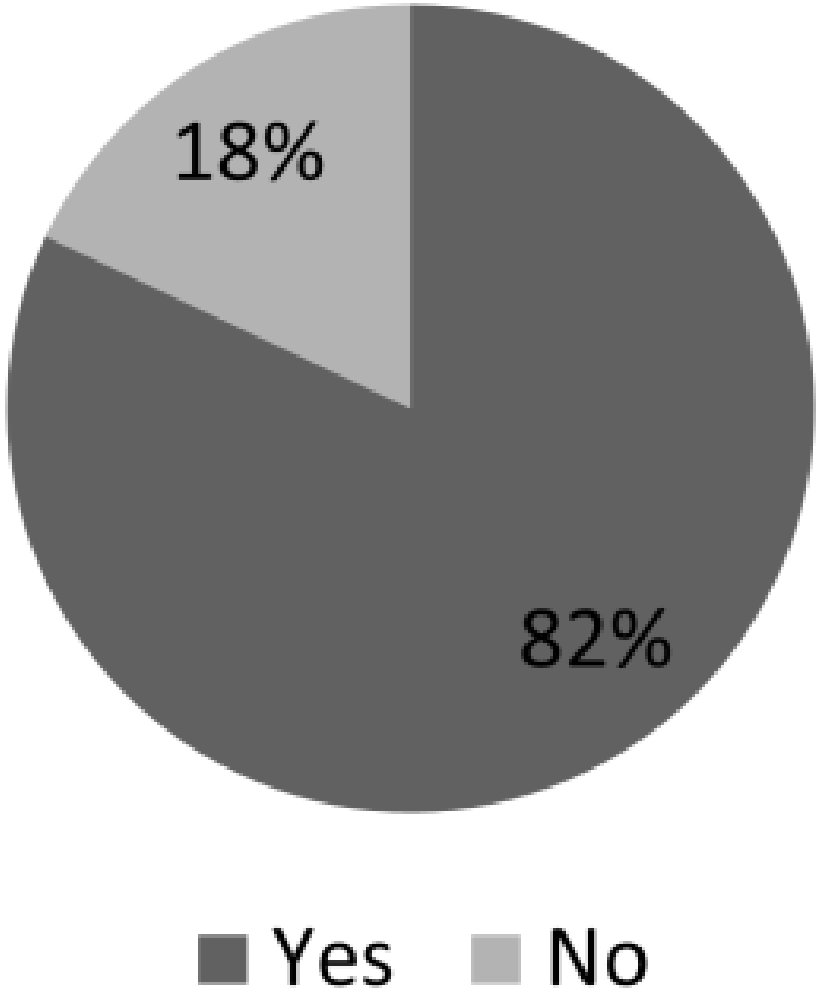
IIUM students during AR simulation workshop

Data analysis

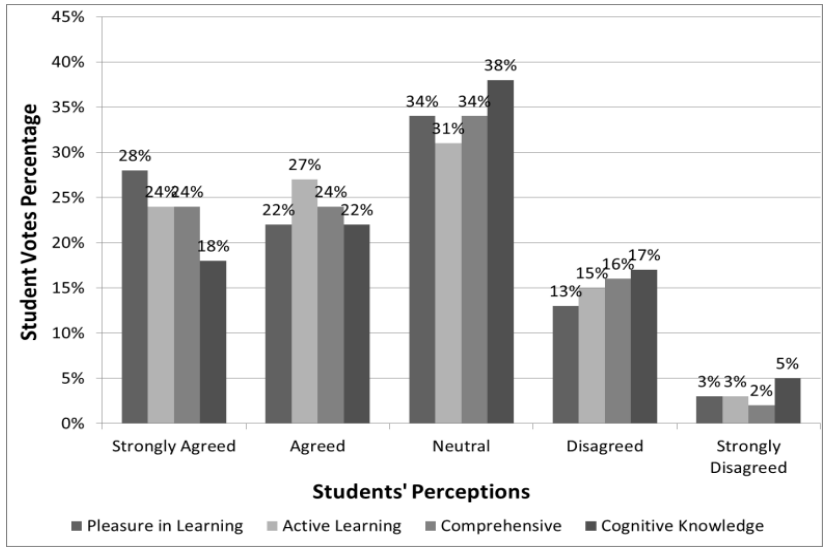
The data analysis divide in two parts:

1. **Graphical data analysis**
   - pleasure in learning,
   - active learning,
   - comprehension and
   - cognitive learning acquisition.

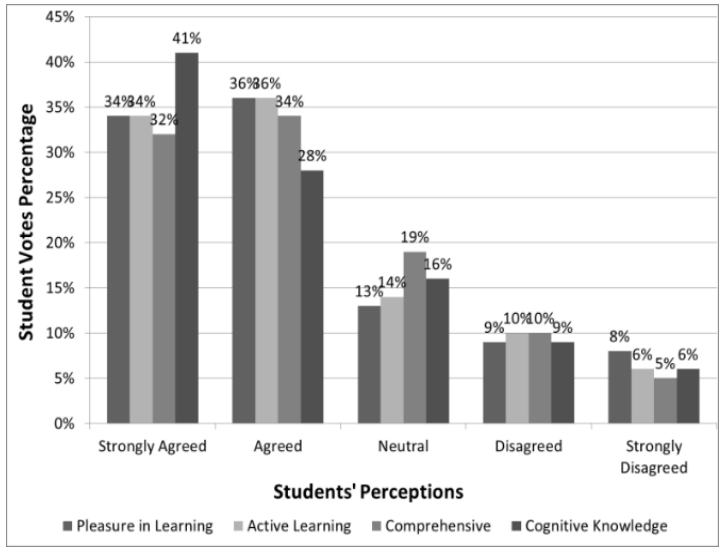
2. **Pearson Correlation data analysis**



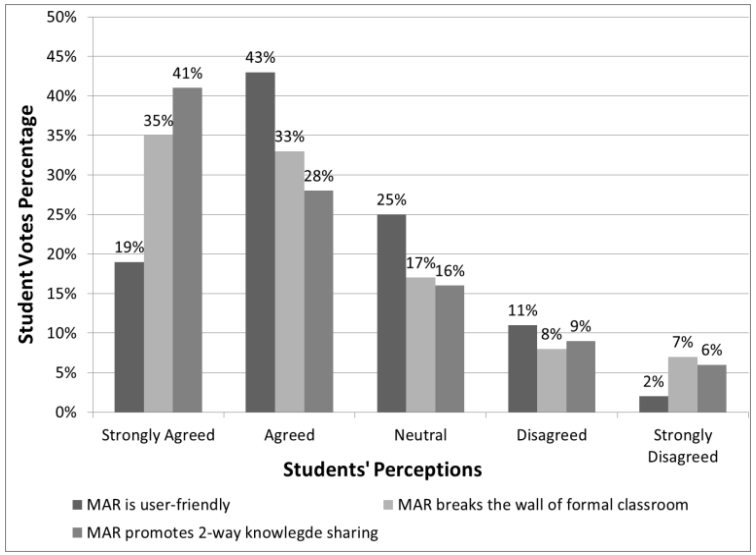
The percentage of students who are familiar
with MAR in USIM and IIUM



The students’ perceptions on the conventional method of learning architectural history in four perspectives



The students' perceptions of learning architectural history using MAR as a tool for technology enhanced learning, in four perspectives.



The students' perceptions of learning architectural history with MAR

Variables	Familiar with MAR	Level of Education
Students gain cognitive knowledge through conventional method	-0.053	0.092
Students gain cognitive knowledge through TEAL with MAR	-0.045	0.078

Pearson Correlation Test with students' familiarity towards MAR and level of education (LoE)

Variables	Comprehensive	Gain Cognitive Knowledge
Students pleasure in learning through conventional method conventional method	0.817	0.686
Students pleasure in learning with MAR	0.915	0.869

Pearson Correlation Test with students on Comprehensive and Gain Cognitive Knowledge

Discussion and suggestions

This study highlights the **importance of MAR in architectural history education**. The **conventional** (the traditional method) and the **TEAL method of teaching architectural history** were analyzed in four (4) perspectives:

1. Pleasure in learning,
2. Active learning,
3. Comprehension
4. Cognitive learning acquisition.

TEAL could be adopted as teaching pedagogy for this course

The finding proved that **MAR could improve students**' understanding of the history of architecture.

Conclusion

- **MAR** usage in the **architectural history education** has proved to be a **tool of importance**.

- **MAR applications** need some **improvement**, especially in the **marker tracking**.

- A lot of **sensitization** and **teaching programs** involving workshops are required **to popularise the technology** as **a universal teaching tool** and to remove students' technological barrier.

References:

1. Powell, Loreen Marie, and Hayden Wimmer. "Evaluating Students' Perception of Group Work for Mobile Application Development Learning, Productivity, Enjoyment and Confidence in Quality." *Information Systems Education Journal* 14, no. 3 (2016): 85.
2. Koponen, Anu, and Sari Kivimäki. "The Pace of Learning Combining Face-to-Face and Online Teaching in Architectural History." Higher Arts Education, no. Special Issue (2015): 121–40.
3. Al-Emran, Mostafa, and Khaled F. Shaalan. "Attitudes Towards the Use of Mobile Learning: A Case Study from the Gulf Region." *iJIM* 9, no. 3 (2015): 75-78.
4. Alrasheedi, Muasaad, and Luiz Fernando Capretz. "Determination of critical success factors affecting mobile learning: a meta-analysis approach." *TOJET: The Turkish Online Journal of Educational Technology* 14, no. 2 (2015).
5. Farley, Helen, Angela Murphy, Chris Johnson, Brad Carter, Michael Lane, Warren Midgley, Abdul Hafeez-Baig, Stijn Dekeyser, and Andy Koronios. "How do students use their mobile devices to support learning? A case study from an Australian regional university." *Journal of Interactive Media in Education* 2015, no. 1 (2015).
6. Akçayır, Murat, and Gökçe Akçayır. "Advantages and challenges associated with augmented reality for education: A systematic review of the literature." *Educational Research Review* 20 (2017): 1-11
7. Pérez-López, David, and Manuel Contero. "Delivering educational multimedia contents through an augmented reality application: A case study on its impact on knowledge acquisition and retention." *TOJET: The Turkish Online Journal of Educational Technology* 12, no. 4 (2013).
8. Petrucco, Corrado, and Daniele Agostini. "Teaching Cultural Heritage using Mobile Augmented Reality." Journal of e-Learning and Knowledge Society 12, no. 3 (2016).
9. Nincarean, Danakorn, Mohamad Bilal Alia, Noor Dayana Abdul Halim, and Mohd Hishamuddin Abdul Rahman. "Mobile augmented reality: The potential for education." *Procedia-Social and Behavioral Sciences* 103 (2013): 657-664.

video

https://www.youtube.com/watch?v=dsq9jPJ1RYg

End.

Thank you!