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Designing an Internal Wiki for Collaborative Course-Related Material Management in College of Informatics and Computing Studies at New Era University

In Partial Fullfilment of the Requirements in
CSLEL2-18 Professional Elective 2

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2023

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CHAPTER I: INTRODUCTION

Introduction

It has been demonstrated that wikis are useful for group learning. Higher level cognitive skills are developed through the knowledge management procedures needed for collaborative writing. The continuation of collaboration and creativity in the online learning environment depends on these procedures. The usage of wikis or online collaborative workspaces in Filipino institutions, however, does not appear to have been the subject of much research, and knowledge management process analysis seems to have received even less attention. In this study, after completing several collaborative tasks throughout time, professors and students' knowledge management procedures are studied and assessed using surveys and interviews.

The 21st century, which is a time of constant evolution, calls for learning environments that may encourage abilities like teamwork in problem-solving (Grieff, Wustenberg, Holt, Goldhammer and Funke 2013). While knowledge is being created, collaborative problem-solving encourages critical thinking and information sharing (Hung, 2013). Several experts contend that prior to content understanding, students need to develop their problem-solving and communication skills (Grieff et al. 2013; Hung 2013). Wikis can facilitate knowledge creation, according to studies (Montero-Fleta & Pérez-Sabater, 2011; Zhang, Scardamalia, Lamon, Messina, & Reeve, 2007). Knowledge construction took place as a result of the collaboration on online platforms, as revealed by the study of the interactions (Jyothi, McAvinia, & Keating, 2012; Zydney, deNoyelles, & Seo, 2012)

The College of Informatics and Computing Studies at New Era University is facing a problem related to the management of course-related materials. These materials are stored in various formats and locations, which makes it difficult for teachers and students to access and share information efficiently. This can result in unequal access to essential course materials, which can impact the quality of education provided by the institution.

The examination of collaborative learning on wikis using knowledge management (KM) techniques, though, has not received much research attention (Biasutti & El-Deghaidy 2012). Although knowledge management (KM) was initially used for organizational management, it is now also employed in education (Biasutti & El-Deghaidy, 2012). The steps of KM for the transformation of knowledge are as follows, according to Kappes and Thomas (1993): knowledge acquisition, knowledge internalization, knowledge creation, knowledge sharing, knowledge application, and innovation process. Students and undergraduates may be required to search and transform knowledge from the large

volumes of information available online and accessed over the internet as part of instructional activities. Unfortunately, it appears that KM is not given much attention in both schools and higher institutions (Cranfield & Taylor 2008; Biasutti & El-Deghaidy, 2012). As such, research is required to ascertain how knowledge management might be effectively applied to the development of knowledge in schools and institutions of higher learning. Before the knowledge can be posted on the wiki, the students must manage it while preparing the collaborative writing work (Biasutti & EL-Deghaidy, 2012). The students engage in knowledge management activities like finding and choosing pertinent information, internalizing new information by connecting it to pre-existing mental models, creating new knowledge by combining it with existing knowledge for a novel situation, sharing and applying the knowledge to various contexts, and so on (Kappes & Thomas, 1993). These procedures are used in group writing and enhance higher order cognitive abilities (Biasutti & El-Deghaidy, 2012, Kappes & Thomas, 1993).

This research is essential at a time when quality teaching and learning are changing the Philippine educational system. Programs for informing individuals should place a strong emphasis on how to employ knowledge management techniques to create effective teaching methods (Biasutti & El Deghaidy, 2012). The application of knowledge management techniques in the classroom can help students become future knowledge workers (Biasutti & El-Deghaidy, 2012).

Definition of Terms

1. **Internal wiki** - a website that allows users to create, edit, and link web pages in a collaborative manner. It is a powerful tool for knowledge management that allows users to store and share information in a centralized and organized location.
2. **Collaborative course materials** - educational resources created and shared by teachers that can be accessed by other teachers for reuse and adaptation in their own classes. This helps ensure consistency and a high-quality learning experience for students.
3. **Knowledge management** - the process of creating, sharing, using, and managing knowledge and information of an organization to improve its efficiency and effectiveness.
4. **Course material management** - the process of organizing, creating, storing, and distributing educational materials for a course.
5. **Collaborative** - Working together with others towards a common goal.
6. **Course materials** - Educational resources used in a specific course, such as readings, assignments, and multimedia materials.
7. **Multimedia** - Content that combines different forms of media, such as text, images, audio, and video.

8. **Interactive** - Involving active participation by the user, often through the use of technology.
9. **Centralized** - Concentrated in a central location or organized around a central authority.
10. **Web browser** - A software application used to access and view websites on the internet.
11. **Discussion pages** - Sections of a website or online platform where users can exchange ideas and opinions.

Research Questions and Objectives

The College of Informatics and Computing Studies at New Era University is looking to enhance the management of course-related materials by designing an internal wiki platform. This platform will enable both students and teachers to access and contribute to course materials, fostering a more collaborative and engaging learning environment. To achieve this goal, we propose the following objectives and questions:

Research Questions

1. What are the needs and expectations of students and teachers for an internal wiki system for managing course-related materials?
2. What are the challenges and limitations of the current course-related material management practices?
3. How does the use of an internal wiki system for course-related material management impact student learning outcomes?
4. How can a wiki-based collaborative course material management system benefit both students and teachers?
5. What are the potential barriers to the adoption and implementation of an internal wiki system for course-related material management?

Research Objectives

1. To gather insights from students and teachers regarding their ideal features and functionalities for a course-related material management system and determine the most important factors to consider in designing the system.
2. To identify the problems and difficulties experienced by students and teachers in managing course-related materials and determine the factors that contribute to these issues.
3. To assess the effectiveness of the internal wiki system in improving student learning outcomes and understanding how its use affects student engagement, collaboration, and knowledge sharing.

4. To design and implement a wiki-based collaborative course-related materials management system that enables students and teachers to easily access, contribute, and organize resources.
5. To identify and evaluate the potential barriers that may hinder the successful adoption and implementation of the internal wiki system and propose strategies to overcome these barriers.

Scope and Delimitation

Scope

This study aims to design and implement an internal wiki system for collaborative course-related material management in the College of Informatics and Computing Studies at New Era University. The study will focus on gathering insights from students and teachers to determine the most important features and functionalities of the system and to identify the challenges and limitations of current material management practices. The study will also assess the impact of the internal wiki system on student learning outcomes and propose strategies for successful adoption and implementation.

Delimitation

The study is limited to the College of Informatics and Computing Studies at New Era University and does not extend to other courses offered by the university. The platform will only store course-related materials such as lectures, notes, presentations, and research papers and will not contain sensitive information like student records or personal data to maintain privacy. The study will also focus on identifying and evaluating potential barriers to adoption and implementation of the internal wiki system and propose strategies to overcome these barriers.

Significance of the Study

To address the challenges that instructors and students of College of Informatics and Computer Studies face in maintaining course-related information, this study suggests developing an internal wiki. There is a need for a centralized site for sharing and accessing resources because the present ways of storing resources in many formats and locations make it challenging for teachers and students to access and exchange information efficiently. This platform will be provided by the internal wiki, enabling learners from all time differences and schedules to access the same course-related materials. It will encourage communication and collaboration between teachers and

students, improving the overall educational experience and possibly resulting in greater academic performance and outcomes.

CHAPTER II: RELATED LITERATURE REVIEW

This chapter presents the related literature review (RRL), theoretical framework, and conceptual framework for the design of an internal wiki for collaborative course-related material management. It provides an overview of the existing literature on the use of wikis, as well as the underlying theories and concepts that support the design and implementation of an internal wiki for course-related material management.

Related Literatures

Wiki for Effective Knowledge Management

Knowledge management has always been an important part of many fields, such as master craftsmen training apprentices. However, it was first in the 1990s that it evolved into a conscious practice. As the focus of industrialized countries shifted from natural resources to intellectual capital, executives were compelled to investigate the foundation of their business. At the same time, networked computers arose, enabling this information to be stated explicitly and shared easily. According to Hansel et al. (1999), leading the charge were consulting firms where the main assets rested firmly in the mind of the employees.

The term knowledge also has a large amount of different definitions according to the literature. If knowledge only exists in the minds of individuals, the hordes of information serve no particular purpose but are only of value when accessed and assimilated by individuals. However, if knowledge is regarded as an object, then it can be stored and gathered in warehouses such as IT systems (Alavi & Leidner, 2001).

Wiki as a Tool for Knowledge Management

Knowledge management is today regarded as an important part of modern organizations (Nonaka, 2007). Wiki technology fosters strong teamwork. A wiki knowledge management system allows any user to modify any article, even ones that were originally published by someone else. One solution often proposed in response to the challenge of intra-organizational knowledge transfer is to implement a computer-based Knowledge Management System (McDermott, 1999).

The current third generation however requires more complex adaptive models to create sense-making of collective knowledge creation. This allows a conceptual alternative to

scientific management, Hasan and Pfaff (2006) describe the rough outline of what a wiki consists of as well as its properties. A wiki is a collective knowledge management repository named after the Hawaiian word for “quick” or “fast” in order to symbolize the fast paced possibilities of editing a document.

Wiki as a Tool for Knowledge Management in Businesses

According to McDermott (1999), the view of knowledge management experts needs to be lifted from the purely technical aspects to the people involved. Despite the popularity of these systems, there is limited research focusing on their use in corporate environments (Holtzblatt, Damianos, & Weiss, 2010). He demonstrates this by focusing on the four main obstacles that businesses must overcome in order to successfully deploy a community-based knowledge management system: the technical obstacle, the social obstacle, the management obstacle, and the individual obstacle. Knowledge management systems need a supportive environment for knowledge transfer in order to perform properly. If people within the organization it is intended to serve do not even add information to the wiki, it is of limited use. Understanding the variables that influence sharing through wiki-based information management systems used within businesses is very interesting considering the widespread use of wiki systems.

Wiki as a Tool for Learning and Teaching

Collaborative learning and teaching have been shown to be effective methods in higher education (Zheng et al., 2014). Wikis, in particular, have been increasingly used as a tool for collaborative learning and teaching in higher education due to their ability to facilitate information sharing and collaboration among learners and instructors (Elgort, 2011).

According to Zheng et al. (2014), wikis can facilitate collaborative learning and teaching by allowing students and instructors to create, edit, and share content. This can result in the development of shared knowledge and the promotion of critical thinking and problem-solving skills among students and instructors. Wikis also promote active learning and engagement among learners and instructors (Su & Beaumont, 2010). Instructors can use wikis to share course materials and create collaborative learning activities.

While wikis have been shown to have several benefits for collaborative learning and teaching, they also present some challenges. One of the challenges is ensuring the quality of the content created on wikis. This is because wikis rely on user-generated content,

which may vary in quality (Elgort, 2011). Another challenge is ensuring that all learners and instructors contribute equally to the wiki, as some may be more active and engaged than others (Coutinho & Bottentuit Junior, 2008).

To address the challenge of ensuring the quality of content on the wiki, our research proposes the implementation of a review process. This review process would involve designated individuals, such as instructors or subject matter experts, reviewing and approving content before it is published on the wiki. Additionally, to motivate learners and instructors to actively participate and contribute to the wiki, our research proposes the implementation of a recognition system. This system would recognize students and instructors who make substantial contributions to the wiki by awarding them with badges or certificates or giving them extra credit or other forms of recognition within the course. This would incentivize all students and instructors to contribute equally and actively to the wiki.

There is a lack of research specifically focused on the use of internal wikis for course-related material management. While there have been several studies on the use of wikis for collaborative learning and teaching, there is a limited number of studies that focus on the use of wikis for internal course-related material management. This gap in the literature suggests a need for further research on the use of wikis as a tool for internal course-related material management.

The potential benefits of using wikis for collaborative learning and teaching in higher education have been identified, as well as the potential challenges. However, our thesis focuses on the use of internal wikis for course-related material management in higher education. This area of research is still relatively unexplored and highlights the need for further research. By addressing the gaps in existing literature, our research aims to contribute to a better understanding of the potential benefits and challenges of using internal wikis for course-related material management in higher education.

Wiki as a Content Management System

Content management systems (CMS) play a vital role in managing digital content and facilitating collaborative work. This literature review focuses on understanding the potential benefits, challenges, and proposed solutions of using a wiki-based CMS for designing an internal wiki for course-related material management.

The use of a wiki-based CMS can offer several benefits to the institution, including enhanced collaboration, communication, and knowledge-sharing among faculty members and students. According to Raman, Ryan, and Olfman (2016), wiki-based CMS enables easy access to relevant information, timely updates, and the ability to share information across departments. It also facilitates group work and supports collaborative learning. Devezas and Nunes (2021) state that the use of a wiki-based CMS can improve research management by enabling researchers to easily create, update and manage research-related information. Furthermore, it can help students develop their research and writing skills through collaboration and the sharing of information.

Despite the potential benefits, several challenges may arise when implementing a wiki-based CMS. One such challenge is the issue of user adoption, as not all users may be comfortable using the wiki platform. Additionally, security concerns may arise, particularly with sensitive or confidential information. Hung and Wang (2020) highlight the challenge of controlling the quality and accuracy of the content on a wiki platform. They suggest that quality control can be addressed by having administrators or moderators oversee the content.

To address user adoption challenges, Hester (2010) suggests providing training and support for users to ensure they are comfortable using the platform. Regarding security concerns, Frumkin (2005) recommends implementing access control mechanisms to ensure only authorized users have access to sensitive information. Quality control challenges can be addressed by implementing editorial oversight, as suggested by Hung and Wang (2020).

One notable gap in the existing literature is the limited discussion on how to ensure the sustainability of the wiki platform. As the wiki platform may require frequent updates and maintenance, there is a need to explore how to ensure its longevity and continued use by users.

This literature review has provided insight into the potential benefits, challenges, and proposed solutions of using a wiki-based CMS for designing an internal wiki for course-related material management. While there are potential benefits, it is essential to address the challenges that may arise when implementing the platform. By providing training and support for users, implementing access control mechanisms, and editorial oversight, these challenges can be mitigated. However, there is a need for future research on how to ensure the sustainability of the wiki platform.

Theoretical Framework

Theoretical framework is developed through extensive and comprehensive reviews of literature and collected data, and it provides the researcher with the key variables and concepts related to the topic of the research. It serves as a structure to support a theory for the research work and explains the reason for the existence of the problem being studied. Theoretical framework is a theory that forms the basis for conducting research and can be presented in graphical or written form. After designing the framework based on existing theories, relevant data is gathered and used to support, modify or extend the theory. It is not necessary to test theories either to prove or disprove them.

This study is based on the Theory of Technology Acceptance Model (TAM), Theory of Motivated Information Management (TMIM) and User-centered Design Theory (UCD).

Theory of Technology Acceptance Model (TAM)

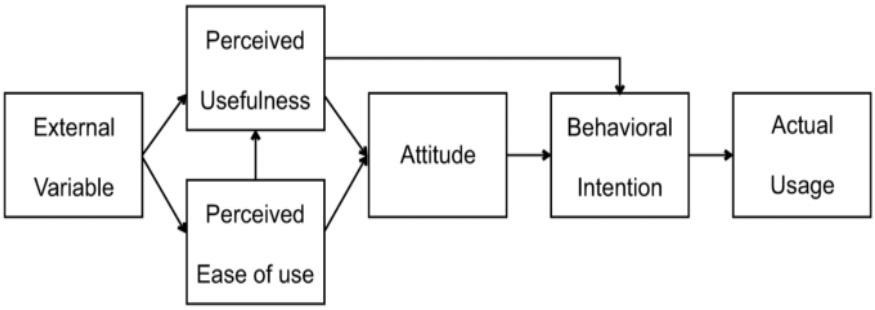

Figure 1. Theory of Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theoretical construct that aims to elucidate how individuals adopt and utilize novel technology. Created by Fred Davis (1989), TAM has found broad applicability across multiple domains, such as information systems, marketing, and education.

This study is based on the framework of Theory of Technology Acceptance Model because the framework of TAM is influenced by two main factors, perceived usefulness and its ease of use. Therefore, if the students perceive that the technology being used in their academic setting is useful and easy to use, they are more likely to accept and use it. By applying the TAM framework, educators and institutions can evaluate the perceived usefulness and ease of use of educational technology by students and instructors. This can inform decisions regarding the adoption and implementation of technology in the academic setting, as well as identify areas for improvement in terms of training, technical support, and social influence.

Theory of Motivated Information Management (TMIM)

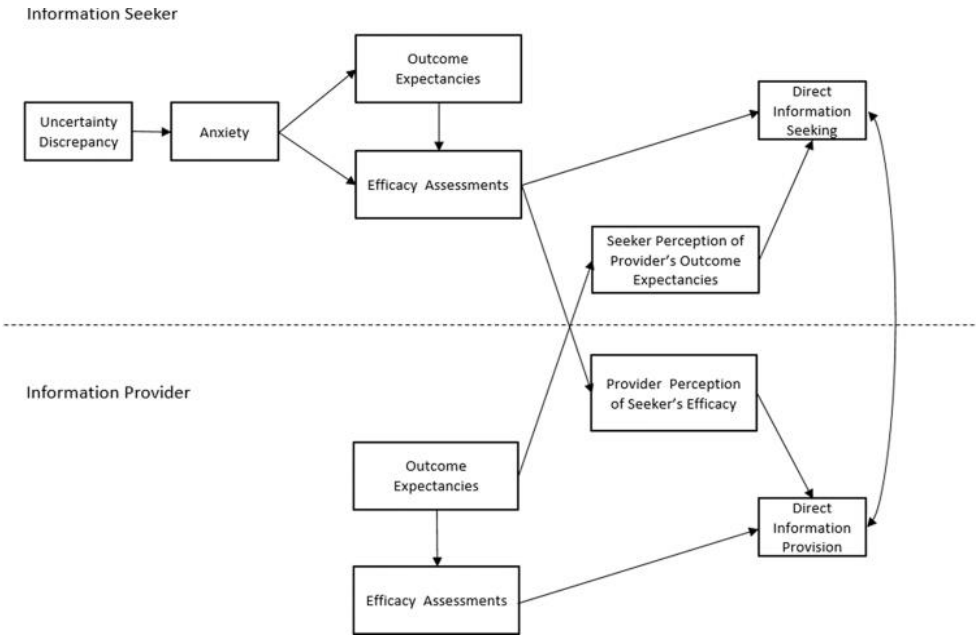

Figure 2. Theory of motivated information management (TMIM)

The Theory of Motivated Information Management (TMIM) was developed as a response to the limitations of Problematic Integration Theory and Uncertainty Management Theory's interpretive approach, and a desire to account for the complexity of individual experiences with uncertainty and prediction. TMIM draws from several theories, including Subjective Expected Utility theory (Fischhoff, Goitein, and Shapira 1983), Social Cognitive theory (Locke and Bandura 1987), and Theories of Bounded Rationality (Kahneman 2003), which suggest that people make suboptimal choices due to emotions and biases. However, TMIM is only applicable in cases where the decision is perceived to be sufficiently important due to its laborious decision-making process.-

The theory of motivated information management (TMIM) has found applications in different areas, such as information technology and knowledge management. It can assist in creating systems and tools that facilitate efficient information management by lowering the perceived cost of managing information and enhancing its perceived value. TMIM also aids students and organizations in comprehending the incentives behind information management actions and devising approaches to foster them.

This theory is relevant to our study because the correlation between the Theory of Motivated Information Management (TMIM) and academic performance of students can be established by the perceived value of information and the students personal goals and needs. Effective information management can lead to better academic performance by facilitating comprehension and retention of the course material making it always up to date.

User-centered Design Theory (UCD)

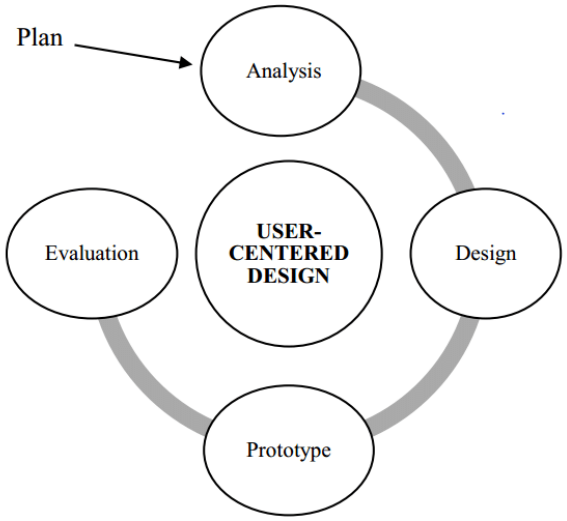

Figure 3. User-center Designed Theory (UCD)

User-centered design (UCD) is a methodology that prioritizes the needs and preferences of users when designing products, systems, and services. It involves comprehending the requirements of the users, developing solutions that fulfill those requirements, and validating those solutions by testing them with users to guarantee their efficacy and user-friendliness.

This theory is related to our study because by using the UCD principles, the developers can create an application or website that is tailored to the specific needs and preferences of the students, such as organizing course-related material, sharing notes, and communicating with classmates and instructors.

Conceptual Framework

The purpose of the conceptual framework is to provide a structured and organized approach to understand the system, doing this can help the development team ensure that the internal wiki website is an effective tool for knowledge management. Providing a conceptual framework helps the developers ensure that it meets the needs and objectives of its intended users.

This conceptual framework is an illustration of the research study in regard to independent variables and dependent variables. As shown below in Figure 4. The conceptual framework highlights the dependent and independent variables showing that independent variables are factors that can have an effect on the dependent variable while

dependent variables are outcomes or effects that are influenced by the independent variable.

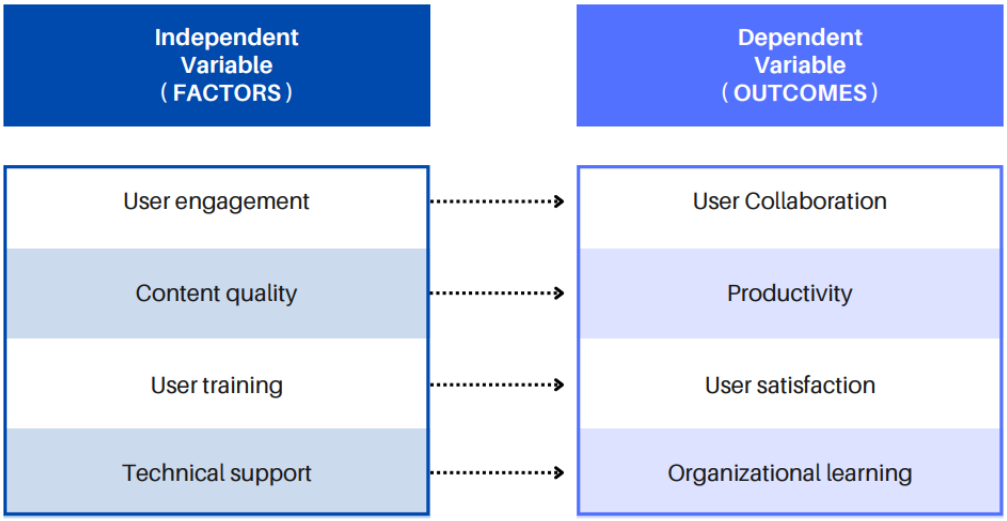

Figure 4. Conceptual Framework

Independent variables

- **User engagement:** The degree to which users actively participate in contributing to and utilizing the internal wiki.
- **Content quality:** The quality and relevance of the content available on the internal wiki.
- **User training:** The extent to which users have been trained on how to use the internal wiki effectively.
- **Technical support:** The quality and availability of technical support for the internal wiki.

Dependent variables

- **User Collaboration:** The extent to which the internal wiki is used to share knowledge and information within the organization.
- **Productivity**: The impact of the internal wiki on the productivity of users and the organization as a whole.
- **User satisfaction:** The level of satisfaction among users with the usability, accessibility, and effectiveness of the internal wiki.
- **Organizational learning:** The degree to which the internal wiki facilitates organizational learning and continuous improvement.

User engagement → User Collaboration

If users are not engaged or they might feel that the internal wiki is irrelevant, they may not feel motivated to contribute, resulting in low levels of collaboration. In contrast, if users are highly engaged with the internal wiki, they are more likely to contribute their knowledge and expertise to the system, which can lead to greater collaboration amongst users.

Content Quality → Productivity

If the contents of the internal wiki is of low quality or not up to date, it can lead to wasted time and effort as users struggle to find the information they need. This can ultimately result in decreased productivity as users are unable to complete their work efficiently.

User Training → User Satisfaction

If users are not adequately trained or if there's no tutorial on how to use the internal wiki, they may struggle to navigate the system or find the information they need, leading to frustration and decreased satisfaction. This can lead to low levels of engagement and collaboration as users become discouraged from using the system.

Technical Support → Organizational learning

Effective technical support can facilitate continuous improvement and innovation within the organization. If technical support is unresponsive to the user's needs, it can lead to technical barriers that can hinder the user's learning capabilities.

CHAPTER III: METHODOLOGY

This chapter presents the purpose of the methodology, It will provide an explanation of the steps and techniques used to conduct the study. The research design, population and sampling, data collection and analysis methods,application implementation and evaluation of the application, and the potential research influencing factors are all covered in this chapter. To help readers evaluate the validity and reliability of the research findings this chapter aims to provide them a clear understanding of how the study was conducted.

Research Design

The research design used in this study is action research, which is a type of research that involves active collaboration between researchers and participants to identify and address problems in a practical setting. This approach is particularly useful for investigating complex issues in real-world contexts, such as the management of course-related materials in a college setting.

Action research was chosen for this study as it enables active participation from both students and teachers. This participation allows researchers to obtain valuable insights into the challenges and opportunities of course-related material management, as well as design and implement a solution that meets their needs and expectations. It is crucial to involve students and teachers in the design of such a system as the study aims to enhance student learning outcomes by providing better access to course materials. A limitation of action research is that it requires a high level of collaboration and engagement from all participants. However, the specific aim of this study is not to provide generalizable results, but to create a course-related material management system tailored to the needs of the College of Informatics and Computing Studies.

Population and Sampling

In this study, a total of twenty-two (22) participants in New Era University Department College of Informatics and Computing Studies from different department, all data were used to collect and gather information that are needed for the study. The researchers used purposive sampling as the sampling technique because the study requires a large number of respondents to acquire more accurate and credible results.

Data Collection Method

The researchers used a google form survey questionnaire consisting of ten questions as a mean of collecting data. The researchers chose survey questionnaires because they are reliable,effective and quick methods to collect information from a large amount of respondents in an efficient and timely manner.

The research goals and questions were initially established before developing and testing the data collection strategies for a Google Form survey questionnaire. The survey questionnaire was subsequently created using Google Forms and it included simple instructions and questions that respondents could easily understand.After that, the target population of students and teachers received the survey questionnaire along with the instructions on how to access and complete it. In order to find patterns, trends, insights pertaining to the study's objectives and questions, the data was evaluated. The survey questionnaire was able to collect useful information by taking a disciplined and systematic approach, which allowed researchers to acquire insights into the wants and needs of both educators as well as learners for an internal wiki system for organizing course-related materials.

There must be potential dilemmas that need to be resolved while using survey inquiries to gather data.Informed consent, confidentiality and anonymity, bias and discrimination and data ownership and use are some of these factors. In this instance, the researchers asked for informed consent and explained the study's objectives, but they omitted to address these concerns about data ownership and usage,prejudice and discrimination. To guarantee that respondents safety and security during the data gathering process these ethical considerations should be properly considered. Through this, the researchers virtually administered and retrieved the necessary information to be checked, analyzed and interpreted.

Data Analysis Method

In this study, the researchers used descriptive statistics to analyze data collected from a survey administered through Google Forms. The data was categorized, arranged, and presented using graphical representation like table that includes frequency, percentage, and rank. To calculate the percentage distribution, the formula $P = (N/T) \times 100$ was used, where P represents the percentage of responses, N represents the number of responses for an answer choice, and T represents the total number of responses.

Descriptive statistics were chosen as the data analysis method due to their ability to summarize and interpret data in a clear and concise manner. This approach allows researchers to identify patterns and trends in the data, which can inform the design and implementation of a wiki-based course-related materials management system. Additionally, descriptive statistics can help identify potential barriers to adoption and implementation, which can be addressed with appropriate strategies.

The researchers also ensured ethical considerations were met, including maintaining confidentiality of data, obtaining informed consent, identifying and minimizing potential risks or harms to participants, and using the data only for the study's intended purposes with participant consent.

Implementation of the Application

The system architecture of the website is illustrated in the diagram below, which depicts how each component responds to each other. The user interface, also known as the front end, is linked to the back end, which manages the processing of user requests and executes coding logic while interacting with the MySQL database. The MySQL database stores all the necessary information pertaining to user and admin accounts. The server, whether physical or virtual, is responsible for hosting the application, it is responsible for running the back end and service requests from the front end. Authentication is the process of verifying the identity of a user and granting access to the application based on their assigned roles as either a user or an administrator.

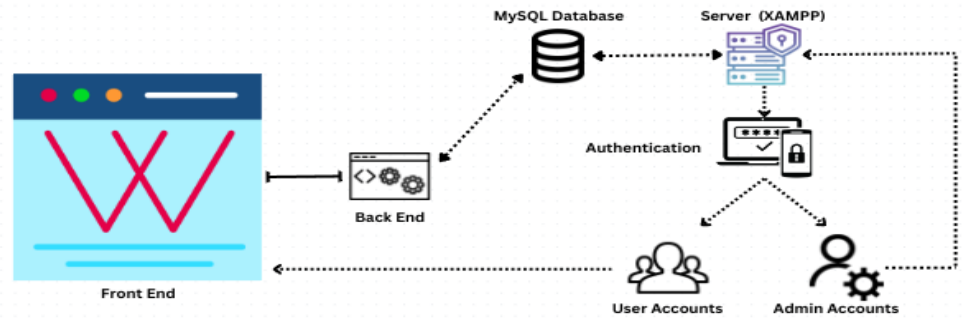

Figure 5. Implementation of the Application

Designing a new application requires careful planning, development, and testing to ensure that it meets the needs of the users and operates as intended. In order to achieve this, various tools and technologies are utilized to facilitate the development process. The

researchers will create the initial design and prototype through Figma. Figma is a powerful design tool that allows us to create and test the application's user interface (UI) and user experience (UX) before writing any code. This will help the researchers identify any potential issues with the early design and will reduce the risk of errors which in turn will save time.

In order to develop the application, the researchers chose MediaWiki as their wiki software. MediaWiki is a popular open-source wiki software that is used by many organizations including Wikipedia. MediaWiki provides an easy to use interface for creating and editing the wiki pages, making it an ideal choice for our website development. To manage the database for our application, the researchers will use MySQL database to facilitate its users, allowing them to create their own account. MySQL is essential for storing and retrieving data which is essential for the website. HTML and CSS will be used by the developers to create and style the web pages while JavaScript will be used to add the functionality and interactivity of the website.

To test the application, the developers will utilize a local server called XAMPP, XAMPP is an open source tool for developing and testing web applications on a local server. Testing the website locally through the use of XAMPP will ensure that the functions are correct before it is deployed to a live server.

Website development involves multiple stages from planning, testing, and the implementation of the website. Since the project has a designated due date, managing time effectively and efficiently is important which then ensures the completion of the project in due time. To address this challenge, the developers made a project timeline in which the developers are required to complete based on the due date it is set.

A website with a poor design or user experience can turn away users and negatively affect the overall potential of the website, that’s why it is important to have a clear understanding of the target audience and their opinions. To address this challenge, the developers made a prototype using figma to visualize the overall look and design of the website and then the researchers gathered the feedback from our target audience, by the use of online surveys so that we can gather the opinions and user experience of CICS students and then make necessary adjustments based on their feedback.

Evaluation of the Application

The evaluation method used to assess the effectiveness of the website is through online surveys and questionnaires. The researchers used this method to gather feedback from CICS students based on their department/course. This evaluation method provides valuable insights and relevance to the research since it identifies the flaws and the areas of improvement of the designed website.

The survey was administered and distributed online to students and teachers from the College of Informatics and Computing Studies at New Era University. Participants were selected based on their willingness to participate in the study and their availability to complete the survey.

In this study, surveys were used to collect data from students and professors regarding their course-related material management practices. The survey was designed to elicit feedback from different aspects such as, their motivation, features of the application, satisfaction, practicality, and common challenges experienced by the user.

The researchers then designed a survey questionnaire that was based on best practices and relevant research findings. The survey was pilot-tested with a small sample of students and professors to identify any issues or challenges with the survey instrument. Feedback from the pilot test was used to refine the survey, which will be administered to a larger sample of participants. In addition, the user interface of the website was tested through a prototype made in Figma, allowing for early identification of potential usability issues. The evaluation methods were developed and tested with care and attention to detail, ensuring that the resulting data would be valid, reliable, and informative.

Challenges faced during evaluation:

Limited availability of users

During the evaluation, one of the primary challenges faced was the limited availability of the users. Given the nature of the project, only students and professors from CICS could provide the necessary feedback to make the evaluation process effective. It also became difficult to find sufficient numbers of individuals who are willing to participate in the prototype evaluation process, particularly since they are busy with other academic and personal commitments.

The researchers addressed them with various strategies to ensure the validity of the evaluation process. To mitigate the limited availability of users, the researchers

expanded the pool of participants by asking their friends to help them pass the survey to students they know that are within the CICS department.

Limited time

Another significant challenge during the evaluation process was the limited time and resources. Evaluating an application takes time and effort which limits the validity and reliability of the data collected.

To address the challenge of limited time, the researchers prioritized their evaluation efforts, focusing on the most critical areas of the application. This ensures that the most important aspects of the website were evaluated thoroughly, this approach helped the researchers combat the time constraints. The researchers also utilized existing resources or tools, such as online survey platforms to reduce time constraints.

User Bias

Another challenge during the evaluation process was the user bias. The individuals who participated in the evaluation may have biases about the application, which could impact their responses to the survey. This bias could be influenced by a variety of factors, such as personal preferences and prior experiences with similar websites.

To address the user bias, the researchers implemented counter measures to ensure that the evaluation process was impartial and objective. This includes using standardized surveys, providing clear instructions, and emphasizing the importance of being honest so that they provide accurate feedback.

Results and Findings

This presents the data gathered, the results of the statistical analysis done and interpretation of findings. These are presented in tables following the sequence of the specific research regarding Designing an Internal Wiki for Collaborative Course-Related Material Management in College of Informatics and Computing Studies at New Era University.

I. User Experience of Material Management Tools

1. What tools and methods are you currently using for managing course-related materials?

	Frequency	Percentage	Rank
Google Drive	22	100	1

Learning Management Systems (LMS)	9	40.9	4
Email communication	13	59.1	3
Online discussion forums or chat rooms	15	68.2	2
Physical binders or Folders	4	18.2	5

Table 1. Course Material Management Tools and Methods in Use

According to the Table 1, Google Drive was the most commonly used tool for managing course-related materials, with 22 respondents indicating its use, accounting for 100% of respondents. Online discussion forums or chat rooms were the second most commonly used tool, with 15 respondents indicating their use, accounting for 68.2% of respondents. Email communication was used by 13 respondents (59.1%), and Learning Management Systems (LMS) were used by 9 respondents (40.9%). Finally, physical binders or folders were the least commonly used tool, with only 4 respondents (18.2%) indicating their use. The results suggest that digital tools are more commonly used than physical ones for managing course-related materials.

2. How satisfied are you with the current tools and methods used for managing course-related materials?

	Frequency	**Percentage**	**Rank**
Very Satisfied	2	9.1	3
Satisfied	11	50	1
Neutral	8	36.4	2
Dissatisfied	1	4.5	4
Very dissatisfied	0	0	5
Total	22	100	

N = 22

Table 2. Satisfaction with Current Course Material Management Tools

Table 2 presented the majority of respondents (50%) are satisfied with the current tools and methods used for managing course-related materials. A total of 11 respondents indicated satisfaction. 36.4% of respondents reported feeling neutral about the current tools and methods, with 8 respondents indicating this. Only 9.1% of respondents indicated being very satisfied with the current tools and methods, with 2 respondents reporting this. One respondent (4.5%) indicated being dissatisfied with the current tools

and methods. The results suggest that most respondents are either satisfied or neutral about the current tools and methods used for managing course-related materials. However, it is worth noting that there is still room for improvement, as some respondents indicated being dissatisfied or neutral.

3. What do you think is the best feature and functionality should an internal wiki system for managing course-related materials include based on the needs and expectations of students and instructors?

	Frequency	Percentage	Rank
Ability to upload and organize different file formats (e.g., PDF, PowerPoint, Word)	3	13.6	3
Access control to limit who can view and edit content	2	9.1	4
Integration with popular Learning Management Systems (LMS)	4	18.2	2
Collaboration tools to enable students and instructors to work together on course-related materials	13	59.1	1
Customizable templates for creating and sharing course content	0	0	5
Total	22	100	

N = 22

Table 3. Desired Features of an Internal Wiki System for Managing Course-Related Materials

Table 3 presented, that the most desired feature for an internal wiki system for managing course-related materials is collaboration tools, with 13 respondents (59.1%) indicating its importance. Integration with popular Learning Management Systems (LMS) and the ability to upload and organize different file formats are also considered

important, with 18.2% and 13.6% of respondents ranking them second and third, respectively. Access control and customizable templates are not considered important by most respondents. These results suggest that students and instructors prioritize features that enhance collaborative work and simplify the management of course-related materials.

4. What do you think motivates students and teachers to use systems for managing course-related materials?

	Frequency	Percentage	Rank
Increased organization and efficiency	7	31.8	1
Enhanced collaboration and communication	6	27.3	2
Ease of access to course materials	5	22.7	3
Customization options for individual learning needs	2	9.1	4
Integration with other course-related platforms	2	9.1	4
Total	22	100	

N = 22

Table 4. Motivations for Using Systems for Managing Course-Related Materials

Table 4 showed that the increased organization and efficiency was the most commonly cited motivation for using systems for managing course-related materials, with 7 respondents indicating it, accounting for 31.8% of respondents. Enhanced collaboration and communication were the second most commonly cited motivation, with 6 respondents indicating it, accounting for 27.3% of respondents. Ease of access to course materials was cited by 5 respondents (22.7%), while customization options for individual learning needs and integration with other course-related platforms were each cited by 2 respondents (9.1%). The results suggest that students and teachers are primarily motivated to use systems for managing course-related materials for organizational and collaborative purposes.

5. What do you think is the most common challenge and limitation of the current course-related material management practices experienced by students and teachers?

	Frequency	Percentage	Rank
Lack of accessibility to required course materials	3	13.6	4
Inadequate organization and storage of materials	7	31.8	1
Insufficient time allocated to managing course-related materials	1	4.5	5
Insufficient support and guidance from educational institutions	4	18.2	3
Issues with digital materials and software compatibility.	7	31.8	1
Total	22	100	

N = 22

Table 5. Common Challenges and Limitations in Course Material Management Practices Experienced by Students and Teachers

Based on Table 5, the most used tool for managing course-related materials was Google Drive, with 22 respondents indicating its use, accounting for 100% of the respondents. Online discussion forums or chat rooms ranked second, with 15 respondents indicating their use, accounting for 68.2% of respondents. Email communication was used by 13 respondents (59.1%), while Learning Management Systems (LMS) were used by 9 respondents (40.9%). Finally, physical binders or folders were the least commonly used tool, with only 4 respondents (18.2%) indicating their use. The results suggest that digital tools are more commonly used than physical ones for managing course-related materials.

II. User Testing of Internal Wiki Platform Design

1. How frequently do you use course-related materials (e.g., syllabus, lecture slides, assignments, etc.) in your academic work?

	Frequency	Percentage	Rank
Daily	10	45.5	2
Twice or Thrice a Week	11	50	1
Twice or Thrice a Monthly	0	0	4
Rarely	1	4.5	3
Never	0	0	4
Total	22	100	

N = 22

Table 6. Frequency of Use of Course-Related Materials in Academic Work

Table 6 showed, the majority of respondents (50%) reported using course-related materials (such as syllabus, lecture slides, assignments, etc.) twice or thrice a week in their academic work, with 11 respondents indicating this. 45.5% of respondents reported using these materials on a daily basis, with 10 respondents indicating this. Only one respondent (4.5%) reported rarely using these materials, while no respondents reported never using them or using them only twice or thrice a month. The results suggest that course-related materials are used frequently by respondents in their academic work, with the majority using them at least twice or thrice a week. This highlights the importance of these materials in supporting students' learning and academic success.

2. What features or functionalities would you like to see in an internal wiki platform for course-related material management?

	Frequency	Percentage	Rank
Discussion Forums	16	72.7	3
Dark Mode	19	86.4	1
Document Sharing	17	77.3	2
Upload Large File	1	4.5	4

Table 7. Desired Features and Functionalities for an Internal Wiki Platform for Managing Course-Related Materials

Based on the data presented in Table 7, it can be observed that the most desired feature or functionality for an internal wiki platform for managing course-related materials is dark mode, with 86.4% of respondents (19) indicating that they would like to see this feature. The second most desired feature is document sharing, with 77.3% of respondents (17) indicating this. Discussion forums were the third most desired feature,

with 72.7% of respondents (16) indicating their desire for this functionality. Only one respondent (4.5%) indicated the desire for the ability to upload large files. The results suggest that respondents are most interested in features that enhance the accessibility and usability of the platform, such as dark mode and document sharing. Additionally, the desire for discussion forums highlights the importance of collaboration and communication in the learning process.

3. Are the fonts and colors used on the prototype easy on the eyes and legible?

	Frequency	Percentage	Rank
Yes	16	72.7	1
No	4	9.1	3
Maybe	2	18.2	2
Total	22	100	

N = 22

Table 8. Legibility and Readability of Fonts and Colors on Prototype

Table 8 showed, most respondents (72.7%) indicated that the fonts and colors used on the prototype for managing course-related materials were easy on the eyes and legible, with 16 respondents reporting this. Only 9.1% of respondents (4) indicated that the fonts and colors were not easy on the eyes and legible, while 18.2% (2) indicated that they were unsure and selected "Maybe." The results suggest that the majority of respondents found the fonts and colors used on the prototype to be easy on the eyes and legible. However, there is still room for improvement, as a small percentage of respondents indicated that they were not easy to read. Further investigation may be needed to determine specific areas of improvement for the prototype's design.

4. What potential benefits do you see in using this internal wiki platform for course-related material management?

	Frequency	Percentage	Rank
Improved organization and accessibility of course-related material	22	100	1
Facilitation of collaboration and knowledge sharing among faculty and students	17	77.3	2
Reduction of the use	14	63.6	4

of papers			
Increased efficiency and productivity in course-related tasks	17	77.3	2
Other: Managing the local storage of a local PC	1	4.5	5

Table 9. Potential Benefits of Using an Internal Wiki Platform for Course-Related Material Management

Based on the data presented in Table 4, the use of an internal wiki platform for course-related material management could provide several potential benefits. The most cited benefit was the improvement of organization and accessibility of course-related material, with all 22 respondents (100%) agreeing. The second most cited benefit was the facilitation of collaboration and knowledge sharing among faculty and students, with 17 respondents (77.3%) indicating agreement. Increased efficiency and productivity in course-related tasks was also mentioned by 17 respondents (77.3%), followed by the reduction of the use of papers with 14 respondents (63.6%). Only one respondent (4.5%) mentioned "other" potential benefits. These results suggest that using an internal wiki platform could have several advantages in managing course-related materials.

5. What do you perceive as the primary drawback of using this internal wiki platform for course-related material management?

	Frequency	Percentage	Rank
Technical difficulties or limitations	14	63.6	1
Security and privacy concerns	6	27.3	2
Over-reliance on technology	2	9.1	3
Total	22	100	

N = 22

Table 10. Primary Drawbacks of Using an Internal Wiki Platform for Course-Related Material Management

Table 10, the primary drawback of using an internal wiki platform for course-related material management, as perceived by respondents, is technical difficulties or limitations, with 14 respondents (63.6%) indicating it as a major concern. Security and privacy concerns were also identified as a drawback, with 6 respondents (27.3%) expressing worry about the platform's vulnerability to data breaches. Finally, over-reliance on technology was cited as a drawback by only 2 respondents (9.1%). These

findings suggest that technical difficulties and security concerns are the major concerns of using an internal wiki platform for course-related material management.

Conclusion

The methodology chapter presents details how the study was conducted, including research design, population and sampling, data collection and analysis methods, implementation and evaluation of the application, and results and findings. This chapter is important as it provides a framework for the research project, ensuring that the findings are valid and reliable. The methodology ensures that the study is conducted in an accurate and consistent manner, enabling the research findings to be interpreted with confidence. In the next chapter, Chapter 4, the results of the study will be presented and analyzed, providing a comprehensive evaluation of the system application, including its strengths and weaknesses. These insights can be used to improve the design and implementation of the system.

CHAPTER IV: PRESENTATION AND ANALYSIS

In this chapter, the researchers analyze the data collected conduct from the study using descriptive statistics. The findings of this analysis will provide answers to the following research questions:

1. What are the needs and expectations of students and teachers for an internal wiki system for managing course-related materials?
2. What are the challenges and limitations of the current course-related material management practices?
3. How does the use of an internal wiki system for course-related material management impact student learning outcomes?
4. How can a wiki-based collaborative course material management system benefit both students and teachers?
5. What are the potential barriers to the adoption and implementation of an internal wiki system for course-related material management?

Data Collection and Analysis

A Google Form survey with ten questions was the tool the researchers used to collect data. The intended target population of students and teachers were given the survey questionnaire, which was made using Google Forms. To identify patterns and trends related to the study's goals and questions, the information collected was evaluated. Informed consent and other legal concerns were discussed, Descriptive statistics were employed as the method for data analysis, allowing for a concise and understandable interpretation of the data as well as its summary and identifying the patterns and trends.

Findings

Research Question 1: What are the needs and expectations of students and teachers for an internal wiki system for managing course-related materials?

Collaboration tools are considered most important by students and instructors in their needs and expectations for an internal wiki system for managing course-related resources, based on most respondents. Important characteristics include the capacity to upload and arrange various file formats as well as integration with well-liked Learning Management Systems (LMS). Access management and editable templates are not yet given much importance. These results imply that to effectively meet the needs and expectations of both students and instructors, an internal wiki system should give priority

to features that improve teamwork and streamline the management of course-related materials.

Research Question 2: What are the challenges and limitations of the current course-related material management practices?

Insufficient or difficult technological resources, dissimilarity of materials across various communication and collaboration tools, and difficulty organizing and accessing materials are just a few of the difficulties and limitations that current course-related material management practices existing to both students and instructors. It is possible that current file storage techniques won't be enough to handle the growing volume of digital content in the classroom. Learning management systems (LMS) have a low adoption rate, which may indicate that some instructors and students find these systems challenging to use or insufficient for their requirements.

Research Question 3: How does the use of an internal wiki system for course-related material management impact student learning outcomes?

Managing the management of course-related materials via an internal wiki system can improve student learning outcomes. It can boost students' engagement and participation in the course by giving them simple access to course content and resources in one convenient area. A collaborative learning environment where students can share knowledge and participate in its production and exchange is made possible by the wiki system. A deeper knowledge of the course subject may result from this. The usage of a wiki system can also encourage student-teacher interaction and feedback, which can further improve student learning results.

Research Question 4: How can a wiki-based collaborative course material management system benefit both students and teachers?

A wiki-based collaborative course material management system can benefit both students and teachers by facilitating information sharing and collaboration, promoting critical thinking and problem-solving skills, promoting active learning and engagement, and improving research management. Additionally, it can help students develop their research and writing skills through collaboration and sharing of information. Teachers can use wikis to share course materials and create collaborative learning activities. By using a recognition system, students and teachers who make substantial contributions to the wiki can be incentivized to actively participate and contribute equally.

Research Question 5: What are the potential barriers to the adoption and implementation of an internal wiki system for course-related material management?

Potential barriers to the adoption and implementation of an internal wiki system for course-related material management include user adoption challenges, security concerns, and quality control challenges. User adoption challenges may arise as not all users may be comfortable using the wiki platform. Security concerns may arise, particularly with sensitive or confidential information. Quality control challenges may arise due to the reliance on user-generated content, which may vary in quality. These challenges can be mitigated by providing training and support for users, implementing access control mechanisms, and editorial oversight. The sustainability of the wiki platform will be ensured through regular updates and maintenance.

Analysis and Discussion

The purpose of the study was to create an internal wiki platform for managing course-related resources and to determine the requirements, difficulties, advantages, and possible implementation barriers. Findings show that the top priorities for both students and teachers are integration with learning management systems, simple access to information, and collaborative tools. The current methods of material management have issues with technology, the variety of materials, and the organization and accessibility of resources. By encouraging active learning, enhancing student learning outcomes, and fostering collaboration and knowledge sharing, internal wiki systems can be used. However, issues with user acceptance, security, and quality control may also come up. Users will receive instruction and help, access control measures will be put in place, and editorial review will all be done to solve these issues.

Presentation

The findings of the study are presented through the use of a table that includes frequency, percentage, and rank. This table serves as a visual aid that provides a concise summary of the data collected, making it easier for readers to understand and interpret the results. The relevance of this visual aid lies in its ability to highlight patterns and trends in the data, allowing the researchers to draw meaningful conclusions and make informed recommendations based on the research questions and objectives. In addition, a comprehensive explanation was presented about how the system development process was carried out, including its implementation and testing.

Conclusion

The presentation and analysis chapter describe details how the data was processed, including data collection and analysis, analysis and discussion, presentation, and future work. The research objectives were met by gathering insights from students and teachers to determine the essential features and functionalities of the system, identifying the limitations of the current material management practices, and evaluating the impact of the internal wiki system on student learning outcomes. The study utilized an action research approach, which ensured accuracy and consistency in achieving the research objectives. However, limitations of the study were identified, such as the limited scope of the research and the need for further exploration of potential barriers to adoption and implementation of the system. The study provides valuable insights into the field of Knowledge Management and emphasizes the significance of collaborative systems for efficient course-related material management.

Future Work

The study provides possible paths for further investigation and improvements to the suggested solution of implementing an internal wiki platform for course-related material management. These involve studying how various digital tools affect user engagement and motivation, assessing the platform's effect on learning outcomes, enhancing its usability using collaborative and communicative abilities, enhancing its design, as well as fixing technical and security issues. As stated in the study, fixing these issues could involve managing resources systems that are more efficient and user-friendly.

CHAPTER V: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the summary, conclusion, and recommendations of the whole study. The finding of the study without so much precise information is written in the summary. The generalization and other interferences would be seen in the conclusion while the recommendations of the researchers to the beneficiaries of this study can also be seen int this chapter. This chapter aims to cover-up the end results of the study.

Summary

Wikis have played an essential part in developing more advanced thinking skills in collaborative learning. The difficulties the College of Informatics and Computing Studies has managing course materials, which has an impact on students' ability to access needed course materials and the overall quality of the education they receive. In chapter I, it aims the knowledge management practices used by instructors and learners in college universities, having particular focus on the use of wikis for collaborative learning evaluate, through surveys and interviews. The research questions are outlined in this chapter, which also defines key terminologies. The implementation of methods for knowledge management in educational settings may help students get ready for future knowledge-based jobs.

In the second chapter, the researchers gathered related literature that is connected to the topic under study. The theoretical and conceptual framework of the study are discussed in this chapter. The basic framework providing a theory for the research project is referred to as the theoretical framework. It was established through in-depth reviews of the available literature and data collection. Technology Acceptance Model (TAM), Theory of Motivated Information Management (TMIM), and User-Centered Design Theory (UCD) are the three theories covered in this chapter. whereas a conceptual framework provides an organized and structured technique for analyzing the system, and in this study, it seeks to make sure that the internal wiki website is a useful tool for knowledge management.

In research design, the researchers used. The action research to determine the active participation from both students and teachers. This participation allows researchers to obtain valuable insights into the challenges and opportunities of course-related material management, as well as design and implement a solution that meets their needs and

expectations. In population and sampling, the researchers have a total of twenty-two College of Informatics and Computing Studies students at New Era University from different departments were used as the respondents to collect and gather information that is needed in the study. In data collection method, the researchers used primary data as their technique and the instrument used was google forms to gather data in the survey questionnaire. Through the survey questionnaire, the researchers had personally administered and retrieved the necessary information.

Conclusion

The study suggests that an internal wiki system can address the challenges and limitations of current course-related material management practices and meet the needs and expectations of both students and teachers by improving collaboration, communication, and knowledge-sharing. The use of an internal wiki for course material management can also benefit both students and teachers by facilitating information sharing, promoting active learning and engagement, and improving student learning outcomes. However, potential barriers to adoption and implementation must be addressed through training and support, access control mechanisms, and editorial oversight to ensure the sustainability and success of the platform. The development and implementation of this internal wiki system for collaborative course-related material management can improve the educational experience and academic performance of students and teachers in the College of Informatics and Computing Studies at New Era University.

Recommendations

The following recommendations can be made to improve the study on designing an internal wiki platform for course material management:

1. The researchers want to incorporate gamification elements into the system because this might use benefits such as points and badges to make learning more enjoyable and engaging. To make learning more personalized and efficient, students can also choose whenever and what they want to pursue.
2. Gather user testing and feedback to ensure user-friendliness and effectiveness to ensure usability and efficacy, it's also essential to collect user testing and feedback. To gather input on the system's usability and efficacy in achieving its specific objectives, the researchers may conduct user testing. The system can then be further improved and enhanced using this feedback.

3. Expand the study to include a comparison group using a traditional course material management system for evaluation,Researchers could evaluate the two to see whether the new wiki platform with gamification and machine learning is superior to the previous one. Learning can be made more personalized and interesting by incorporating gamification, customized educational paths, and machine learning into the wiki. Researchers can conduct more analysis, testing, and user input gathering to ensure that it functions well and is simple to use.

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