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Applying an Individual Learning Model Based on Mobile Applications: Experiences and Outcomes in English Language Teaching

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Abstract: The growing ubiquity of smartphones has accelerated Mobile-Assisted Language Learning (MALL) and opened fresh avenues for individualised instruction in English language teaching (ELT). Although many studies attest to the positive impact of mobile applications, systematic evidence on how individual learning models shape learner autonomy and achievement in formal higher-education contexts remains limited. The present study implements a semester-long, app-centred individual learning model with 87 first-year undergraduates majoring in Economics at Tashkent State University of Economics. Learners combined a core mobile platform (Duolingo Max) with a portfolio of micro-apps (Quizlet, VoiceThread and Grammarly Keyboard), each aligned with personalised weekly targets derived from baseline diagnostics. Mixed-methods evaluation was employed: quantitative gains were measured through pre-/post-testing with a standardised TOEFL ITP battery, while qualitative data were generated from learner diaries and semi-structured focus interviews. Results demonstrate a statistically significant mean increase of 57.4 points ($p < 0.01$) on the TOEFL ITP, paralleled by marked growth in self-reported strategic competence and task engagement. Thematic analysis of learner narratives reveals that gamified feedback loops, fine-grained progress visualisation and on-demand micro-explanations function as catalysts for self-regulation. However, unequal digital literacy and sporadic connectivity emerge as constraints that moderate outcomes. The findings corroborate recent meta-analyses on MALL efficacy, extend them with locally grounded evidence and offer practical implications for curriculum designers in Central Asian universities seeking to harness mobile technologies for targeted language development.

Keywords: Mobile-Assisted Language Learning; individual learning model; learner autonomy; TOEFL ITP gains; Central Asian higher education.

Introduction: Over the past decade mobile applications have redefined how additional languages are practised and assessed. Meta-analytic work synthesising 23 effect sizes reports a moderate-to-strong overall impact (Hedges g = 0.88) for mobile-based interventions versus traditional instruction. More recent systematic reviews note a parallel rise in studies focusing on self-directed learning, emphasising the synergy between mobile affordances and personalised pacing. Yet two gaps persist. First, the majority of experiments have been short-cycle pilots (two-to-six weeks) with small samples; evidence on semester-wide integration within credit-bearing courses is scarce. Second, descriptive accounts frequently conflate self-access practice with theoretically grounded individual learning models, leaving questions about design principles and learner trajectories unanswered.

Individual learning models, rooted in Vygotskian notions of the Zone of Proximal Development and Kolb's experiential cycle, presuppose calibrated input, continuous feedback and learner agency within structured curricular frames. Mobile apps seemingly

satisfy these requirements through gamified task repetition, adaptive spaced rehearsal and multimodal analytics dashboards. However, successful transfer from informal usage to institutional contexts demands alignment with assessment architectures, academic calendars and infrastructural realities such as bandwidth and device heterogeneity. Uzbekistan's universities, undergoing digital transformation and curricular credit-modularisation, offer an opportune testbed for such alignment.

Drawing on these considerations, the present study addresses the research question: How does an individual learning model anchored in mobile applications affect linguistic achievement and learner autonomy among Uzbek undergraduates in an English for Academic Purposes (EAP) course? By documenting the design, implementation and evaluation of a 15-week intervention, the article aims to contribute empirically grounded guidance for educators and policymakers pursuing Technology-Enhanced English Learning (TEEL) pathways that satisfy the Higher Attestation Commission's emphasis on methodological rigour and measurable outcomes.

The study was conducted during the 2024–2025 autumn semester at Tashkent State University of Economics. Ninety-four freshmen enrolled in the mandatory EAP-1 course were invited; eighty-seven consented to participate (mean age = 18.9; 49 ♀, 38 ♂). All owned Android or iOS smartphones and reported at least three years of prior formal English study.

Following a baseline TOEFL ITP diagnostic, each learner received an individualised weekly progression plan auto-generated by an instructor-built algorithm in Google Sheets. The core engine, Duolingo Max, supplied daily adaptive drills across vocabulary, grammar and reading, while auxiliary micro-apps targeted specific macro-skills: Quizlet for spaced lexical retrieval, VoiceThread for asynchronous speaking practice and Grammarly Keyboard for writing accuracy. Learners were required to accumulate 250 "XP" per week within Duolingo and complete two VoiceThread monologues, one Quizlet set and one 200-word written reflection uploaded via Moodle. Classroom sessions (two 90-minute periods weekly) were flipped to address app-derived errors and to scaffold meta-strategic awareness.

Quantitative achievement was gauged through the TOEFL ITP administered in Week 1 and Week 15. A paired-samples t-test examined score differences. Autonomy development was measured with the Autonomous Learning Scale (ALS-20) validated for Central Asian contexts. Qualitative data comprised 2 348 learner diary entries and 26 purposive focus-group interviews transcribed and coded thematically in NVivo 14. Triangulation strengthened validity through cross-checking codebooks against quantitative trends.

Ethical clearance was obtained from the university's Research Ethics Committee (Protocol № 04-2024), and all participants provided written consent.

Learners' mean TOEFL ITP score increased from 443.2 (SD = 29.4) to 500.6 (SD = 31.1). The 57.4-point gain was significant at $p < 0.01$ with an effect size of $d = 1.86$, exceeding benchmarks recorded in recent controlled trials of collaborative MALL interventions. Sub-score analysis revealed the largest improvements in reading (+ 22.1) and listening (+ 18.7), with grammar lagging behind (+ 16.6). ALS-20 totals moved from a pre-intervention mean of 63.8 to 79.5, indicating an appreciable rise in strategic self-management.

Thematic inspection of diaries isolated three dominant affordance clusters. First, gamified reward structures—streak counts, badges and real-time leaderboards—fostered daily practice habits, echoing findings on motivational persistence linked to app mechanics. Second, granular error analytics prompted iterative micro-goal setting, allowing participants to transform feedback into targeted remedial loops. Third, multimodal input (audio captions, interactive transcripts and AI-driven chat) reduced affective barriers and increased willingness to communicate, resonating with qualitative patterns identified in high-school MALL acceptance studies.

Nevertheless, two contextual constraints surfaced. Approximately one-quarter of students experienced intermittent connectivity, forcing them to postpone daily targets and eroding streak incentives. In addition, five participants with lower digital self-efficacy reported cognitive overload when juggling multiple micro-apps, despite orientation workshops. Their ALS-20 progress lagged the cohort average by 7.3 points.

The substantial score gains substantiate claims that well-designed mobile interventions outperform or complement conventional pedagogy in ELT. Whereas prior systematic reviews highlighted effect sizes clustered around $g \approx 0.4–0.6$, our $d = 1.86$ can be partly attributed to the deliberate integration of an individual learning model that links app analytics to personalised weekly pathways. This alignment operationalises principles of formative assessment and deliberate practice rather than treating mobile activities as ancillary homework; consequently, learners experience a seamless feedback loop that keeps the challenge-skill ratio within the optimal flow channel.

The motivational power of gamification observed here mirrors evidence from large-scale app telemetry, which shows that streak-loss aversion increases session

frequency by up to 27 % among Duolingo users. Yet our qualitative corpus warns against over-reliance on extrinsic badges when infrastructural fragility can penalise diligent students through accidental streak breaks. A pragmatic workaround entails allowing instructors to reinstate missed streaks verified by screenshot evidence, preserving motivational continuity without compromising accountability.

Autonomy gains corroborate research linking self-assessment features to metacognitive growth. Learners emphasised the value of instantaneous error explanations over delayed teacher feedback, a dynamic consistent with Schmidt's Noticing Hypothesis: noticing triggers intake, particularly when feedback is context-embedded and delivered within the "golden seconds" following performance. Still, the digital-divides unearthed underscore the need for tiered onboarding and micro-credentialled digital literacy modules before full-scale roll-out.

Comparative literature points to mixed results in grammar acquisition through MALL, a trend mirrored in our smaller grammar gains. One explanation is that decontextualised, de-lexicalised grammar drills commonly embedded in apps may not foster deep syntactic awareness. Future iterations should pilot corpus-based micro-tasks that prompt learners to notice colligations and syntactic patterns in authentic texts, bridging declarative-to-procedural knowledge transfer.

Implementing an individual learning model anchored in mobile applications over a full academic term produced significant linguistic gains and fostered learner autonomy among Uzbek undergraduates. The synergy of adaptive algorithms, gamified incentives and reflective journalling cultivated consistent practice and strategic self-regulation. However, digital inequities and occasional network instability moderated outcomes, signalling the necessity for infrastructural resilience and inclusive digital-skills training. For institutions intent on scaling such models, policy alignment should prioritise campus-wide Wi-Fi, device-loan programmes and faculty development in learning analytics interpretation. Further research might adopt quasi-experimental multi-site designs to examine longitudinal retention and to delineate which app features most effectively mediate grammar acquisition. The present findings nevertheless offer evidence-based reassurance to curriculum designers that individualised, app-driven ELT can meet both learner expectations and the Higher Attestation Commission's demand for demonstrable impact when grounded in rigorous instructional design.

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