

i-Know: Revolutionizing Knowledge Management with Interactive Quizzes

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Abstract— This project focuses on the development of a website system designed to facilitate knowledge acquisition for students enrolled in the Kulliyah of Information Communication and Technology (KICT) at the International Islamic University Malaysia (IIUM). The aim is to alleviate the information overload experienced by new intake students during the *Taaruf* week (orientation week). Despite its establishment in 2010, KICT faces a persistent challenge where new students remain unaware of crucial system details, including rules, regulations, and academic matters. To address this issue, the project endeavors to provide a comprehensive platform enabling new students to access pertinent information and knowledge about KICT. An analysis of seven similar existing systems has been conducted, highlighting their main functions, advantages, and disadvantages. The System Development Life Cycle methodology has been selected for its practicality in guiding the project through the phases of Final Year Project (FYP) 1 and FYP2. Data collection involved surveying 30 KICT students to identify challenges faced by new students in obtaining the necessary information. Results underscore the urgent need for a technically guided application to enhance student understanding of KICT. The logical design of the app encompasses a Use Case Diagram, Use Case Narrative, Activity Diagram, Interface Flow, Low-Fidelity Design, and Interface Flow. The "i-know" system has been developed using PHP, HTML, CSS, and Javascript, with connectivity to MySQL through phpMyAdmin for user authentication. The User Acceptance Test (UAT) was conducted during implementation, following beta testing. The paper concludes with insights into the system's effectiveness and its potential to address the identified challenges faced by new KICT students.

Keywords—knowledge management, knowledge sharing system, knowledge capturing system, system development, system development life cycle.

I. INTRODUCTION

A knowledge management system (KMS) is a type of computer software that is designed to support the creation, storage, and dissemination of knowledge within an organization or community. These systems are used to capture, organize, and share knowledge in order to improve

decision-making, increase collaboration, and enhance overall performance.

There are a variety of different types of knowledge management systems, including knowledge capture systems, knowledge sharing systems, and knowledge discovery systems. Each of these systems is designed to support different aspects of the knowledge management process, and may use a range of different technologies and techniques to do so.

Knowledge Application System is the type of knowledge management systems used by the developers. Since most of the information will be shared in the system it can be transferable across personnel. Not to mention, Some of the information shared in the system shows a standard operating procedure using certain tools or doing specified activities.

A. Problem Statements

New students in KICT face a myriad of challenges that impede their smooth integration into the academic system. The foremost issue lies in a lack of understanding of the fundamentals of KICT, hindering their ability to grasp essential concepts. Navigating the academic landscape is further complicated by difficulties in finding relevant information and knowledge, leaving new KICT students feeling adrift in a sea of unfamiliarity. Additionally, a lack of awareness about the ongoing activities within the KICT system exacerbates the sense of isolation. The absence of clear instructions on how to manually add courses adds to the confusion, making enrollment a cumbersome process. Compounding these challenges is the issue of some students not adhering to the study plans provided by KICT, highlighting a need for better communication on the benefits and personalization of these plans. Furthermore, students are left unsure about whom to contact regarding specific issues, leading to a sense of helplessness. Lastly, the incomplete comprehension of KICT rules and regulations adds another layer of complexity, necessitating the development of clearer

guidelines and effective communication channels to address these multifaceted concerns.

B. Project Objectives

The first objective of this project is to explore the issues and problems encountered by KICT new students in obtaining the appropriate information and knowledge. The second objective is to develop a system that will assist new KICT students in obtaining the necessary information and knowledge about KICT, Academic Matters, KICT layout, and Rules and Regulations through the completion of quizzes.

C. Project Scope and Limitation

The targeted users for this system are the administrative staff and new intake students of KICT.

TABLE 1: SPECIFIC PLATFORMS FOR THE SYSTEM DEVELOPMENT

Software	Description
Microsoft Window 10 & 11	Operating System Environment
Microsoft Word 2016 & 2019	Writing Report
Microsoft Excel	Creating Gantt Chart & Store Information
Canva	Presentations
Adobe Photoshop	Editing Picture
Google Form	Questionnaire Survey
XAMPP	Open Software to Create the Web
Laravel, PHP and HTML	Creating the Web Application
CSS and Javascript	Design the Web Application Layout
MYSQL & phpMyAdmin	Database for Web Application

Table 1 outlines the essential software tools [1] [2] employed in the development and implementation of the proposed system. This comprehensive array of specific platforms forms the technological foundation for the multifaceted aspects of system development outlined in the study.

II. LITERATURE REVIEW

A. Types of Knowledge Management System

There are 4 types of Knowledge Management as shown in Table 2. This system is focusing on the Knowledge Application System [3].

TABLE 2: TYPES OF KNOWLEDGE MANAGEMENT SYSTEM

Knowledge Management	Definition
Knowledge Application Systems	Knowledge application systems support the process through which some individuals utilize knowledge possessed by other individuals without actually acquiring, or learning, that knowledge. Mechanisms and technologies support knowledge application systems by facilitating routines and direction. [3]
Knowledge Capture Systems	Knowledge capture systems support the process of retrieving either explicit or tacit knowledge that resides within people, artifacts, or organizational entities. These systems can help capture knowledge that resides within or outside organizational boundaries including within consultants, competitors, customers, suppliers, and prior employers of the organization's new employees. Knowledge capture systems rely on mechanisms and technologies that support externalization and internalization.[3]
Knowledge Sharing Systems	Knowledge sharing systems support the process through which explicit or tacit knowledge is communicated to other individuals. They do so by supporting exchange

	(i.e., sharing of explicit knowledge) and socialization (which promotes sharing of tacit knowledge). [3]
Knowledge Discovery Systems	knowledge discovery systems support the process of developing new tacit or explicit knowledge from data and information or from the synthesis of prior knowledge. These systems support two KM subprocesses associated with knowledge discovery: combination, enabling the discovery of new explicit knowledge; and socialization, enabling the discovery of new tacit knowledge. [3]

B. Similar Existing Systems

The literature study component will significantly emphasize examining the utilization of similar applications in the context of this research. The literature review serves four primary objectives: to survey, synthesize, analyze, and report the findings of relevant research. Its importance lies in the potential extraction of features and functionalities applicable to the proposed project.

Presently, there are no systems that precisely mirror the proposed project. However, there are other platforms with features akin to those suggested by the developers. This chapter conducts a comparative analysis of these platforms and various websites offering similar services. Furthermore, it explores opportunities to enhance and integrate the features and functionality of the existing system into the proposed project. Nevertheless, seven systems were identified and explored thoroughly as shown in Table 3. They are Quizizz, Quizlet, KAHOOT!, KPP Test Malaysia, Geoguessr, Knowledge Trainer: Trivia and General Knowledge Quiz

All these available applications do have their own pros and cons. However, the concept provided by most of the applications are relatively the same, which is providing an i-Knowledge system an idea to add on.

TABLE 3: THE SIMILAR EXISTING SYSTEMS' FEATURES

Features	Applications and Websites						
	Quizizz	Quizlet	Kahoot!	KPP Test Malaysia 2022	Geoguessr	Knowledge Trainer: Trivia	General Knowledge Quiz
Classes	/	/					
Recent Activity	/	/					
Game Settings	/	/	/			/	
Google Classroom	/						
Scribble Tool	/						
Convert quizzes into printable worksheets	/						
Create		/					
Find		/			/		

Study		/					
Flashcards		/					
Learn		/					
Achievement		/	/				
Profile	/	/			/		
Pictures and Captions		/	/				
Labelled Diagrams		/	/				
Maps		/					
Play			/				
Explore Content	/	/	/				
Resources	/	/	/				
Higher Ed Faculty			/				
Teachers	/	/	/				
Revision				/			
Test	/	/		/			
Test History	/	/		/			
Competitive					/		
Play with friends					/		
Improve Knowledge						/	
Statistics & KQ						/	
Level							/
Category							/

The developers found that there are several elements or features that are suitable to be implemented in the i-Know. The existing system has its own unique features and it uses different approaches for different platforms. These functions can be improvised and shall be used in i-Know.

1. Login - User enter detail and proceed to main page
2. Game Settings - Background Music and Sound Effect to make it more interesting [5].
3. Convert quizzes into printable worksheets - Quizzes can be printed as worksheets

4. Profile - The user can view their matric number and set a new password.
5. Maps - Information presented in visual form to tell the users where something is or where it happened. It helps to understand where places are located.
6. Test History - The user can see all the previous quizzes they have taken and retake them if the user wants to.
7. Level and Category - Each Quiz on a different level and different category.

III. METHODOLOGY

The adoption of the Agile System Development Life Cycle (SDLC) for this proposed system is motivated by its inherent flexibility, cost-effectiveness, and rapid delivery capabilities. In the face of ambiguity and uncertainty surrounding various project aspects, Agile methodologies provide the adaptability necessary for navigating unpredictable scenarios. Furthermore, Agile methodologies encourage collaboration and shared insights within cross-functional teams, facilitating the production of high-quality software that aligns with client demands. By embracing Agile SDLC as shown in Figure 1, this approach not only enhances software quality but also maximizes opportunities for modifications, ensuring a responsive and dynamic development process.

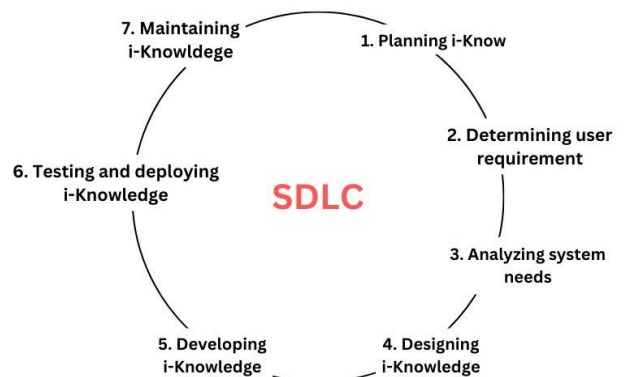


Figure 1: The SDLC

Table 4 shows how the phases in the SDLC [6] [7] being adapted and implemented to i-Know system.

TABLE 4: IMPLEMENTATION OF THE SDLC TO I-KNOW SYSTEM

SDLC PHASE	PHASE DESCRIPTION	i-Know SYSTEM
Planning and Ideation	Generating suggestions depending on the issue that the targeted users have raised.	Brainstorming, Planning and Ideation
Requirement Gathering	Compile and write down the system requirements.	Conducting data collection for user requirements by using questionnaire.
Analyzing System Needs	The user demand should be converted into verifiable, comprehensive, and consistent requirements.	Analyze the data collection and present it in a chart and graph.

Design	To design based on the requirements	UML design diagrams including use case, activity, sequence, and class.
Testing	to make sure the system satisfies the needs of the user.	The User Acceptance test were conducted with IUM students.
Development	Create the real programme on the	Connect the system with the database and the coding

A. Data Collection

The main objective of this questionnaire is to investigate the issues and problems among the KICT new students when getting the right information and knowledge.

5. Do you know about the history of Kulliyyah of Information and Communication Technology (KICT)?
30 responses

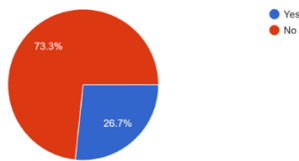


Figure 2: Sample answer from the questionnaire

13 survey questions were asked to the KICT students. One of the survey questionnaires was asked regarding their knowledge in KICT History, as shown in Figure 2. Most of the respondents (73.3%) do not know about the history of KICT. In summary, respondents were agreeing that their knowledge about KICT is very limited and agree to have a platform to educate them about KICT. Moreover, they also agree to gain the knowledge via quizzes.

B. Physical Design

After coming out with the data analysis, that is the time whereby the list of suggested features was finalized and proposed.

A key concept of use case modeling is that it helps us design a system from the end user's perspective [8]. It is an effective technique for communicating system behavior in the user's terms by specifying all externally visible system behavior. The use case diagram for I-Know is shown in Figure 3.

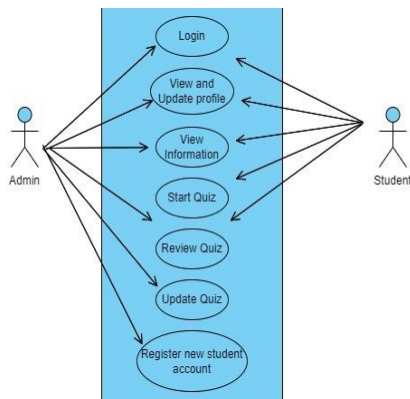


Figure 3: The Use Case Diagram

Entity Relationship Diagram (ERD) visualizes the relationships between entities like people, things, or concepts in a database. ERD will also often visualize the attributes of these entities. Figure 4 shows the ERD for the features for i-Know system.

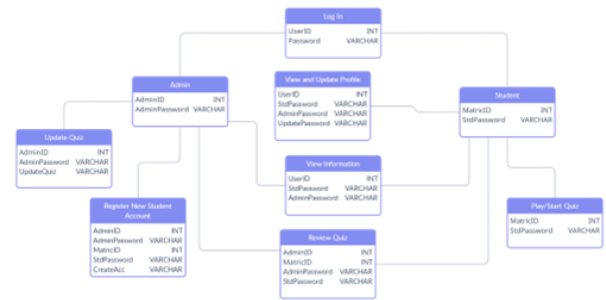


Figure 4: Entity Relationship Diagram for I-Know

A class diagram is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects. Below in Figure 5 is the Class Diagram for the features for i-Know system.

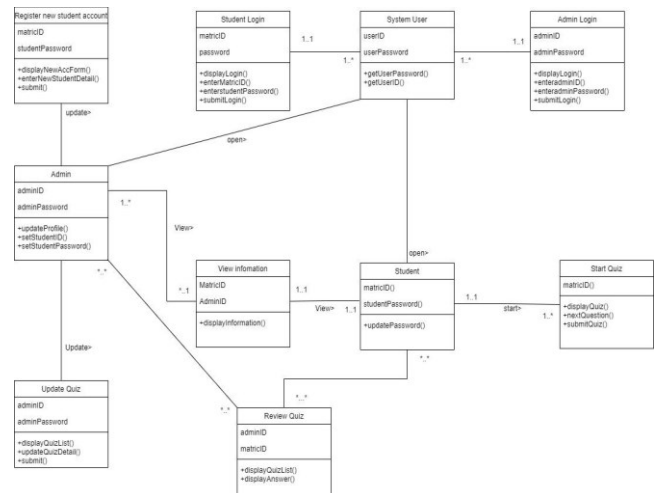


Figure 5: Class Diagram for I-Know

IV. PROJECT DEVELOPMENT, IMPLEMENTATION AND EVALUATION

A. System Development

i-Know encompasses a variety of features, with its central functionality revolving around quizzes. Recognizing the need for a more comprehensive user experience, the developer extended beyond quiz creation to introduce a forum page. To enhance the legitimacy and functionality of the i-Know website, additional tabs were incorporated. These tabs serve as distinct features, contributing to a well-rounded system that goes beyond quiz functionalities.

1. Home page : Summarize what the system is about and a button for the user to start the quiz.

- KICT Layout page : The users can view and get information about the KICT layout.
- About KICT page : The users can view and get information about the KICT and the history of the Kuliyyah itself.
- Rules And Regulation Page : The users can view and get information about the rules and regulations in the University.
- Academic Matters Page : The users can view and get information about the academic matters in the University.
- About Us page : The users can view and get information about the i-Knowledge system.
- Quiz Page : Users need to enter their Matric card and IC number to log in and proceed with the quiz.
- Admin Dashboard : Display information on student performance every semester. Provide tabs for the admin to navigate.
- Add Quiz page: Add a new quiz for students.
- Remove Quiz : Remove quiz for students.
- Add Students page : Admin register new intake students.

Some screenshots of the system are shown in Figure 6 – 13.



Figure 4: Homepage

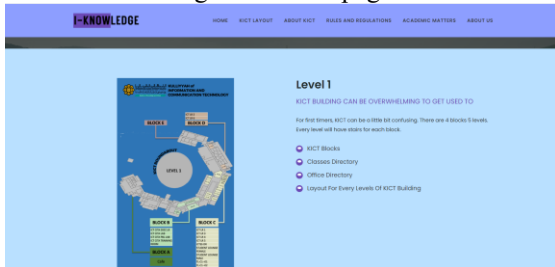


Figure 6: KICT Layout Page

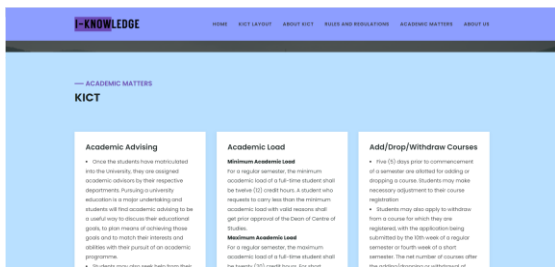


Figure 7: Academic Matters Page



Figure 8: About KICT Page

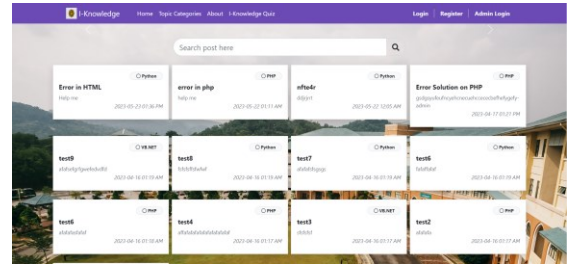


Figure 9: Forum Page

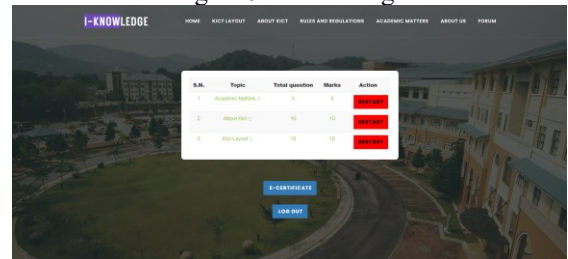


Figure 10: Level 1,2,3 and 4 quiz Page

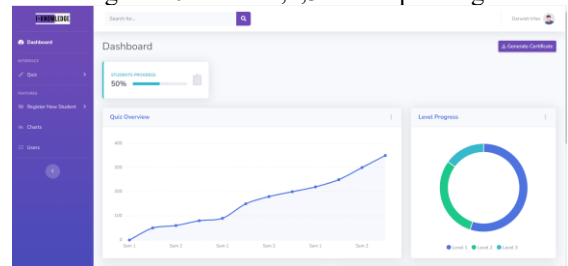


Figure 11: Admin Dashboard Page

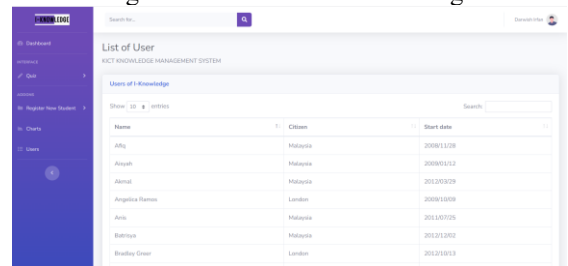


Figure 12: Admin page for report



Figure 13: Certificate Page

B. System Testing

The testing phase employed the User Acceptance Test (UAT) methodology [9], where participants were provided with a User Manual for reference, and their responses were documented in the User Acceptance Test Form. The form detailing task function completion within the i-Know system.

In light of the insights gained from the User Acceptance Test, meticulous attention was given to each tester's comments to enhance the application. A prevalent observation highlighted the user interface design, emphasizing the necessity for improvements to enhance user engagement. Additionally, suggestions were made to introduce more features, such as incorporating memes between quiz questions, to augment the application's functionality and user appeal. These feedback-driven refinements underscore the commitment to continuous improvement and user satisfaction in the development process.

IV..FINDINGS AND PROJECT CONSTRAINTS

From the system development, the complete list of the system features of I-Know are shown below:

Admin

- i. Register or delete new students.
- ii. Log in into the website.
- iii. Add and remove questions.
- iv. Dashboard charts for student performance.

Students

- i. Log in into the website.
- ii. Answer the quiz
- iii. Access to information pages.
- iv. Register to forum page.

The development of i-Know is subject to two key project constraints: budget limitations and accessibility requirements. The budget constraint necessitates effective management and allocation of financial resources, encompassing development costs, infrastructure expenses, licensing fees, and ongoing maintenance. Careful cost analysis, prioritization of features, and budget monitoring are crucial to ensure the project remains financially feasible. Simultaneously, the accessibility constraint emphasizes the need to comply with relevant accessibility standards and guidelines, enabling users of diverse abilities to access and utilize the system's information and features. Incorporating accessible design, conducting usability testing, and implementing necessary adjustments ensure an inclusive and user-friendly experience. Balancing these constraints is essential to deliver an i-Know system that meets budgetary limitations while providing accessible and equitable access to information for all users.

V. FUTURE ENHANCEMENT

Upon successful development, the implementation of several features has the potential to enhance the website's overall functionality. The incorporation of the following feature set is envisioned to enable the application to operate

seamlessly and dynamically, catering to the needs of both intended user groups:

- i. Choose file to register students - The user is able to register new students by dragging the excel file and register students simultaneously rather than one by one.
- ii. Provide study plan for students - By clicking on the Academic Matters page, the students can check for their Study Plan, this will help the students to organize their course.
- iii. Admin able to edit the information pages - The user can edit updated information in the information page.

VI. CONCLUSION

In summarizing the entirety of the project, it is acknowledged that successful development has been achieved, notwithstanding the current unavailability of some intended functions on the website. The project's developers adeptly navigated various limitations by undertaking thorough research to address constraints. While recognizing the present state, the creators of the website aspire to see ongoing improvements once the development phase concludes. The ultimate goal is to create a resource that proves beneficial for both administrators and students, serving as a dynamic and helpful platform.

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