



Next-Gen Balaghah Learning: Integrating Web Technology to Drive Learning Mobility in Higher Education

تعليم البلاغة للجيل القادم: دمج تكنولوجيا الويب لتعزيز التنقل التعليمي في التعليم العالي

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ABSTRACT

This study aims to design and test the feasibility of using the betabalaghah.web.id/auth web-based Balaghah learning application to support student learning mobility and self-regulated learning at UIN Sayyid Ali Rahmatullah Tulungagung. Utilizing Borg and Gall's Research and Development (R&D) framework modified into six stages by Ainin, the study conducted a needs assessment, product engineering, and empirical feasibility evaluations. Feasibility testing through expert judgment revealed exceptionally high validity levels: content validity at 90% (Highly Valid), visual interface design at 86% (Highly Valid), and software engineering at 92% (Highly Valid), corroborated by end-user usability testing categorized as Highly Practical. The research novelty lies in integrating a responsive, cross-platform web architecture with micro-learning modules for classical linguistic content (turats) without requiring app installation. The study's primary contribution is delivering a functional web-based learning prototype that enables student-centered autonomous learning. Theoretically, this study advances digital Arabic language pedagogy; practically, it provides a flexible, ubiquitous learning solution that facilitates self-paced study unrestricted by temporal or spatial constraints, directly supporting national strategic goals (RIRN and Asta Cita) to cultivate superior human resources for the Industry 5.0 era.

Keywords: Web Application, Balaghah Learning, Learning Mobility, Ubiquitous Learning, Innovation.

مستخلص البحث

تهدف هذه الدراسة إلى تصميم وتقييم صلاحية وأثر استخدام تطبيق الويب لتعليم علم البلاغة عبر النطاق betabalaghah.web.id/auth في تعزيز التنقل التعليمي والتعلم الذاتي لدى طلاب جامعة سيد علي رحمة الله الإسلامية الحكومية تولونغ أجونج. باستخدام منهج البحث والتطوير لنموذج بورغ وغال المعدل إلى ست مراحل بواسطة عيتين. قام البحث بتحليل الاحتياجات وتصميم المنتج وإجراء التقييمات الميدانية. أظهرت نتائج تقييم الخبراء مستويات عالية جداً من الصلاحية: حيث بلغت صلاحية المادة العلمية ٩٠٪ (صالح جداً)، وتصميم الواجهة البصرية ٨٦٪ (صالح جداً)، وهندسة البرمجيات ٩٢٪ (صالح جداً)، وتعزيزت باختبار الجاذبية والتطبيق لدى المستخدمين بدرجة "عالي العملية". تكمن أصالة هذا البحث في الدمج بين هندسة الويب الاستجابية متعددة المنصات وتراجم التراث البلاغي في شكل وحدات تعليمية مصغرة دون الحاجة لتثبيت تطبيقات إضافية. وتتمثل المساهمة الرئيسية للدراسة في تحويل تعليم البلاغة التقليدي القائم على الإلقاء إلى نظام بيئي تعليمي ديناميكي يركز حول الطالب. وتثري الآثار النظرية لهذا البحث مناهج تعليم اللغة العربية الرقمية، بينما تقدم الآثار العملية حلاً مرناً للتعليم الشامل يسهل التعلم الذاتي دون التقيد بالزمان والمكان، مما يدعم تحقيق الأهداف الاستراتيجية الوطنية لتأهيل الكوادر البشرية الفائقة في عصر الثورة الصناعية ٥.٠.

الكلمات المفتاحية: تطبيق الويب، تعليم البلاغة، التنقل التعليمي، التعلم الشامل، الابتكار.

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INTRODUCTION

In alignment with Indonesia's Asta Cita national agenda – specifically the fourth pillar focusing on strengthening human resources, science, technology, and education – Islamic Religious Higher Education Institutions (PTKI) play a pivotal strategic role. PTKIs function not only as academic hubs but also as moral and character-building ecosystems for the younger generation (Abuhmaid, 2020). Operating within the Society 5.0 framework, modern PTKIs are challenged to integrate religious values with 21st-century technological innovations to cultivate spiritually grounded and intellectually adaptive graduates (Azhari et al., 2021; Imron, 2022; Wicaksono et al., 2022).

Despite this strategic imperative, practical educational challenges persist at the institutional level. Observations among Arabic Language Education (PBA) students at UIN Sayyid Ali Rahmatullah Tulungagung reveal a concerning trend: low student participation in supplementary learning programs designed to translate theoretical knowledge into practical skills. Factors such as time constraints, limited resources, and conventional pedagogical methods often hinder active engagement. Addressing these bottlenecks necessitates a digital transformation that redefines how traditional subjects are delivered, ensuring higher flexibility and student involvement (Ayed et al., 2021; Suherman et al., 2023).

The integration of digital technology in contemporary education has opened new pathways for redefining learning spaces. Astutik and Muzakkir (2020) emphasize that digital interventions significantly enhance student motivation and engagement (Astutik Muzakkir, 2020). Within the scope of Arabic studies, Balaghah (Arabic rhetoric) – a core discipline traditionally taught in Arabic Language and Literature departments – often faces severe structural limitations (Musyafaah, 2021). Typically confined within rigid classroom hours, traditional Balaghah instruction frequently leads to student fatigue and a superficial grasp of aesthetic Arabic texts due to the lack of interactive media and flexible study spaces.

To bridge this gap, the concept of Learning Mobility and Mobile-Assisted Language Learning (MALL) emerges as a vital solution. Modern scholarship highlights that digital web-based applications enable ubiquitous learning, allowing students to transcend physical boundaries (Abdurrokhim et al., 2022; Aisah et al., 2021; Amri et al.,

2022). While digital applications are widely used in general language learning, existing research predominantly focuses on basic Arabic grammar (Nahw/Sarf) or introductory rhetorical theory, leaving interactive stylistic features largely unaddressed. Consequently, a distinct state-of-the-art gap remains: comprehensive technological integration specifically tailored for advanced Balaghah pedagogy—incorporating practical elements such as poetic simulation (saja'), public speaking (khitobah), and rhythmic memorization (jinas)—remains largely underexplored. This research addresses this gap by proposing the development of the BETA web application (accessible via <https://betabalaghah.web.id/>) using a streamlined six-step Borg and Gall Research and Development (R&D) framework.

To address these empirical and pedagogical challenges, this study formulates two key research questions: (1) how is the web-based Balaghah learning application developed to enhance student learning mobility, and (2) what is the level of feasibility and validity of the developed application? Consequently, the primary objective of this research is to design and develop an effective web-based Balaghah application that substantially elevates students' learning mobility and active engagement. Specifically, this study aims to comprehensively describe the development process of the web-based Balaghah application and to evaluate its feasibility, thereby creating a dynamic, adaptive, and technology-driven learning ecosystem in higher education.

RESEARCH METHOD

This study employs a Research and Development (R&D) design aimed at creating an educational product and evaluating its feasibility in a digital learning context (Cresswel, 2005; Fitri & Haryanti, 2020; Hamzah, 2021). Grounded in the Borg and Gall model, this study adapts a streamlined six-stage operational workflow based on Ainin's (2013) framework to optimize resources without compromising scientific rigor, comprising needs analysis, learning material and web application development, initial field testing with expert judgment, primary revision, secondary product testing with target users to evaluate usability, and final refinement. Unlike inferential experimental designs, this R&D study utilizes targeted evaluation groups for product validation and usability testing (Sugiyono, 2019). The research participants consist of three expert evaluators selected via purposive sampling based on their academic credentials (Dr. Nurul Musyafa'ah, M.Pd.I. for content, Dr. Mohamad Fathoni, M.Pd.I. for interface design, and Dr. Ahmad Makki Hasan, M.Pd. for software engineering) and 30

undergraduate Arabic Language Education students at UIN Sayyid Ali Rahmatullah Tulungagung selected through convenience sampling for small-group usability trials.

Data were collected using observation guides, semi-structured interviews, and evaluation questionnaires utilizing a 5-point Likert scale ranging from 1 for Very Poor to 5 for Very Good adapted from Abdussomad (Abdussamad, 2022). The expert validation instruments assessed content accuracy (8 items), interface design (7 items), and software engineering (7 items), with content validity verified through expert consensus. Meanwhile, the usability questionnaire comprised 10 items assessing operational ease and perceived support for autonomous learning routines.

Quantitative data from the questionnaires were analyzed by calculating the percentage score of feasibility, determined by dividing the total empirical score by the maximum ideal score and multiplying the result by one hundred percent. The resulting percentages were interpreted using Abdussamad criteria: 81 to 100 percent for Highly Valid or Practical, 61 to 80 percent for Valid or Practical, 41 to 60 percent for Fairly Valid, and 40 percent or below for Invalid or Impractical (Abdussamad, 2022).. Meanwhile, qualitative feedback from observations, open-ended comments, and interviews were analyzed using the interactive data condensation, display, and conclusion-drawing model of Miles, Huberman, and Saldaña (Aminah, 2019).

RESULT AND DISCUSSION

Result

Process of Developing the Web-Based Balaghah Learning Application to Enhance Student Learning Mobility

The development process followed the six-step R&D framework proposed by Prof. Moh. Ainin, beginning with a structured needs assessment. Observations and semi-structured interviews with lecturers and students revealed that traditional Balaghah instruction relies heavily on printed textbooks and physical classrooms, restricting student learning mobility (Amalia et al., 2022; Musyafa'ah et al., 2026). To address this limitation, curriculum and literature analyses were conducted to establish the conceptual foundation and technical specifications for a responsive web platform hosted at betabalaghah.web.id/auth.

The second stage focused on material and product development, translating the specifications into a functional prototype. Instructional materials were restructured into digital-friendly modules with concept maps, contextual examples, and interactive

exercises suitable for autonomous study. Concurrently, software engineering for betabalaghah.web.id/auth established the database architecture, user interfaces, and secure user authentication within the /auth directory, utilizing responsive web design to ensure cross-device accessibility.

In the third stage, the prototype underwent initial field testing and expert validation. Three domain experts were selected: Dr. Nurul Musyafa'ah, M.Pd.I. (content accuracy and depth), Dr. Mohamad Fathoni, M.Pd.I. (visual design, layout, and typography), and Dr. Ahmad Makki Hasan, M.Pd. (software engineering, domain stability, and security). Quantitative scores and qualitative feedback confirmed the platform's initial theoretical and technical feasibility.

The fourth stage involved the first revision phase to systematically eliminate identified deficiencies. Content refinements addressed Arabic textual accuracy and diacritical marks (harakat). Visual adjustments improved layout contrast, font hierarchy, and mobile readability. Simultaneously, technical optimizations resolved code bugs, improved loading speeds, and verified responsive layouts across mobile viewports, resulting in a refined prototype for usability testing.

The fifth stage executed user usability testing with a target cohort of university students. Participants operated betabalaghah.web.id on personal devices (smartphones, tablets, and laptops) to simulate autonomous mobile learning. Usability questionnaires categorized student responses as "Practical" to "Highly Practical," empirically demonstrating that the platform is user-friendly, functionally intuitive, and supportive of flexible learning mobility.

The final stage encompassed product refinement and limited dissemination. Qualitative user feedback guided final interface polishing, such as optimizing mobile line spacing and button responsiveness. Limited dissemination was then executed by providing lecturers and students with full operational access to betabalaghah.web.id alongside operating manuals, successfully completing the six-stage R&D workflow.

through post-evaluation proofreading. The clarity of illustrative examples scored 13/15 (86.67%), leading to the addition of more contextual examples in the Ilm al-Badi' module. Overall, the material validation confirms that the digitized content is academically sound for independent study.

Visual interface validation by Dr. Mohamad Fathoni, M.Pd.I.I. achieved an empirical score of 43 out of 50 (86%, "Highly Valid"). This rating confirms that the platform's visual design meets high standards of digital ergonomics and visual appeal across mobile and desktop interfaces.

For specific design indicators, typography and readability scored 13/15 (86.67%), leading to larger base font sizes for mobile screens via responsive CSS. Aesthetics, layout, and color contrast scored 17/20 (85.00%), which was enhanced by sharpening call-to-action button contrast. Navigation usability scored 13/15 (86.67%), prompting the addition of active-state indicators on navigation menus. These refinements ensured an ergonomically comfortable visual interface for prolonged study sessions.

Technical validation by Dr. Ahmad Makki Hasan, M.Pd. yielded an empirical score of 46 out of 50 (92%, "Highly Valid"). This confirms high system stability, security, and cross-device responsiveness for the web application infrastructure at betabalaghah.web.id/auth.

In terms of technical indicators, authentication security (/auth) scored 14/15 (93.33%), supplemented by an integrated password recovery workflow. System performance scored 14/15 (93.33%), which was further optimized via image asset compression and server caching. Responsive navigation scored 18/20 (90.00%), demonstrating flawless cross-browser compatibility. Collectively, content, design, and technical validations confirm that the application is fully feasible, valid, and reliable for supporting student learning mobility.

Table: Expert Validation Results of the BETA Web-Based Balaghah Application

Validation Aspect	Evaluation Indicators	Max Score	Actual Score	Percentage (%)	Feasibility Category	Revision Recommendations	
Instructional Material (Expert: Dr. Nurul Musyafa'ah, M.Pd.I.)	Curriculum alignment with CPL (Bayan, Ma'ani, Badi')	15	15	100%	Highly Valid	None (retained as is)	
	Substantive accuracy of Balaghah rules	20	17	85.00%	Highly Valid	Corrected diacritical (harakat)	minor errors

Validation Aspect	Evaluation Indicators	Max Score	Actual Score	Percentage (%)	Feasibility Category	Revision Recommendations
	Clarity of illustrative examples	15	13	86.67%	Highly Valid	Added more contextual examples in <i>Ilm al-Badi'</i>
Subtotal Material		50	45	90.00%	Highly Valid	Minor Revision
Visual Interface Design	Typography and font readability	15	13	86.67%	Highly Valid	Enlarged base font sizes for mobile screens via responsive CSS
(Expert: Dr. Mohamad Fathoni, M.Pd.I.)	Aesthetics, layout, and color contrast	20	17	85.00%	Highly Valid	Enhanced contrast for call-to-action buttons
	Navigation usability	15	13	86.67%	Highly Valid	Added active-state visual indicators on navigation menus
Subtotal Design		50	43	86.00%	Highly Valid	Minor Revision
Software Engineering	Authentication security (/auth)	15	14	93.33%	Highly Valid	Integrated a password recovery workflow
(Expert: Dr. Ahmad Makki Hasan, M.Pd.)	System performance	15	14	93.33%	Highly Valid	Optimized system load via image asset compression
	Cross-device responsiveness & stability	20	18	90.00%	Highly Valid	Fine-tuned multi-screen platform layouts
Subtotal Technical		50	46	92.00%	Highly Valid	Minor Revision

Discussion

Process of Developing the Web-Based Balaghah Learning Application to Enhance Student Learning Mobility

The development of the betabalaghah.web.id/auth platform addresses critical instructional challenges in Islamic Higher Education (PTKI), including restricted face-to-face hours and complex classical linguistic content. The material validation score of 90% ("Highly Valid") aligns with findings by Huda (Huda, 2017). This high validity score confirms that digitizing *Ilm al-Bayan*, *Ma'ani*, and *Badi'* using structured micro-learning modules successfully maintains scholarly depth while enhancing instructional clarity. The slightly higher validity in this study stems from the deliberate integration of contextual examples and real-time diacritical accuracy proofreading during the development phase, which minimized conceptual ambiguity commonly found in digitized classical texts (*turats*).

Similarly, the visual interface rating of 86% ("Highly Valid") and technical software engineering score of 92% ("Highly Valid") corroborate previous studies on Mobile-Assisted Language Learning (MALL) and ubiquitous learning environments (Aljawarneh, 2020; Alomari, 2019). These studies emphasize that cross-platform accessibility, clean visual ergonomics, and low-latency system architecture significantly boost student engagement. The exceptional technical rating (92%) achieved by the BETA platform outperforms typical web application prototypes in language education, primarily due to the lightweight, responsive architecture of the /auth authentication system and asset compression that ensures zero cross-device layout distortion (Aljojo, 2017).

Theoretically, these findings reinforce Cognitive Load Theory (Aulia & Hardeli, 2022) by demonstrating that chunking complex Balaghah concepts into micro-modules reduces extraneous cognitive load. Practically, the platform offers a scalable model for PTKI institutions to operationalize self-paced study without space-time constraints, thereby supporting strategic national human resource targets for the Industry 5.0 era.

Feasibility Analysis of the Web-Based Balaghah Learning Application to Enhance Student Learning Mobility

Feasibility testing on the betabalaghah.web.id/auth domain was conducted through expert judgment and user usability testing. This tiered evaluation ensured that the developed media satisfied Arabic linguistic validity (Ananda & Usmeldi, 2023; Kara et al., 2022) while maintaining web-based technical reliability to address spatial and temporal learning constraints.

The material expert evaluation (90% - "Highly Valid") confirmed that Ilm al-Bayan, Ma'ani, and Badi' contents were representatively organized and aligned with learning goals. Meanwhile, the interface validation (86% - "Highly Valid") affirmed that the intuitive layout and clear Arabic typography effectively minimized cognitive load during independent study.

Software engineering validation by the web expert achieved a 92% score ("Highly Valid"), reflecting robust software architecture, fast page loading speeds, and secure account authentication within the /auth directory. This technical stability ensures optimal performance during simultaneous multi-user access.

Operationally, the successful feasibility test realized ubiquitous learning in practice. The platform's cross-platform nature allows UIN Sayyid Ali Rahmatullah

Tulungagung students to access learning materials via standard web browsers on smartphones, tablets, or laptops anytime without downloading additional applications.

Overall, the feasibility of betabalaghah.web.id/auth provides a meaningful contribution to modernizing digital Arabic language pedagogy in higher education. This research not only resolves classroom time limitations but also advances national strategic goals (RIRN and Asta Cita) by producing graduates proficient in classical texts (turats) and equipped with digital competencies for Revolution 5.0.

CONCLUSION

The development and feasibility testing of the Balaghah web-based learning application at betabalaghah.web.id/auth (BETA Platform) at UIN Sayyid Ali Rahmatullah Tulungagung successfully addresses the spatial and temporal limitations of conventional Arabic rhetoric instruction. Guided by Prof. Moh. Ainin's six-stage R&D framework, the platform was systematically engineered by integrating adaptive micro-learning modules, a responsive user interface, and robust web infrastructure. Expert evaluations confirmed exceptionally high feasibility across all domains – content validity (90%), visual interface design (86%), and software engineering (92%) – which were further corroborated by end-user usability testing categorized as "Highly Practical." Implicatively, this cross-platform application transforms the traditional Balaghah learning paradigm into a dynamic, student-centered autonomous learning ecosystem, supporting national strategic goals (RIRN and Asta Cita) in the Industry 5.0 era.

However, several methodological limitations must be acknowledged. First, product field testing was restricted to a single institution with a small user cohort. Second, the evaluation relied on a limited panel of expert validators. Third, the current study lacked a control group and did not perform longitudinal tracking to evaluate long-term retention of Balaghah mastery. To address these constraints, future research should implement a quasi-experimental design comparing the BETA platform against conventional instruction, while empirically measuring its impact on student learning outcomes and self-regulated learning skills over extended instructional periods.

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