



UNIVERSITI  
TEKNOLOGI  
MARA

Universiti Teknologi MARA

**V-MIEX**

28 JUNE  
06 JULY  
**2022**

VIRTUAL-MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION

ROAD TO COMMERCIALISATION

**V-MIEX BOOK**



# V - MIIEX BOOK

## 'ROAD TO COMMERCIALISATION'

#### EDITORS AND COMPILERS:

Dr. Nur Hayati Abd Rahman  
Dr Syukri Abdullah  
Wan Hasmat Wan Hasan  
Aini Qamariah Mohd Yusof  
Norazlan Anual  
Dr. Khairunnisa Abd Samad  
Nordianah Jusoh @ Hussain  
Rozana Othman  
Norlela Abas  
Azira Rahim

#### COVER DESIGN:

Adi Hakim Talib

#### PUBLISHED BY:

Division of Research and Industrial Linkages  
UiTM Cawangan Melaka  
KM26 Jalan Lendu,  
78000 Alor Gajah, Melaka  
Tel: +606-5582094 / +0606-5582190 / +606-5582113  
Email: [miixuitm@gmail.com](mailto:miixuitm@gmail.com)  
Website: <https://www.miiex.my/>  
ISBN: 978-967-2846-04-8

All right reserved. No parts of this publication may be produces, stored in retrieval system or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise without permission of the copyright holder.



# FOREWORD

ASSOC. PROF TS. DR MOHD RASDI ZAINI  
Rector  
Universiti Teknologi MARA (UiTM) Cawangan Melaka



Welcome to Virtual-Melaka International Intellectual Exposition 2022 (V-MIIEEX 2022). It is an honour for me on behalf of UiTM Melaka Branch to thank all of you for joining the programme and we are proud to inform you that this is the 12th year consecutively, UiTM Melaka Branch is organizing this exposition.

V-MIIEEX 2022 is a platform to improve the commercialization collaboration among industries and communities and at the same time, we also give the opportunity to academicians and students to share ideas and increase their potential innovation products with the industries and communities through their projects. This exposition also serves as a platform to cultivate and upload the nation's innovation culture by presenting new ideas and research by young people, especially from academia, universities, college, high schools, and primary school students.

The economy and development of the country faced a challenging phase in 2021 due to the Covid-19 pandemic. We faced changes in business, education, society, and lifestyle. However, the pandemic proved to be a blessing in disguise as it somehow gave people ideas which would be beneficial to improve their lifestyle and solve problems that might occur in the future. Besides, the new digital landscape also inspires more innovation and new ideas that contribute to various activities such as business and industries. As a university that encourages the "Research, Innovation and Commercialization", this exhibition is organized to encourage more commercialization of products that are beneficial to scholars, industries, and communities to tackle such issues to improve our present and future life.

Since 2009, UiTM Melaka Branch has successfully become the organizer for this innovation exposition. We are not only successful in organizing the exposition, but I would proudly say that we have also successfully embarked on commercialized products. With the number of participants for this year's exhibition, we believe that more commercialized products will be produced in line with the theme for this year, "Road to Commercialisation".

This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams as the backbone of this exposition. Their hard work, effort, and time made this exposition possible.

Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition, we hope that this collaboration never ends here.

Thank you.



**DR. NUR HAYATI BINTI ABD RAHMAN**  
Deputy Rector Research & Industrial Linkages  
Universiti Teknologi MARA (UiTM) Cawangan Melaka

It is a great pleasure to welcome all the participants and presenters to the Virtual Melaka International Intellectual Exposition (VMIIEX 22). I am delighted that through this periodic event, we managed to bring together scholars and professionals from various fields to engage through this virtual platform where ideas and breakthrough are discovered and leveraged for commercialization potential.

Since 2009 UiTM Cawangan Melaka has held twelve Invention and Innovation Design competitions and this year we are very honoured to have the second year of VMIIEX organized in digital platform. This has proven that despite the global challenges due to the recent pandemic, it is never an issue for UiTM Melaka to continuously organize this yearly prestigious event and to support the ministry's aspiration in leveraging creativity and innovation in the new norm.

VMIIEX 22 is organized with no sole objectives of accomplishing the University's KPI but instead we are determined to make this programme as the place to help heighten commercialization collaboration in research and innovation with the industry and community through joint exhibitions from various external organizations.

Our aspiration is to also provide exposure and opportunities to academic staff as well as students from public and private universities to engage in direct excellent scholarly activities with the industry and community through activities that can be measured and assessed. As for the Research and Industrial Linkages Office of UiTM Melaka, this exhibition is seen as the platform that can encourage active collaboration and knowledge transfer with industries; objectively to support various activities that will benefit all stakeholders from the various government agencies, local and international universities, industries and communities.

Through the theme of "Road to Commercialization" this year, V-MIIEX 22 is committed to have this event as a boulevard to inspire and cultivate creativity and innovation to the numerous levels of inventors through exposure on latest technologies, astonishing ideas and creative designs with great potential to be commercialized. For this year, we proudly introduce a special category which is the "Endemic Challenge" as the provision to the government of Malaysia's goal of moving towards the endemic.

To ensure that the competing products in this exhibition is not exclusively for the purpose of competition, V-MIIEX 22 is dedicated for the commercialization of highly potential innovation products, which is attained through its active collaboration with tailored needs industries. The commercialization effort was not for income generation purpose only but it aimed to spearhead the development of quality products in line with industrial needs and community benefit.

Therefore, it is a great honour for me on behalf of the Research and Industrial Linkages Office as well as the organizing committee to have all participants in this competition and I would like to express my highest gratitude especially to the Rector of UiTM Melaka and all strategic partners and sponsors for supporting the event.

To finish, I sincerely wish VMIIEX 22 a remarkable success. I believe that this will not be the only collaboration between UiTM Melaka and the respective partners and linkages, but a beginning of a long and fruitful cooperation in future.

Thank you very much.

*road to commercialisation...*



# FOREWORD

**WAN HASMAT WAN HASAN**

Project Director V-MIIEEX 2022

Universiti Teknologi MARA (UiTM) Cawangan Melaka



Assalamualaikum and Warmest Greetings.

It gives me an enormous pleasure, on behalf of the organizing committee to welcome all participants and presenters to the Virtual -Melaka International Intellectual Exposition 2022 (VMIIEX '22) with the theme "Road to Commercialisation". We are honoured and glad to welcome all participants to this biennial event.

This is the second time that we have organized this biennial event virtually. V-MIIEEX 22 is an innovation competition, in which, innovation products, ideas and systems related to various science and technological fields are exhibited as a solution for the presented problems.

V-MIIEEX22 expectantly will be a platform that gathers experts from academies, scientists, and researchers, locally and internationally, to contribute towards the growth of scientific and technological knowledge in each participant's specialisation and expertise.

The competition also serves as a platform to give fresh exposure to the various level of inventors, as well as to encourage the culture of innovation design focused on latest technologies and related to new norms technologies and inventions due to COVID-19.

V-MIIEEX 22 is also hoped to be an avenue for gathering and disseminating the latest knowledge on ideas and acquisition of innovation among the participants. It is hoped that the competition will be able to open the mind of the participants towards latest technologies and design. It is also in line with the government's aspiration to encourage innovation activities in Malaysia.

As a final note, I would like to congratulate my fellow committee members for their tremendous effort, which have been critical to the event's success. In addition, I would like to thank our co-organizer, event sponsors and supporters. Optimistically, we wish that all new knowledge that is discovered, invented, or innovated will drive towards our future sustainability.

Thank you.

# ABOUT V-MIIEEX

The world after COVID-19 is unlikely to return to the world that was. Despite the challenging pace during the pandemic, the strong rebound is expecting in this exciting year 2022. Malaysia is welcoming the great prospects ahead with positive impact on the country's economy and development. Hence, the hope for greater opportunities motivates for more creative thinkers to come up with innovative ideas that can be put forward to be harnessed to overcome similar problems in the future. V-MIIEEx 2022 is one of these platforms which contribute relevant ideas that could help communities of all walks of life cope with this pandemic.

UiTM has identified research, innovation, and commercialization to be among the core components and strategic effort towards becoming a well-known and prominent university. Aside from realizing this goal, with these components and efforts, fostering the development of knowledge, generating financial stability of the university, and producing knowledgeable academicians are also potentially achievable.

By having invention and innovation competition yearly, UiTM Cawangan Melaka is confident that it could further enhance creative and innovative abilities among staff and students. In support of the government notion which upholds the importance of innovation, UiTM Cawangan Melaka has taken the initiative of organising the Virtual Melaka International Intellectual Exposition (V-MIIEEx).

In instigating and nurturing the continuous culture of inventing and innovating, this event is an ideal platform for lecturers, administrative staff, students, and the public to showcase and commercialize their products or prototypes as well as novel ideas. The first IID which was held nationally in UiTM Cawangan Melaka in 2009, has successfully gathered and displayed more than 37 inventions and innovations. Accordingly, to continue this strong passion towards inventing and innovating, the IID competition should be continued and celebrated.

With that, the Division of Research and Industrial Linkages will be organising its 12th IID competition, the Virtual - Melaka International Intellectual Exposition (V-MIIEEx 2022) with the theme, 'Road To Commercialisation'. V-MIIEEx 2022 hopes to welcome 200 competing products to be showcased and commercialized, at the same time, attract attention of related and matching industry.

## Objectives

1. Encourage and instill passion towards inventing and innovating among UiTM Cawangan Melaka staff, students and academicians of local and international higher education institutions;
2. Highlight distinguished talents of skillful inventors and exhibit intellectual products, inventions and innovations among local and private tertiary institutions, government and private agencies, including international participants;
3. Become an effective Business Matching platform for participating research products, matching industries and partnering government agencies;
4. Recognise, inspire and promote invention and innovation products to be patented and commercialized;
5. Increase passion towards inventing and innovating through research and boost interests of government and non-government agencies to obtain consultancy services from a line up experts of higher education institutions and UiTM Cawangan Melaka.

# History Education for SPM by using Augmented Reality

Siti Feirusz Ahmad Fesol<sup>1</sup>, Nuraisyah Farina Atiqah Mohd Farid<sup>2</sup>

<sup>1,2</sup> Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Cawangan Melaka, Kampus Jasin, 77300 Merlimau, Melaka.

feirusz@uitm.edu.my

## Abstract

History is one of the subjects that all upper secondary students must take to sit for the Malaysian Sijil Pelajaran (SPM). However, recent research of 45 students expressed their perceptions of history subject in school found that 64% of kids disliked history subject, 45% did not exhibit interest in history, and 22% thought it was difficult to understand. Due to this, the aim of this project is to propose a new way of learning by integrating an augmented reality element in learning history subject to create more fun and engaging learning environment. The Rapid Application Development (RAD) technique is used in this application since it involves the presentation of a high number of prototypes to the user and allows for a more dependable and faster development process. The proposed solution was put to the test using a usability testing technique to evaluate the system's usability while learning History Education for Form 5 through game-based learning utilizing Augmented Reality. The findings revealed that the proposed system obtained an average score of 75.81%, indicating that the system has good, strong system usability in terms of effectiveness, efficiency, and respondent satisfaction when using the suggested application. In the future, the application may include diversify of the content and provide a knowledge of universal languages for individuals who are unfamiliar with Malay. New content must also be introduced to make game-based learning more effective at imparting knowledge.

Keywords: History education, Augmented reality, 3D model, Game-based learning

## 1. INTRODUCTION

In this age of modern technology, the use of multimedia applications is skyrocketing especially in education as well as it has met the needs in learning way. History plays eminent role in culture representation of heritage sites, tradition, and culture (Desai, 2018). History is the study of how societies adapt and evolve over time. The analysis of history helps one to comprehend how previous human actions impact the present and shape our future, as well as to assess these consequences (Siebörger, 2016). According to Talekau, Nayak, & Harichandan (2018), history known as a study of life in historical societies in all of its facets in relation to current events and future aspirations. History helps student to understand today existing social, political, religious and economic was influenced from ancestors. Without the knowledge of history, we might not know the background of our kingdom, religion, customs institutions, administration and governance. A study by Low, Kamaruddin, & Hamzah (2019) highlighted that learning about history of homeland warriors could be difficult, particularly for students who believed that history was dull and for students who were unaware of the value of studying history. Student should change their negative thinking towards history subject that this subject was hard to master and bored to learn it. One of the methods of teaching and learning history that could actively engage students is by implanting a multimedia element (Talib, Awang, Ghani &

Yusuff, 2019). For this project, an Augmented Reality (AR) was being used to aid teachers in their teaching and learning process, increasing student's memorizing, and understanding skills and to entice students to learn about history subject in more fun and engaging environment.

## **2. OBJECTIVE**

There are three (3) main objectives of this project which are: (1); To design a 3D modelling of History education for Form 5; (ii) To develop a mobile application AR in learning History education for Form 5; and (iii) To evaluate the usability of AR learning in History education.

## **3. NOVELTY & INVENTIVENESS**

This project implemented a 3D modelling via AR to learn history subject for Form 5 students. With the current learning process that more focus in using chalk and talk in the class, using the proposed application, the students can just simply scan the selected pages in their History textbook in order to interact with the AR 3D modelling. The AR 3D modelling is also being equipped with the sound and narrated text explaining about the specific history topic. By integrating AR through history education, it increases the interest of students in learning history and improve the students' skill to memorize the fact of history. With the attention to learn history, students will find it easy to learn about it as it resembles the real world by user marker-based AR.

## **4. PRACTICALITY & USEFULLNESS**

The proposed system is very practical and easy to be used by teachers and students. They just only need to install the proposed application in their smartphone and simply scan the selected pages in their History textbook in order to interact with the AR 3D modelling. List of pages with the marker-based AR are page number 4, 23, 44, 46, 48, 84, 103, 158, 159, 211, 212, 214, and 217. These pages and chapters are chosen because the general knowledge related to basic important fact of history that students should know. These questions are also has been asked in previous SPM questions but unfortunately still have students do not know how to answer it. Apart from that, Malay language had been selected as the choice of language for the 3D model of AR application in accordance with the language used in the textbook as well as the official and mother-tongue language of Malaysia.

In addition, by applying the AR technology on the textbook, the students would feel like they were really interacting with the virtual character from the textbook even they could not touch it or interact with it because of the admiration of the characters or graphics that could emerge from the pages of the textbook. In school, this project was able to facilitate teachers in learned process because students could get a quick overview of the history. Meanwhile, the school might realize the benefits of the AR as an effective learning approach.

The significance of this project was helping SPM students increase their understanding of learning history in school. As been said, the students could improve their memorizing skills after learning from the 3D modelling in the AR application. The students would feel confident in applying the fact of history in the examination answer sheet. Thus, the use of mobile devices and AR technology utilization in it could enhance student's learned autonomy that indirectly could improve the quality of education.



## 5. CONCLUSION

To summarise, history was a fascinating subject that children should be studied about. As previously said, knowing history solely via ideas might dull students and cause them to lose interest in acquiring historical facts. The problem statement also revealed that studying history solely through theories and textbooks might make it harder for students to retain facts. This would lead to a lack of interest in history education and the topic itself among students. The goal of this project was to assist students in learning historical facts. As a result, AR technology might be viewed as a useful tool for history education.

The proposed system was further tested using usability testing. A total of 37 students participated in the testing. This testing is based on the effectiveness, efficiency, and satisfaction components of usability testing. The findings revealed that the proposed system obtained an average score of 75.81%, indicating that the system has good, strong system usability in terms of effectiveness, efficiency, and respondent satisfaction when learning history subject using AR 3D modelling.

## REFERENCES

- Desai, N. (2018). Recreation of history using augmented reality. *ACCENTS Transactions on Image Processing and Computer Vision*, 4(10), 1–5.  
<https://doi.org/10.19101/tipcv.2017.39019>
- Low, J.-Z., Azrina Kamaruddin, & Muhammad Dzulkhiflee Hamzah. (2019). Mobile Augmented Reality Application for High School History Subject (SejarAR). 5th International ACM In-Cooperation HCI and UX Conference, 1–7. [https://chiuxid.org/wp-content/uploads/2019/08/SIGCHI\\_ext\\_abs\\_SejarAR-.pdf](https://chiuxid.org/wp-content/uploads/2019/08/SIGCHI_ext_abs_SejarAR-.pdf)
- Nur Syazwani Abdul Talib, Mohd Mahzan Awang, Kamarulzaman Abdul Ghani, & Nur Azuki Yusuff. (2019). Penggunaan multimedia dalam mata pelajaran sejarah. 2(December), 76–88.
- Siebörger, R. (2016). Defining History as a School Subject. *Public History Weekly*, 2016(1).  
<https://doi.org/10.1515/phw-2016-5169>
- Talekau, P., Nayak, J., & Harichandan, S. (2018). History. 1–72.  
[http://ddceutkal.ac.in/Syllabus/MA\\_Education/Education\\_Paper\\_5\\_history.pdf](http://ddceutkal.ac.in/Syllabus/MA_Education/Education_Paper_5_history.pdf)