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Digitalization Empowerment for the Reconfiguration of Classroom Ecology in Foreign Language Teaching

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Abstract: *Digital technology drives the transformation of foreign language classrooms from the closed and one-way traditional structure to an open and interactive ecological system. Based on the theory of educational ecology, this paper analyzes the imbalance problems of the traditional foreign language classroom ecology, expounds the reshaping effect of digitalization on the subject relationship, spatial form, resource supply, teaching process and evaluation mechanism of foreign language classrooms, and puts forward the practical paths for digitalization to empower the reconfiguration of foreign language classroom ecology. The specific paths include constructing a synergistic and symbiotic subject ecology, creating a virtual-real integrated spatial ecology, building an open and dynamic resource ecology, optimizing a coherent and efficient process ecology, and establishing a diversified and three-dimensional evaluation ecology. The research results are conducive to constructing a new type of foreign language classroom ecology featuring dynamic balance, diversified symbiosis and sustainable development, and improving the quality of foreign language teaching and the efficiency of talent cultivation.*

Keywords: *Digitalization; Foreign Language Teaching; Classroom Ecology; Ecological Reconstruction; Practical Paths*

1. Introduction

Under the tide of the digital transformation of education, the deep integration of digital technology and education and teaching has become the core driving force for advancing the modernization of education, and even a key path to solving the predicament of traditional teaching and improving the quality of talent cultivation. As a core discipline with both instrumental and humanistic attributes, foreign language teaching is directly related to the cultivation of students' cross-cultural communication competence, the broadening of their international horizons, and the level of the country's reserve of international talents. However, the traditional foreign language classroom is teacher-centered, forming a rigid mode of one-way knowledge transmission and mechanical training, and the classroom ecology presents an obvious state of imbalance. It can hardly meet students' personalized learning needs and the training objectives of core competencies, nor is it compatible with the development trend of educational digitalization.

The rapid development of digital technologies such as artificial intelligence, big data, virtual reality and cloud platforms, along with their increasingly rich application scenarios in the field of education, has provided solid technical support and conceptual guidance for the reconfiguration of foreign language classroom ecology. These technologies can break the limitations of physical space and information transmission, optimize the subject relationship in classrooms, expand learning space, enrich resource supply, reshape the teaching process and evaluation system, and construct a student-centered personalized learning environment [1]. They drive the transformation of foreign language classrooms from the closed, one-way and rigid traditional form to an open, interactive, diversified and dynamic ecological system, offering a brand-new path to solving the predicament of traditional foreign language teaching. Against this backdrop, conducting research on digitalization-empowered reconfiguration of the classroom ecology in foreign language teaching by applying the theories of ecology and system science [2] can guide teachers to rationally use digital technology to optimize teaching practice, solve the problem of ecological imbalance in traditional classrooms, improve the quality and efficiency of foreign language teaching, cultivate international talents adapted to the needs of the new era, and promote the high-quality development of foreign

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language education.

2. The Imbalance Dilemma of Traditional Foreign Language Classroom Ecology

2.1 Imbalance in Subject Relationship

The traditional foreign language classroom has always been dominated absolutely by teachers, with teaching activities carried out around teachers' lectures. Students are mostly in a passive state of receiving knowledge, lacking space and opportunities for active participation. The interaction between teachers and students is mostly one-way output: teachers take the lead in questioning, explaining and evaluating, while students passively respond, record and memorize, making it difficult to form a positive interactive relationship of equal dialogue and two-way communication [3]. Students' learning needs, cognitive differences and individual expression are ignored, their learning initiative and creativity are suppressed, and their subject status cannot be highlighted. This leads to a lack of vitality in the classroom ecology and makes it hard to realize a positive cycle of synergistic symbiosis between teachers and students.

2.2 Rigidity in Space and Resources

The learning space of the traditional foreign language classroom is strictly limited to fixed physical classrooms, and learning time is divided by class hours, with clear and insurmountable temporal and spatial boundaries, which fails to meet students' needs for autonomous and extended learning. Teaching resources are centered on textbooks and supplementary teaching materials, with slow content updates and a relatively single form [4], mainly consisting of textual materials, and lacking authentic corpus, audio-visual resources and cross-cultural communication materials. The resource supply adopts a "one-size-fits-all" model, which cannot adapt to the learning needs of students at different levels and hardly supports immersive and diversified language learning, resulting in a serious lack of openness and diversity in the classroom ecology.

2.3 Linearization of the Teaching Process

The traditional foreign language teaching follows a fixed linear process, mostly advancing in the mode of "preview - lecture - practice - consolidation", with fixed links, rigid rhythm, and a lack of flexibility and pertinence. The teaching process overemphasizes the transmission of linguistic knowledge and mechanical training, separates the four skills of listening, speaking, reading and writing in teaching, and ignores the correlation and comprehensiveness among these skills. Classroom activities are mainly based on teachers' explanations and students' repetitive exercises, lacking exploratory, collaborative and creative links. This leads to a serious disconnect between language learning and life practice, making it difficult for students to develop comprehensive language application competence, and restricting the dynamics and innovation of the classroom ecology.

2.4 Singleness of Evaluation Methods

The evaluation of traditional foreign language classrooms is centered on summative examinations, with the evaluation focus on the memorization of linguistic knowledge and paper scores, ignoring students' learning process, emotional attitudes, cooperative ability and innovative thinking. The evaluation subject is single, mainly relying on teacher evaluation, and lacking student self-evaluation, peer evaluation and process feedback, which cannot fully reflect students' learning effects and growth trajectories. The single evaluation criteria and methods not only fail to exert the diagnostic, incentive and guiding functions of evaluation, but also suppress the individual development of students, leading to the damage of the balance of the classroom ecology and being unfavorable to the improvement of students' core competencies.

3. The Internal Logic of Digitalization Empowering the Reconfiguration of Foreign Language Classroom Ecology

3.1 Technology Empowers the Transformation of Subject Relationship

Digital technology breaks the pattern of single teacher dominance in traditional foreign language

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classrooms and promotes a fundamental transformation of subject relationship. Teachers have transformed from mere knowledge transmitters to designers of learning activities, guides of the learning process and companions of students' growth, focusing their energy on curriculum design, situational creation and personalized guidance. With the help of intelligent learning tools, students can independently plan their learning progress, obtain resources, carry out exercises and conduct reflections, with their autonomy significantly enhanced. Human-computer collaboration optimizes subject interaction, enabling communication to break the constraints of time and space, and forming a new type of subject ecology characterized by equal dialogue, mutual assistance and symbiosis, and coordinated development. This not only highlights the subject status of students, but also activates the internal vitality of the classroom ecology.

3.2 Technology Expands the Spatial Boundaries of Classrooms

Digital technology completely breaks the limitations of the fixed physical space of traditional foreign language classrooms and constructs a diversified learning space with the deep integration of online and offline learning. Physical classrooms are no longer the only learning places; online platforms cover the entire process of preview, practice, evaluation and interaction, allowing students to learn anytime and anywhere and breaking the division of time and space. Virtual reality and augmented reality technologies can create authentic language scenarios such as airports, workplaces and cross-cultural communication, enabling language learning to get rid of abstract memory and realize immersive experience. This virtual-real integrated form transforms the classroom from a closed physical space into an open, extendable and connectable dynamic field, greatly expanding the boundaries and dimensions of foreign language learning.

3.3 Technology Optimizes the Resource Supply Mode

Digital technology drives the transformation of the foreign language teaching resource supply mode from the traditional unified and single mode to a personalized, diversified and precise one. Big data and artificial intelligence technologies integrate resources such as MOOCs, original readings, audio-visual corpus and question banks to build a three-dimensional digital resource library with dynamic updates and open sharing, breaking the limitation of the slow update of traditional textbooks. Intelligent systems accurately analyze students' learning progress, weaknesses and interests by collecting learning behavior data, push adaptive resources, and carry out "blockchain + foreign language education" [5] to realize personalized supply of "one policy for one person". This optimized mode not only meets the needs of students at different levels, but also realizes the efficient utilization of resources, constructing a sustainable and developing classroom resource ecology.

3.4 Technology Reshapes the Teaching and Evaluation Processes

Digital technology runs through the entire process of foreign language teaching and promotes the systematic reshaping of the traditional linear teaching process and single evaluation mode. The teaching process forms a closed loop of online preview before class, offline interaction in class and online extension after class. Intelligent diagnosis before class locates weak points accurately, the in-class learning focuses on inquiry and difficulty solving, and personalized consolidation and improvement are carried out after class, which improves the coherence and pertinence of teaching. The evaluation mode shifts from result-oriented to process-oriented; big data tracks learning behaviors and ability development in real time to realize instant feedback and diversified evaluation, integrating teacher evaluation, student self-evaluation and peer evaluation. It fully reflects learning effects, exerts the role of promoting learning and teaching through evaluation, and improves the closed-loop operation of the classroom ecology.

4. Practical Paths for Digitalization to Empower the Reconfiguration of Foreign Language Classroom Ecology

4.1 Construct a Synergistic and Symbiotic Subject Ecology

First, clarify the role positioning of teachers and students. Teachers should focus on core teaching responsibilities, devoting their main energy to the overall curriculum design, creation of language situations, task-driven guidance and explanation of learning difficulties, and greatly reducing repetitive

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knowledge teaching. Students need to take the initiative to assume the responsibility of autonomous learning, independently plan their learning progress, actively obtain high-quality learning resources, participate in various classroom activities positively, and conduct timely learning reflections and achievement summaries.

Second, strengthen the human-computer collaboration mechanism. With the help of digital tools such as intelligent speech evaluation, automatic essay correction and oral dialogue robots, basic language training tasks can be effectively shared, releasing valuable classroom time for high-order thinking interaction and practical application of authentic language. At the same time, it is necessary to establish clear norms for human-computer collaboration, define the boundaries of technical assistance, avoid over-reliance on technology while ignoring the core value of interpersonal interaction, and promote the sound operation of the subject ecology.

Third, teachers should promote in-depth peer collaboration. Relying on digital tools such as online collaborative documents, group task platforms and cloud display spaces, teachers can design cooperative tasks in line with the objectives of foreign language teaching and guide students to conduct in-depth inquiry-based learning in groups. They can organize discussions, debates, situational drama performances and other activities around authentic language topics, enabling students to inspire each other and complement each other's strengths in communication and interaction, so as to effectively improve their language expression ability and team cooperation awareness.

4.2 Create a Virtual-Real Integrated Spatial Ecology

First, schools should build smart physical classrooms. They can equip classrooms with interactive large screens, speech collection terminals, group learning equipment and an Internet of Things environment to support real-time classroom interaction, group discussion, instant feedback and achievement display, thus completely breaking the functional limitations of traditional classrooms. Meanwhile, schools can optimize classroom layout by adopting flexible forms such as group-based seating arrangements and the integration of activity areas and display areas, so as to adapt to the needs of diversified classroom activities and facilitate close interaction and ideological collisions between teachers and students.

Second, educators should build an online learning space. By relying on cloud teaching platforms, they can integrate comprehensive functions including curriculum resources, homework assessment, Q&A and discussion, and learning data statistics, so as to provide coherent support for the whole process of pre-class preview, in-class assistance and after-class extension. The platform provides a variety of flexible learning forms such as on-demand viewing, live streaming and playback, completely breaking the restrictions of learning time and space, and meeting students' diversified needs for autonomous learning, flexible supplementary learning and extended improvement.

Third, teachers can create virtual simulation scenarios. They can use virtual reality and augmented reality technologies to construct immersive language situations closely related to daily life, workplace communication and cross-cultural communication, and accurately simulate real scenes such as overseas communication, business negotiations and academic exchanges. Students independently carry out practical activities such as dialogue, role-playing and problem-solving in virtual scenarios, getting rid of the constraints of abstract linguistic knowledge and effectively improving their language application ability and on-the-spot adaptability.

4.3 Build an Open and Dynamic Resource Ecology

First, teachers should integrate multimodal digital resources. Centering on foreign language teaching objectives and students' learning needs, they can integrate diverse high-quality resources including MOOCs, micro-courses, e-books, original corpora, audio-visual materials and question banks to build a three-dimensional and multi-dimensional digital resource library. They can also focus on introducing authentic corpus such as news reports, podcasts, film and television clips and social media texts to enhance the timeliness and practicality of learning, and expose students to authentic language expressions and cultural contexts.

Second, teachers should promote the precise supply of resources. They can utilize learning analytics technology to collect students' learning behavior data, practice data and test data in real time, accurately identify students' learning progress, ability weaknesses, interest preferences and learning habits, and improve the learner experience [6]. Based on accurate data analysis results, intelligent systems can

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dynamically push learning resources of appropriate difficulty and in line with individual needs, realizing personalized resource support of "one policy for one person" and completely avoiding the "one-size-fits-all" mode of resource supply.

Third, teachers should encourage teacher-student co-creation of teaching resources. They can guide students to convert their learning outcomes into shareable digital resources, such as micro-courses, speeches, situational drama videos, mind maps and knowledge summaries, thus enriching both the content and forms of the digital resource library. In addition, schools can establish a class-university dual-level resource co-creation mechanism, clarify the standards and procedures of resource co-creation, motivate teachers to develop distinctive teaching resources based on their own teaching practice, and guide students to take an active part in resource creation and optimization.

4.4 Optimize a Coherent and Efficient Process Ecology

First, teachers should implement blended teaching organization. They can promote an integrated teaching model consisting of online pre-class preview, in-class offline interaction and post-class online extension. Before class, students can complete the input of basic linguistic knowledge through micro-course learning and online self-assessment, and accurately identify their individual learning weaknesses. In class, teachers can focus on interactive inquiry, difficulty resolution and achievement display, and carry out diversified classroom activities to improve students' language application ability. After class, students can consolidate their learning outcomes and expand their learning dimensions through personalized online exercises, extended reading, Q&A and communication.

Second, teachers should advance task-based and project-based learning. Centering on authentic language application scenarios, they can design tasks and projects that align with teaching objectives and students' cognitive levels, organically integrate the four language skills of listening, speaking, reading and writing into the whole process of task implementation, and break the limitations of isolated skill teaching. Teachers can also carry out cross-class and cross-unit project-based learning, and guide students to work in groups to comprehensively apply acquired linguistic knowledge and skills to solve practical problems and complete project tasks.

Third, teachers should strengthen classroom interaction and instant feedback. With the help of digital interactive tools, they can design a variety of interactive activities to fully mobilize students' enthusiasm for participation and improve their classroom engagement and activity. Teachers collect students' learning feedback data in real time through digital platforms, timely grasp students' learning status and knowledge mastery, give centralized explanations for common problems and individual guidance for personalized problems, realizing precise teaching and personalized tutoring.

4.5 Establish a Diversified and Three-dimensional Evaluation Ecology

First, teachers should improve the process evaluation system. They can incorporate classroom participation, online learning duration, homework completion quality, group collaboration contributions, oral presentation effects and learning reflection reports into the evaluation scope, and track students' entire learning process comprehensively and dynamically. Teachers can also establish a diversified evaluation mechanism combining teacher evaluation, student self-evaluation and peer evaluation, clarify the responsibilities and specific evaluation criteria of each evaluation subject, and ensure the comprehensiveness, objectivity and impartiality of the evaluation process [7].

Second, teachers should apply data-driven evaluation. With the help of digital teaching platforms, they can collect various learning data of students in real time, generate students' learning paths, ability maps and progress curves through professional data analysis, and clearly present students' learning status and ability development level in a visual way. Teachers can also accurately locate students' ability weaknesses and learning problems based on data analysis, provide personalized improvement suggestions for students, and offer scientific data support for optimizing teaching design.

Third, teachers should adhere to competency-oriented evaluation. In the evaluation process, they should take into account the comprehensive development of linguistic knowledge, language skills, cultural awareness, thinking quality and learning ability, focusing not only on students' language mastery, but also on their emotional attitudes, team spirit, innovative thinking and cross-cultural communication competence. They should break the single and standardized evaluation criteria, fully respect individual differences among students, and encourage students' innovative expression and practical exploration.

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5. Conclusions

The digitalization-empowered reconfiguration of the classroom ecology in foreign language teaching is a systematic reform of concepts, technologies and practices. Its core is to break the traditional unbalanced structure and construct a new ecological system centered on students, linked by interaction, supported by data and aimed at talent cultivation. This process requires transforming teaching concepts, optimizing factor allocation, innovating teaching modes, improving guarantee mechanisms, and promoting the synergistic symbiosis of various elements such as teachers, students, technology, space, resources and evaluation. In the future, we should continue to deepen the integration of digital technology and foreign language teaching, focus on the development of students' core competencies, constantly explore more adaptable, personalized and open classroom forms, make digitalization truly serve the cultivation of high-quality foreign language talents, and provide strong support for the modernization of education and the reserve of international talents.

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