Sino-US English Teaching, July 2025, Vol. 22, No. 7, 235-240
doi:10.17265/1539-8072/2025.07.004

On the Manifestations, Causes and Mitigation of Teachers' Digital Anxiety

HU Chunxiao
Zhejiang Gongshang University Hangzhou College of Commerce, Hangzhou, China

In the wave of digital transformation in education, teachers are the core implementers, and their adaptability to digital technology directly affects how effective the transformation will be. Difficulties in self-regulating to adapt to digital changes lead to their sustained negative emotion: teachers' digital anxiety, which covers survival, development, technical application, and value perception dimensions. Enhancing teachers' digital-intelligent competence is the key to alleviating digital anxiety and advancing in-depth educational digital transformation.

Keywords: educational digital transformation, teachers' digital anxiety, digital-intelligent competence

Introduction

Nowadays, digital technologies are leading global changes at an unprecedented speed. The State Council's 14th Five-Year Plan for Digital Economy Development (2022) clearly stated that "digital transformation has become an irresistible trend". In recent years, China has rolled out a series of policies to facilitate educational digital transformation. China Education Modernization 2035 proposes that "efforts should be made to coordinate the construction of an integrated intelligent platform for teaching, management and services, and establish a mechanism for the co-construction and sharing of digital educational resources" (The State Council, 2019). "Digital anxiety" is a unique negative emotion in the digital age. It is mainly manifested as various negative emotions of educational subjects in the digital teaching context, such as passivity, rejection, or disgust towards the use of artificial intelligence, which are triggered by the rapid development of artificial intelligence, as well as their concerns about the potential impacts it may bring (Mo, Wei, & Ding, 2025).

Failure of Self-Regulation: The Cause of Teachers' Digital Anxiety

The emergence of teachers' digital anxiety is the result of teachers' failure in self-regulation during educational digital transformation. The self-regulation theory points out that individuals adapt to environmental changes through three links: self-observation, self-judgment, and self-reaction. Individuals first observe their own behaviors, then compare them with external standards for evaluation, and finally produce emotional responses. When an individual's resources and energy are insufficient to meet the needs of environmental changes, self-regulation may fail, leading to anxiety and other negative emotions (Bandura, 1991).

In the context of digital transformation in education, this logic is fully reflected. On the one hand, China's education digitalization strategy continues to advance, and digital technology has been deeply integrated into

HU Chunxiao, M.A. associate professor, School of Foreign Languages, Zhejiang Gongshang University Hangzhou College of Commerce, Hangzhou, China.

the entire process of education and teaching. Innovative forms, such as smart campuses and online platforms have put rigid requirements on teachers' digital literacy. On the other hand, there is a gap between the digital capabilities of most teachers and the needs of transformation—They need to not only skillfully use emerging technologies, but also cope with in-depth changes in teaching models and role positioning brought by technology. When teachers realize that their abilities are difficult to meet the requirements of digitalization and lack effective strategies to make up for the gap, self-regulation will fail, and digital anxiety will arise.

Manifestations of Teachers' Digital Anxiety in Educational Digitalization

Teachers' digital anxiety is not a single emotion but a multi-dimensional negative state formed due to the failure of self-regulation in the digital transformation of education, specifically manifested as four types of anxiety: survival, developmental, technical, and value-based.

Survival Anxiety: Fears of Professional Obsolescence

The rapid development of artificial intelligence has extended concerns about technological displacement from industrial sectors into education. Teachers' survival anxiety stems from worries about the potential of digital technologies to replace their roles. In practice, the educational advantages of digital technologies have become increasingly apparent: Intelligent tutoring systems can deliver personalized instruction more effectively than traditional methods; online platforms can integrate high-quality resources to enable learning beyond time and space constraints. These advantages create tangible pressure on educators—many perceive themselves as less efficient than digital systems in knowledge transmission and resource integration. Students' positive responses to technology-enhanced instruction amplify concerns about diminished professional value. Combined with institutional emphasis on digital teaching metrics, these factors lead teachers to fear that those lacking digital proficiency may be replaced, resulting in survival anxiety centered on concerns about career continuity.

Developmental Anxiety: Struggles With Role Transformation

Education's digital transformation involves more than just technology application; it reshapes teachers' roles. The traditional role of "imparting knowledge and solving doubts" is evolving into multiple roles: "digital resource integrator", "personalized learning guide", and "human-machine collaborative partner". This shift places new demands on teachers' professional development. However, role transformation is fraught with obstacles, triggering developmental anxiety. External support is insufficient: Uneven quality of digital educational resources hinders practice, and institutional systems for digital development are imperfect, lacking clear training paths and incentives. Internally, many teachers have low tech acceptance; heavy teaching and administrative tasks leave little time for skill improvement, reducing motivation. Additionally, vague role cognition leads to confusion about how to transform, further amplifying their developmental anxiety.

Technical Anxiety: Difficulties in Digital Application

The deep integration of digital technology with education and teaching requires teachers not only to "be able to use technology", but also to "use it well". However, the rapid iteration of technology and the lag of teachers' application ability form an obvious capability gap, triggering technical anxiety. On the one hand, digital technologies evolve far faster than teachers can learn—smart classroom tools, data analytics, and new tech emerge endlessly. Teachers mastering one skill soon face more complex updates, fostering "too much to learn" frustration. On the other hand, the application of technology has high contextual requirements. Artificial intelligence technologies, such as virtual reality, augmented reality, and digital twins can effectively integrate

real classroom environments with virtual digital environments, helping teachers achieve ideal classroom effects. However, such effects cannot be achieved by technology alone; they need to be based on teachers' competence in artificial intelligence-assisted teaching. Additionally, teachers in rural or underperforming schools may struggle to even ensure basic educational technology application due to insufficient equipment and unstable internet connections, making their technical anxiety more prominent (Wang & Li, 2022).

Value Anxiety: Concerns About Educational Purpose

The essence of education is "educating people", with its value rationality emphasizing ultimate care for people, while the instrumental rationality of digital technology focuses on efficiency. Overemphasis on instrumental rationality may overshadow education's value rationality, triggering teachers' value anxiety. Value anxiety manifests in three aspects: First, alienated human-machine relations, as some teachers over rely on technology, taking "the use of digital tools" as an evaluation criterion, thereby ignoring communication between teachers and students and leading to the tendency of "valuing technology over humanity"; Second, vague educational purposes, with teachers falling into the misconception of "technology for technology's sake", forgetting the core question of "What kind of people to cultivate and how to cultivate them", and thus becoming confused about their goals; and Third, concerns about ethical risks, such as leaks of students' learning data and privacy-related information, and algorithm-recommended content solidifying students' thinking—Issues that make teachers worry that the use of technology deviates from education's fundamental purpose.

Digital-Intelligent Competence: The Path to Alleviate Teachers' Digital Anxiety

Digital-intelligent competence is a comprehensive ability developed on the basis of digital literacy. In November 2022, the Ministry of Education released *the Educational Industry Standard for Teachers' Digital Literacy* establishing a teacher digital literacy framework with five dimensions: digital awareness, knowledge and skills of digital technologies, digital application, digital social responsibility, and professional development. On the basis of "digital", digital-intelligent competence incorporates the dimension of "intelligence". It emphasizes the use of artificial intelligence and other intelligent technologies to collect, analyze, and apply data, so as to realize the intelligent upgrading of teaching and other scenarios, and highlights the integration of intelligent technologies and digital capabilities. It is a core means to alleviate teachers' digital anxiety.

Fan Jianli and Zhang Xinping (2022, p. 67) defined teachers' digital-intelligent competence as "the ability of teachers to collect, analyze, and interpret teaching data with the help of artificial intelligence technologies on the basis of having certain knowledge of data and intelligence". Only by taking digital-intelligent competence as the orientation and making coordinated efforts from the four levels of policy, mechanism, practice, and individual can we help teachers move from anxiety to competence.

Policy Frameworks and Implementation: Building Digital Literacy Support Systems

Educational digital transformation, a systematic endeavor, demands coordinated top-level design and policy execution to institutionally support teachers' digital literacy enhancement. First, government departments should refine supporting policies: develop a "guidance + regulation" framework for educational digitalization, encouraging digital teaching exploration, issuing ethical norms, and prioritizing rural schools to bridge the digital divide. Second, relevant educational authorities should build a platform-based support environment: centered on the National Smart Education Platform, integrate quality digital resources to offer

teachers "on-demand learning" spaces, with special training for digital teaching skills, plus a real-time "technical Q&A" section to lower tech use barriers. Third, local education administrative departments, in collaboration with universities, research institutions, and frontline excellent schools, should establish a collaborative mechanism: form expert-researcher teams for "theoretical guidance—practical training—effect evaluation" closed-loop management, add digital literacy in school assessments, and offer rewards to teachers.

Developing Digital Competence Indicators: Creating Evaluation Frameworks

Clear competency standards and a scientific evaluation system serve as the "guiding tools" for teachers to enhance their digital proficiency. It is essential to further refine the indicators and evaluation framework based on the industry standard Teachers' Digital Literacy. First, local education bureaus and school administrative teams should establish a complete chain of "evaluation—training—improvement". Meanwhile, local education administrative departments, in conjunction with subject teaching research institutions should formulate differentiated competency standards according to teachers' subject characteristics and years of teaching experience to avoid a "one-size-fits-all" approach. Second, school teaching and research departments and information management teams dynamically collect evaluation data. Educational researchers and subject leaders gather process-oriented data on teachers' digital teaching practices through classroom observations, teaching case analyses, and digital platform usage records. School information management teams establish digital literacy development files for teachers, provide regular feedback on their shortcomings, and lay the groundwork for personalized improvement. And third, local education administrative departments (e.g., municipal or district education bureaus) implement digital competency certification. Local education administrative departments and school human resources departments link certification results to teachers' professional title evaluations and excellent teacher selections to create a positive incentive mechanism.

Enhancing Digital Infrastructure and Training: Scaling Digital Literacy Improvement

Hardware environment and professional training need to be promoted in coordination to achieve large-scale improvement of teachers' digital-intelligent competence. First, local education administrative departments balance the allocation of digital infrastructure. Local government financial departments and education authorities increase investment in new educational infrastructure to ensure that urban and rural schools can access stable networks and be equipped with smart teaching equipment. In addition, teaching and research departments design training content oriented to "problem-solving", for example, carry out special training on "digital tools supporting personalized teaching" for the problem of "not being able to design layered teaching with technology"; teach simple Excel functions or online analysis tools for the problem of "weak data analysis ability". Through "combining learning with application", let teachers feel the value of technology in practice and reduce their fear of technology.

Teachers' Active Adaptation: Embracing Educational Digitalization

External support ultimately needs to play a role through teachers' internal actions, and teachers' own active adjustment is the key to alleviating anxiety. First, teachers themselves shift mindsets: recognize digital technology as an assistant to focus more on students' emotions and personalized needs, and proactively pursue lifelong digital learning as a professional goal. Second, teachers should integrate digital literacy into teaching: use online questionnaires, mind maps, and short videos for small classroom attempts to build tech application confidence; join teaching-research activities to share experiences with colleagues and foster mutual learning.

And third, teachers should balance tech and humanity: stick to "educating people"—combine tech-based learning analysis with face-to-face communication, and retain group work in online homework, ensuring tech serves education via human-machine collaboration, not replacement.

Practical Case Evidence and Effect Reflection on Alleviating Teachers' Digital Anxiety

The effectiveness of strategies to alleviate teachers' digital anxiety has been verified in educational digital transformation practices across regions. Analyzing typical cases not only provides concrete references for strategy implementation but also extracts optimization directions from practical feedback, enhancing the feasibility of digital-intelligent competence improvement paths.

Regional Practice: Zhejiang's Initiative

Zhejiang Province's "Special Initiative for Improving Teachers' Digital Literacy" exemplifies synergy between institutional guarantees and training. Guided by the industrial standard Teachers' Digital Literacy, it established a three-level system ("provincial overall planning—municipal implementation—school-level promotion"): At the provincial level, the Three-Year Plan for Improving Teachers' Digital Literacy in Zhejiang Province was issued (digital literacy as a "bonus item" for teacher title evaluation), with a 200-million-yuan fund for hardware upgrading and training subsidies. At the municipal level, the "Zhejiang Education Forum" platform was built, offering hierarchical courses (e.g., "Introduction to Digital Teaching" for new teachers, "Advanced Application of AI in Classrooms" for key teachers). At the school level, "subject teacher + technical specialist" teams were formed, and "digital teaching salons" were held regularly. After 18 months, Zhejiang's survey data showed: The proportion of teachers finding digital technology "difficult to master" dropped from 62% to 28%; those proactively designing digital teaching plans rose from 31% to 59%; rural teachers' technical anxiety (due to insufficient equipment/unstable network) decreased by 41%. This confirmed the synergy of "institutional guidance + hardware support + peer assistance", providing a replicable regional model.

School Practice: Hangzhou Middle School

A Hangzhou middle school's "Digital-Intelligent Classroom Initiative" focused on individual adjustment, forming a "problem-oriented—incremental iteration—positive incentive" loop. Through questionnaires and interviews, it identified two key anxieties: 73% of teachers feared "technical application harming classroom interaction" (value-based anxiety), and 68% struggled with "data-driven teaching" (technical anxiety). Instead of large-scale training, it adopted "micro-reform": weekly "digital-intelligent demonstration classes" (e.g., online Q&A tools for participation), one-on-one "data mentors" (university educational technology majors guiding Excel-based homework error analysis), and monthly "Digital Teaching Innovation Stars" (cases compiled into a handbook). After one academic year, teachers' Digital Anxiety Scale score (self-developed, Cronbach's $\alpha = 0.87$) fell from 4.23 to 2.15 (five-point scale), and student satisfaction with digital classrooms rose by 27%. This proved "small-cut, operable tasks" and "positive feedback" outperformed "one-size-fits-all" training in boosting initiative and breaking the "anxiety—avoidance" cycle.

Practical Reflections and Conclusions

Three optimization gaps emerged: insufficient focus on "educational quality" (some cases improved teacher participation but not students' core competencies like critical thinking); neglect of elderly teachers (29%

anxiety relief for those over 55 *vs.* 67% for under 35s, due to poor adaptability to online training); and poor sustainability (program suspension due to fund expiration, causing anxiety rebound). Alleviating digital anxiety requires multi-dimensional synergy ("institutional guarantee + precise training + practical empowerment + individual initiative"). Only by centering on teachers' needs (rather than "technology-driven") can teachers shift from "anxiety avoidance" to "confident application", promoting in-depth integration of digital-intelligent competence and teaching practice.

References

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*(2), 248-287.

Fan, J. L., & Zhang, X. P. (2022). Research on the model of teachers' data intelligence competence in the era of big data+AI. *Journal of Distance Education, 40*(4), 65-74.

Ministry of Education of the People's Republic of China. (2022-11-30). On issuing the educational industry standard "Teachers' Digital Literacy". Retrieved from https://www.gov.cn/zhengee/zhengeeku/2023-02/21/content_5742422.htm

Mo, J. Y., Wei, R. Z., & Ding, Y. M. (2025). Realistic representation, generative mechanism and alleviation path of artificial intelligence anxiety of vocational college teachers. *Vocational Education Research, 44*(1), 66-74.

The State Council. (2019-02-23). China education modernization 2035. Retrieved from https://www.gov.cn/zhengce/2019-02/2

The State Council. (2022-01-12). *Notice by the State Council of issuing the plan for development of the digital economy during the "14th Five-Year" period*. Retrieved from https://www.gov.cn/zhengce/zhengceku/2022-01/12

Wang, T. P., & Li, Z. (2022). Forms, motivations and countermeasures of teachers' technology anxiety in the age of intelligence. *e-Education Research, 43*(10), 110-115+128.