



Study on the Technical Ethics Analysis of Digital Transformation in Foreign Language Education

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Abstract. With the shifting demands of higher education's target audience, the digital transformation of foreign language education has become irreversible. However, while the introduction of digital technologies improves teaching efficiency and personalization, it inevitably brings corresponding ethical risks in education. This paper conducts an in-depth analysis from four dimensions: algorithmic cognition, data privacy, human-machine relationships, and evaluation systems. It proposes that the governance of technical ethics in the digital transformation of foreign language education should focus on multi-stakeholder co-governance and dynamic assessment, promoting a balanced development between technological innovation and educational ethics. The findings provide a theoretical reference for building a safe and trustworthy digital ecosystem for foreign language education.

Keywords: Foreign Language Education, Digital Transformation, Technical Ethics, Risk Governance.

1 Introduction

“The 14th Five-Year Plan for Educational Informatization” emphasizes promoting the deep integration of artificial intelligence with education and teaching, which provides a directional guide for the digital transformation of foreign language education. Amid the accelerated integration of next-generation digital technologies—particularly generative artificial intelligence—into higher education, the digital literacy of university foreign language teachers has emerged as a critical driver in the digital transformation of foreign language instruction^[1]. Foreign language teachers in vocational colleges urgently need to strengthen their digital literacy to meet the needs of education transformation in the new era^[2]. We also need to pay attention, when college teachers use digital technology to meet diversified teaching needs, they are also prone to negative digital anxiety, we should strengthen school support and cultivate teachers' emotional resilience to realize the organic integration of digital technology and emotional civilization^[5]. Meanwhile, foreign education should adhere to the principle of “prioritizing educational goals while leveraging technological means” to promote the deep integration of AI and foreign language education^[3].

However, expanding data applications in English education also brings complex ethical challenges. If these risks are not effectively addressed, they may deviate from the fundamental goal of cultivate talent through character education, and may even trigger crises in educational equity and social trust. This paper aims to systematically respond to the above issues by combing the technical ethical risks in the digital transformation of foreign language education, providing a reference and practical pathways for building a high-quality digital ecosystem for foreign language education.

2 Technical Ethical Risks in the Digital Transformation of Foreign Language Education

The ethical risks of digitalization in foreign language education constitute an undeniable new challenge, characterized by concealment, process-orientation, and systemic interweaving, forming a complex risk network. Based on a summary of previous teaching experiences and student interviews, this paper discusses the technical ethical risks of digital transformation in foreign language education from three dimensions: algorithmic cognition, data privacy, and human-machine relationships. The corresponding results are shown in Table 1.

Table 1. Classification and Characterization of Technical Ethical Risks

Risk Dimension	Main Type	Specific Manifestations	Potential Impact
Algorithmic Cognition Risks	Algorithmic bias	Implicit cultural, gender, and regional biases in databases	Weakens cross-cultural understanding ability
	Cognitive ability degradation	Over-reliance on translation tools, grammar checkers, etc	Weakening of basic language skills, decline in autonomous learning ability
	Information distortion	Grammatical knowledge with logical errors	Misunderstanding in linguistic information and cultural knowledge
Data Privacy Risks	Privacy invasion	Excessive collection of learning behavior, social interaction data	Infringes on privacy rights of teachers and students
	Data misuse	Learning data used for non-educational purposes	Triggers trust crisis
	Data breach	Sensitive data leakage	Exposure of personal privacy
Human-Machine Relationship Risks	Goal alienation	Excessive pursuit of technical efficiency, neglect of cultural awareness and value shaping	Loss of humanistic spirit

Risk Dimension	Main Type	Specific Manifestations	Potential Impact
	Subjectivity dissolution	Students become objects of algorithmic indoctrination	Decline in learning initiative
	Lack of interaction	Loss of emotional and cultural resonance in interpersonal interactions	Unmet emotional needs
Assessment System Risk	Quantitative indicators are singular.	The evaluation metrics primarily consist of objective indicators such as accuracy rate, class hours, and absenteeism rate, while neglecting humanistic indicators.	Undervaluing the role of personal charisma and humanistic care
	The evaluation process is not transparent.	Relying on algorithmic logic and models, students cannot grasp the process.	Students show low satisfaction with the evaluation results, leading to negative emotions.

Algorithmic cognitive risk is one of the most central ethical challenges in the digital transformation of foreign language education. During digital transformation, reliance on databases is inevitable, but "negative information" such as cultural biases and values embedded in the data cannot be eliminated. Differences in individual cognition may lead to unconscious amplification during model learning. Notably, conflicts between mainstream English-speaking countries' data, their habitual expressions, and multicultural perspectives will be particularly pronounced. Meanwhile, "manufactured knowledge" generated by digital models may not be effectively identified, potentially producing incorrect foreign language usage, which could seriously mislead students' knowledge structures. Furthermore, over-reliance on digital tools puts students' thinking abilities at risk of degradation. This dependency will subtly influence learning modes and pathways; the phenomenon of simply obtaining answers rather than mastering methods will become widespread in the near future.

Data privacy risk is an unavoidable dilemma in the development of digital technologies. Through modern foreign language learning platforms, students' click patterns, dwell time, voice exercises, and social interactions generate massive data flows. While these comprehensively reflect students' learning patterns, from another perspective, they can be described as panoptic surveillance, blurring the boundaries of students' personal privacy. Digital technology has no inherent sense of right or wrong. As the breadth and depth of educational data collection continue to expand, the potential for commercial misuse increases, posing a latent threat to the rights and interests of teachers and students.

Is the goal of foreign language learning only to master a communication ability of a different linguistic system, or to serve as a vehicle for Western culture? The answer is self-evident. We must completely abandon the dependent development model, and

build a new teaching system centered on cultural confidence and aimed at co-constructing discourse. Future innovation pathways should focus on three directions: first of all, establishing a mechanism for mutual translation and symbiosis between Chinese and Western technological discourses; second, building an equal dialogue platform for cross-cultural academic exchange; and third, promoting innovation in cultural communication models in the digital era. Only by reconstructing through critique and developing through innovation can English teaching truly shoulder the mission of cultivating scientific ,and technological talents with global vision and cultural confidence.

The evaluation system risk represents an often overlooked yet profoundly impactful ethical dimension in the digital transformation of foreign language education. While intelligent evaluation systems based on algorithms and data replace traditional manual assessments and enhance efficiency, they give rise to ethical dilemmas characterized by overly simplistic quantitative metrics and opaque evaluation processes. This singularity in metrics manifests primarily through the dominance of objective indicators such as accuracy rates and attendance rates, while neglecting the importance of personal charisma and humanistic considerations. The lack of transparency in the evaluation process directly leads to low student satisfaction with the assessment results and fosters negative resistance.

3 A Framework for Defining Responsibility in Foreign Language Digital Technology

The technical ethical risks of digital transformation in foreign language teaching are extremely complex, and responsibility definition is not an action of a single entity. Rather, it requires shifting the management subject from the teacher alone to a framework involving four parties: teachers, students, technology developers, and educational administrators. While using digital technology to construct authentic scenarios for cross-cultural communication, a thorough reconstruction of its epistemological foundation is necessary. This is shown in Table 2.

Table 2. Multi-stakeholder Responsibility Definition Framework

Responsible Subject	Core Role	Main Responsibility Content	Responsibility Fulfillment Mechanism
Teacher	Instructional design and ethical gatekeeper	Balance technology empowerment with humanistic guidance; cultivate students' ability to use AI critically; protect student data privacy	Teaching and research training,Conducting technical ethics teaching discussions for each unit
Student	Responsible technology user	Adhere to academic integrity, use technological tools critically; maintain learning subjectivity	Sign the commitment letter on academic integrity and AI , and establish a peer supervision mechanism within the team

Responsible Subject	Core Role	Main Responsibility Content	Responsibility Fulfillment Mechanism
Technology Developer	Technology provider	Eliminate bias and discrimination in training data and models; adopt privacy-by-design approaches	Undergo third-party ethics and safety audits, establish the rapid response channel for user feedback
Educational Administrator	overseer	Formulate technology use standards and ethical guidelines; establish ethical review mechanisms	Develop an ethical guidelines for educational digital technologies, and hold a regular ethics review meeting once per semester.

Teachers serve as frontline gatekeepers of curriculum design and digital ethics. They need to balance technological empowerment with humanistic education, guide students to rationally adopt various intelligent foreign language learning tools, and cultivate their critical digital thinking. Meanwhile, teachers shall strictly restrict the scope of data usage, attach importance to the protection of student privacy, and integrate digital ethics education into the whole process of foreign language teaching.

As core participants in foreign language learning and actual users of digital tools, students should develop correct perceptions and attitudes towards digital learning and abide by the bottom line of academic integrity. They should refrain from over-reliance on intelligent programs to replace independent thinking and language practice, so as to avoid the deterioration of basic language abilities. Students need to strengthen their awareness of norms and actively prevent learning hazards and security risks arising from the abuse of digital technologies.

As the developers of digital teaching products, R&D teams should enforce ethical governance at the research and development source. They shall continuously optimize corpora and algorithm logic, rectify latent problems such as cultural one-sidedness and regional prejudice in data, and upgrade systems through professional institutional reviews and user feedback, so as to reduce ethical flaws at the technical source.

Colleges and educational administrative departments are responsible for institutional planning and overall supervision. Combined with the practical characteristics of foreign language teaching in higher vocational colleges, they should formulate management regulations and codes of conduct tailored to digital teaching scenarios, and establish normalized ethical review, dynamic risk screening and long-term evaluation mechanisms.

The multi-stakeholder collaborative governance model conforms to the essential goals of cross-cultural communication and value cultivation in foreign language education. The joint coordination of teaching practice, technological research and development, institutional supervision and students' self-regulation forms a complete governance closed loop. This model can effectively address practical challenges such as algorithmic bias, data leakage and the marginalization of humanistic education, and ensure the steady, sound and sustainable development of digital transformation in foreign language education.

4 Conclusion

The digital transformation of foreign language education represents a profound paradigm shift. Its success depends not only on the breadth and depth of technology application but also on our ability to effectively navigate the complex ethical challenges brought by technology. This paper systematically analyzes the risk landscape in the digitalization of foreign language education across dimensions such as algorithms, data, human-machine relationships, and evaluation systems, revealing the potential erosion of educational equity, human development, and humanistic values caused by these risks. To address these challenges, the study constructs a multi-stakeholder collaborative responsibility framework covering teachers, students, developers, and administrators, clarifying each party's role and boundaries in ethical governance. It also proposes a comprehensive evaluation system comprising four dimensions—value, technology, humanities, and practice—providing an operational tool for monitoring and improving ethical impacts. With the rapid advancement of generative AI, scholars in foreign language studies ought to proactively identify feasible approaches to realize coordinated development alongside this emerging technology^[4].

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