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Research on the Construction of a Sustainable Digital Literacy Development Ecosystem for College English Teachers

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Abstract: The digital transformation of higher education requires a more integrated understanding of how college English teachers develop digital literacy. Existing approaches often remain fragmented, treating training, platform construction, individual learning, and institutional incentives as separate interventions. Drawing on ecological systems theory and the TPACK framework, this conceptual study identifies three structural challenges: fragmented professional agency and shallow pedagogical integration, weak collaborative learning and limited knowledge circulation, and incomplete institutional and governance support. In response, it proposes a four-level ecosystem comprising teacher self-development, professional learning communities, institutional support, and external governance with networked resources. It also develops a three-phase operational pathway encompassing diagnosis and differentiated planning, collaborative learning and classroom practice, and evidence-informed reflection and iterative improvement. The framework reframes digital literacy development from episodic training to continuous professional growth, from individual adaptation to multi-actor collaboration, and from tool-oriented evaluation to pedagogically grounded improvement. It provides a theoretical and practical reference for universities seeking to support sustainable, discipline-responsive, and ethically responsible digital literacy development among college English teachers.

Keywords: College English teachers; Digital literacy; Digital literacy development ecosystem; Professional learning community; Multi-level collaboration

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1. Introduction

Digital technologies now permeate nearly every dimension of higher education, including curriculum design, resource production, classroom interaction, formative assessment, student support, academic research, and institutional management. Their influence is particularly pronounced in college English education, where teachers increasingly engage with learning management systems, online corpora, automated writing evaluation, speech-recognition applications, multimodal resources, virtual communication spaces, learning

analytics, and generative artificial intelligence. These technologies broaden access to authentic language input, facilitate flexible interaction, and provide more timely feedback. Simultaneously, they demand that teachers make increasingly complex decisions about pedagogy, language quality, cultural appropriateness, data use, academic integrity, and the division of responsibility between human educators and intelligent systems.

The digital literacy of college English teachers, therefore, cannot be reduced to the ability to operate software, prepare electronic courseware, or upload resources to an online platform. It concerns whether teachers can select and adapt technologies according to language-learning objectives, design meaningful tasks, interpret learner evidence, evaluate digital content, protect student privacy, and continuously renew professional knowledge. It also requires them to preserve the communicative, intercultural, and humanistic purposes of language education while working in data-intensive and increasingly automated environments. In this sense, digital literacy is not a stable technical possession but a developing professional capacity that must be situated in disciplinary practice.

Recent Chinese scholarship has moved toward a more systematic understanding of this development. Wang explicitly stated that "This study aims to build a comprehensive, systematic and sustainable digital literacy training model for English teachers" [1]. Chen and Su likewise observed that "A four-dimensional improvement pathway comprising 'policy guarantees, institutional support, training optimization, and teachers' internal motivation' is proposed" [2]. These formulations are important because they locate teacher development within a wider support structure rather than treating digital competence as a matter of individual effort alone. Ye noted that "The digital literacy of normal English teachers covers three core elements: technology application, resource integration and teaching innovation" [3].

However, a significant limitation persists. Many existing studies follow a linear problem-solution structure: insufficient awareness is addressed with awareness training, weak skills with technical workshops, limited resources with platform construction, and inadequate motivation with incentives. Such recommendations are individually reasonable, but they are often presented as parallel measures. The relationships among teacher agency, collegial learning, institutional arrangements, external resources, and ethical governance remain insufficiently explained. The long-term process by which teachers transform new knowledge into classroom practice, collect evidence, revise instructional designs, and circulate professional knowledge tends to receive less attention than the initial training event.

An ecological perspective offers a useful way to address this fragmentation. Cai concluded that "The teaching ecology takes digital literacy as the core element" [4]. Transferred from classroom ecology to teacher development, this proposition suggests that digital literacy can function as an organizing principle connecting individuals, communities, institutions, technologies, policies, and values. Sustainable improvement then depends not on a single intervention but on recurring interactions among these elements and on the capacity of the system to learn from practice.

Accordingly, this paper addresses three questions: What structural challenges hinder the sustainable development of college English teachers' digital literacy? What components should constitute a multi-level development ecosystem? How can the ecosystem operate as a continuous professional learning mechanism rather than as a collection of disconnected recommendations? The paper contributes by defining sustainable digital literacy development as a dynamic and discipline-responsive process, constructing a four-level collaborative ecosystem, and proposing a concise operational pathway that links professional diagnosis,

collaborative practice, evidence, and iterative improvement.

2. Research approach and conceptual foundations

2.1. Research approach

To examine the sustainable development of college English teachers' digital literacy, this study integrates policy analysis, analytical literature synthesis, and framework construction. Policy analysis is used to identify the normative expectations for teacher digital literacy in the Chinese context. The education industry standard Digital Literacy for Teachers defines a five-dimensional structure comprising digital awareness, digital technology knowledge and skills, digital application, digital social responsibility, and professional development [5]. Although the standard provides a general framework, its application to college English education requires discipline-specific interpretation.

Analytical literature synthesis is used to integrate recurring concerns in recent Chinese studies of college, vocational, and pre-service English teachers. The synthesis identifies convergent themes concerning technological-pedagogical integration, digital resource use, teacher motivation, professional communities, institutional support, evaluation, and ethical responsibility. Framework construction then reorganizes these themes into a relational model. The model is normative and explanatory: it clarifies what a sustainable ecosystem should contain and how its components should interact.

2.2. Digital literacy as a discipline-responsive professional capacity

The national standard defines teacher digital literacy as the awareness, ability, and responsibility required to appropriately use digital technologies to obtain, process, use, manage, and evaluate digital information and resources; identify and solve educational problems; and optimize or transform teaching activities [5]. This definition is broader than operational competence because it connects technical activity with pedagogical problem solving and social responsibility. For college English teachers, these elements must be interpreted through the communicative, cultural, and multimodal nature of language education.

English teachers work with learning processes that are highly dependent on interaction, feedback, audience awareness, contextualized meaning, and repeated language production. A digital resource is therefore educationally valuable only when it contributes to these processes. A corpus tool may support discovery learning, but only if the teacher can design appropriate questions and help students interpret linguistic patterns. Automated writing feedback may increase response speed, but teachers must determine whether the feedback is valid, understandable, and consistent with instructional goals. Generative artificial intelligence may produce fluent materials, yet those materials still require evaluation for level, accuracy, cultural representation, source reliability, and pedagogical suitability.

Based on the national standard and the literature synthesis, this paper conceptualizes sustainable digital literacy for college English teachers through five interconnected capacities. The first is digital awareness and professional agency: teachers understand the value and limitations of technology and assume responsibility for continuing development. The second is technological-pedagogical integration: teachers select and adapt tools according to content, learners, objectives, and context. The third is digital resource and data competence: teachers locate, evaluate, create, manage, and interpret resources and learner evidence. The fourth is critical and ethical judgment: teachers address privacy, copyright, accessibility, academic integrity,

algorithmic bias, and responsible artificial-intelligence use. The fifth is collaborative professional learning: teachers participate in shared inquiry, resource development, peer feedback, and collective reflection. Sustainability depends on the interaction of these capacities rather than on mastery of an expanding list of applications.

2.3. TPACK and ecological systems thinking

The Technological Pedagogical Content Knowledge (TPACK) framework explains why technical knowledge alone is insufficient. TPACK conceptualizes effective technology integration as the interaction of technological knowledge, pedagogical knowledge, and content knowledge [6]. In college English education, content knowledge includes language systems, skills, discourse, translation, culture, and intercultural communication. Pedagogical knowledge includes task design, scaffolding, classroom interaction, feedback, assessment, differentiation, and learner autonomy. Technological knowledge includes platforms, corpora, media-production tools, analytics, and intelligent systems. Effective practice emerges from the relationships among these knowledge domains rather than from any domain in isolation.

Ecological systems thinking extends the analysis beyond the individual teacher. Bronfenbrenner's ecological perspective emphasizes that development is shaped by nested and interacting environments [7]. Applied to digital literacy, the teacher is situated within an English department, a university, inter-university networks, technology-service systems, and policy and ethical environments. A motivated and technically capable teacher may still be unable to innovate if platforms are unstable, support is unavailable, workload is excessive, or evaluation systems do not recognize digital teaching work. Conversely, sophisticated infrastructure may remain underused if teachers lack pedagogical confidence, collegial support, or opportunities for guided experimentation.

Combining TPACK with an ecological perspective produces a twofold analytical principle. First, digital development must remain anchored in English pedagogy: the central question is not whether a technology is advanced but whether it supports worthwhile language learning. Second, development must be organizationally embedded: teachers require relationships, time, resources, feedback, recognition, and ethical guidance. These principles provide the conceptual basis for the challenge analysis and ecosystem proposed below.

3. Structural challenges to sustainable development

3.1. Fragmented professional agency and shallow pedagogical integration

The first challenge concerns the relationship between teachers' professional agency and their use of technology. College English teachers differ in career stage, prior experience, confidence, workload, research obligations, and access to support. Some teachers approach digital innovation with curiosity, while others experience anxiety or regard it as an externally imposed requirement. A further group may use new tools frequently but without sufficient critical judgment. As previous research indicates, the rapid development of generative artificial intelligence has introduced new requirements for English teachers' professional competencies and professional roles [2]. These differences mean that participation in the same workshop cannot be assumed to produce the same professional learning.

Fragmentation is also evident in the imbalance between low-order and high-order applications. Basic platform operation, electronic presentation, online communication, and resource retrieval are increasingly

common, but deeper integration requires a different level of professional reasoning. Teachers must connect technology with task sequence, interaction design, feedback timing, learner differences, and assessment evidence. When this connection is absent, digitalization becomes substitution: a printed worksheet becomes a digital worksheet, a lecture is moved to a video platform, or artificial intelligence generates materials that are used without adequate adaptation. Convenience may increase, but the underlying pedagogy remains unchanged.

For language education, shallow integration creates specific risks. Automated feedback may encourage surface correction rather than revision of meaning; translation tools may produce fluent but culturally inappropriate output; speech-recognition scores may be treated as objective despite variation in accent and task conditions; and generated reading materials may contain inaccurate information or unsuitable vocabulary. Teachers need sufficient disciplinary and pedagogical judgment to decide when technology adds value, when human feedback is necessary, and when a tool should not be used. Without this judgment, digital literacy is easily confused with frequency of tool use.

3.2. Weak collaborative learning and limited knowledge circulation

The second challenge is the isolation of professional learning. Digital innovation often begins with individual experimentation: a teacher explores a platform, develops prompts, redesigns an assignment, or tests automated feedback. Such experimentation is valuable, but it becomes fragile when it remains private. Individual teachers repeatedly solve similar problems, successful practices are not documented, unsuccessful attempts are hidden, and expertise disappears when a project ends or a staff member leaves.

Conventional professional development does not always overcome this isolation. One-off lectures may introduce concepts or tools, but they rarely provide enough time for design, rehearsal, classroom application, observation, and revision. Generic training may also ignore the needs of particular English courses. A teacher of academic writing requires different examples from a teacher of oral English, translation, intercultural communication, or English teaching methodology. When training is detached from course problems, teachers may understand a tool during the session but remain uncertain about how to use it in their own classroom. Research has shown that "many vocational college English teachers are still in a passive adaptation stage regarding the application of emerging technologies such as AIGC, and have not been able to fully leverage the empowering role of intelligent technology in teaching innovation" [2].

A sustainable system therefore requires knowledge circulation. Teachers need spaces in which lesson designs, digital resources, assessment rubrics, classroom evidence, and ethical questions can be discussed. The aim is not merely to exchange files. Professional knowledge becomes reusable when teachers explain the learning problem, instructional rationale, implementation conditions, evidence, limitations, and necessary adaptations. A professional community also provides emotional support. Because digital experimentation involves uncertainty and possible failure, a collegial environment can reduce anxiety and make critical discussion more acceptable.

3.3. Incomplete institutional and governance support

The third challenge concerns the enabling environment. Universities may invest in platforms, smart classrooms, or digital resources without establishing a coherent support system. Teachers then confront multiple logins, unstable functions, limited interoperability, inadequate language-learning resources, or delayed technical assistance. The problem is not simply insufficient equipment; it is a mismatch between

technological provision and pedagogical work. Tools designed for general course management may not support oral interaction, formative language feedback, corpus exploration, or multimodal production in ways that college English teachers require.

Training, workload, and evaluation are often similarly disconnected. Teachers may be encouraged to innovate but receive no protected time for course redesign, collaborative observation, resource development, or reflection. Digital teaching outputs may be counted by quantity rather than evaluated for pedagogical quality. Participation certificates, platform-use frequency, and numbers of uploaded resources are easy to record, but they reveal little about whether teaching has improved. When digital innovation adds invisible labor without meaningful recognition, sustained participation becomes difficult.

Governance and ethics constitute another weak area. Educational data may be collected without clear rules concerning purpose, access, storage, retention, and deletion. Teachers may be uncertain about whether student work can be uploaded to external artificial-intelligence services, how generated content should be acknowledged, or who is responsible for automated decisions. Unequal student access, accessibility needs, algorithmic bias, and intellectual-property questions may be treated as secondary matters. Yet ethical uncertainty can undermine both trust and innovation. Sustainable development requires clear boundaries that protect students and support teachers' professional judgment rather than relying on individual improvisation.

4. A Multi-level sustainable development ecosystem

4.1. Teacher self-development as the internal core

The first level of the ecosystem is teacher self-development. Sustainable digital literacy begins with professional agency: teachers must recognize digital development as part of their educational responsibility rather than as temporary compliance with a technological trend. Agency does not mean that teachers are solely responsible for overcoming structural limitations. It means that they retain the capacity to identify pedagogical problems, set development goals, select appropriate tools, evaluate consequences, and make reasoned decisions about continued use.

Self-development should be problem-oriented. Instead of attempting to master every emerging application, teachers can begin with a recurring instructional challenge: insufficient speaking practice, delayed writing feedback, limited access to authentic materials, weak learner participation, or difficulty interpreting formative evidence. The teacher then examines whether a digital approach can address the problem and what new risks it may introduce. This orientation protects professional learning from becoming a sequence of product demonstrations.

Reflection is the mechanism that turns experience into professional knowledge. Teachers can maintain concise development portfolios containing lesson designs, digital materials, samples of student work, feedback records, observation notes, and reflective explanations. The purpose is not administrative accumulation but disciplined inquiry: What was the intended learning outcome? Why was the technology selected? What changed in student participation or performance? What difficulties emerged? What should be revised? Such questions make digital literacy visible as pedagogical judgment rather than technical display. Research confirms that "teachers should establish a lifelong learning concept, develop professional awareness of technology-enabled education, and actively adapt to the trend of digital technology change" [8].

4.2. Professional learning communities as the collaborative engine

The second level is the professional learning community, which converts individual experimentation into shared and revisable knowledge. A community may be organized within an English department, across departments, or through inter-university virtual teaching and research networks. Its members can include college English teachers, educational-technology specialists, librarians, data-support personnel, and, where appropriate, student representatives. The community needs a shared domain, recurring interaction, and concrete products. Without these features, it risks becoming another communication group that distributes information but does not generate professional learning.

Community activity should be organized around teaching cases and design problems. A useful cycle may involve identifying a course problem, jointly designing a digital task, anticipating ethical and accessibility issues, implementing the task in one or more classes, reviewing evidence, and revising the design. Peer observation and microteaching can make tacit decisions open to discussion. Case records should include not only successful outcomes but also limitations, failed attempts, and conditions of use. This prevents the uncritical circulation of fashionable practices.

Shared repositories are valuable when they preserve context. A prompt, rubric, video, corpus activity, or automated-feedback workflow should be accompanied by information about course type, learner level, objectives, implementation steps, evaluation criteria, and known risks. The community should also establish a process for reviewing and updating resources, because platforms and artificial-intelligence systems change rapidly. Through this mechanism, professional communities become the collaborative engine of the ecosystem: they distribute expertise, reduce repetitive work, support emotional resilience, and sustain innovation beyond isolated individuals.

4.3. Institutional support as the enabling structure

The third level is the university. Institutional support integrates infrastructure, professional development, time, technical service, and recognition. Platform construction is necessary but insufficient. Universities should involve English teachers in procurement and evaluation so that systems respond to language-learning requirements. Technical support should be coordinated with pedagogical consultation; solving a login problem and redesigning a feedback activity are different forms of assistance, and both are needed.

Professional development should be differentiated by need and career stage. Teachers with limited digital experience may need basic operational skills, confidence building, privacy awareness, and supported practice. Teachers with moderate experience may need TPACK-oriented course design, digital assessment, corpus pedagogy, and interpretation of learning data. Experienced teachers may need opportunities to lead curriculum innovation, mentor colleagues, evaluate new technologies, and conduct classroom-based research. Differentiation should also reflect course type rather than relying only on age or job title.

Universities must create conditions for application. Protected time, small teaching-innovation grants, access to specialist support, peer-observation arrangements, and recognition of resource development can help teachers transform training into practice. Evaluation should emphasize pedagogical evidence. Participation and output counts may be supplementary indicators, but they should not substitute for analysis of instructional design, learner support, ethical compliance, and reflective improvement. A portfolio-based approach can connect professional development with classroom evidence without reducing teaching to platform statistics.

Institutional leadership also has a cultural function. Teachers need permission to experiment cautiously, report difficulties, and revise unsuccessful designs. If only polished success stories are rewarded, professional learning becomes performative. A supportive culture treats responsible experimentation and evidence-based revision as legitimate academic work. This makes the university an enabling structure rather than merely a provider of technology.

4.4. External governance and networked resource support

The fourth level consists of policy standards, inter-university networks, publishers, technology providers, research organizations, and broader ethical and legal expectations. External governance should establish minimum principles for data protection, accessibility, intellectual property, academic integrity, artificial-intelligence use, and transparency. These principles need sufficient stability to protect participants and sufficient flexibility to respond to technological change.

Networked resources can reduce institutional inequality. Regional alliances may share evaluated training modules, English teaching cases, digital corpora, technical expertise, and virtual teaching and research activities. Smaller or less-resourced universities should not be required to duplicate every platform and support function. Collaborative procurement, shared repositories, and cross-institution mentoring can broaden access while preserving local adaptation.

Technology providers should also be treated as accountable partners rather than neutral vendors. Universities need clear information about data use, model limitations, accessibility, system updates, and mechanisms for contesting automated outputs. Teachers and students should not be locked into opaque systems that limit professional judgment. External governance therefore functions as the enabling external environment of the ecosystem: it supplies standards and resources while defining the conditions under which innovation remains trustworthy and educationally defensible.

The four levels are mutually dependent. Teacher agency gives the ecosystem direction; professional communities circulate knowledge; universities provide resources, time, and recognition; and external governance supplies standards and networked support. Weakness at one level constrains the others. Conversely, feedback from classroom practice can improve community resources, institutional arrangements, and policy guidance. This reciprocal relationship distinguishes an ecosystem from a list of independent interventions.

5. Operational pathway and implementation

5.1. Diagnosis and differentiated planning

The ecosystem should operate through a recurring pathway rather than a fixed training schedule. The first phase combines diagnosis and differentiated planning. Diagnosis should not rely on a single self-rating score. A more credible process can draw on self-assessment, analysis of teaching documents, peer dialogue, observation, student-learning evidence, and institutional priorities. The national standard provides useful dimensions, but indicators should be translated into English-teaching practices such as multimodal resource evaluation, digital task design, feedback literacy, corpus use, data interpretation, and responsible artificial-intelligence integration.

The outcome of diagnosis should be a focused development profile rather than a deficit label. Teachers may possess strong resource-search skills but limited assessment competence; another teacher may use

technology creatively but need support with privacy and accessibility; a third may require confidence and basic platform practice. Differentiated plans should specify a pedagogical problem, a manageable learning goal, appropriate support, expected evidence, and a review point. This converts professional development from general exposure into purposeful inquiry.

Planning should also recognize institutional conditions. A development goal that depends on unavailable infrastructure or unsupported software is unlikely to be sustainable. Departments and support units should therefore review individual plans collectively, identify common needs, and coordinate resources. Where several teachers share a problem, a community project may be more efficient than separate training. Where needs are highly specialized, mentoring or external collaboration may be more appropriate.

5.2. Collaborative learning and classroom practice

The second phase connects collaborative learning with classroom practice. Learning activities should be organized around authentic English-teaching tasks rather than tool functions. Teachers might jointly design an AI-assisted writing sequence, a corpus-informed vocabulary activity, a multimodal intercultural project, a speech-feedback task, or a data-supported formative assessment. Workshops should include demonstration, design, peer critique, rehearsal, implementation planning, and ethical review. This sequence allows teachers to connect technological knowledge with pedagogy and disciplinary content.

Classroom experimentation should begin at a manageable scale. A teacher can test one revised task, one assessment process, or one feedback workflow before redesigning an entire course. Small-scale implementation makes it easier to identify whether the technology improves access, interaction, feedback, differentiation, or learning quality. It also reveals unintended consequences, including increased cognitive load, inequitable access, inaccurate output, excessive dependence, or reduced human interaction.

Teacher and student agency must remain central. Students should understand why a technology is being used, what data it collects, what limitations it has, and how their work will be evaluated. Teachers should retain responsibility for instructional decisions and provide alternatives when access, disability, privacy, or other concerns arise. Technology should support language use, thinking, cultural interpretation, and feedback rather than replace them. This human-centered principle keeps implementation aligned with the educational purposes identified during planning.

5.3. Evidence-informed reflection and iterative improvement

The third phase links evidence, reflection, and system improvement. Evidence should be proportionate to the development question and may include lesson plans, task instructions, student work, feedback samples, platform records, observation notes, teacher journals, and student reflections. Collection should not become surveillance or administrative overload. Its purpose is to support professional reasoning: Did the design produce the intended form of language practice? Which learners benefited or encountered barriers? Was feedback accurate and actionable? Did the technology change the quality of learning or merely the speed of task completion?

Reflection should occur both individually and collectively. Individual reflection identifies adjustments to the teacher's own design. Community discussion helps distinguish problems caused by local conditions from weaknesses in the task or tool. Cases can then be revised and added to shared repositories with contextual information. Evidence from multiple cases may reveal a need for a new training module, improved technical support, changes to workload arrangements, or clearer ethical guidance. Studies indicate that "teachers should

be encouraged to actively participate in teaching research, form a digital technology learning community, and collectively explore the innovative application of digital technologies represented by AIGC in English teaching" [8].

The final step is iteration across levels. Teachers redesign activities; communities update shared knowledge; universities adjust platforms, support, recognition, and professional development; and external networks or policy actors respond to recurring technical and ethical issues. The cycle then returns to a more focused diagnosis. Sustainability is therefore not measured by the completion of a course or the acquisition of a certificate. It is reflected in the ecosystem's capacity to convert experience into evidence, evidence into shared knowledge, and shared knowledge into improved practice and governance.

Implementation should be gradual and adaptive. Universities do not need to establish every component simultaneously. A feasible starting point is a departmental diagnostic workshop, a small professional learning community, and several supported classroom projects. Evidence from these projects can guide expansion and institutionalization. The central requirement is coherence: each new platform, workshop, incentive, or evaluation measure should connect with the larger pathway and with the pedagogical purposes of college English education.

6. Conclusion

The sustainable development of college English teachers' digital literacy is inherently an ecological issue, requiring more than isolated workshops or individual experimentation. The four-level ecosystem proposed in this study—encompassing teacher self-development, professional learning communities, institutional support, and external governance—addresses this complexity by embedding individual agency within collaborative, institutional, and policy environments. Complemented by a three-phase operational cycle of diagnosis, collaborative practice, and evidence-informed reflection, the framework illustrates how professional learning can circulate across levels and become integrated into routine teaching practice rather than remaining peripheral to it. By shifting the discourse on teacher digital literacy from a preoccupation with tool proficiency toward a broader concern with sustainable professional growth, the framework reorients both institutional planning and research agendas around the conditions that enable long-term development. In an era of relentless technological change, college English teachers must be more than competent users of digital tools; they must be reflective practitioners who harness technology in service of the humanistic and communicative ends of language education. The ecosystem proposed here offers a structured pathway toward that goal, providing a coherent analytical lens for universities seeking to build resilient, discipline-responsive, and ethically grounded digital development among their faculty.

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References

[1] Wang Y, 2025, Research on Improving the Digital Literacy of College English Teachers under the Background of Digital Education. Modern English, (15): 62–64.

[2] Chen H, Su P, 2026, Digital Literacy of Higher Vocational English Teachers in the AIGC Era: Actual Forms, Development Dilemmas and Improvement Paths. Vocational Technology, 25(1): 44–50.

[3] Ye C, 2026, Research on Digital Literacy of English Teacher Education under Digital Empowerment. Modern English, (4): 80–82.

[4] Cai R, 2026, The Construction of Teaching Ecology of College English for Higher Vocational Education: Embedding Digital Literacy. Special Zone Economy, (2): 104–107.

[5] Ministry of Education of the People's Republic of China, 2022, Digital Literacy for Teachers (JY/T 0646–2022). Ministry of Education, Beijing.

[6] Mishra P, Koehler MJ, 2006, Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. Teachers College Record, 108(6): 1017–1054.

[7] Bronfenbrenner U, 1979, The Ecology of Human Development: Experiments by Nature and Design. Harvard University Press, Cambridge, MA.

[8] Zhou L, Zhang M, Zhang C, 2023, Cultivation of Teachers' Digital Literacy under the Background of Digital Transformation: Era Value, Realistic Dilemma and Breakthrough Path. China Educational Technology, (10): 98–105.