Available online at
https://jcrinn.com/
https://crinn.conferencehunter.com/

Journal of Computing Research and Innovation 9(1) 2024

Journal of Computing Research and Innovation

Web-Based Planner System: A User Centric Evaluation for University Community

Nor Arzami Othman[1*], Mohd Nizam Osman[2], Khairul Anwar Sedek[3], Nurhasnisha Shamsuhaidi[4]

[1,2,3,4] *College of Computing, Informatics, and Mathematics, Universiti Teknologi MARA Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia*

ARTICLE INFO

Article history:
Received: 30 January 2024
Revised: 13 February 2024
Accepted: 14 February 2024
Online first: 1 March 2024
Published 1 March 2024

Keywords:
Web-based
Planning
Planner
Agile Methodology
User Acceptance Testing
Community

DOI:
10.24191/jcrinn.v9i1.418

ABSTRACT

This study introduces a web-based planner system developed to enhance the planning and scheduling processes within the academic environment. It is due to universities grapple with manual and fragmented planning processes, leading to inefficiencies, miscommunication, and a lack of real-time updates. The Agile methodology was employed to foster adaptability and responsiveness to changing requirements throughout the development lifecycle. The research focuses on the User Acceptance Test (UAT) phase, a crucial element in ensuring the system's functionality aligns with end-user expectations. A total of 36 respondents, comprising academic staff, students, and administrative personnel from UiTM Perlis, participated in the UAT process. The study investigates user satisfaction, system usability, and overall acceptance of the web-based planner system through a series of targeted assessments and surveys. Results indicate a positive reception among users, highlighting the system's effectiveness in streamlining planning processes and improving overall user experience. The Agile methodology's iterative nature facilitated real-time adjustments based on user feedback, ensuring that the final product meets the dynamic needs of the academic community. The findings contribute valuable insights into the successful integration of Agile methodologies in web-based system development and underscore the importance of user involvement in shaping functional and user-friendly solutions. This research not only showcases the benefits of web-based but also emphasizes the significance of user acceptance testing as a critical step in delivering solutions that truly resonate with end-users.

1.0 INTRODUCTION

A community website for university instructors and college students is a helpful forum for sharing information that doesn't need to be shared publicly on social media. Suitable content types for a website catering to the collegiate community include: a schedule of events on campus or specific classes. This study contains a planner for education web-based which implements the schedule and additional information for

[1*] Corresponding author. *E-mail address*: arzami@uitm.edu.my
https://doi.org/10.24191/jcrinn.v9i1

students or lecturers. The planner system is part of the framework to create the schedule for the students and lecturer in the university community at UiTM Perlis Branch efficiently. A planner is something that creates a plan for the activity that needs to be performed.

Having a plan helps to eliminate ambiguity and clarifies expectations for everyone. Individuals who are aware of and comprehend a goal are more willing to work toward it. Plans define benchmarks for performance. Planning establishes goals and milestones to indicate advancement.

This project aims to create web-based planner that use the model-view-controller architectural pattern. According to Chung et al. (2022), as a result, the previously developed research programs would be unable to meet the diverse information demands of all potential campus users or interest groups. Since the education platform does not fulfil the users' needs, the planner will invent better uses, such as more manageability.

2. PROBLEM STATEMENT

Traditionally, universities grapple with manual and fragmented planning processes, leading to inefficiencies, miscommunication, and a lack of real-time updates. Students and faculty face difficulties in accessing pertinent information, resulting in scheduling conflicts and suboptimal resource utilization. Addressing these issues is crucial for optimizing academic workflows, enhancing collaboration, and ensuring a seamless and user-friendly experience within the university community. The web-based planner system aims to bridge these gaps and offer a comprehensive solution to the prevalent challenges in academic planning.

Students and lecturers have trouble accessing and receiving their class schedules because the university's existing website lacks an accurate and dependable schedule system. Technical problems or website breakdowns that prevent students from getting the necessary information are to blame for this problem, as well as discrepancies and errors in the timetable information that is provided. According to a previous study conducted by Zo u et al. (2019), furthermore, present schedule management comprises several systems, making consistent schedule management by users impossible, resulting in reduced job performance.

With the reform of quality education in colleges and universities, college student management has shifted from classic transactional management to the primary channel of cultivation education and the primary classroom for management and cultivation. As a result, there is an urgent need to develop an information platform for cultivating, evaluating, and managing the ideological and moral qualities of college students (Li, 2021).

One major restriction of these initiatives is that users may either give static information regarding facilities or provide real-time status updates about specific locations. As a result, the previously developed research applications would be unable to meet the diverse information demands of all conceivable campus user or interest groups (Chung et al., 2022). The finding of Heim et al. (2022) research, however, due to a burdensome system design of scattered and non-integrated systems, the aim cannot be met.

https://doi.org/10.24191/jcrinn.v9i1

3. OBJECTIVES

The main objectives to be achieved for this study are:

(i) To design a planner of an education system for the UiTM Perlis Branch community.

(ii) To develop a web-based planner system.

(iii) To evaluate the web based using User Acceptance Testing (UAT).

4. SIGNIFICANCE

A web-based planner system holds significant importance for the university community by revolutionizing and optimizing various aspects of academic and administrative processes. Firstly, such a system provides a centralized platform for seamless communication and coordination among students, faculty, and administrative staff. It enhances accessibility to critical information, including class schedules, academic deadlines, and important announcements, fostering a more connected and informed university community.

Additionally, the web-based planner system streamlines course planning and registration processes, enabling students to make informed decisions about their academic journey. Faculty members benefit from efficient scheduling tools, facilitating better management of classes, assignments, and examinations. The system's real-time updates and notifications contribute to improved time management and planning for both students and faculty.

Moreover, administrative tasks, such as resource allocation, room scheduling, and academic event planning, are simplified, reducing manual efforts and minimizing errors. The enhanced efficiency and organization brought about by the web-based planner system contribute to an overall positive academic experience, promoting a collaborative and technologically advanced learning environment within the university community. Ultimately, the system plays a pivotal role in fostering productivity, communication, and academic success for all stakeholders in the university community.

5. LITERATURE REVIEW

5.1 Planner System

The literature on planner systems reveals a growing interest in leveraging technology to enhance organizational and academic planning processes across various domains. Studies underscore the pivotal role of planner systems in improving efficiency, time management, and overall productivity within educational institutions, corporations, and other settings. Web-based planner systems, in particular, have gained prominence for their accessibility, real-time updates, and collaborative features, fostering seamless communication and coordination (Aud Tennøy et al., 2016).

Researchers emphasize the significance of user-centered design principles in the development of effective planner systems, with a focus on user experience and satisfaction. Agile methodologies have emerged as a popular approach, enabling iterative development and continuous adaptation to user needs. Studies also highlight the impact of planner systems on reducing manual workloads, minimizing errors, and optimizing resource allocation (Carol M., 2021).

Additionally, the literature emphasizes the importance of customization and adaptability in planner systems to accommodate diverse user preferences and organizational requirements. The integration of

https://doi.org/10.24191/jcrinn.v9i1

mobile applications and cloud-based platforms further extends the reach and accessibility of planner systems, catering to the evolving needs of users in an increasingly digitalized environment. Overall, the literature reveals a consensus on the transformative potential of planner systems, shedding light on their multifaceted benefits and the need for continued research and innovation in this domain (Tiihonen et al., 2017).

5.2 Related Works

Web-based technology has been used to create a platform that can report and monitor the university's information. To address this issue, the paper discusses the building of the Crowd-Assisted Map Pervasive University Service (CAMPUS), a system that enables the reporting of static facility information and dynamic status updates. Plus, it also allows for the reporting of problem areas on campus (Chung et al., 2022).

Besides, the web-based schedule integration management system not only includes basic capabilities for viewing the perpetual calendar, scheduling, and scheduling categorization, but it also has advanced functions for multiple calendar views, scheduling output, and local schedule input (Zou et al., 2019). Li (2021) describes the basic structure of the system for ideological and moral quality evaluation and implements design and research on the system content using ASP.NET as the programming language. The program can quickly generate a website using HTML code and simple scripting languages like VBScript and JavaScript. It is simple to write without the requirement for compilation and can be immediately run on the server side.

Alfayez and Hassan (2022) explain a web-based learning system that will serve as a platform for the University of Basrah to distribute online content to its students in times of crisis. The system is made utilizing agile software development techniques and the Scrum methodology, as well as HTML, CSS, and the PHP programming language, with MySQL operating as the database. Laragon is a portable, isolated, fast, and powerful universal development environment for establishing and managing, PHP, Node.js, Python, Go, and Ruby web applications.

6. METHODOLOGY

Agile development model has been selected in developing web-based planner system. The are six iteration stages involved:

6.1 Phase1: Requirements Gathering

The first stage entails a comprehensive analysis of the needs and expectations of the university community, including students, faculty, and administrators. Stakeholders collaborate to define the system's functional and non-functional requirements, establishing a clear vision for the web-based planner.

6.2 Phase 2: Design

Following requirements gathering, the design stage focuses on creating a blueprint for the system. This involves architectural planning, user interface design, and database structuring. The goal is to ensure that the system is not only functional but also intuitive and visually appealing (Adwin, 2021), fostering positive user experiences. Activity Diagram and Entity Relationship Diagram (ERD) was designed during this stage.

https://doi.org/10.24191/jcrinn.v9i1

6.3 Phase 3: Development

Once the design is finalized, development begins. In an Agile development model (Alfayez Z. H. & Hassan I. M. (2022)), this phase is divided into sprints, with each sprint producing a functional increment of the system. Developers use coding languages and frameworks to bring the design to life, implementing features and functionalities based on the outlined requirements (Almaimoni et al., 2018; Sriarunrasmee & Anutariya, 2020). List of software that have been used such as:

(i) Composer as tool for dependency management in PHP.

(ii) Laragon as a local server on Windows.

(iii) Node.JS to write command line tools and for server-side scripting.

(iv) SQLyog Community as a GUI tool to manage MySQL and MariaDB servers and databases in physical, virtual, and cloud environments.

(v) Visual Studio Code as editor redefined and optimized for building and debugging modern web and cloud applications.

This project used several templates. The aim of the template is to allow the developer the freedom to create a visually captivating site while employing the skills of web designers and developers. Sweet Alert is one of the interesting features and is meant to create an alert box that is more visually appealing and easier to design. Example of web page after user log in as shown in Fig. 1.

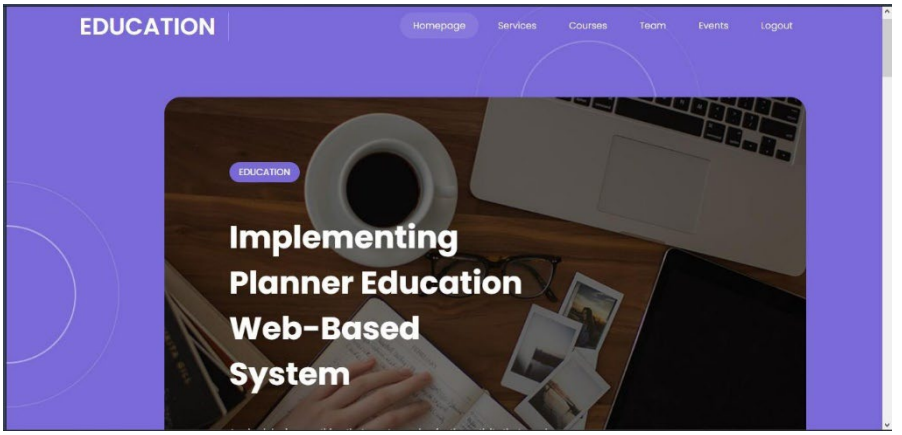

Fig. 1. Main page for a website

6.4 Phase 4: Testing

Testing is a critical stage to identify and rectify bugs, ensuring the web-based planner system's reliability and functionality (Stanford, 2020). This phase involves unit testing, integration testing, and functionality testing. Rigorous testing helps guarantee that the system meets the specified requirements and operates seamlessly across different user scenarios.

https://doi.org/10.24191/jcrinn.v9i1

6.5 Phase 5: Deployment

Once development and testing are complete, the web-based planner system is deployed to a production environment. Deployment involves making the system accessible to the end-users. This stage requires careful coordination to minimize downtime and disruptions, ensuring a smooth transition from development to active use.

To comprehensively assess the effectiveness of the web-based planner system within the university community, a structured methodology was employed, centered around three key criteria: exploration of the system, answering User Acceptance Test (UAT) questionnaires, and rigorous data gathering and analysis.

(i) System Exploration: The initial phase involved a systematic exploration of the web-based planner system's functionalities and features. This exploration aimed to familiarize users, including students, faculty, and administrative staff, with the system's interface, navigation, and available tools. Users were provided with access to the system and guided through its various components to ensure a clear understanding of its capabilities and potential benefits.

(ii) User Acceptance Test (UAT) Questionnaires: A pivotal aspect of the evaluation process was the administration of UAT questionnaires to a diverse group of 36 respondents within the university community. These questionnaires were meticulously designed to capture user feedback on different aspects of the web-based planner system, including usability, accessibility, and overall satisfaction. The questions were aligned with the system's objectives, emphasizing user experiences and expectations. Responses from the UAT questionnaires served as a quantitative and qualitative foundation for gauging user acceptance and identifying areas for improvement.

(iii) Data Gathering and Analysis: Subsequent to the UAT phase, data gathering encompassed on quantitative metrics. Usage statistics, such as system logins, feature utilization, and frequency of access, were collected to measure user engagement. Additionally, simple qualitative data, including open-ended feedback from users, was gathered to gain deeper insights into specific user experiences and perceptions.

The collected data underwent rigorous analysis, employing both quantitative methods such as statistical analysis of questionnaire responses and qualitative methods like thematic analysis of open-ended comments. This dual approach allowed for a comprehensive understanding of the system's impact on different user groups within the university community.

6.6 Phase 6: Review and Feedback

After deployment, the system undergoes a review phase. Users are encouraged to provide feedback on their experiences with the web-based planner. This feedback loop is crucial for identifying any post-deployment issues, gathering insights for potential improvements, and ensuring continuous refinement based on user needs.

By combining systematic exploration, UAT questionnaires, and robust data gathering and analysis (Nurjanah et al., 2018), this methodology provided a holistic and in-depth evaluation of the web-based planner system, shedding light on its strengths, weaknesses, and overall effectiveness in meeting the diverse needs of the university community.

7. FINDINGS

The users were given a link to explore the web-based planner system. Toward at the end, they are required to answer 16 UAT questions base on the opinion regarding to the system.

https://doi.org/10.24191/jcrinn.v9i1

7.1 Attitude of Using (ATT)

ATT refers to people's attitudes about using technology efficiently in their daily lives or activities. Based on Table 1, 63.9% of 36 respondents strongly agree that they felt comfortable using this system. Also, 63.9% of users strongly agree that overall, they are satisfied with how easy it is to use this system. Besides, 66.7% strongly agree that they think it would be easy for them to adapt with the interface of the web based. Other than that, 69.4% would consider using it again in the future.

Table 1. Attitude of Using (ATT)

Section B: Attitude of Using (ATT)	Percentage (%)				
	1	**2**	**3**	**4**	**5**
1. I liked using the interface of this system				44.4	55.6
2. I felt comfortable using this system				36.1	63.9
3. I will consider using it again in the future.			2.8	27.8	69.4
4. I think it would be easy for me to adapt with the interface of the web based			5.6	27.8	66.7
5. Overall, I am satisfied with how easy it is to use this system				36.1	63.9

7.2 Perceived Ease of Use (PEOU)

PEOU is the degree to which a person feels that using a specific system will need no effort on their behalf. Table 2 displayed the percentage results of the perceived ease of user questions. 55.6% strongly agree, 41.7% agree and 2.8% neutral that the web based was easy for them to find the information they needed. 69.4% strongly agree and 30.6 agree found this web based easy to create, read, update, and delete (CRUD) operations on the lists in the system. 77.8% strongly agree while 19.4% agree and 2.8% neutral that their interaction with the system would be clear and understandable.

Table 2. Perceived Ease of Use (PEOU)

Section C: Perceived Ease of Use (PEOU)	Percentage (%)				
	1	**2**	**3**	**4**	**5**
1. My interaction with the system would be clear and understandable			2.8	19.4	77.8
2. I found it easy to create, read, update, and delete (CRUD) operations on the lists in the system				30.6	69.4
3. It was easy for me to find the information I needed			2.8	41.7	55.6
4. I found the web-based interface (buttons, icons, and dialogue boxes) an easy way to perform system functions.			2.8	19.4	77.8
5. I found that the system isa useful system.				27.8	72.2

7.3 Perceived Usefulness (PU)

The level to which a person feels that employing a specific system would improve his or her job performance refers to the PU. Table 3 depicted that the lowest Likert scales was 3 indicating neutral. 2.8% neutral, 44.4% agree and 52.8% strongly agree the system gave error messages that clearly told them how to fix problems. Next, the interface of this system was pleasant depicts that 2.8% neutral, 33.3% agree and 63.9% strongly agree.

https://doi.org/10.24191/jcrinn.v9i1

Table 3. Perceive d Usefulness (PU)

Section D: Perceived Usefulness (PU)	Percentage (%)				
	1	**2**	**3**	**4**	**5**
1. With this web based, the user easy to monitor the schedule and other information			5.6	30.6	63.9
2. The system gave error messages that clearly told me how to fix problems			2.8	44.4	52.8
3. This web based is moreorganize				33.3	66.7
4. This system has all the functions and capabilities I expect it to have				47.2	52.8
5. The organization of information on the system screens was clear			2.8	27.8	69.4
6. The interface of this system was pleasant			2.8	33.3	63.9

8. CONCLUSION

In conclusion, the User Acceptance Test (UAT) conducted on the web-based planner system within the university community has unequivocally demonstrated its success in meeting the dynamic needs and expectations of its users. The positive outcomes of the UAT, involving feedback from 36 respondents, highlighted the system's effectiveness in streamlining academic planning processes, fostering improved communication, and enhancing overall user experience. The iterative and collaborative nature of the Agile methodology employed during development allowed for real-time adjustments based on user feedback, ensuring that the final product aligns seamlessly with the community's requirements. The system's impact on time management, resource allocation, and organizational efficiency was consistently acknowledged by both students and faculty, showcasing its transformative potential within the university setting. The successful implementation of the web-based planner system underscores not only the importance of user involvement in system development but also the broader benefits of technology in optimizing academic workflows and creating a more connected and efficient university community.

9. ACKNOWLEDEGEMENTS/FUNDING

The authors would like to acknowledge the support of Universiti Teknologi MARA (UiTM), Cawangan Perlis, Kampus Arau and Collage of Computing, Informatics and Mathematics for providing the facilities on this research.

10. CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interest.

11. AUTHOR CONTRIBUTIONS

Nurhasnisha Shamsuhaidi and Nor Arzami Othman conceived of the original and presented idea. Both of them developed the theory and performed the development process. Mohd Nizam Osman and Khairul Anwar Sedek verified the analytical methods. Nor Arzami encouraged Nurhasnisha Shamsuhaidi to investigate on a specific aspect and supervised the findings of this work. Nurhasnisha Shamsuhaidi carried out the experiment supported by Mohd Nizam Osman. Khairul Anwar Sedek contributed to the

https://doi.org/10.24191/jcrinn.v9i1

interpretation of the results. All authors discussed the results and contributed to the final version of the manuscript.

12. REFERENCES

Adwin, C. (2021). What is the best background color for a website? *Designerly*. https://designerly.com/what-is-the-best-background-color-for-a-website/

Alfayez, Z. H., & Hassan, I. M. (2022). Design and implement a web-based learning system to provide e-learning in the University of Basrah during crises. *IICETA 2022 - 5th International Conference on Engineering Technology and Its Applications* (pp. 277–282). https://doi.org/10.1109/IICETA54559.2022.9888328

Almaimoni, H., Altuwaijri, N., Asiry, F., Aldossary, S., Alsmadi, M., Al- Marashdeh, I., Badawi, U. A., And, A., & Alrajhi, D. (2018). Developing and Implementing WEB-based Online Destination Information Management System for Tourism. *International Journal of Applied Engineering Research*, *13*(10). https://www.ripublication.com/ijaer18/ijaerv13n10_42.pdf

Aud Tennøy, Lisa Hansson, Enza Lissandrello, Petter Næss, (2016). *Progress in planning*. https://doi.org/10.1016/j.progress.2015.05.002

Carol M. Barnum. (2021). *Usability testing essentials* (2nd ed.). Elsevier.

Chung, C.-C., Lin, Y.-C., Wang, Y.-C., Chen, T.-Y., Chen, C.-Y., Jiang, X., Lin, F.- Y., Weng, Y.-H., & Chang, Y.-J. (2022). CAMPUS: A university crowdsourcing platform for reporting facility, status update, and problem area information. Computer Supported Cooperative Work and Social Computing (pp. 59-62). https://doi.org/10.1145/3500868.3559447

Dalip, V., Yadav, A. L., & Joshi, A. (2022). Custom analytics module and admin panel for websites built in PHP (Laravel). *International Conference on Cyber Resilience, ICCR 2022*. https://doi.org/10.1109/ICCR56254.2022.9995942

Heim, S., Testor, D., Levkovskyi, B., Wittges, H., & Krcmar, H. (2022). fostering knowledge sharing in education-as-a-service communities: A learning management system for lecturers. *IEEE Global Engineering Education Conference, EDUCON* (pp. 1804–1813). https://doi.org/10.1109/EDUCON52537.2022.9766598

Li, X. (2021). Design of web-based information management system for ideological and moral quality evaluation in colleges and universities. *The 3rd International Conference on Internet Technology and Educational Informization, ITEI* (pp. 266 – 269). https://doi.org/10.1109/ITEI55021.2021.00068

Nurjanah, S., Santoso, H. B., & Hasibuan, Z. A. (2018). The user acceptance test of an "ICT adoption for education" framework. *ACM International Conference Proceeding Series* (pp. 129–133). ACM. https://doi.org/10.1145/3177457.3177481

Sriarunrasmee, J., & Anutariya, C. (2020). The development of one stop service online system based on user experience design and AGILE Method. *ACM International Conference Proceeding Series* (pp. 64–69). ACM. https://doi.org/10.1145/3377571.3377612

Stanford. (2020). *User Acceptance Testing | University IT*. https://uit.stanford.edu/pmo/UAT

Tiihonen, Juha, Felfernig, Alexander. (2017). An introduction to personalization and mass customization. *Journal of Intelligent Information System*, *49*, 1 – 7. https://doi.org/10.1007/s10844-017-0465-4

Zou, R., Wu, N., & Yu, Y. (2019). Design and implementation of a schedule integration management system based on web. *ACM International Conference Proceeding Series*. ACM. https://doi.org/10.1145/3358331.3358363

https://doi.org/10.24191/jcrinn.v9i1