A Computerized Dynamic Assessment Platform for EFL Listening Comprehension

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ABSTRACT

Traditional assessments in EFL listening primarily report scores without revealing learners' specific difficulties, leaving students uncertain about how to improve and teachers unable to adjust instruction. Dynamic Assessment (DA) addresses this gap by combining assessment with mediation, yet its traditional one-on-one format is impractical for large classroom.

This project introduces a Computerized Dynamic Assessment (CDA) platform designed for individual instruction in large scale EFL context. This platform delivers graduated, pre-scripted manual hints in multiple modalities (text, audio, image, video) and generates detailed learning logs that track attempts, hints use and completion time. These features provide individualized scaffolding for learners and equip teachers with diagnostic insights for targeted instruction.

A quasi-experimental design was conducted with low-proficient Chinese undergraduates across four intervention sessions. Listening comprehension was measured with pre- and post-tests using CET-4 listening tests, and platform logs were analyzed for hint trajectories and efficiency. Results showed significant gains in listening performance, alongside reductions in hint usage and task completion time, indicating both enhanced comprehension and efficiency.

The CDA platform demonstrates that individualized mediation can be scaled to large classrooms without overburdening teachers. By combining DA principles with multimodal support and learning analytics, the platform offers a practical and innovative solution for EFL listening education. Future research may explore its long-term effects and applicability across different learner groups and contexts.

Keywords: Computerized Dynamic Assessment (CDA), EFL listening, Graduated Prompts, Learning Analytics

INTRODUCTION

Traditional EFL listening assessment typically consist of test papers and scores, offering little diagnostic information on where learners struggle (Kao & Kuo, 2023). As a result, students' progress is often limited because they are unaware of their problems, In large, test-driven classrooms, such static assessment often leads to passive learning, with students unable to actively engage in listening activities (Dogani, 2023; Hidri, 2014).

Dynamic Assessment (DA) has been proposed as an alternative in second language learning (Lantolf & Poehner, 2014). By integrating assessment with instruction, DA promotes learner development through mediation tailored to individual abilities (Zhang, 2023). However, DA is typically carried out in one-on-one teacher–student interactions, which are time-consuming and impractical for large classrooms (Izadi et al., 2024; Yang & Qian, 2020).

Computerized Dynamic Assessment (CDA) addresses this challenge by enabling large-scale implementation through computer systems (Pileh Roud & Hidri, 2021; Poehner et al., 2015). However, most CDA platform still rely on limited question formats or provide only fixed feedback, offering little flexibility for teachers to adapt tasks (Zeng, 2020). The present platform improves upon these limitations by incorporating multi-modal tasks and hints support and multi-function dashboard. These innovations ensures that scaffolding remains consistent with DA principles while being feasible for large classroom contexts.

Objectives

1. Provide hints when students get stuck, creating an adaptive learning environment and encouraging active problem-solving to enhance listening comprehension.
2. Generate detailed learning logs and result reports to support teacher diagnosis, enabling timely adjustments to instruction and materials.

Product Description

In practice, the CDA platform provides an integrated environment for both teachers and students. Teachers create listening tasks by uploading audio or video files, writing the question stem, and entering multiple-choice, matching, or fill-in-the-blank answers. Graduated manual hints are entered by teachers in advance. Once tasks are deployed, students attempt questions. If they answer incorrectly, the system reveals hints progressing from implicit to explicit (e.g., from a general reminder such as “listen again” to a specific cue), helping them move forward without simply giving away the answer. As students work through the tasks, the system records their attempt history, time spent, and hint usage. Afterward, teachers can access dashboards that summarize each learner’s performance, identify persistent distractors or skills causing difficulty, and export results for instructional follow-up.

The platform includes the following key functions:

Item creation: Teachers can design questions with audio, image, or video materials, define the number of hints and indicate the correct answer.

Multimodal Support: Hints can be delivered in text, audio, image, or video formats.

Adaptive delivery: Next-level hints are released when a learner answers incorrectly, scaffolding listening comprehension while preserving learner autonomy.

Time management: Tasks can be time-limited, and hints are displayed only for a controlled duration, encouraging active processing.

Dashboard and learning logs: Track attempts, chosen answers, time spent, and hint use; teachers can view or edit items, analyse results, and export reports to guide future teaching.

METHODOLOGY

To evaluate the platform’s effectiveness, a quasi-experimental design was conducted with 32 second-year low-proficiency Chinese undergraduates, whose CET-4 listening scores were below 149 (60% out of total 249). The CET-4 score below 425 passing benchmark corresponds to the A2–B1 transition level of CEFR, indicating low-proficiency EFL learners (Li et al., 2025). Listening comprehension was measured using CET-4 listening test. Additional data were collected from platform logs.

The Intervention consisted of four CDA sessions (40 minutes each) in which traditional listening exercises were replaced with CDA tasks featuring audio-based multiple-choice questions and graduated, pre-scripted manual hints. Pre- and post-tests were administered to assess changes in listening comprehension performance. In addition, log data for each session were analyzed to track the number of hints used, attempt made, and completion time.

Data Analysis involved paired-sample t-tests to compare pre- and post-test listening scores. Descriptive and trend analyses of the log data examined changes in hint use and efficiency across sessions. Although the sample size provides a focused view of CDA implementation, findings should be interpreted with caution regarding their generalizability to broader EFL populations.

POTENTIAL FINDINGS AND COMMERCIALISATION

Preliminary findings shows that the CDA platform enhances EFL learners' listening performance. Students scored higher on post-test, while log data indicated fewer hints were needed and tasks were completed more quickly, reflecting gains in both comprehension and efficiency.

From a commercial perspective, the CDA platform directly responds to the needs of large classrooms where individual feedback is rarely feasible. It also alleviates teachers' workload by streamlining task design and automatic feedback deliver. Its modular architecture allows easy integration into existing Learning Management Systems (LMS) or use as a stand-alone web-based tool.

Future research employing longitudinal designs is recommended to evaluate the sustainability of learning gains over time and across diverse educational contexts.

NOVELTY AND RECOMMENDATIONS

Unlike many existing CDA systems that rely on text-only prompts and fixed feedback, the present platform addresses several long-standing limitations. It introduces multimodal graduated hints (text, audio, image, video), a flexible backend that enables teachers to edit and configure different hint progressions, and automated learning logs that capture attempts, hint use, and completion time.

These innovations overcome common CDA shortcomings such as restricted prompt formats, heavy teacher workload, and lack of actionable diagnostic information. By embedding these functions, the platform advances CDA beyond simple computer delivery, making it both pedagogically robust and scalable for large EFL classrooms.

To further validate its educational value, future studies should broaden participant diversity, adopt longitudinal approaches, and compare CDA with other innovative assessment tools to highlight its relative advantages.

Looking ahead, the model can be extended to other language skills and even other subject areas requiring both assessment and scaffolding, with future work focusing on LMS integration, richer analytics, and sustainable deployment.

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