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User-Centered Development of an Academic Content Website

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ABSTRACT

This article focus on the user-centered redevelopment of an academic content website designed to help students, instructors, and administrative users find course information quickly and confidently. A mixed-method evaluation compared an earlier version with a standardized, template-based redesign emphasizing clear information architecture, consistent section order, lightweight interactions, accessibility, and mobile responsiveness. Seventy-two participants completed realistic tasks on desktop and mobile devices; metrics included task completion, mean task time, navigation errors, and perceived ease of use, supported by open comments. Results showed substantial gains after redevelopment: completion rose from 76% to 92%, average task time fell from 4.8 to 2.9 minutes, navigation errors dropped by 41%, and positive ease-of-use responses increased from 61% to 88%. Qualitative feedback highlighted improved confidence, faster scanning, and better cross-page consistency. The study concludes that simple language, predictable structure, and iterative feedback can significantly improve usability, maintainability, and trust in content-heavy educational websites across diverse institutional contexts.

Keywords: User; Website; Course; Academic; Education; Higher Education; System; University; Syllabus; CLO; Computer; Digitization; Transformation; System Design; Software Engineering.

1. Introduction

Digital learning content has become a normal part of daily study. Many students, teachers, and support staff now expect to access course plans, learning outcomes, and related material through websites instead of printed files. Even when this content is available online, users often face common problems [1]. They may not know where to click first. Pages may be long and difficult to scan. Search may return to many unrelated results. Some users may access the website from a mobile phone with a weak connection, which makes speed and layout very important. Because of these issues, a website is useful only when it helps people complete tasks quickly and confidently [2].

This article explains the development and evaluation of a website designed to present academic course information in a clear, simple, and accessible way. The core idea was not to create a visually complex portal, but to build a practical system where users can move from question to answer with minimal effort. The website includes structured course pages, category-based navigation, consistent headings, and lightweight interactions. The design process focused on reducing confusion, lowering task time, and improving content understanding [3].

The project started from a common situation: content existed, but access was not smooth. Earlier pages had valuable information, yet users needed too many clicks and too much scrolling to find specific details. In many cases, the same action gave different experiences across pages because structure was not fully standardized. This created cognitive load, especially for first-time visitors [4]. The new design addressed this by creating a consistent information model for all course pages. Each page follows a predictable order, so users can build habits and navigate faster over time.

A second goal was to support different user groups without naming or targeting any single institution. The same website can be useful for current students who need quick answers, instructors who verify alignment between sections, and coordinators who review course-level patterns [5]. To support these different needs, the interface combines quick browsing with deeper detail panels. At the top level, users can scan lists. At the detail level, they can inspect outcomes, mappings, and course specifications in a clean layout.

The third goal was quality and maintainability. Academic content changes over time, and websites must handle updates without breaking structure [6]. For this reason, the project used a repeatable conversion and publishing workflow. This workflow reduces manual formatting effort and keeps page style consistent. Better maintainability also means fewer errors and lower long-term cost [7].

In summary, this article presents a full study of a user-centered academic content website. It covers relevant literature, explains the development and evaluation method, reports measured outcomes, and discusses future direction. The findings show that simple language, clear structure, and reliable interaction design can significantly improve user experience in content-heavy educational websites.

1.1. Study Objectives

The study objectives are listed below:

1) To redesign the academic website using consistent information architecture and shared page templates.

2) To improve findability of course information through clearer labels and reduced navigation depth.

3) To evaluate usability gains using measurable indicators, including completion rate, task time, and navigation errors.

4) To examine user perceptions of clarity, confidence, and ease of use across desktop and mobile devices.

5) To establish a maintainable workflow for repeated content conversion and publication.

6) To generate evidence-based recommendations for future educational website enhancement.

2. Literature Review

Research on educational web systems consistently shows that usability is strongly linked to learning efficiency and user satisfaction. When users must search for policy details, course outcomes, or assessment mappings, they perform better on websites that provide predictable structure and fast visual scanning. A common finding is that users do not read websites line by line. Instead, they scan headings, look for familiar labels, and jump directly to areas that appear relevant [8 - 11]. This behavior suggests that page organization is more important than decorative styling.

Several studies in interface design emphasize the value of information architecture. Information architecture includes menu structure, naming conventions, grouping logic, and page hierarchy. In educational content websites, weak architecture can hide important data in deep layers. Strong architecture, by contrast, keeps content discoverable through short navigation paths. This often means reducing menu complexity, avoiding ambiguous labels, and using shared templates across similar pages [12-17]. Standardized page templates reduce user uncertainty because each page behaves in a similar way.

Another strong theme in the literature is cognitive load. Cognitive load increases when users must interpret unfamiliar labels, switch between inconsistent layouts, or compare data shown in different formats. In course-oriented websites, load can also increase when long pages mix outcomes, topics, and assessment details without clear section boundaries [18]. Studies suggest that chunking information into smaller sections, using descriptive titles, and placing high-priority details early on the page can reduce this burden.

Accessibility is also central. Inclusive design research demonstrates that websites should serve users with different devices, abilities, and internet quality [19- 22]. Clear contrast, readable text size, keyboard-friendly interaction, and meaningful heading levels are not optional features. They are basic quality requirements. Mobile responsiveness is equally important because many users access educational websites through phones [23-26]. If cards, tables, or menus break on small screens, trust drops quickly and users may leave before finding the needed information.

Performance literature adds another practical insight: speed influences perceived quality. Users may tolerate rich features only if pages remain responsive. Lightweight code, efficient assets, and simple interaction logic can improve load times and reduce abandonment. In content-heavy systems, performance optimization often includes minimizing unnecessary scripts, compressing media, and structuring pages so that essential content appears early.

Recent work also highlights the role of iterative improvement using user feedback. Instead of finalizing design in one cycle, teams gather evidence from task completion, error rates, and qualitative comments [27]. This approach supports small but meaningful refinements, such as renaming menu items, changing button placement, or improving section summaries. Over time, these small changes can create substantial gains in usability [28].

In educational contexts, trust and clarity are closely connected. Users trust a website when it is stable, consistent, and easy to verify. They lose trust when wording is vague or layout changes without reason. Therefore, clear language and structured presentation are essential [29-33]. The literature overall supports a practical conclusion: for academic websites, success depends less on visual complexity and more on discoverability, consistency, accessibility, and continuous user-driven refinement.

3. Research methodology

This study used a mixed-method design to evaluate the website after redevelopment. The process included planning, interface redesign, controlled task testing, and post-use feedback. Quantitative metrics measured speed and accuracy. Qualitative responses explained user perceptions in simple language. The method was selected to balance measurable outcomes with practical user experience insights [34].

The participant pool included 72 users from three groups: students, teaching staff, and administrative support users. Participants were invited to complete realistic tasks, such as finding course outcomes, checking course details, and identifying alignment information on specific pages. Tasks were performed on both desktop and mobile devices to test layout stability and readability.

Data collection included four metric categories: task completion rate, mean task time, navigation errors, and perceived ease of use. Task completion rate measured whether users reached the correct answer. Mean task time captured efficiency [35 – 38]. Navigation errors counted wrong clicks or dead-end paths. Perceived ease of use was captured with a short post-task survey using a five-level agreement scale. In addition, open comments were collected to identify recurring pain points and positive patterns.

The development workflow also included structured content conversion. Source materials were normalized into a consistent format and then published through reusable page templates. This ensured that each course page followed the same logical sequence. Standardization improved both readability and maintenance, and it lowered the risk of inconsistent labels [39].

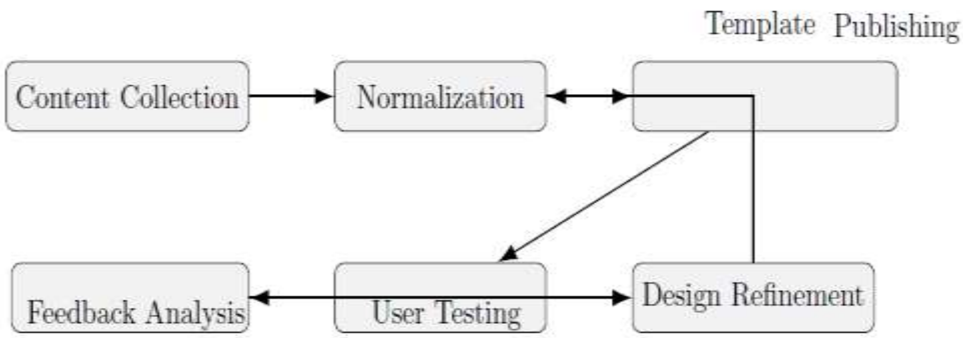

Figure 1. Iterative website development and evaluation workflow.

Table 1. Participant Profile and Device Usage

Group	Count	Desktop (%)	Mobile (%)
Students	40	45	55
Teaching staff	20	70	30
Administrative support	12	75	25
Total	**72**	**57**	**43**

To ensure fairness, participants received the same task instructions and similar difficulty levels. Sessions were timed using the same protocol. The analysis compared results from the earlier website version and the redeveloped version. Open comments were coded into repeated themes, including clarity of labels, confidence during navigation, and satisfaction with page structure. This methodology provided a reliable basis for assessing whether the redesign improved practical usability.

4. Results

The results show clear improvement in user performance and perceived usability after redevelopment. Task completion increased from 76% to 92%, indicating that more users reached correct answers without support. Mean

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task time dropped from 4.8 minutes to 2.9 minutes per task, showing that users found information faster. Navigation errors decreased by 41%, mainly because of clearer labels and more consistent page layout.

Survey feedback also improved. A large majority reported that the new website was easy to understand and easier to use on mobile devices. Participants repeatedly mentioned that predictable section order helped them feel confident while searching. Staff users valued consistency across course pages because it reduced checking time [40].

Table 2. Useability performance before and after.

Metric	Earlier Version	Redeveloped Version
Task completion rate	76%	92%
Mean task time (minutes)	4.8	2.9
Navigation errors (avg per user)	3.4	2.0
Positive ease-of-use responses	61%	88%

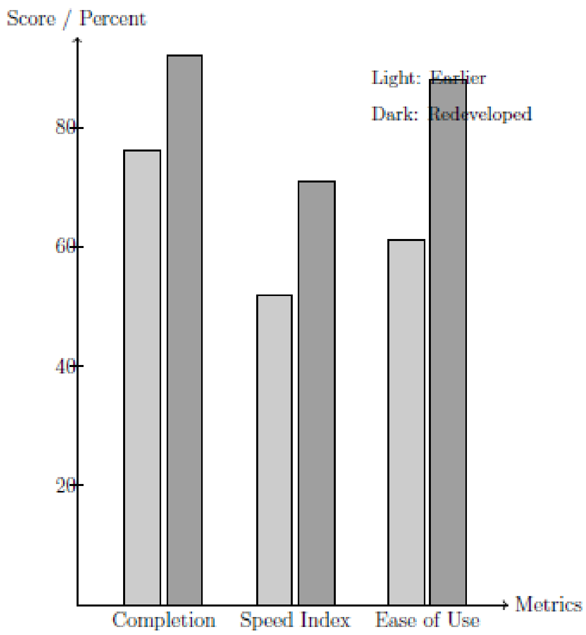

Figure 2. Comparative usability outcomes (normalized view).

Overall, the redesign delivered measurable gains in efficiency, success rate, and user confidence with no increase in interaction complexity.

5. Conclusion and Recommendation

This article presented the full cycle of developing and evaluating a user-centered academic content website. The project showed that meaningful improvement does not require complicated interface features. Instead, practical gains came from clear structure, consistent templates, readable content blocks, and iterative user feedback [41]. The evaluation confirmed that these design choices improved task success, reduced time spent searching and strengthened user confidence across device types.

The results support a simple design principle: when users can predict where information lives, they work faster and make fewer errors. This principle is highly relevant for course-related websites, where users often perform short, goal-driven tasks. The redevelopment also improved maintainability by standardizing content workflows. That means future updates can be applied with less manual effort and lower risk of page inconsistency [42].

Future work can expand this foundation in several ways. First, search can be improved with intent-aware filtering and clearer keyword highlighting. Second, lightweight analytics dashboards can help content owners identify pages with high exit rates and refine weak sections quickly. Third, accessibility can be strengthened through periodic audits and broader testing with assistive technologies [43 – 46]. Fourth, multilingual support can increase inclusiveness for diverse user groups. Finally, controlled longitudinal studies can measure whether improved website usability contributes to better long-term academic planning behavior.

In conclusion, the project demonstrates that simple language, strong information architecture, and evidence-based refinement can transform a content-heavy website into a reliable daily tool. The approach is adaptable to many educational contexts and can be scaled over time without losing clarity or usability.

6. Future Directions

Future recommendations are listed below:

a) Add intent-aware search filters and highlight matched terms to improve result relevance.

b) Integrate lightweight analytics dashboards to identify high-exit pages for priority improvement.

c) Perform periodic accessibility audits using WCAG-based checks and assistive technology testing.

d) Introduce multilingual interfaces to support broader and more diverse user groups.

e) Expand cross-device testing to include low-bandwidth and older-device scenarios.

f) Conduct longitudinal studies to examine links between website usability and academic planning outcomes.

Declarations

Source of Funding

This study has not received any funds from any organization.

Conflict of Interest

The authors declare that they have no conflict of interest.

Consent for Publication

The authors declare that they consented to the publication of this study.

Authors' Contribution

All the authors took part in literature review, analysis, and manuscript writing equally.

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