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Technology Empowered Instructional Design for Primary English Teaching

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Abstract

The 2022 Compulsory Education English Curriculum Standards require deep integration of information technology and English teaching, elevating technology from a supplementary aid to an essential component of instructional design. However, current research on technology-empowered teaching mainly focuses on classroom implementation, with limited systematic exploration of instructional design as an antecedent stage. Grounded in the curriculum standards and oriented by the four core competencies of the English discipline. This paper articulates the core concepts, fundamental principles, and implementation pathways for technology-empowered primary English instructional design. It also presents a complete lesson design from PEP Grade 5, Unit 3, My School Calendar, to illustrate the approach.

Keywords

Technology Empowerment; Primary English; Instructional Design; New Curriculum Standards; Core Competencies

1. Introduction

This part unfolds the research context and illustrates the motivation of this study.

1.1. Policy Context and the Evolving Role of Technology

As the process of social informatization and digitalization continues to accelerate, various sectors of society are seeking footholds amidst the rapid currents of technological development. Education, as an endogenous driver of social progress, must proactively pursue transformation and explore pathways that adapt to the developmental imperatives of the new era (Cai, 2026). With the sustained advancement of the Education Informatization 2.0 initiative, the enabling role of information technology in basic education has moved from conceptual advocacy to practical implementation. In the field of English language education, the Compulsory Education English Curriculum Standards promulgated by the Ministry of Education

in 2022 explicitly incorporate "advancing the deep integration of information technology and English teaching" into the curriculum philosophy, with particular emphasis at the primary level on "designing learning activities that are activity-oriented, game-based, and grounded in real-life contexts" (Ministry of Education, 2022). This policy orientation signals that technology is no longer viewed merely as a tool to assist teachers in teaching, but has become deeply involved throughout the entire process of instructional design, emerging as a transformative force that reshapes teaching objectives, content, activities, and resource configurations.

According to Piaget's theory of cognitive development, children aged 6 to 12 are in the concrete operational stage, during which their thinking is characterized by concreteness and requires the support of concrete objects, images, stories, and experiences (Wei, 2025). They are more sensitive to intuitive, dynamic, and multimodal information, and technological tools are precisely capable of transforming abstract linguistic symbols into tangible, perceptible embodied experiences, thereby lowering cognitive barriers and stimulating learning motivation.

1.2. The Research Gap

However, a review of current research literature and pedagogical practices reveals that discussions on technology empowered English teaching have largely concentrated on the level of classroom implementation. For instance, how to use technology to organize classroom interactions, how to utilize technology for immediate assessment, and how to evaluate the effectiveness of technology applications.

2. Theoretical Foundations

This part sorts out the theoretical basis supporting the research.

2.1. TPACK

The core tenet of this framework is that effective technology integration in teaching is not a matter of simply superimposing technological tools onto traditional teaching; rather, it requires teachers to simultaneously possess technological knowledge, pedagogical knowledge, and content knowledge, and to form integrated instructional design decisions at the dynamic intersection of the three (Mishra & Koehler, 2006). In other words, technology cannot exist in isolation from subject content and teaching methods; it must mutually adapt to and co-construct with both, ultimately merging into a new pedagogical configuration (Cai, 2016). The TPACK framework provides an important cognitive model for understanding technology-empowered instructional design, reminding instructional designers that when introducing technology, they must simultaneously consider the intrinsic

relationships among “what to teach” (content), “how to teach” (method), and “with what to teach”(technology), rather than addressing these dimensions separately (Alghasab & Handley, 2025).

2.2. Multimodal Learning Theory

This theory holds that human meaning making is not accomplished solely through linguistic symbols, but through the synergistic coordination of multiple modalities, including visual, auditory, tactile, and kinesthetic channels (Walsh, 2010). In language teaching, multimodal input can activate different sensory channels in learners, enhancing the richness of memory encoding and the accessibility of retrieval (Jiang, 2014). For primary school students in particular, whose cognitive development is still in the concrete operational stage and whose capacity to process abstract linguistic symbols is limited, multimodal technologies can transform tedious vocabulary and sentence patterns into vivid images, pleasant sounds, and operable interactive tasks, turning language learning from passive “listening” into active “experience.” This theory suggests that in primary English instructional design, the value of technology lies not merely in presenting information, but in creating multimodal perceptual environments in which students naturally acquire language through multisensory coordination.

2.3. The 2022 Curriculum Standards

The new curriculum standards construct a competency based objective system composed of four interrelated dimensions—language ability, cultural awareness, thinking quality, and learning ability —and this system imposes entirely new requirements on instructional design (Ministry of Education, 2022; Wang, 2022; Cheng & Zhao, 2016).

Instructional design must be oriented by the core competencies, with the establishment of all teaching objectives, selection of teaching content, and arrangement of teaching activities taking the cultivation of core competencies as the starting point and ultimate destination.

3. Core Concepts

Guided by the direction of the new curriculum standards and the insights of the above theoretical frameworks, this paper proposes that technology-empowered instructional design for primary English should establish four core concepts, which together constitute the value coordinates and operational guidelines for technology integration in instructional design.

3.1. Competency Orientation

The first core concept is competency orientation. Technology must serve the cultivation of core competencies, not become an end in itself. When introducing any

technological tool, teachers must ask which dimension of language ability, cultural awareness, thinking quality, or learning ability does this technology serve? For instance, an AI pronunciation tool should target the specific objective of using correct pronunciation to express oneself, not merely practicing pronunciation. Competency orientation requires teachers to start with clarified competency objectives, not with the convenience or novelty of technology.

3.2. Technological Appropriateness

The second core concept is technological appropriateness. Technology selection should be based on an accurate diagnosis of teaching needs, not on a blind pursuit of high-end or feature-rich tools. Appropriateness means the technology matches the instructional segment in difficulty, complexity, and functional fit. In primary English, this involves three considerations: alignment with learners, alignment with content (Pan, 2024; Murphy & Arciuli, 2024), and alignment with context. The essence is what fits is best. The criterion is better alignment and greater effectiveness, not novelty or visual appeal.

3.3. Activity Progression

The fourth core concept is activity progression. Technology should be embedded in the cognitive progression of three activity types, namely learning and understanding, applying and practicing, and transferring and creating, with different levels matched to different types of technological support. Learning and understanding activities focus on information perception and initial processing, where technology serves as context presenter and knowledge demonstrator through micro-lectures, animations, and interactive courseware. Applying and practicing activities focus on knowledge manipulation and initial application, where technology serves as interactive practice facilitator and feedback provider through online quiz games, human-computer dialogue systems, and collaborative discussion platforms. Transferring and creating activities focus on comprehensive application and creative expression, where technology serves as creation tool and presentation medium through digital story-making software, multimedia presentation tools, and project-based learning platforms (Alghasab & Handley, 2025).

4. Fundamental Principles

To translate the above concepts into actionable design behaviors, it is necessary to further articulate several principles that are both normative and guiding.

4.1. Principle of Goal Consistency

The first principle is goal consistency. All technological elements in instructional design, including tool selection, activity design, and resource use, must maintain intrinsic logical consistency with the preset teaching objectives. In essence,

technology serves to achieve objectives; its presence should not cause deviation from those objectives. In practice, when designing each technology-mediated activity, teachers must clearly identify which specific objective the activity serves, and the activity's outputs or assessment criteria should align with that objective. For instance, if the objective is for students to use target sentence patterns for simple daily communication, the activity should be designed as a paired dialogue or group interview, rather than a purely mechanical drill. This principle also implies a crucial design sequence: determine objectives first, then select technology, rather than starting with technology and searching for objectives it might serve.

4.2. Principle of Activity Hierarchy

The fourth principle is activity hierarchy. Drawing upon the Activity-based Approach to English Learning, this principle requires that technology-mediated activities be arranged in a gradiented sequence according to the cognitive levels of learning and understanding, applying and practicing, and transferring and creating, with the three levels progressively ascending and closely interlinked. At the learning and understanding level, activities focus on input and perception, such as watching animations to comprehend dialogue gist or operating interactive courseware to recognize new vocabulary. At the applying and practicing level, the focus shifts to practice and consolidation, such as sentence pattern substitution drills through online games or using recording tools for shadowing and comparison (Jiang et al., 2024). At the transferring and creating level, the emphasis is on comprehensive application and creativity, such as using digital tools to produce an English poster or a short English video.

5. Implementation Pathways

For concepts and principles to be realized in concrete design plans, a clear and actionable implementation pathway is also needed.

5.1. Step 1: Theme Analysis

The first step is theme analysis, which involves extracting the thematic category and thematic significance from the textbook unit (Bai, 2024). After receiving a teaching unit, the teacher should first determine which of the three broad thematic categories, namely human and self, human and society, or human and nature, the unit belongs to, and then deeply explore the educational values and cultural connotations carried by the theme. For example, in analyzing the unit My School Calendar, the teacher should perceive not only the surface-level topic of calendar and school activities, but also the deeper thematic significance of scheduling time effectively, planning school life, and cherishing campus time. The outcome is a clear articulation of the unit's thematic significance, which provides the meaning framework and integrative thread for all subsequent instructional design activities. In this process, teachers

may also draw upon research on theme-based reading instruction to inform their analysis (Bai, 2024).

5.2. Step 2: Competency Positioning

The second step is competency positioning, which translates thematic significance into concrete, observable, and assessable core competency objectives (Pan, 2024). The teacher draws upon the grade-level descriptors for the four core competency dimensions specified in the new curriculum standards (Ministry of Education, 2022), together with the unit content and student profile, to formulate specific objectives for the unit or lesson. The key lies in specificity, avoiding vague formulations such as improving students' listening and speaking abilities and instead specifying that students can use the question pattern When is...? and the response pattern It's in... to inquire about and respond to the timing of school activities. Clear objective statements serve as the basis for subsequent technology selection and as the benchmark for determining the effectiveness of technology-mediated activities. The outcome is a clear core competency objective checklist.

5.3. Step 3: Technology Selection

The third step is technology selection, which involves choosing the most appropriate technological tools based on the competency objectives established in the previous step and the cognitive activity types required for each instructional segment. Technology selection should follow a needs–first, tools–second logic. The teacher first analyzes what specific problem technology needs to address in a given segment, such as stimulating interest, presenting knowledge, practicing sentence patterns, creating contexts, or supporting creative production, and then identifies the technological tool capable of addressing that problem. Common technological tools for primary English teaching include micro-lectures and short videos for contextual introduction and knowledge presentation, interactive whiteboard courseware for interactive practice and game-based learning, AI pronunciation assessment tools for pronunciation training and oral practice, online collaboration platforms for cooperative learning and work presentation, and digital story or poster creation tools for creative expression (Pan, 2024; Jiang et al., 2024; Alghasab & Handley, 2025; Cai, 2026). The outcome is a technology tool inventory specifying the tools to be used in each instructional segment and their functional roles.

5.4. Step 4: Activity Design

The fourth step is activity design, the most central stage in the entire pathway. Based on the Activity-based Approach to English Learning (Ministry of Education, 2022), the teacher designs three categories of interconnected and progressively challenging learning activities, namely learning and understanding, applying and practicing, and transferring and creating, and organically embeds the selected

technological tools into each category. In this stage, the teacher plans in detail the operational procedure for each activity, the division of labor between teacher and students, time allocation, and the specific ways in which technological tools are used. The core requirement is the naturalness of technology integration. Technology should not be an external appendage to activities but an organic component internal to the activity flow, without which the activity would be difficult to implement effectively. The outcome is a complete teaching activity flow plan.

5.5. Step 5: Resource Integration

The fifth step is resource integration, which involves preparing and testing all technologysupported teaching resources in advance according to the needs of the activity design. This includes downloading and editing video and audio materials, creating and piloting interactive courseware, setting up courses and class rosters on online learning platforms, and adjusting parameters and trialing AI tools. Resource integration also requires teachers to prepare alternative plans—when a technological tool malfunctions or runs poorly in actual teaching, there should be a nontechnological or lowtechnology alternative available. The final outcome of resource integration is a complete "teaching resource package," encompassing all digital materials, courseware files, links, and operational guides, ensuring that the technological arrangements in the instructional design are fully feasible.

6. Summary of Key Findings

Grounded in the 2022 edition of the Compulsory Education English Curriculum Standards and oriented by the core competencies of the English discipline, this paper has focused on the dimension of instructional design, systematically examining the conceptual system, principled framework, implementation pathways, and lesson exemplars for technology-empowered instructional design in primary English teaching, and has formed the following main conclusions.

Technology-empowered instructional design for primary English requires the establishment of a clear core conceptual system. This paper has proposed four core concepts, namely competency orientation, technological appropriateness, contextual authenticity, and activity progression, which constitute an integrated whole. Competency orientation specifies the value direction of technology application, ensuring that technology does not deviate from educational objectives. Technological appropriateness defines the quality criteria for technology selection, ensuring that better alignment rather than more technology is the goal. Contextual authenticity determines the form of technology-created environments, ensuring that language learning occurs in meaningful communicative contexts. Activity progression specifies the structural logic of technology embedding, ensuring that technology supports learning tasks at different cognitive levels. These four concepts are interrelated and mutually reinforcing, collectively providing the value

coordinates for technology-empowered instructional design.

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