i-SPiKE 2023

INTERNATIONAL EXHIBITION & SYMPOSIUM ON PRODUCTIVITY, INNOVATION, KNOWLEDGE & EDUCATION

"Optimizing Innovation in Knowledge, Education and Design"

EXTENDED ABSTRACT

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Assalamualaikum warahmatullahi wabarakatuh,

First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality . I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH

WELCOME MESSAGE (i-SPiKE 2023 CHAIR)

We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPiKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPiKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail
Chair
3rdInternational Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023)

ARabic-KAFA: AN AUGMENTED REALITY APPLICATION FOR LEARNING ARABIC VOCABULARY

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ABSTRACT
This study aims at explaining the design and development process for ARabic-KAFA application for learning KAFA Arabic vocabularies. Students at primary level especially at KAFA institutions are in need to a multimedia platform due to scarcity of multimedia learning materials as an additional method to the current traditional method of learning Arabic vocabulary. Therefore, ARabic-KAFA is designed and developed based on design and development approach (DDR) and Scaffolding theory to shed light on heautagogy approach through multimedia augmented reality platform for KAFA students to learn KAFA Arabic in a better environment.

Keywords: Arabic language, application, augmented reality, KAFA, vocabulary

INTRODUCTION

Quranic and Fardu 'Ain Class (KAFA) is an institution that caters on the education of Quranic and Islamic studies including Arabic language at primary level. Previous studies showed that KAFA institutions are utilizing minimum multimedia platform and the most widely used platform is only the e-UPKK platform as the e-learning platform (Ahmad Zulfiqar Shah et al., 2018). Arabic language learning nowadays has becoming more interesting through the integration of multimedia in information and technology. Current alpha generation are inneed to have a better learning environment to enhance their learning towards Arabic vocabularies.

The importance of utilizing augmented reality as a learning platform

Multimedia augmented reality is a platform that has the feature of engaging virtual information in real time and real world. This feature enables this augmented reality to have fun characteristic that creates edutainment concept of education (Ntagiantas et al., 2022). Apart from that, previous studies proved that augmented reality has the ability to increase students' attention and students' motivation in their learning (Cao & Yu, 2023). All these elements of benefits are important for educators and students to gain the utmost benefit from current teaching and learning languages especially Arabic vocabulary.

RESULTS AND DISCUSSION

The design process for ARabic-KAFA Application

The design of this ARabic-KAFA application has several phases. The design process started with the design of objectives of this augmented reality application as well as the storyboard of this application to get the overview of the concept of augmented reality application for learning Arabic vocabulary. There are 28 hijaiyah characters used in as the markers and 3D animation for this ARabic-KAFA application. Table 1 below listed the hijaiyah characters together with the vocabulary related to that particular hijaiyah character.

Table 1. Hijaiyah characters and KAFA vocabularies

No	Hijaiyah character	Vocabulary
1	)Alif (أ	)Lion(أسد
2	)Ba(ب	)Orange(برتقال
3	(Ta) ت	)Date(تمر
4	(Tha) ث	)Snake(ثعبان
5	(Jim) ج	)Grandfather(جد
6	(Ha) ح	)Bag(حقيبة
7	(Kho) خ	)Five(خمسة
8	(Dal) د	)Bicycle(دراجة
9	(Zal) ذ	)Chin(ذقن
10	(Ro) ر	)Foot(رجل
11	(Zai) ز	)Ginger(زنجبيل
12	(Sin) س	)Pant(سروال
13	(Shin) ش	)Slipper(شبشب
14	(Sod) ص	)Eagle(صقر
15	(Dhod) ض	)Frog(ضفدع
16	(Tho) ط	)Aeroplane(طائرة
17	(Zho) ظ	)Envelope(ظرف
18	(Ain) ع	)Grape(عنب
19	(Ghain) غ	)Deer(غزال
20	(Fa) ف	)Elephant(فيل
21	(Qaf) ق	)Shirt(قميص
22	(Kaf) ك	)Chair(كرسي
23	(Lam) ل	)Tongue(لسان
24	(Mim) م	)Fan(مروحة
25	(Nun) ن	)Tiger(نمر
26	(Waw) و	)Rose(وردة
27	(Ha) ه	)Phone(هاتف
28	(Ya) ي	)June(يونيو

The development of ARabic-KAFA application

The development phase in this study is integrated with the theory of cognitive theory of multimedia learning by Mayer (2021). The redundancy aspect for example is considered to develop the multimedia content through this platform. Figure 1 below shows user interface for this application.

Figure 1. AR Marker for ARabic-KAFA

For image target or the marker, the development of the marker is based on the design from the design phase. The selection of image is made from the vocabularies selected from KAFA syllabus. Figure 2 below is the example of marker or image target for this application.

Figure 2. AR Marker for ARabic-KAFA

Figure 3 below portrays the 3D image overlays on the camera after the camera has captured the image target. Navigation button of sound and the voice of vocabulary pronunciation is put on the screen.

Figure 3. 3D Animation overlays on camera

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