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Research on the Improvement of Teaching Ability of College English Teachers in A Digital Environment

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Abstract

The deep integration of digital technologies is reshaping the pedagogical paradigms in university English education, where teacher competency enhancement has become a pivotal factor for improving teaching quality. To address the disconnect between technological empowerment and instructional practices, this study analyzes the dual impacts of digital environments on teachers' professional development. It explores four dimensions of competency: digital literacy, interactive design, innovative assessment methods, and emotional intelligence. Practical approaches are examined through school-based training programs, interdisciplinary collaboration, data-driven iterative processes, and tripartite ecosystem partnerships. The research demonstrates that teacher development must transcend basic technical operations, focusing instead on critical technology integration, dynamic equilibrium in teaching scenarios, in-depth interpretation of process data, and reconstruction of emotional connections in virtual spaces. These elements collectively form an integrated development paradigm where technological empowerment and pedagogical wisdom synergistically converge.

Keywords

Digital environment; College English teachers; Teaching ability improvement

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1. Introduction

Digital technologies have transformed the educational ecosystem of higher education, shifting English classrooms from traditional face-to-face instruction to blended online-offline formats. This transition has fundamentally redefined teachers' roles, pedagogical design principles, and student-teacher interactions. While intelligent technologies now require enhanced digital literacy, cross-media communication skills, and data-driven decision-making capabilities, many educators remain confined to basic tool usage without developing deep teaching innovation. This study examines the internal mechanisms driving teacher competency development, identifies core elements of English teaching proficiency in digital environments, provides theoretical foundations for professional growth, and contributes to

substantial improvements in university English education quality.

2. Challenges and opportunities of the digital environment to English teachers' teaching ability

2.1. Challenges

The rapid evolution of digital technologies far outpaces educators' adaptability. With educational platforms and smart tools emerging quickly, teachers must continually invest time mastering new technological frameworks. However, traditional teacher training systems have failed to integrate digital pedagogical competencies into core curricula, leaving many educators struggling with technology implementation. The deeper challenge lies in transforming instructional mindsets: digital environments require educators to evolve from knowledge transmitters to learning designers. This necessitates restructuring course content presentation, designing multimodal learning tasks, and establishing data-driven dynamic evaluation systems, rather than simply replicating offline teaching materials on online platforms [1]. Moreover, students' learning behaviors in digital spaces become more implicit, with attention easily distracted. Teachers can no longer monitor students 'comprehension in real-time as they did in traditional classrooms. Teacher-student interactions shift from face-to-face emotional exchanges to screen-mediated symbolic communication, significantly diminishing classroom immediacy and posing severe challenges to educators' ability to maintain classroom control.

2.2. Opportunities

Digital platforms have shattered geographical barriers, enabling teachers to directly access English teaching videos, corpus resources, and cutting-edge research from top universities like Oxford and Cambridge. This allows for the rapid application of international academic theories in local classroom practices, significantly shortening the transition cycle from theory to practice. Meanwhile, AI-generated learning data provides unprecedented insights for educators. Precise records of pronunciation errors in speech recognition software, pauses in reading platforms, and grammatical weaknesses in writing systems allow teachers to design personalized training programs for students at different proficiency levels, transforming one-size-fits-all teaching into tailored guidance. Furthermore, online academic communities have reshaped professional development pathways. Teachers now engage in real-time discussions with global peers about teaching challenges, participate in cross-border research collaborations, and observe classroom cases from diverse cultural backgrounds. Professional growth has evolved from isolated individual exploration to collaborative sharing and interaction of collective wisdom.

3. The constituent elements of teaching ability of college English teachers in a digital environment

3.1. Digital literacy: From basic operations to critical technology integration

Teachers 'digital literacy has evolved beyond basic software operation skills, with the core competency being the ability to assess the value boundaries of technology in education critically. Educators must evaluate whether intelligent tools genuinely align with language acquisition principles, rather than being swayed by technological novelty to blindly digitize all teaching processes. Deep technical integration capability manifests in teachers' proactive selection, adaptation, or rejection of specific technological tools based on educational objectives. For instance, when cultivating critical thinking, educators recognize that AI-generated standard answers may undermine independent thinking, thus limiting AI tool usage while designing open-ended discussion tasks. Additionally, teachers must possess emergency response skills for technical failures. When platforms crash or network disruptions occur, they should swiftly adjust teaching plans, converting digital resources into offline materials to ensure uninterrupted instructional continuity despite technical issues [2].

3.2. Interaction design: Dynamic balance strategies for blended online and offline teaching

The essence of blended learning lies not in rigidly allocating time between online and offline sessions, but in precisely identifying the optimal medium for different knowledge types. Specifically, procedural knowledge like

vocabulary memorization and grammar drills work best on digital platforms where systems provide instant error feedback and personalized exercises, freeing up classroom time for advanced language application. Complex cognitive tasks such as critical reading and academic writing, however, demand face-to-face interactions where teachers can immediately identify students' cognitive blocks and adjust their questioning strategies to overcome barriers. This dynamic equilibrium also involves teachers flexibly adapting teaching scenarios based on real-time feedback. When deep disagreements emerge during online discussions, educators may extend these debates to in-person sessions using non-verbal cues like body language and eye contact to stimulate intellectual exchange, rather than mechanically following predetermined lesson plans.

3.3. Evaluation innovation: Application of process data collection and intelligent analysis technology

Digital technology has transformed educational assessment from outcome-focused to process-oriented tracking. Teachers can now monitor students 'complete writing journeys, including detailed behavioral data such as initial draft completion time, revision frequency, vocabulary substitution patterns, and sentence structure adjustments. These insights reveal authentic writing strategies, like a student's frequent deletion of complex sentences for simpler alternatives, indicating insufficient grammatical confidence. This allows teachers to provide targeted syntactic reinforcement in subsequent lessons. Meanwhile, intelligent analysis converts massive data into visualized learning profiles. Instead of manually reviewing each assignment, the system automatically identifies deviations from normal trajectories. For instance, when a student's online study duration drops sharply over two weeks, teachers can intervene promptly to investigate causes and prevent learning difficulties from accumulating. Furthermore, evaluation granularity expands from overall scores to micro-level skill progression. Students can clearly track changes in specific dimensions like listening comprehension speed and speaking fluency, significantly enhancing their sense of academic control.

3.4. Emotional intelligence: The construction path of emotional connection between teachers and students in a digital environment

The screen barrier diminishes the emotional cues teachers traditionally rely on in classrooms, making it difficult to perceive students 'confusion, anxiety, and burnout through cold text messages or static avatars [3]. To address this, educators need to develop new emotional sensing technologies. For instance, they can actively monitor implicit indicators like students' speaking frequency, response speed, and emotional tone in online discussions, capturing psychological states through digital footprints. Simultaneously, building emotional connections requires teachers to create ritualistic interactions in virtual spaces, such as personalized greetings before each class, regular one-on-one voice chats, and immediate affirmation of progress, to consistently convey attention and expectations. Furthermore, teachers must guard against emotional detachment risks in digital environments. When noticing prolonged inactivity on platforms, they should proactively send private messages instead of waiting for help requests. This transforms passive monitoring into active humanistic care, establishing an emotional bridge across screens between teachers and students.

4. Practical approaches to improving the teaching ability of college English teachers in the digital environment

4.1. School-based training: Workshops on technology applications based on real teaching scenarios

School-based training should address real-world challenges teachers encounter in daily teaching by integrating technology tool learning into specific instructional contexts, rather than providing isolated software operation instruction. Workshop design requires identifying practical dilemmas teachers face during lesson preparation, teaching, and assessment, such as maintaining student engagement in online classes or implementing personalized feedback through digital platforms, and developing tailored training programs accordingly. During the training, participating teachers must bring their current unit content to complete digital instructional design under mentor guidance, including

selecting appropriate applications, designing interactive activities, and creating digital materials. Peer observation proves crucial: after a teacher demonstrates their design approach, other participants provide immediate feedback addressing potential classroom management issues or student comprehension barriers in technology application, prompting designers to make real-time adjustments. This hands-on refinement process helps teachers truly understand how technology serves educational objectives, avoiding formalistic tendencies of using technology for its own sake. After the workshop, teachers must implement their designs within the following week, then share classroom implementation outcomes during debriefing meetings to discuss student feedback, technical stability, time allocation, and other practical issues, thereby accumulating valuable experience. For instance, a teacher participating in a workshop learned to use Padlet for post-reading discussions. She designed an activity where students uploaded analyses of novel characters, accompanied by screenshots of textual references. Other students could then comment and interact under others' posts. The teacher utilized the platform's tagging feature to categorize and archive student contributions, exporting the data as formative assessment material afterward. This entire process seamlessly integrated technical features with reading instruction objectives.

4.2. Collaborative innovation: Interdisciplinary teams build digital teaching resource banks

The formation of interdisciplinary teams requires breaking down departmental barriers. English teachers collaborate with educational technology experts, subject matter teachers, and multimedia designers to form fixed working groups, each member assuming distinct roles in resource development. English teachers define language teaching objectives, design task sequences, and control language difficulty gradients. Educational technology experts evaluate interactive designs from a user experience perspective to ensure alignment with cognitive principles. Multimedia designers transform teaching content into visual and dynamic presentations, while subject matter teachers ensure professional accuracy across interdisciplinary themes [4]. Resource repository development cannot be fragmented; teams must establish cyclical collaborative mechanisms. Each resource undergoes multiple rounds of discussions, from topic selection and scriptwriting to material production and final review, where members annotate revisions in shared documents in real time. Design drafts circulate within groups with modification notes to prevent information gaps. Resources must undergo small-scale testing before inclusion, with teams selecting target student groups to collect operational path data, dwell time, and repeated viewing segments. This data informs resource effectiveness evaluation. Quality control mechanisms require complete iteration records for each version, preserving the evolution from initial drafts to revisions and final products to facilitate team reflection on design logic optimization. For instance, English teachers and journalism faculty collaborated to develop a media literacy module for English instruction. The English teachers designed vocabulary learning tasks focused on fake news identification, while journalism instructors provided authentic news case materials. Educational technology experts created interactive decision trees to guide students in verifying information authenticity, and multimedia designers developed a simulated social media interface. Over three weeks, the four teams held five online meetings to refine the module. They addressed issues including case study political sensitivity, language difficulty, alignment with student proficiency, and interactive node design rationality. After initial testing in two classes, the presentation timing of prompts was adjusted based on students' feedback.

4.3. Feedback optimization: Use the learning analysis system to realize the iteration of teaching behavior

The core of applying learning analytics systems lies in transforming previously vague teaching outcomes into visualized data metrics. Educators should develop data interpretation capabilities rather than relying solely on technical reports. Specifically, the platform automatically tracks students' behavioral patterns in learning management systems, including granular details like video completion rates, replay frequency at specific knowledge points, time distribution of online test responses, and discussion participation frequency. After each class, teachers should dedicate time to analyzing backend data, focusing on teaching blind spots revealed by anomalies.

For instance, excessive replay of a video segment suggests unclear explanations, concentrated errors on a particular question indicate conceptual misunderstandings, while persistent silence in discussion forums reflects insufficient inclusivity in participation design. Teachers must compare these anomalies with their lesson plans to identify which sections create comprehension barriers or engagement challenges. Additionally, iterative processes require teachers to maintain teaching logs documenting data-driven adjustments—such as illustrating abstract grammar points with diagrams or modifying discussion questions to lower cognitive barriers. Subsequent teaching implementations should review changes in these metrics to validate adjustments. The system also generates individual learning profiles, enabling teachers to identify students needing extra support and design differentiated learning paths for learners with varying learning styles, rather than pushing uniform content at all.

4.4. Ecological construction: A sustainable development mechanism involving universities, enterprises and teachers

The establishment of a sustainable development mechanism requires clarifying the value contributions of all three parties: universities provide policy support, institutional safeguards, and teaching practice scenarios; enterprises deliver cutting-edge technological products, application training, and real-world business cases; while teachers validate technical effectiveness through practical implementation and provide feedback for improvement. This creates a value loop rather than a one-way supply relationship. Specifically, universities should establish an enterprise access evaluation mechanism to screen partners committed to deep involvement in teaching R&D rather than mere product promotion. When signing long-term agreements, clear boundaries must be defined regarding enterprises 'responsibilities in technology updates, teacher training, and data security to prevent superficial collaborations. Enterprise representatives should not limit themselves to software demonstrations but must conduct classroom observations to identify practical challenges faced by teachers. They should customize functional modules based on specific teaching scenarios—such as developing rapid grouping tools for large classes or designing automated speech evaluation systems for oral training. Teachers assume the role of product testers during implementation, documenting functional defects, operational inconveniences, and technical issues encountered by students, while regularly submitting usage reports to drive educational adaptation improvements [5]. Furthermore, universities should incorporate teachers' participation in product development and collaborative resource-building into performance evaluations, granting corresponding workload recognition or performance incentives to ensure sufficient motivation for collaborative innovation.

5. Conclusion

The digital wave is not a static technological phenomenon. Therefore, teachers 'capacity building cannot rely on single training sessions or short-term programs to achieve fundamental breakthroughs, but must be embedded throughout their entire career as a regular component of teaching practice. The continuous iteration of technical tools requires teachers to maintain an open mindset for lifelong learning, while institutions should establish long-term support mechanisms that shift resource allocation from hardware procurement to deep empowerment of teacher development. The ultimate goal of capability enhancement lies not in technical mastery itself, but in teachers' ability to use digital means to diagnose student needs more accurately and adjust teaching strategies more flexibly, ultimately leading to substantial improvements in language acquisition quality. This allows technology to truly return to its original role as a service supporting educational objectives.

Disclosure statement

The author declares no conflict of interest.

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