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Innovative Strategies and Practical Research on Data-Empowered Primary School English Dialogue Teaching

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Abstract

With the in-depth development of the digital age in education, big data technology, as a revolutionary force, is profoundly reshaping the models and ecology of primary school English teaching. Dialogue teaching, as a key pathway for cultivating students' core English competencies—especially listening, speaking, and communicative abilities—has become a focal point of instructional reform. Grounded in core principles of educational theory, this paper analyzes in depth the problems faced by traditional primary school English dialogue teaching in areas such as individualized instruction, educational equity, and developmental evaluation, and systematically demonstrates the educational support provided by big data technology. The paper constructs a three-in-one innovative practice framework consisting of "data-driven precise goal setting—technology-enhanced interactive activity design—intelligent developmental teaching evaluation." It also elaborates, through detailed teaching cases, how big data can specifically empower various aspects such as learner analysis, context creation, cooperative learning, and evaluative feedback. Research shows that big-data-based dialogue teaching effectively enables personalized instruction within large-scale education, significantly enhancing the scientific basis, interactivity, and effectiveness of teaching, and provides a practical model for achieving the coordinated development of students' language ability, learning competence, and thinking quality in primary school English classrooms.

Keywords

Primary School English; Dialogue Teaching; Big Data Analysis; Educational Principles; Integration of Teaching, Learning, and Evaluation

Introduction

With the accelerated advancement of globalization and the full implementation of China's national strategy for educational digitization, the value orientation of English education has shifted from a traditional knowledge-based approach to a competency-based one, increasingly emphasizing the cultivation of students'

comprehensive language application skills and cross-cultural communicative competence in authentic contexts. This transformation is essentially a concrete manifestation of core educational principles in contemporary educational practice, with the central aim of realizing the fundamental requirements of education—namely, individualized instruction, educational equity, and the cultivation of core competencies.

Against this backdrop, dialogue teaching, as the core vehicle for realizing language's communicative function, has become increasingly prominent. However, traditional dialogue teaching often faces structural challenges in practice, including uniform teaching objectives, monotonous activity formats, delayed evaluative feedback, and unequal opportunities for participation, which constrain the implementation of educational principles and the full potential of teaching effectiveness. In recent years, rapid developments in big data, artificial intelligence, and learning analytic have provided new perspectives and powerful technological tools to address these challenges. In particular, big data technology enables comprehensive, multi-modal data collection and analysis of students' learning processes, making previously implicit learning states explicit and visible. Consequently, instructional decision-making shifts from an experience-based "art" to a data-informed "science," providing technical support for the precise implementation of educational principles.

Therefore, this study focuses on the following core research questions:

(1) What structural difficulties exist in the implementation of educational principles such as individualized instruction, educational equity, developmental evaluation, and core competency cultivation in traditional primary school English dialogue teaching?

(2) How can a practical framework and an actionable strategy system for big-data-empowered primary school English dialogue teaching be constructed based on educational principles?

(3) Can data-empowered dialogue teaching practices effectively implement educational principles and promote the personalized development of students at different levels and the improvement of their English core competencies?

Deeply exploring innovative pathways for big-data-empowered primary school English dialogue teaching is not only a positive response to the national strategy for educational digitization but also an inevitable requirement for grounding educational principles and achieving high-quality teaching development, with significant theoretical innovation value and broad practical guidance significance.

1. Realistic Dilemmas of Primary School English Dialogue Teaching and New Perspectives Enabled by Big Data

Traditional primary school English dialogue teaching played a positive role in a

specific historical period, but today, in the pursuit of high-quality development and personalized cultivation, its inherent limitations have become increasingly apparent. The introduction of big data technology provides new methodologies and support platforms to systematically re-examine and address these dilemmas.

1.1. The Gap between Experience-Driven Instructional Design and Data-Driven Scientific Decision-Making

In traditional models, teachers' instructional design—including the setting of teaching objectives and the identification of key and difficult points—relies mainly on curriculum standards, textbook content, and personal teaching experience. While this experience-driven model incorporates teachers' wisdom, it inevitably carries a degree of subjectivity and ambiguity. Teachers find it difficult to accurately grasp the specific learning situation of each student in the class. For example, regarding an upcoming dialogue to be taught: what is the students' existing vocabulary? How well do they understand the core sentence patterns? Is there a polarization of proficiency? Such critical information often remains vague, making it difficult for instructional plans to accurately target students' "zone of proximal development," leading to the dilemma where "advanced students are under-challenged and struggling students fall behind."

Big data-enabled teaching allows teachers to use smart learning platforms to release short preview micro-lessons and accompanying formative assessments before class. The platform automatically grades and generates diagnostic reports that highlight common class-wide weaknesses and individual students' knowledge gaps. For example, before teaching a dialogue on asking for directions using "Where is the …?" the preview data might show that 90% of students can recognize "library," but only 50% can correctly pronounce and understand "post office," and the prepositional phrase "It's next to …" is a common difficulty. Based on this, the teacher can set the recognition and use of "post office" and "next to" as key breakthrough objectives for the lesson, fundamentally changing the old "one-size-fits-all" instructional design model to one driven by data: from "what the teacher thinks students should learn" to "what the data tells the teacher students need to learn."

1.2. The Disconnect between Uniformly Preset Teaching Contexts and Dynamically Generated Personalized Experiences

Although many teachers recognize the importance of creating authentic contexts in dialogue teaching and actively use pictures, real objects, multimedia, and other means to do so, such contexts are often uniformly preset based on the teacher's general understanding of the student group. They may align with the experiences of most students but fail to account for individual differences in interests and backgrounds, causing some students to disengage, thereby reducing their intrinsic motivation to participate in dialogue. Big data technology, by analyzing students'

online learning behaviors (e.g., click-through rates, time spent on different thematic resources, frequency of interactions), can map out class-wide and even individual interest profiles. Based on this, teachers can create more engaging "personalized contexts." For example, data might show that male students in the class have a significant preference for "superhero" themes and female students for "fairy tale princess" themes. When teaching the sentence pattern "What can you do?" the teacher can create parallel contexts such as a "Superhero/Princess Talent Show," allowing students to choose the character they are interested in for dialogue, which greatly stimulates their desire to express themselves. With relevant technological support, augmented reality (AR) can turn static images into interactive 3D stereoscopic images on a screen, allowing students to engage in virtual dialogues via tablets and receive real-time pronunciation feedback. This immersive, ramified contextual experience generates data (e.g., interaction duration, dialogue turns, sentence complexity) that can be fully recorded, providing a basis for teachers to optimize context design.

1.3. The Gap between Rigid Interaction Patterns and Technology-Supported, Deep, Whole-Participation Interaction

Traditional classroom interaction often manifests as one-way dialogue between the "teacher and top students" or the display of a few active students in groups. Due to time and energy constraints, teachers cannot easily attend to every student, especially introverted or lower-proficiency students, leading to imbalanced participation.

Smart classroom interaction tools supported by big data technology make deep, whole-participation interaction possible. For example, the teacher can initiate a class-wide multiple-choice or short-answer question on students' tablets, requiring all students to respond within a set time. The system immediately generates a visual response distribution chart, allowing the teacher to see the class's mastery at a glance. During dialogue creation activities, the teacher can ask each group to upload their discussion process in real time via audio recording or keyword input to the cloud, making their thinking processes visible. These technical tools ensure equal participation opportunities for all students. Based on real-time data, the teacher can precisely prompt and encourage students with low participation, thereby creating a highly engaged, highly interactive dialogue classroom.

1.4. The Imbalance between Outcome-Oriented Static Evaluation and Process-Oriented Developmental Evaluation

Evaluation in traditional dialogue teaching is predominantly summative: at the end of a unit or semester, students' learning outcomes are assessed through oral tests. Such evaluation is often delayed, its criteria are subjective and singular (mostly determined by the teacher alone), and it fails to provide timely, effective feedback

on students' learning processes, limiting its motivational and regulatory functions.

In the era of big data, a "developmental evaluation system" that integrates "teaching, learning, and evaluation" has emerged. Intelligent speech assessment systems can provide real-time evaluation for each student's reading aloud and dialogue practice, giving quantitative scores and specific improvement suggestions (e.g., "Pay attention to the pronunciation of /θ/; the tip of the tongue should lightly touch the upper teeth") across multiple dimensions such as accuracy, fluency, completeness, and prosody. This immediate, specific, and actionable feedback greatly enhances practice efficiency. Meanwhile, learning platforms build an electronic portfolio for each student, continuously recording their data trajectory throughout the learning process, including preview status, classroom performance, homework scores, and oral progress curves. Comprehensive, developmental assessments based on this series of process data can more fully and objectively reflect students' growth and effort, truly playing the role of evaluation in promoting learning.

2. Construction of a Core Strategy System for Big-Data-Empowered Primary School English Dialogue Teaching

2.1. Data-Driven Differentiated Goal Setting and Precise Path Planning

2.1.1. Dynamic Goal Stratification Based on Pre-assessment Data

At the beginning of a unit, teachers can use the platform to carry out precise diagnostic pre-assessments. For example, before teaching the theme "My weekend," an online diagnostic test covering vocabulary (e.g., play football, watch TV, read books) and core sentence patterns (e.g., What do you do on weekends ?) can quickly classify students into "basic consolidation group," "ability enhancement group," and "expansion and innovation group." For the basic consolidation group, the goal is set as mastering the core vocabulary and basic question-answer patterns of the sentence structures; for the ability enhancement group, the goal is upgraded to using frequency adverbs (often, sometimes) and conjunctions (and, but) to enrich expression; for the expansion and innovation group, they are encouraged to describe more complex weekend activities and briefly give reasons. These stratified goals are not fixed but are dynamically adjusted based on students' performance data (e.g., accuracy rates on class exercises, task completion) in subsequent learning activities, ensuring that each student remains in an appropriately challenging cognitive zone.

2.1.2. Personalized Planning of Learning Paths

Based on stratified goals, the learning platform can intelligently push differentiated learning resources and practice tasks to different groups. Students in the basic consolidation group receive more vocabulary memorization games, sentence pattern drills, and mechanical substitution exercises; those in the ability enhancement group engage in contextual dialogue completion and role-play tasks;

those in the expansion and innovation group face problem-solving tasks, such as planning an interesting weekend for a friend and presenting the dialogue. The big data system automatically records each student's learning trajectory on their respective path. The teacher can monitor overall progress at any time and manually intervene and adjust the paths for individual students who are "lost."

2.2. Technology-Enhanced Immersive Context Creation and Interactive Activity Design

2.2.1. Deep Application of VR and AR

For themes with strong scene potential, such as "At the zoo" and "In the park," VR/AR technologies can create near-real virtual environments. Students wearing VR headsets or using tablets can "be" in the zoo, interacting with virtual animals (e.g., feeding, observing) and must use the target language to complete specific dialogue tasks (e.g., asking a virtual guide for information about an animal). Through data analysis, teachers can learn about students' interests and gaps in their ability to use language in authentic contexts. For example, if data show that most students avoid interacting with "peacock," it may be because the word is difficult to pronounce or unfamiliar. The teacher can then provide targeted reinforcement in subsequent teaching.

2.2.2. Collaborative Games and Competitions Supported by Smart Platforms

Classic language games can be "smart-upgraded." For example, the "telephone game" can be upgraded to "tablet telephone": the first student listens to a standard recording, then restates it in their own words, records it, and passes it to the next student. After the game, the system not only assesses the accuracy of the final student's restatement but also uses speech recognition and text analysis to trace the entire message chain, accurately identifying at which student and due to which pronunciation or vocabulary error the information changed, generating a group diagnostic report. This turns the game itself into a valuable formative assessment tool. Another example: using the platform's "group competition" function around a dialogue theme, groups collaboratively create and upload dialogues on tablets. The system can provide preliminary scoring based on dimensions such as lexical richness, syntactic complexity, and pronunciation accuracy (with pre-set rubrics), which is then combined with peer assessment (from other groups) and teacher evaluation to determine the winner. The entire process is engaging and challenging, and all interaction data are recorded, serving as a basis for final evaluation.

2.3. Data-Visualized Cooperative Learning Management and Process-Oriented Guidance

Group cooperation is an important form of dialogue teaching, but it often suffers from the phenomenon of "the strong always dominate while the weak remain on the

sidelines." Big data technology can make the cooperative learning process more transparent and manageable.

2.3.1. Scientific Grouping Based on Multidimensional Data

Teachers can move beyond grouping by seat arrangement or subjective impressions and instead rely on the intelligent system's comprehensive assessment of each student's listening, speaking, reading, and writing abilities, as well as personality tendencies (inferred from daily behavior data), for structured heterogeneous grouping. The system can automatically recommend optimal grouping plans, ensuring complementary abilities and compatible personalities within each group, forming the best collaborative structure.

2.3.2. Data-Monitored and Intervened Cooperative Process

When groups are engaged in dialogue discussions or rehearsals, members collaborate via tablets. Their discussion audio (convertible to text), input text, and other data can be recorded and analyzed in real time. The teacher's large dashboard can display each group's progress bar, activity heat map, and even a social network graph (showing interaction patterns within the group). The teacher can quickly identify which groups are stuck in silence or which members are being marginalized, providing targeted guidance and encouragement to promote truly effective cooperation. The cooperative outcomes (e.g., dialogue scripts, performance videos) are automatically collected into the group's electronic portfolio, providing valuable material for process-oriented evaluation.

2.4. Intelligent Developmental Evaluation and Personalized Feedback Mechanism

2.4.1. Embedded Formative Evaluation

Almost all student learning behaviors on the smart platform—such as time spent watching micro-lessons, accuracy and speed in completing interactive exercises, and frequency of participation in discussions—serve as data sources for formative evaluation. Through corresponding algorithms, the system can dynamically generate individual students' knowledge graphs and competency models, visually displaying their strengths and areas for improvement. For example, the graph might show that a student is in the "excellent" zone (95% mastery) for "vocabulary recognition" but at risk (65% mastery) for "syntactic application," making it clear to both teacher and student where to focus subsequent efforts.

2.4.2. Precise Feedback from Intelligent Speech Assessment

After class, students can use apps equipped with intelligent speech assessment for oral homework practice. For a designated dialogue, the system not only gives an overall score but also provides detailed sub-scores across dimensions such as

pronunciation accuracy, fluency, prosody, and completeness, highlighting words and sentences that are well-pronounced and those needing improvement with different colors, and offering actionable suggestions (e.g., "Imitate the model audio, paying attention to the 'th' sound with the tongue between the teeth"). This immediate, specific, and actionable feedback greatly enhances the effectiveness of after-class oral practice, effectively compensating for the limited practice time in class.

3. Comprehensive Practical Case of Big-Data-Empowered Primary School English Dialogue Teaching

To make the above strategies more operational, this section takes the example of "My clothes" Part B—Let's talk from Unit 5 of the PEP Primary English textbook for Grade 4 (second semester) to present a complete big-data-empowered teaching process covering pre-class diagnosis, in-class interaction, and after-class extension, highlighting the closed-loop support of data in goal setting, activity design, and outcome evaluation.

3.1. In-depth Analysis of Teaching Content

This lesson is centered on a "lost and found" context, with core sentence patterns: "Are these yours? Yes, they are./No, they aren't. They're …" and "What about this hat? It's mine." It focuses on training nominal possessive pronouns (mine, yours) and singular/plural forms of yes/no questions. The topic is close to students' lives and highly communicative, but the correspondence between singular/plural forms and the flexible conversion of possessive pronouns are common difficulties in traditional teaching, often leading to confusion in student expression.

3.2. Multi-Level Teaching Objectives Supported by Big Data

Based on the principle of "teaching determined by learning," and using pre-class diagnostic data, this study establishes a stratified, measurable system of teaching objectives designed to meet the developmental needs of students at different cognitive levels.

(1) Basic objective: 95% of students can understand, recognize, and say possessive pronouns such as mine and yours, with a platform reading accuracy rate ≥90%, meeting the consolidation needs of basic-level students.

(2) Core objective: 85% of students can complete three or more question-answer exchanges in a "lost and found" context, with an intelligent speech assessment fluency score ≥75, achieving the transformation of linguistic knowledge into contextual application.

(3) Extended objective: 40% of students can create a short skit combining color and clothing vocabulary, with the digital portfolio recording their linguistic creativity and collaboration performance, cultivating comprehensive application and innovation abilities.

(4) Equity objective: 100% of students receive equal opportunities for participation in class (tablet-based interactive responses ≥3 times), with low-performing students speaking in class at least once, ensuring procedural fairness.

3.3. Teaching Process

3.3.1. Pre-class

The teacher releases a preview package on the smart platform, including: (1) a 2-minute micro-lesson on the use of possessive pronouns; (2) an interactive drag-and-drop task (matching clothing pictures to correct sentence patterns); (3) a "lost and found" dialogue reading activity.

The platform automatically generates a diagnostic report, showing good mastery of singular sentence patterns (e.g., matching "hat" with "It is …" accuracy 92%), but common difficulties in plural patterns (e.g., matching "socks" with "They are …" accuracy 55%) and understanding of "yours" (only 40% correct). The teacher adjusts the teaching focus accordingly, preparing comparative singular/plural charts and targeted exercises on possessive pronouns, designing tiered tasks for individual differences to ensure the implementation of the principle of individualized instruction.

3.3.2. In-class

In-class teaching is a process of dynamic adjustment based on data feedback, consisting of four progressive activities.

Activity 1: Contextual introduction and data verification

After creating an authentic "class lost and found" context, the teacher uses the interactive whiteboard to launch a quick response activity targeting the pre-class difficulties (e.g., "These socks are _____ (yours/mine)"). Students respond via tablets. The system-generated class-wide accuracy change curve shows that the accuracy for plural patterns has risen to 72%, but the accuracy for "yours" usage remains only 58%. The teacher then provides 5 minutes of targeted instruction and interactive practice, ensuring the immediacy of evaluative feedback and implementing the principle of developmental evaluation.

Activity 2: Dialogue perception and intelligent correction

When students engage in human-machine dialogue imitation reading, the intelligent speech assessment system provides real-time analysis and personalized feedback on pronunciation and intonation. Low-performing students receive hints such as "Focus on correcting the pronunciation of 'yours'," while advanced students receive suggestions like "Try adding polite expressions to extend the dialogue." The teacher's data dashboard highlights common class-wide pronunciation difficulties (e.g., "pants" pronunciation errors) for whole-class demonstration, achieving a unity of group instruction and individual guidance, and accurately implementing the principle of individualized instruction.

Activity 3: Contextual application and collaborative inquiry

Using AR technology to construct a virtual "lost and found" scene, students work in groups on role-playing and record their dialogues. The teacher observes each group's interaction heat map on the data monitoring screen, noticing that two introverted students in Group 3 have low participation levels. The teacher intervenes immediately, guiding them to take on tasks such as "recording key points of the dialogue" and "adding simple responses," thereby ensuring their participation. The virtual context immerses students in language use, aligning with the teaching process law of "integrating indirect and direct experience." After practice, the platform initiates peer assessment based on clear criteria (e.g., fluency, polite expressions, syntactic accuracy), diversifying the evaluation subjects.

Activity 4: Creative transfer and outcome consolidation

Students work in groups to complete a digital poster and dialogue narration on the theme "Class Lost and Found." Different groups receive differentiated tasks: the basic group focuses on "accurate use of core sentence patterns," the enhancement group adds "color vocabulary expansion," and the extension group attempts "creating multi-turn dialogues." Outcomes are uploaded to the class learning community for display and peer review. The teacher, integrating platform data (lexical richness, syntactic complexity, collaboration duration), provides comprehensive feedback, cultivating core competencies such as language use, collaboration, and innovation.

3.3.3. After-class

After the class session, based on each student's performance data from various in-class activities (e.g., reading scores, task completion, interaction participation), the system automatically generates and pushes differentiated homework. For example, low-performing students receive consolidation exercises focusing on vocabulary and sentence structures, while higher-performing students receive more challenging creative tasks, such as dubbing a short silent film. This ensures the extension and personalization of instruction, forming a complete data loop of "teaching—evaluation—feedback—optimization."

4. Deep Reflections and Paradigm Reconstruction in the Educational Application of Big Data

The integrated application of big data technology in primary school English dialogue teaching represents a new stage in the digitization of foreign language education. This technological integration concerns not only improvements in teaching efficiency but also deeper transformations in educational paradigms. However, the empowering effect of technology does not occur automatically; its realization is constrained by multiple factors, requiring systematic scrutiny.

4.1. In-depth Analysis of Structural Challenges and Response Pathways

4.1.1. Structural Deficits in Teacher Digital Literacy

Currently, a significant gap exists between teachers' digital literacy and the demands of technological innovation. This gap is evident not only at the technical operation level but more profoundly in the disconnect between data-informed thinking and instructional decision-making. Teachers in rural and under-resourced schools often find themselves in a double bind of "techno phobia" and "application confusion." The solution lies in constructing a multi-level, embedded teacher professional development system. Specifically, a three-stage training model of "technology application—data interpretation—instructional decision-making" should be established. Through practical methods such as case studies, peer observation, and micro-teaching, teachers can be helped to transform from "technology users" to "data-wise teachers."

4.1.2. Lack of Data Ethics Norms and Governance Framework

Educational data applications face a tension between privacy protection and value creation. The behavioral and speech data generated by students during learning are both the foundation of personalized teaching and the private assets requiring strict protection. Currently, there is a lack of unified data classification and grading standards and usage norms, posing risks of data misuse and algorithmic bias. There is an urgent need to establish an educational data governance framework based on block chain technology to achieve data ownership confirmation, traceability, and compliant use. This framework should specify the "minimum necessary" principle for data collection, establish a tiered authorization mechanism, and adopt a "data trust" model to release data value while protecting privacy.

4.1.3. Deepening Digital Divide and Challenges to Educational Equity

Technological empowerment can produce a "Matthew effect," exacerbating imbalances in the allocation of educational resources. Hardware gaps are only the surface; deeper differences lie in soft conditions such as teacher digital literacy, quality of curriculum resources, and technical support services. A multi-dimensional, comprehensive mechanism for bridging the digital divide is needed, including: establishing a regional collaborative public service system for digital educational resources, exploring a "government-guided, enterprise-participating, school-applying" co-construction and sharing model, and implementing targeted "digital empowerment action plans" for under-resourced schools, ensuring that technological innovation truly benefits all learners.

4.2. The Return to the Essence of Education in Technological Empowerment

Maintaining educational steadfastness amidst technological enthusiasm is crucial. The value of big data lies not in the technology itself but in the extent to it

illuminates the essence of education. Currently, there is a risk of prioritizing technological instrumental rationality over educational value rationality. Such a technology-centered orientation may lead to educational alienation.

The essence of education is the process of "cultivating persons through culture," with its core being the dialogue and resonance between teacher and student subjects. Big data can optimize teaching processes, but it cannot replace the value guidance achieved by teachers through their words and actions. It can diagnose learning situations precisely, but it cannot replicate the emotional experiences and wisdom insights generated in teacher-student interaction. The ideal educational technology ecosystem should be an "intelligent augmentation model" of "human-machine collaboration and mutual learning," where technology acts as a "cognitive scaffold" empowering teachers, rather than replacing them.

In this process, teachers need to transform from "technology users" to "instructional designers," focusing on enhancing their abilities in data interpretation, instructional decision-making, and emotional communication. Teaching evaluation should shift from a single focus on knowledge mastery to a comprehensive competency evaluation system encompassing cognitive development, emotional attitudes, collaboration, and innovation.

4.3. Future Prospects: The Development Path of Intelligent Education

Educational digitization is undergoing a profound transformation from "instrumental integration" to "ecological restructuring." In the future, big-data-empowered primary school English teaching will be more deeply integrated with educational principles.

First, artificial intelligence will drive the shift of teaching paradigms from "standardization" to "personalization," deepening the implementation of the principle of individualized instruction. Based on learning analytic, systems will construct more precise student knowledge graphs and competency models, enabling adaptive learning path planning. Virtual teacher assistants can take over mechanical tasks (e.g., vocabulary dictation, basic pronunciation assessment), allowing teachers to focus more on cultivating students' creative thinking and meeting personalized needs.

Second, the fusion of multi-modal data will enable comprehensive teaching evaluation, perfecting the practical pathway for the principle of developmental evaluation. By integrating

multidimensional data such as speech, facial expressions, gestures, and interaction behaviors, students' language ability, communicative strategies, and emotional attitudes can be more comprehensively assessed, providing richer grounds for instructional improvement, ensuring that evaluation runs through the entire learning process and covers all dimensions of competency.

Most importantly, the future classroom will feature "virtual-real integration,"

enhancing the implementation of the teaching process law. Digital twin technology can create more authentic language use scenarios (e.g., cross-cultural communication contexts, real-life dialogue scenarios), enabling students to gain near-real communicative experiences. This immersive learning environment will greatly enhance the authenticity and effectiveness of language learning, allowing the teaching process law of "integrating indirect and direct experience" to be more fully realized.

5. Conclusion

The deep integration of big data technology and primary school English dialogue teaching is sparking a profound "teaching revolution." This revolution is reflected not only in innovative technological applications but also in the reconstruction of teaching philosophies, models, and evaluation systems, with the core goal of precisely implementing educational principles such as individualized instruction, educational equity, and developmental evaluation. Through data-driven precise teaching, technology-enhanced interactive experiences, and intelligent real-time evaluative feedback, we are constructing a more open, diverse, and personalized English learning ecosystem, transforming abstract educational principles into actionable and verifiable teaching practices.

However, it must be clearly recognized that technology is only a catalyst for educational change, not education itself. The fundamental mission of education is to "cultivate virtue and nurture persons"; its core is always the holistic development of "persons." In advancing the digitization of education, we must maintain a balance between technological rationality and educational rationality, both embracing technological innovation and adhering to the core requirements of educational principles.

Future education should be a harmonious unity of "technology empowerment" and "humanistic leadership." Teachers' central role as educational subjects is irreplaceable. Technology should serve as a booster for teachers to implement educational principles and achieve professional development, not as a substitute for teacher value. Only by using technology appropriately—respecting educational laws and adhering to educational principles—can we truly achieve deep integration of information technology and English teaching, laying a solid foundation for cultivating talents of the new era with international perspectives and cross-cultural communication skills.

The digital transformation of education is a profound change. We need to embrace the opportunities brought by technology with an open mind, face the challenges with a prudent attitude, and explore the development paths of future education with an innovative spirit. Only in this way can we truly achieve high-quality educational development in the digital age.

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