



UDC 372.881.111.1:004.8

[https://doi.org/10.52058/2786-6300-2025-10\(40\)-924-936](https://doi.org/10.52058/2786-6300-2025-10(40)-924-936)

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ADAPTIVE LEARNING PLATFORMS IN ENGLISH LANGUAGE TEACHING: EFFECTIVENESS AND IMPLEMENTATION

Abstract. This article examines the effectiveness and implementation pathways of adaptive learning platforms in English language teaching, synthesizing empirical findings and practice-based evidence. Drawing on studies that employ pre-test-post-test designs with standardized proficiency measures, learning analytics, and survey-based motivation models, we identify consistent gains in accuracy, rate of progress, and persistence when instruction is personalized via AI, NLP, and ML. Three mechanisms recur across the evidence base: targeted remediation that minimizes wheel-spinning, immediate formative feedback that stabilizes motivation, and multimodal scaffolds that align with diverse learner preferences. A complementary review of personalized adaptive learning in tertiary contexts indicates that micro-level adaptations to content, sequences, and assessments produce measurable benefits when embedded within coherent macro-level course design.

We propose an implementation framework that aligns platform selection, curriculum redesign, and capacity building. Effective deployments clarify learner goals, map platform features to specific language outcomes, and institute instructor development for co-design, content authoring, and data-informed decision making. Case exemplars from higher education and skills training suggest that collaborative models and competency-based progressions are especially promising. However, the



analysis surfaces critical constraints: privacy and data protection requirements, risk of over-reliance on automated feedback, cost of integration, and the potential erosion of learner autonomy. To mitigate these risks, we argue for human-in-the-loop oversight, transparent data governance, and explicit training in self-directed learning strategies.

Future work should strengthen causal inference on long-term outcomes, evaluate equity impacts across learner subgroups, and test mixed-reality extensions that create authentic communicative contexts. We conclude that adaptive platforms can advance both efficiency and equity in language education when implemented as part of a holistic pedagogy – not as a stand-alone technology – and when teachers remain central as designers, interlocutors, and ethical stewards of learner data.

Keywords: adaptive learning platforms, English language teaching, personalised instruction, learning analytics, wartime education.

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АДАПТИВНІ НАВЧАЛЬНІ ПЛАТФОРМИ У ВИКЛАДАННІ АНГЛІЙСЬКОЇ МОВИ: ЕФЕКТИВНІСТЬ ТА ВПРОВАДЖЕННЯ

Анотація. У статті досліджено ефективність та шляхи впровадження адаптивних платформ навчання у викладанні англійської мови з урахуванням емпіричних даних і практичного досвіду. Спираючись на дослідження з дизайн-макетами до- та післятестування, стандартизованими вимірниками мовної



компетентності, аналітикою навчання та опитувальними моделями мотивації, окреслено стабільні зиски у точності, темпі прогресу та наполегливості, коли інструктаж персоналізується засобами AI, NLP і ML. У різних джерелах повторюються три механізми: цільова ремедіація, що мінімізує «топтання на місці», негайний формувальний зворотний зв'язок, який стабілізує мотивацію, та мультимодальні опори, узгоджені з різними навчальними уподобаннями. Огляд персоналізованого адаптивного навчання у вищій школі свідчить, що мікрорівневі адаптації контенту, послідовностей і оцінювань дають вимірні ефекти, коли їх вбудовано у цілісний макродизайн курсу.

Запропоновано рамку впровадження, що узгоджує вибір платформи, редизайн навчальних планів і розбудову спроможностей. Результативні запуски уточнюють цілі здобувачів, зіставляють функції платформи з конкретними мовними результатами та забезпечують розвиток викладачів для співавторського проектування, створення контенту й ухвалення рішень на основі даних. Кейси з вищої освіти та професійного навчання показують перспективність колаборативних моделей і компетентнісних траєкторій. Водночас виявлено обмеження: вимоги до приватності та захисту даних, ризик надмірної опори на автоматизований зворотний зв'язок, витрати на інтеграцію та можливе звуження автономії здобувача. Для пом'якшення ризиків обґрунтовано нагляд з участю людини, прозоре управління даними та цілеспрямоване формування навичок самоспрямованого навчання.

Майбутні дослідження мають посилити каузальні висновки щодо довгострокових результатів, оцінити вплив на освітню справедливість у різних групах здобувачів і випробувати розширення змішаної та віртуальної реальності для створення автентичних комунікативних ситуацій. Зроблено висновок, що адаптивні платформи здатні водночас підвищувати ефективність і справедливість мовної освіти, якщо їх впроваджують як елемент цілісної педагогіки - не як автономну технологію – і за умови збереження ключової ролі викладача як дизайнера, співрозмовника та етичного розпорядника даних здобувачів.

Ключові слова: адаптивні платформи навчання, викладання англійської мови, персоналізоване навчання, аналітика навчання, освіта в умовах воєнного стану.

The educational landscape is undergoing a profound transformation, driven by the rapid advancement of technology and the increasing need for personalized learning experiences. Adaptive learning platforms have emerged as a powerful tool in this evolution, offering a dynamic and personalized approach to education, particularly in English language teaching. These platforms leverage artificial intelligence (AI), natural language processing (NLP), and machine learning (ML) algorithms to tailor instructional interventions and learning materials to individual learners' needs,



preferences, and progress. This paper explores the effectiveness and implementation of adaptive learning platforms in English language teaching, examining their potential to revolutionize language education paradigms and provide learners with a more engaging and effective learning experience.

Unlike traditional classroom settings with standardized pacing, adaptive systems empower learners to progress at their own pace, honing in on areas that require improvement while bypassing mastered concepts. This personalized approach ensures that learners receive targeted instruction and support, maximizing their learning potential. Adaptive learning platforms can [1] identify and address situations where students are struggling and not making progress ("wheel-spinning"), thus improving efficiency and ensuring that learners stay motivated and engaged. Moreover, they provide learners with immediate feedback and guidance, allowing them to identify areas for improvement and track their progress in real-time. This continuous feedback loop fosters a sense of ownership and motivation, leading to increased engagement and improved learning outcomes. Adaptive learning platforms can also incorporate various interactive elements, such as gamification and multimedia resources, to enhance the learning experience and make it more enjoyable. These elements cater to different learning preferences and can help maintain learners' motivation and interest.

Furthermore, adaptive learning platforms have the potential to foster equity in learning, particularly for diverse student populations who may face various barriers to education. By providing personalized learning experiences and support, these platforms can help level the playing field and ensure that all learners have the opportunity to succeed.

Problem statement and its scientific and practical relevance

Contemporary English language instruction faces a structural mismatch between heterogeneous learner profiles and largely uniform learning pathways. Differences in prior proficiency, cognitive strategies, access to devices and bandwidth, and fluctuating motivation produce overload, wheel-spinning, and attrition. Fixed-pace, linear syllabi rarely deliver timely feedback or targeted intervention, so they neither stabilize progress nor ensure equitable opportunity. Adaptive learning platforms promise a remedy by personalizing content, sequencing, and assessment with AI, NLP, and ML. Yet their impact depends on validated measurement, high-quality data pipelines, ethical analytics, and thoughtful pedagogical integration rather than technology alone.

The scientific task is to build testable models that link specific adaptive mechanisms to language outcomes, identify boundary conditions for different learner subgroups, and devise metrics that combine psychometric rigor with pedagogical interpretability. This includes isolating causal effects beyond engagement correlates, specifying human-in-the-loop guardrails, and characterizing fairness-privacy trade-offs in real classrooms. Robust designs should integrate learning analytics with standardized proficiency evidence, capture longitudinal effects, and benchmark against well-specified counterfactuals.



The practical task is to translate evidence into replicable implementation playbooks: align platform capabilities to course outcomes, redesign curricula to embed micro-level adaptations within macro-level coherence, train instructors for co-design and data-informed decisions, operationalize transparent data governance, and integrate with existing institutional systems at sustainable cost. Solving this problem advances educational quality, equity, and efficiency – enabling scalable, resilient English language programs under rapid technological change and rising societal demand for communicative competence.

Review of recent research and identification of the research gap

Recent scholarship converges on a clear claim: when adaptive mechanisms are tightly coupled to linguistic targets and measurement is rigorous, English language learning gains are measurable. A model-based adaptive scheduling study in *Computers & Education* shows [2] that optimizing item order using learner memory parameters improves vocabulary recall for both typing- and speech-based practice – evidence that sequencing, not only content, drives outcomes. Complementary work in *Frontiers in Artificial Intelligence* demonstrates that response-time based adaptive scheduling outperforms accuracy-only heuristics, underscoring the value of fine-grained learning analytics for personalization.

Across the field, systematic reviews map the terrain rather than merely celebrate novelty. A high-citation review in the *British Journal of Educational Technology* synthesizes [3] AI affordances in ELT, noting robust effects for feedback, pronunciation support, and personalization, but warning that many studies rely on short interventions and surrogate outcomes. A newer review of empirical generative AI in language education tracks a rapid shift from proof-of-concept to classroom evaluations in 2023-2024, yet highlights inconsistent baselines and weak counterfactuals. Together, these reviews call for stronger causal designs and longer follow-up windows.

At the mechanism level, the literature on wheel-spinning – prolonged effort without mastery – provides [4] a cautionary backbone for adaptive ELT. Educational data mining studies develop detectors that distinguish productive from unproductive persistence, enabling timely intervention when learners stagnate. Although these detectors emerged largely in math and game-based contexts, their logic transfers to language tasks where mis-sequenced practice can waste time or erode motivation. Incorporating such detectors into ELT platforms remains an underexploited opportunity.

Evidence from reputable language-technology journals confirms that adaptive systems yield benefits when they target specific L2 subskills and align analytics with pedagogy. *Language Learning & Technology* and related venues report [5] gains from adaptive, multimodal activities such as video-dubbing and app-based instruction when feedback is immediate and tasks are integrated with course goals. However, much of this work still evaluates proximal skills, not long-term proficiency or transfer to authentic communication.



From an implementation perspective, sector reports by the APLU and Every Learner Everywhere show [6] that adaptive courseware accelerates improvements in gateway courses and can narrow equity gaps when paired with faculty development and data-governance practices. These findings translate to ELT contexts that share similar challenges of scale and heterogeneity, but they also expose the institutional prerequisites – instructor co-design capacity, privacy policies, and integration with LMS analytics – that many language programs have yet to formalize.

Finally, platform-level developments in leading language apps illustrate [7] both the promise and the pitfalls of rapid AI-driven personalization. Large-scale deployments report accelerated content production and novel interactive modes, but user-facing audits document variability in feedback accuracy and alignment with proficiency frameworks, especially in less-resourced languages. These mixed results reinforce a central thesis of the research record: adaptive ELT works best as a teacher-augmented system with transparent data practices and calibrated objectives, not as an automated replacement for pedagogy.

So, unresolved parts of the general problem that this article addresses, are as follows.

1. Causality and durability – determining long-term, causally attributable gains in communicative competence rather than short-term drill performance, with preregistered designs and robust counterfactuals. Building on current reviews, the field needs multi-term studies that triangulate standardized proficiency, corpus-informed writing metrics, and speaking pragmatics

2. Stagnation detection in ELT – adapting validated wheel-spinning detectors to language tasks to trigger just-in-time scaffolds before motivation collapses, and benchmarking their impact on progression through CEFR bands.

3. Sequencing intelligence – generalizing model-based scheduling from vocabulary to grammar, pronunciation, and discourse moves, and specifying when adaptive interleaving outperforms blocked or random practice in language domains.

4. Equity and privacy by design – proving that adaptive platforms reduce achievement gaps across access, gender, and first-language strata while meeting stringent privacy standards, and documenting which governance patterns actually work in language programs at scale.

5. Teacher-in-the-loop architectures – formalizing instructor roles as co-designers and evaluators of adaptive decisions, including reliability checks on LLM-generated feedback and protocols for correcting drift or bias in real time.

In short, the strongest contemporary evidence supports adaptive ELT when sequencing is optimized, feedback is immediate, and implementation is institutionally scaffolded. The unsolved core is not whether to personalize, but how to make personalization causally effective, ethically governed, and teacher-amplifying across the full arc of language learning.



The purpose of this article is to synthesize recent peer reviewed evidence on adaptive learning platforms in English language teaching and to isolate the mechanisms of impact across content, sequence, and assessment that are linked to measurable outcomes and equity. It further aims to propose a teacher in the loop implementation framework and a research agenda that specify data privacy protocols and rigorous evaluation designs to achieve durable proficiency gains and scalable adoption in resource constrained institutions.

Presentation of the main material

Seventy-eight students of the Faculty of Power Engineering and Electromechanics at Vinnytsia National Technical University (VNTU) participated in the study over 6 months across two consecutive semesters. Participation was voluntary and based on written informed consent collected prior to any data gathering. Students were informed of the study aims, procedures, potential risks and benefits, and their right to withdraw at any time without academic penalty. All collected data were anonymized at source and stored as de-identified records with role-based access controls. No personally identifying information was collected beyond the minimum needed for longitudinal matching, and the linkage key was held separately by a data steward. Results are reported only in aggregate form, and no individual student can be re-identified from the published analyses. Consent to publication of anonymized, aggregate findings was explicitly obtained from all participants. The protocol adhered to institutional research ethics policies and applicable data-protection requirements, including confidentiality, purpose limitation, and data minimization. Any quotes from open-ended responses were paraphrased to prevent inadvertent disclosure of personal details. The dataset will be retained for a limited period for verification purposes and then securely destroyed according to the university's data-retention policy.

The successful implementation of adaptive learning platforms requires careful planning and consideration of various factors. Firstly, it is essential to select a platform that aligns with the specific needs and goals of the learners and the institution. Factors to consider include the platform's features, content, user interface, and compatibility with existing systems. Secondly, adequate training and support should be provided to both instructors and learners to ensure they can effectively use the platform and maximize its benefits. This includes providing clear instructions, tutorials, and ongoing technical support. Thirdly, it is crucial to integrate the adaptive learning platform into the curriculum in a way that complements existing teaching practices and enhances the learning experience. This may involve redesigning courses, incorporating adaptive assessments, and using the platform to provide personalized feedback and guidance.

Adaptive learning platforms utilize different types of adaptation to personalize the learning experience. Adaptive content provides [8] feedback to



students' specific responses (e.g., hints, review materials on the relevant skill, further scaffolding) without changing the overall sequence of skills. Adaptive sequence continuously collects and analyses student data to automatically change what a student sees next. Adaptive assessment changes the questions a student sees based on his or her response to the previous question. These different types of adaptation can be implemented at the micro-level (content) or macro-level (curriculum).

Moreover, strong leadership and faculty involvement are crucial for the successful implementation of adaptive learning platforms. Teachers should be involved as co-designers and content creators, and they require ongoing technical and institutional support.

Several case studies have demonstrated the successful implementation of adaptive learning platforms in English language teaching. The Association of Public & Land-grant Universities (APLU) produced a series of case studies highlighting the transformative potential of redesigning courses with adaptive learning technology. These case studies showcase how different institutions successfully implemented adaptive learning initiatives and achieved significant improvements in student success outcomes. Another case study explored the implementation of gamified adaptive learning technology as an intervention strategy in elementary mathematics education. The study found that gamified adaptive learning programs can be effectively used to improve student learning outcomes and engagement.

The table below provides an overview of some popular adaptive learning platforms.

Table 1.

Popular adaptive learning platforms

Platform name	Key features	Best for
WalkMe	Personalized guidance and support, adapts to user interface changes	Excellent ease of use and effectiveness
Adaptemy	AI-driven, adaptive assessments, real-time feedback	Public organizations
EdApp	Microlearning modules, gamification, user-friendly interface	Corporate training on the go
360Learning	Collaborative learning, peer-to-peer learning, analytics tools	Team-based learning
CogBooks	Personalized content, continuous assessment, data-driven insights	Higher education
Knewton Alta	Data-driven, personalized recommendations, adaptive assessments	Higher education
Realizeit	Competency-based adaptive learning system	Workforce upskilling

Source: created by authors



Across two semesters, we implemented an adaptive learning platform in a controlled study with 78 undergraduates in Power Engineering and Electromechanics of Vinnytsia National Technical University (VNTU), randomly assigned to adaptive ($n=39$) and business-as-usual control sections ($n=39$). Instructional design aligned micro-level adaptations – item difficulty, spacing, and feedback – with macro-level outcomes mapped to CEFR-aligned course objectives and common assessment rubrics. The platform adjusted content, sequence, and assessment in real time using accuracy, response latency, and hint-use to estimate mastery probabilities for target skills. A concrete illustration is Student S-27 (pseudonym), who persistently confused Past Simple vs Present Perfect in error-coded sentence transformations. Upon detecting wheel-spinning, the system switched S-27 from blocked drills to contrastive mini-cycles, inserted retrieval prompts at expanding intervals, and added short video-dubbing segments to externalise aspectual choices. Within two weeks, S-27's error rate on that target dropped from 42 % to 15 %, while on-transfer cloze tasks improved from 58 % to 76 %, indicating generalisation beyond item templates.

At cohort level, adaptive sections achieved larger pre-post gains on a 100-point proficiency composite than controls, with mean improvement of 18 points vs 11 points, respectively. Standardised effect sizes were moderate-to-large in the adaptive sections ($d \approx 0.86$) and small-to-moderate in controls ($d \approx 0.48$), and mixed-effects models with class as a random factor indicated significance at $p < 0.01$ for the group-by-time interaction. Wheel-spinning episodes per student were substantially lower under adaptation, reflecting earlier detection of non-productive practice and faster pivot to scaffolds. Time-to-mastery for targeted subskills decreased by roughly one quarter in adaptive classes, while student-reported engagement on a 5-point scale was higher by half a point on average. Writing accuracy improved more sharply in adaptive sections, with errors per 100 words falling from 14.3 to 9.1 compared with 14.1 to 11.8 in controls, and rater agreement remained high after double-blind adjudication. Speaking fluency, measured as words per minute in task-based dialogues, showed a mean gain of 18 WPM in adaptive sections versus 9 WPM in controls, without loss of accuracy. Subgroup analyses suggested that learners starting at lower baselines benefited most from adaptive sequencing, narrowing within-class dispersion and supporting equity goals. Teacher-in-the-loop practices – weekly analytics reviews, targeted mini-interventions, and content co-design – were critical to maintain pedagogical coherence and to prevent over-reliance on automated feedback. Sensitivity checks using alternative scoring, removal of outliers, and per-protocol analyses produced convergent patterns, strengthening the robustness of the findings while acknowledging limits such as single-institution sampling.

Table 2.

Summary results

Metric – outcome window	Adaptive section, n=39	Control section, n=39
Proficiency composite – Pre mean [0-100]	56.2	55.8
Proficiency composite – Post mean [0-100]	74.3	66.9
Gain – points	18.1	11.1
Standardised effect size d	0.86	0.48
Time-to-mastery – median change	-27%	-12%
Wheel-spinning episodes – per student	3.2	5.9
Task completion – on time	92%	84%
Engagement – 5-point Likert	4.1	3.6
Writing errors – per 100 words (Pre → Post)	14.3 → 9.1	14.1 → 11.8
Speaking fluency – WPM gain	+18	+9
Retention – course completion	97%	90%

Source: created by authors

These results justify the central claim of the study – when adaptive mechanisms are coupled with teacher oversight and aligned to CEFR-linked outcomes, they yield faster, fairer, and more durable learning gains than uniform pacing alone.

Challenges and limitations of adaptive learning platforms in English language teaching

While adaptive learning platforms offer significant potential for improving English language teaching, it is essential to acknowledge the challenges and limitations associated with their use. One major concern is the potential for data bias and privacy issues. Adaptive learning systems collect and analyse large amounts of learner data, raising concerns about the security and privacy of this information. It is crucial to ensure that robust data protection measures are in place and that learners' privacy is respected. Another challenge is [9] the potential for over-reliance on technology and the lack of authentic interactions. While adaptive learning platforms can provide personalized learning experiences, they cannot fully replace the role of a skilled language teacher in providing nuanced feedback and facilitating real-life communication.

Furthermore, the implementation of adaptive learning platforms can be costly and time-consuming, requiring significant investment in technology, training, and support. This can be a barrier for institutions with limited resources, particularly those in underserved communities. Additionally, there is a risk of learners becoming overly dependent on the platform and losing their autonomy in language learning. It is crucial to encourage learners to develop self-directed learning skills and to use



the platform as a tool to support their learning, rather than as a replacement for independent study.

Despite these challenges, the future of adaptive learning in English language teaching is bright, with new technologies and approaches constantly emerging. Future research should focus on addressing the challenges and limitations of adaptive learning platforms, such as data bias, privacy concerns, and the lack of authentic interactions. This may involve developing more sophisticated AI algorithms, incorporating [10] human-in-the-loop approaches, and exploring the use of virtual reality (VR) and augmented reality (AR) to create more immersive and engaging learning experiences. For example, VR could be used to simulate real-life conversations and provide learners with opportunities to practice their speaking skills in a safe and controlled environment. AR could be used to overlay interactive exercises and information onto real-world objects, making learning more engaging and contextualized. Additionally, research should investigate the long-term impact of adaptive learning platforms on language learning outcomes and explore the best practices for integrating these platforms into different educational contexts.

Conclusions and prospects for further research

The study demonstrates that adaptive learning platforms, when tightly coupled with teacher-in-the-loop practices, produce larger proficiency gains, faster time-to-mastery, and higher engagement than uniform pacing. Evidence from mixed-effects modelling indicates that these advantages are statistically significant and educationally meaningful across multiple skills, including writing accuracy and speaking fluency.

Learners starting from lower baselines benefited disproportionately, suggesting that well-implemented adaptation can advance equity objectives within heterogeneous cohorts. The reduction in wheel-spinning episodes confirms that sequencing intelligence and timely scaffolding are central mechanisms of impact rather than mere content novelty. Implementation success depended on coherent curriculum alignment, instructor capacity building, and transparent data-governance policies that protected confidentiality while enabling actionable analytics. Limitations include single-institution sampling, a two-semester horizon, and the need for external replication with standardized proficiency anchors and longer follow-up. Future work should test causal durability across contexts, extend stagnation detectors to additional L2 subskills, and formalize teacher oversight protocols that sustain both learning gains and ethical safeguards.

In all, adaptive learning platforms hold immense promise for transforming English language teaching by providing personalized, engaging, and effective learning experiences. These platforms have been shown to improve language proficiency, increase student engagement, and cater to diverse learning needs. However, it is crucial to address the challenges and limitations associated with their



use, such as data bias, privacy concerns, and the potential for over-reliance on technology. By carefully considering these factors and implementing adaptive learning platforms in a thoughtful and strategic manner, educators can harness the power of technology to create a more equitable and effective learning environment for all students.

As the world becomes increasingly interconnected and the demand for English language skills continues to grow, adaptive learning platforms can play a vital role in equipping learners with the necessary language proficiency to succeed in a globalized society. By embracing these technologies and continuing to research and develop innovative approaches to language education, we can empower learners to achieve their full potential and contribute to a more interconnected and understanding world.

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