

COMPUTER AIDED INSTRUCTIONAL MATERIAL (CAIM) IN LEARNING COMMON AILMENTS REMEDY

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Abstract

The developed application, titled "Computer Aided Instructional Materials (CAIM) in Learning Common Ailments Remedy," aims to improve students' knowledge of common ailments and their herbal remedies. Many students struggle with identifying appropriate herbal treatments for various conditions. To address this, the researchers created clearer modules that use Android technology to teach common ailments and plant-based remedies. The study's primary goal is to provide an efficient learning tool for the College of Nursing at Isabela State University, Echague Campus, offering students a portable reference for ailments and their remedies. The application features six key functions: an A-Z Common Ailments Dictionary, an A-Z Common Herbal Remedy list with preparation instructions, a Quick Search engine for ailments and herbs, quizzes (Pretest and Post-test), trivia on medical practices, and an "About Us" section with researcher information and references. The system was developed using Rapid Application Development (RAD) methodology and technologies like Java for coding, SQLite for the database, XML for layout and design, and CSS/HTML for display. The application was evaluated for information quality, usability, and portability. Results showed mean ratings of 4.45 for information quality, 4.71 for usability, and 4.575 for portability, all corresponding to "Agree." The overall system rating was 4.5325, indicating that users found the application both useful and easy to use.

INTRODUCTION

Nature has provided us with a diverse range of plants that have medicinal uses (Abdallah et.al.,2023). Herbal remedies have coexisted with humankind for centuries and are considered one of the oldest forms of healthcare (Qadir & Raja,2021). The use of plants, both traditionally and in modern times, has been widespread worldwide, with many cultures relying on them for the prevention and treatment of various ailments, though their effectiveness often varies and requires further research (Monib, 2024; Rizvi et al., 2022). Over the years, there has been a shift from synthetic drugs to herbal medicines, with many turning to natural remedies to address common ailments (Chaachouay & Zidane, 2024; Jamal,2023)

The specific learning gap in nursing education lies in the lack of accessible and comprehensive materials on common ailments and their remedies, which are crucial for nursing

students to manage patient care effectively (Ahmed & Tamim, 2025). Although students are expected to learn how to treat and alleviate common ailments, the limited availability of textbooks and the inaccessibility of online resources due to poor internet connections hinder their ability to acquire sufficient knowledge (Mbunge et al., 2022; Busari, 2021).

In the College of Nursing at Isabela State University – Echague Campus, students face difficulties in identifying the proper herbal remedies for common ailments. Despite instructors providing modules, the available resources remain inadequate, especially for remote training and medical missions. A survey conducted among students revealed that while they were generally satisfied with their instructors' teaching, the lack of resources hindered their learning, leading to a dependence on modules.

To address this gap, the researchers propose the development of a Computer-Aided Instructional Material (CAIM) on Common Ailments Remedy. This application will provide students with easily accessible information on common ailments, herbal remedies, and related resources. The system will also feature quizzes to engage students and assess their learning progress, aiming to enhance their understanding of herbal remedies. The goal is to offer a portable and interactive tool that improves both student knowledge and the teaching process.

METHODS

Research Design

Rapid Application Development (RAD) was employed by the researchers. A software development process that emphasizes fast prototyping over extensive planning. The usage of RAD to prepare for software development is linked to the actual creation of the application (Fauzi,2023).

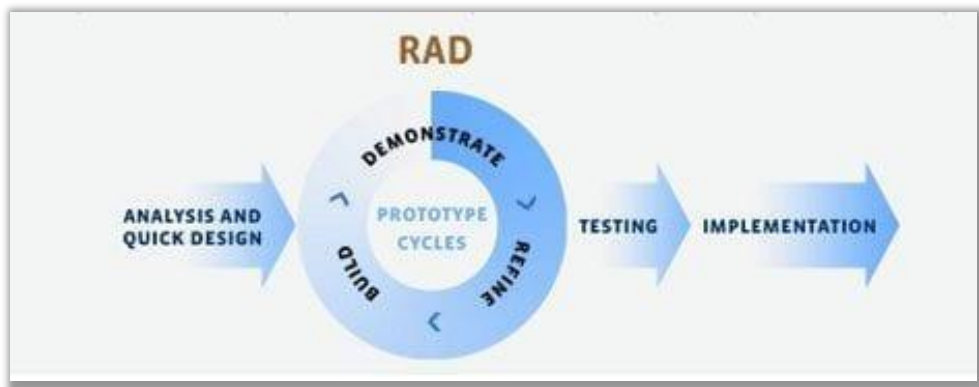


Figure 1. Rapid Application Development

Respondents and Locale of the Study

The study was conducted at the College of Nursing, Isabela State University, Echague Campus in Isabela, with a total of 62 respondents, consisting of 2 Nursing Faculty members and 60 Nursing students. Convenience sampling was used to select participants based on their availability and willingness to participate. The inclusion criteria for Nursing students required them to be currently enrolled in the College of Nursing, while Nursing Faculty members had to have at least one semester of teaching experience. The exclusion criteria included Nursing students who were not enrolled during the study period and faculty members who were not actively involved in teaching. The students were selected from various year levels, mainly from the second and third years, and prior exposure to herbal medicine was not a requirement, but was considered during data collection to understand their level of knowledge. Participants' access to devices capable of running the application was also checked. An informed consent form was signed by all participants before the study, explaining their voluntary participation and ensuring confidentiality. The application was evaluated by a panel of three IT experts, who were selected based on their qualifications with a Master's degree in Information Technology and five years of experience in software development and/or information system planning. These experts were chosen for their relevant experience in assessing the technical aspects of mobile applications.

Research Instrument

The evaluation of user acceptance was conducted in terms of Information Quality, Usability, and Portability. To assess Portability, the researchers utilized ISO 9126 standards. Usability was evaluated based on the ISO 9241-11:2018(en) guidelines, while Information Quality was measured using the methodology outlined in Vaziri's (2012) study, "A Questionnaire-Based Data Quality Methodology." These instruments were used to gather data on the system's performance and user feedback across these key dimensions.

Data Gathering Procedure and Analysis

The data for this study were collected through interviews and surveys conducted with nursing students and faculty from the College of Nursing at Isabela State University - Echague Campus. The goal was to assess user acceptance of the Computer-Aided Instructional Material (CAIM) in Common Ailments Remedy application. Interviews were carried out with a selected group of nursing students and faculty members. These interviews aimed to gather detailed feedback about their experiences with current learning resources, difficulties in identifying remedies for common ailments, and their thoughts on the CAIM application. The interview questions were open-ended, allowing participants to express their views freely. All interviews were recorded with consent and later transcribed for analysis. Alongside the interviews, a survey was distributed to a larger group of nursing students. The survey focused on Information Quality, Usability, and Portability. It used guidelines such as ISO 9126 for portability, ISO 9241-11:2018(en) for usability, and the methodology described in Vaziri 's study for Information Quality. The survey used Likert-scale questions to measure participants' satisfaction with the application, how easy it was to use, and whether the information provided was useful and accurate.

The data from both the interviews and surveys were analyzed using descriptive statistics. For the survey, mean scores were calculated for each category. The results were used to assess user acceptance of the application. The qualitative data from the interviews were analyzed using thematic analysis, identifying common themes and insights shared by participants. This approach helped provide a complete understanding of the CAIM application's effectiveness.

Ethical Considerations

This study adhered to ethical guidelines to protect participants' rights and well-being. Informed consent was obtained from all participants, who were fully informed of the study's purpose, their voluntary participation, and their right to withdraw at any time. The study was approved by the Research Panel Members, Program Chair, and College Dean at the College of Computing Studies, Information and Communication Technology (CCSICT), Isabela State University-Echague Campus. Data were securely stored, with access restricted to the research team, and personal identifiers were removed to ensure confidentiality. The development of the CAIM application followed ethical standards, with all health-related information carefully guided by the College of Nursing to ensure its accuracy and reliability. A medical disclaimer was provided, advising users to consult a healthcare professional before using any remedies, particularly if they have underlying health conditions, or are pregnant, breastfeeding, or on medications. Contraindication warnings for each remedy were included to help users make informed decisions. Citations from authoritative pharmacopeias and clinical sources supported the accuracy and reliability of the remedies presented.

RESULTS AND DISCUSSION

Design and Development of Computer-Aided Instructional Material (CAIM) in Common Ailments Remedy

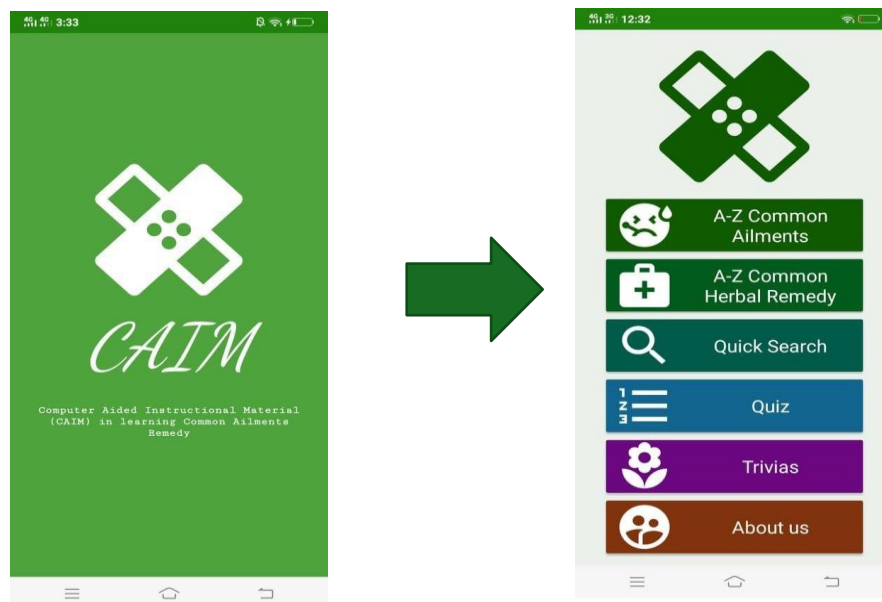


Figure 2. Screenshots showing the main screen of the Common Ailments Remedy App

Figure 2 shows the minimalist design of the main screen of the Common Ailments Remedy App. The application has six (6) menus: A-Z Common Ailments, A-Z Common Herbal Remedy, Quick Search, Quiz, Trivia and About Us. The application was designed using XML (Extensible Markup Language) and it was developed through Sublime with the use of Java, HTML, (Hypertext Markup Language), CSS (Cascading Style Sheet) and SQLite for database. The main function of the application was to provide a portable repository module for learning common ailments remedy.

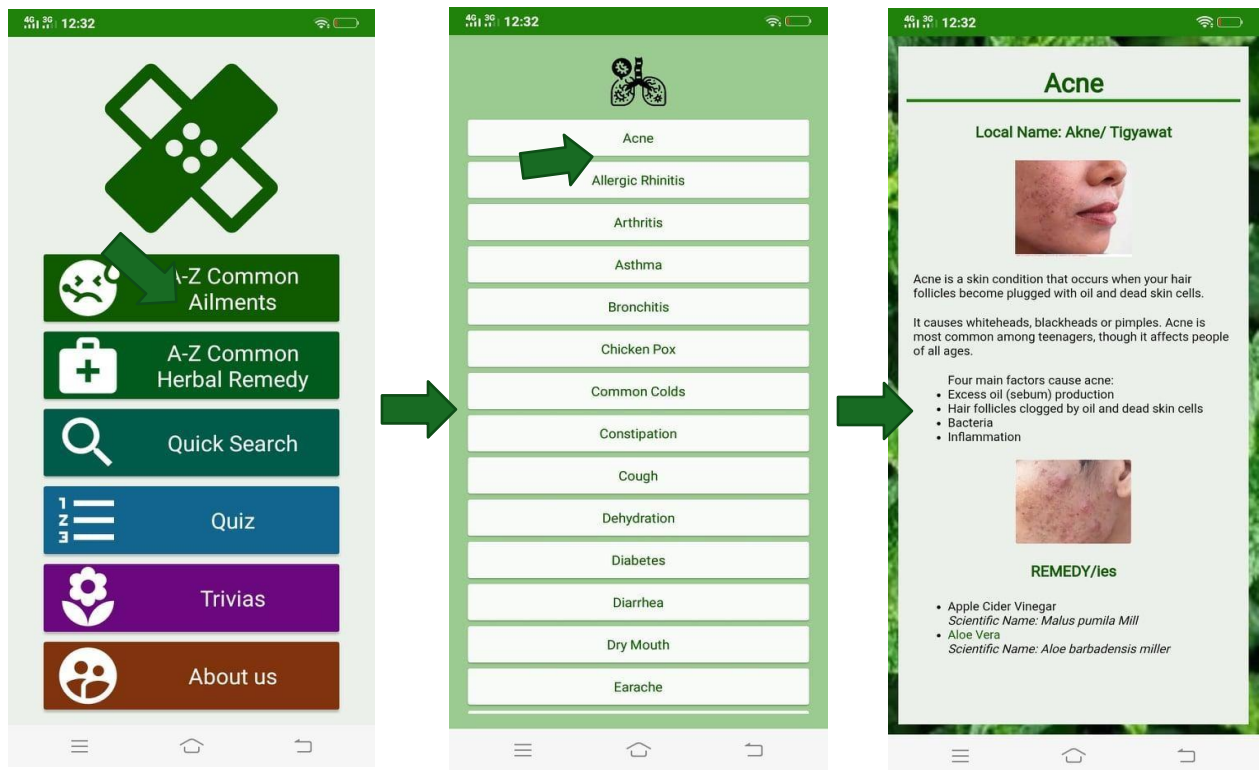


Figure 3. Screenshots showing how Common ailments and their remedies are listed and presented in the application

Figure 3 shows the screenshots of the main screen on the left, the list and presentation of A-Z Common ailments information at the center and the selected ailment on the right. Using these features of arranging common ailments from A-Z made the presentation of the topics organized, and the user can easily look for the topic. This function of the system allows users to learn about common ailments and their remedies even without an internet connection.

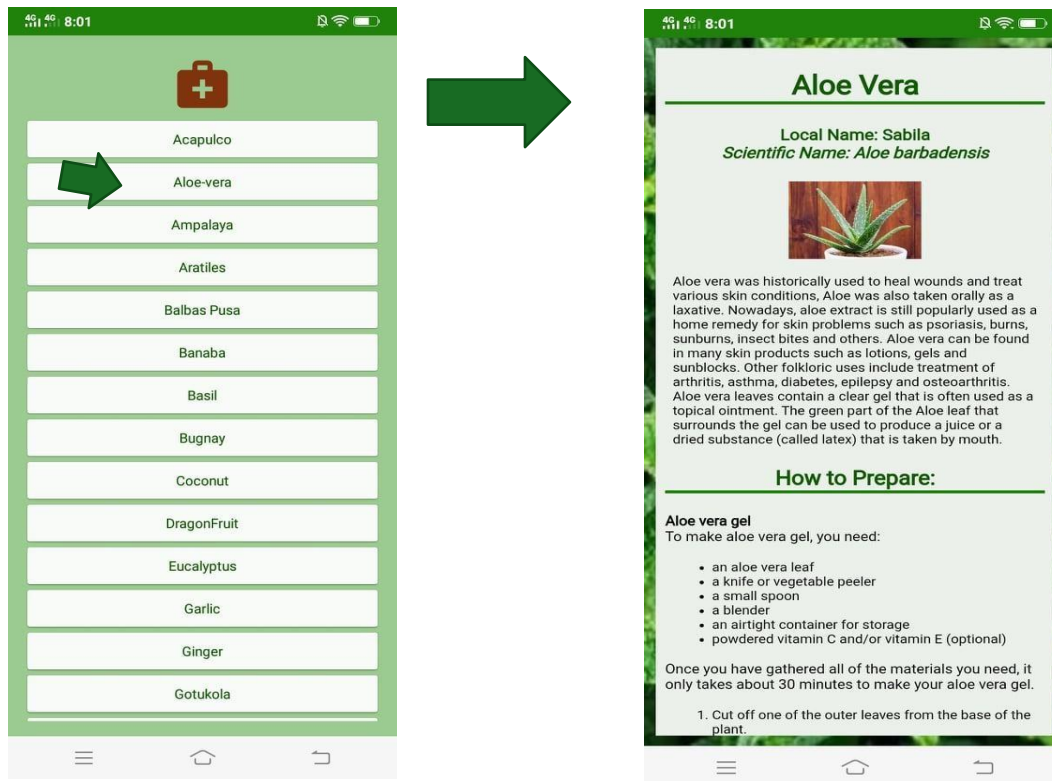


Figure 4. Screenshots showing how herbal remedies are listed and presented in the application

Figure 4 shows the screenshots of how the herbal remedies are listed and presented in the application. The first image was the list of herbal remedies arranged in alphabetical order for a more functional reading. The second image shows the sample output upon selecting one button. This function of the system will allow users to gain knowledge about herbs and their uses.



Figure 5. Screenshots showing the Quick Search function of the application

Figure 5 shows how the search function works. The first figure is where a user may enter a desired search inquiry on the application. The second image shows related words to the searched word. And the last figure shows the result of the search word of the user. Through this function, the user can easily find a herbal remedy for a certain ailment by just typing the common ailment name or vice versa.



Figure 6. Screenshots showing the Quiz function of the application

Figure 6 shows the screen of the quiz feature of the application. The application is composed of a pre-test and a post-test. The sets of questionnaires are the same to measure the learning of the user.

Users Evaluation Results in Acceptability

Table 2. Overall Result

Criteria	Rating	Qualitative Rating
Information Quality	4.45	Agree
Usability	4.71	Strongly Agree
Portability	4.58	Strongly Agree
Grand Mean	4.58	Strongly Agree

Table 2 shows the overall rating of the application for Information Quality, Usability, and Portability. The total grand mean of 4.58, which corresponds to "Strongly Agree," indicates that users gave a positive overall evaluation of the application. Although the mean score is not exceptionally high, it suggests strong user acceptance. Specifically, users strongly agreed that the application provided high-quality information and was usable in delivering sufficient details about common ailments and their remedies. The portability of the application was also rated positively, with users agreeing that it worked well across different devices. These ratings suggest general satisfaction with the application's functionality, though the grand mean of 4.58 shows that users endorsed the app without giving it the highest possible score. Future improvements could focus on refining specific features to make the application even more appealing.

To ensure the reliability of the evaluation, we calculated the internal consistency of each criterion using Cronbach's α . For the Information Quality scale, the Cronbach's α was 0.92, indicating excellent consistency. The Usability scale had a Cronbach's α of 0.90, also showing high reliability. Finally, the Portability scale's Cronbach's α was 0.88, indicating a good level of consistency. These results confirm that the scales used were reliable and accurately measured the application's quality.

In addition to the quantitative ratings, we gathered qualitative feedback from users. Common themes included appreciation for the clarity and accuracy of the information, the ease of use, and the smooth performance across devices. Some users suggested small improvements to the visual design to make the app more attractive and easier to navigate. These suggestions can be used for future updates to improve user experience.

Comparison to Computer-Assisted Instruction (CAI)/Usability Research

Table 3. Comparison to Computer-Assisted Instruction (CAI)/Usability Research

Criteria	Current Study Findings	CAI/Usability Research Findings	Interpretation/Comparison
Information Quality	Average Rating: 4.45 (Agree)	Boulos et al. (2018): Clear, relevant, and accurate information is crucial for mobile health apps.	Both studies emphasize the importance of clear, accurate information in ensuring a positive user experience.
Usability	Average Rating: 4.71 (Strongly Agree)	Nielsen (2020): Usability plays a key role in user satisfaction with digital tools.	The high usability rating (4.71) aligns with the findings from Nielsen's research, which stresses ease of use.
Portability	Average Rating: 4.575 (Strongly Agree)	Kushendriawan et al. (2021): Cross-device functionality is critical for mobile applications.	Portability is also highly valued in the Halodoc study, with users appreciating its cross-device functionality.
Overall User Satisfaction	Grand Mean: 4.58 (Strongly Agree)	Kushendriawan et al. (2021): The Halodoc app ranked as "Good" based on UEQ benchmarks.	Overall satisfaction in our study is consistent with other usability studies, indicating strong acceptance.
Content Validity	CVI: 0.85 (Expert Review)	Rozi et al. (2023): Used expert reviews and ISO 9241 for content validity.	Both studies ensured strong content validity, confirming the accuracy and relevance of the evaluation tools.
Internal Consistency	Cronbach's α : 0.92 (Information Quality), 0.90 (Usability), 0.88 (Portability)	Yáñez-Pérez et al. (2025): High internal consistency for the SUS and UEQ scales.	High internal consistency in both studies indicates reliable measurement tools for evaluating usability.
Generalizability	Limited by a convenience sample (n=62)	Kushendriawan et al. (2021): Larger sample (96) across different demographic groups.	Convenience sampling limits generalizability. Future studies should use more diverse samples to improve this.
Limitations	Self-report bias, Novelty effect, Short exposure, No control group	Rozi et al. (2023): Same limitations of self-report, convenience sample, and short exposure.	All studies share common limitations (e.g., self-report bias, short exposure), which should be addressed in future work.
Suggested Improvements	Search feature visibility, Pricing clarity, Navigation optimization	Halodoc study: Search functionality and clarity of pricing need improvement.	Improvement suggestions in both studies focus on enhancing search features, clarity, and navigation.

The table compares the findings of this study with other research on usability and CAI applications. The study's results on Information Quality (4.45) are similar to Boulos et al. (2018), who found that users prefer clear and accurate information. Both studies show that providing reliable content is important for users. The Usability score of 4.71 in this study is consistent with Nielsen (2020), where ease of use is a key factor in ensuring user satisfaction. High usability ratings in both studies suggest that users value applications that are easy to navigate. The Portability score of 4.575 also matches the findings of Kushendriawan et al. (2021), where users expect mobile applications to work well across different devices. The Grand Mean score of 4.58 in this study indicates strong overall satisfaction, similar to Kushendriawan et al. (2021), who rated their app as "Good." While this is positive, both studies note that there is still room for improvement to reach the highest ratings. However, like other studies, this research has some limitations. Convenience sampling, self-report bias, and short exposure time may have affected the results. The novelty effect, where users may give higher ratings to new apps, is also a factor. To improve future research, using a more diverse sample and longer exposure would provide more reliable results. Lastly, both this study and Kushendriawan et al. (2021) suggest improving search functions and pricing clarity in the application. These findings show that many mobile apps can be improved by addressing common usability issues to enhance user experience.

CONCLUSION AND FUTURE WORKS

Based on the development and evaluation of the Computer-Aided Instructional Material (CAIM) for learning about Common Ailments Remedy, the researchers concluded the following:

The app has shown the ability to engage students by offering more than just text. It includes images and videos, which help to hold students' interest. The app goes beyond traditional books by including pre-tests and post-tests. This allows users to compare their knowledge before and after using the app. It also automatically checks answers and gives explanations. Unlike books or online resources, the app can be used without an internet connection, making it a portable learning tool. The search function also makes it easy for users to quickly find topics. The evaluation results, which focused on information quality, usability, and portability, showed strong acceptance from students, with a grand mean score of 4.5325. This suggests that students strongly agree that the app is effective and useful for learning about common ailments and herbal remedies.

For future research, the researchers recommend several improvements. Adding a game feature could make the app more engaging and interactive. Including First Aid tutorials would also add value by providing important medical knowledge. The researchers also suggest adding videos on making herbal remedies so users can see the process. Finally, adding images to the Trivia feature could encourage users to explore more topics and interact with the content.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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