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Original Research Article

Research on the optimization of interactive strategies in intelligent classrooms of higher vocational business English empowered by AI+BOPPPS

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Abstract: This paper focuses on classroom interaction in vocational business English teaching under educational digital transformation. Traditional classrooms are limited by monotonous interaction, low participation, weak personalization, and delayed feedback, which can hardly meet the needs of cultivating interdisciplinary talents. Supported by TAM and constructivist theory, this study integrates AI and the BOPPPS model to construct an optimized teaching strategy, verifies its effect through empirical research, and puts forward supporting measures. It provides theoretical and practical references for the digital, intelligent, and personalized reform of vocational business English education.
Keywords: AI technology; BOPPPS model; higher vocational business English; intelligent classroom; interactive strategy; teaching optimization

1. Introduction

1.1. Research background

Driven by vocational education reform and educational informatization, digital transformation and intelligent classrooms have become the mainstream of vocational teaching reform. As an interdisciplinary course, vocational business English aims to cultivate compound talents, and classroom interaction is critical to improving students' learning initiative and practical language abilities. However, current classroom interaction suffers from single forms, insufficient personalization, delayed subjective feedback, and low integration of technology and teaching due to teachers' limited digital capacity. AI's personalized and real-time feedback advantages, together with the interactive BOPPPS model, form the AI+BOPPPS interactive framework, which effectively addresses the above problems in classroom interaction.

1.2. Research significance

1.2.1. Theoretical significance

This paper integrates AI, the BOPPPS model and vocational college business English classroom interaction, enriches interdisciplinary research, extends AI application in vocational education, and offers a new theoretical perspective for technology-empowered interaction. Grounded in TAM and constructivist theory, it explores the integrated empowerment mechanism and improves the theoretical system of vocational classroom interaction.

1.2.2. Practical significance

The constructed interactive strategy solves current interaction pain points, improves pertinence and interest, and stimulates student participation; helps teachers optimize teaching processes, reduce burdens, and promote classroom transformation from knowledge transmission to ability cultivation; enhances students' practical ability and post adaptability, meeting the demand for compound talents.

1.3. Research status

1.3.1. Foreign research

Foreign research on AI application in language teaching is mature, focusing on AI-teaching model integration to optimize interaction. The BOPPPS model is widely used in language teaching, but few studies focus on higher vocational business English, and its adaptability to China's vocational talent training needs to be optimized.

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1.3.2. Domestic research

Domestic research focuses on AI application scenarios and BOPPPS model optimization, but has deficiencies: over-reliance on single technology/model, lack of in-depth integration; theoretical-oriented interactive strategy research, insufficient empirical support; neglect of vocational characteristics of higher vocational business English. This paper addresses these deficiencies through integrated research.

1.4. Research content and methods

1.4.1. Research content

This paper focuses on AI+BOPPPS empowered interactive strategy optimization in higher vocational business English intelligent classrooms, including: sorting out relevant theories and research status; investigating interaction status and analyzing problems/causes; constructing strategy system and clarifying implementation paths; verifying effectiveness through empirical research; proposing guarantee measures.

1.4.2. Research methods

Scientific methods are adopted: (1) Literature research: laying theoretical foundation by retrieving relevant literature; (2) Questionnaire survey: collecting 298 valid student questionnaires and 38 valid teacher questionnaires from three Guangdong higher vocational colleges; (3) Interview: conducting one-on-one interviews with 10 teachers and 20 students; (4) Empirical research: selecting two classes (48 in experimental class, 46 in control class) with no significant foundation difference, taught by the same teacher for 16 weeks; (5) Data analysis: using SPSS 26.0 and AMOS 24.0 for quantitative analysis.

2. Theoretical basis

2.1. AI technology

AI simulates human intelligence via computer technology, characterized by intelligence, personalization, real-time performance and interactivity. In vocational business English teaching, AI speech recognition and synthesis enable real-time oral interaction feedback, while intelligent assessment provides objective and timely evaluation, enhancing teaching efficiency.

2.2. BOPPPS model

The BOPPPS model is a structured teaching model with six progressive links, focusing on interaction and teaching objective achievement. Its structural advantages align with the vocational and practical characteristics of higher vocational business English, enhancing interaction systematicness and effectiveness.

2.3. Technology acceptance model (TAM)

TAM core variables include perceived ease of use, perceived usefulness, usage intention and actual behavior. This paper holds that teachers' and students' perception of AI and BOPPPS directly affects interaction participation and strategy implementation effect.

3. Current situation and problems of classroom interaction

3.1. Research design and implementation

The research selected business English students and teachers from three Guangdong higher vocational colleges, distributed 320 student questionnaires (298 valid, 93.13% recovery rate) and 40 teacher questionnaires (38 valid, 95.00% recovery rate); interviewed 10 teachers and 20 students to collect interaction-related data.

3.2. Current situation

All surveyed colleges have established intelligent classroom platforms. 84.21% of teachers master platform operation, and 78.57% of students engage in frequent interaction. 68.42% of teachers use AI for teaching, 52.63% know the BOPPPS model, but only 34.21% apply it systematically. Teacher-student Q&A (89.47%) and group discussion (76.42%) dominate interaction, with low innovation. 64.29% of students participate occasionally, and participation correlates with language proficiency. Feedback is mostly simple oral evaluation, while 71.43% of students expect timely and specific feedback, indicating single evaluation methods and insufficient scientific indicators.

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3.3. Core problems

(1) Single & less innovative interaction: dominated by traditional modes; (2) Insufficient personalization: one-size-fits-all tasks; (3) Delayed, general feedback: underused AI real-time function; (4) Weak digital capacity: only 34.21% proficiently integrate AI and BOPPPS; (5) Disconnection from vocational needs: overemphasis on basic knowledge, weak integration with business skills.

4. Construction of interactive strategies

4.1. Construction principles

Adhere to vocationalization, personalization, coordination, practicality and innovation principles, fit post needs, balance student differences, realize in-depth integration of AI and BOPPPS, and design simple, interesting and effective strategies.

4.2. Strategy system construction

Based on BOPPPS links and AI advantages, an "AI embedding + BOPPPS adaptation" interactive strategy system is constructed, clarifying each link's design and implementation path.

4.2.1. Bridge-in link: AI situation empowerment

Use AI VR/AR to create real business scenarios for immersive interaction; design personalized introduction questions via AI intelligent Q&A system, provide real-time feedback and extended content; design interesting interactive games to stimulate participation.

4.2.2. Objective link: AI accurate positioning

AI analyzes students' historical learning data, pushes personalized objectives; students confirm and communicate via AI platform, teachers adjust interaction design based on feedback.

4.2.3. Pre-assessment link: AI accurate diagnosis

AI online testing designs pre-assessment questions, corrects in real time and generates personalized reports to identify weak links; group students by weak links, design targeted tasks, AI tracks interaction to assist teachers in optimization.

5. Empirical research on interactive strategies

5.1. Research design

Hypotheses:

H1: The strategy enhances interaction quality;

H2: The strategy improves academic performance;

H3: The strategy boosts learning satisfaction.

Two vocational classes (48 experimental, 46 control) with equivalent foundations were taught by the same teacher for 16 weeks. Experimental class used the new strategy; control class used traditional teaching. Pre-test, post-test, interaction and satisfaction data were analyzed via SPSS 26.0 and AMOS 24.0.

5.2. Results and analysis

(1) Interaction quality: experimental class participation rate 89.58%, average 8.6 interactions per student per class, task completion rate 92.71%, significantly higher than control class (64.13%, 3.2 times, 73.91%), supporting H1; (2) Academic performance: experimental class average post-test score 82.63, significantly higher than control class 70.45, with better listening, speaking, reading and writing scores, supporting H2; (3) Satisfaction: experimental class average score 4.23, significantly higher than control class 3.12, with significant differences in all dimensions, supporting H3.

5.3. Conclusions

The AI+BOPPPS empowered strategy effectively solves current interaction problems, significantly improves interaction quality, academic performance and satisfaction; realizes collaborative empowerment, promotes interaction intelligence and diversification; fits vocational characteristics, enhances students' practical ability and post adaptability, conforming to talent training goals.

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6. Conclusions

This paper concludes: five core problems exist in current higher vocational business English intelligent classroom interaction, caused by concepts, resources, students and evaluation; in-depth integration of AI and BOPPPS solves the dilemma; the constructed strategy system is effective and feasible; strategy implementation requires five aspects of guarantee.

Fundings

1. Key Project of Research and Practice on Education and Teaching Reform Project Approved in the Second Batch of the 2024 Teaching Quality and Teaching Reform Project of Guangdong Innovative Technical College "Research on Optimization of Interactive Strategies in Intelligent Classrooms of Higher Vocational Business English Empowered by AI+BOPPPS"(JGZD202406).

2. 2025 Annual Project of the Special Committee on Teaching Quality Management of Private Colleges and Universities, Guangdong Higher Education Teaching Management Association "Research on Optimization of Interactive Strategies in Intelligent Classrooms of Higher Vocational Business English Empowered by AI+BOPPPS"(GDZLGL25094).

References

[1] Ministry of Education. National Plan for Vocational Education Reform [Z]. 2019.

[2] Ministry of Education. Education Informatization 2.0 Action Plan [Z]. 2018.

[3] Davis F D. A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results[J]. MIS Quarterly, 1989, 13(3): 319-340.

[4] Piaget J. The Principles of Genetic Epistemology [M]. Beijing: The Commercial Press, 2015.

[5] Li M, Shi J Q. The Connotation, Characteristics and Construction Strategies of Intelligent Classrooms [J]. Educational Research, 2020, 41(2): 115-124.