AI Empowering Seewo Whiteboard 5: Exploring New Strategies for Gamified Teaching—A Case Study on Grammar in Unit 3 of the Grade 8 People's Education Press English Textbook

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Abstract: *This study focuses on the application of Seewo Whiteboard 5 integrated with AI technology in junior high school English grammar teaching, using Unit 3 of the Grade 8 People's Education Press textbook as a case study. Based on constructivist theory, the study analyzes the advantages and design principles of gamified teaching. Through the design of various instructional stages, including introduction, explanation, practice, interactive discussion, and review, this research aims to effectively enhance students' learning interest and engagement, providing innovative insights for junior high school English grammar teaching.*

Keywords: *Seewo Whiteboard 5 + AI; Gamified Teaching; Junior High School English*

Introduction

In the ongoing development of education, the effectiveness of English teaching has been increasingly emphasized. As a crucial component of English learning, grammar instruction in traditional teaching methods often lacks engagement, making the learning process monotonous and failing to stimulate students' interest. Consequently, students tend to adopt a passive learning attitude, posing a significant challenge for English teachers. Meanwhile, the gamified teaching model integrating Seewo Whiteboard 5 with AI has gradually gained prominence in the field of education. Although previous studies have preliminarily confirmed the potential of this innovative gamified teaching model in capturing students' attention and enhancing their enthusiasm for learning [1], there is still a lack of in-depth research on its specific application in junior high school English grammar teaching, as well as the design principles of each teaching stage.

This study takes the grammar teaching of Unit 3 from the eighth-grade English textbook (People's Education Press) as the entry point. Based on constructivist theory, it explores the application of the Seewo Whiteboard 5 + AI gamified teaching model in depth, analyzing its implementation in different teaching stages according to relevant principles. The study aims to optimize grammar teaching methods, enhance students' classroom engagement, and improve learning outcomes. Furthermore, it seeks to fill the research gap and provide valuable insights for the innovation of junior high school English grammar teaching, contributing to the deeper integration of educational informatization into English instruction.

1. Definition of Core Concepts

1.1 Constructivism

Constructivism is a significant theory of learning and knowledge, belonging to a branch of cognitive psychology. Its core focus lies in the active role of learners in constructing knowledge. This theory posits that knowledge is not simply transmitted from the external world to learners; rather, learners actively construct and generate knowledge through their own existing experience systems, cognitive structures, and intrinsic beliefs in interaction with their surrounding environment.

During the learning process, learners primarily achieve knowledge construction and cognitive development through two mechanisms: assimilation and accommodation. Assimilation refers to the

process in which learners integrate new information into their existing cognitive structures, making it a part of their knowledge system. Accommodation, on the other hand, occurs when existing cognitive structures cannot incorporate new information, prompting learners to adjust or modify their cognitive frameworks to accommodate new knowledge. Through the dynamic balance between assimilation and accommodation, learners continuously refine and expand their cognitive structures.

Additionally, constructivism places great emphasis on the crucial role of socio-cultural contexts in learning. It asserts that learning is an activity that occurs within a social and cultural context. Through collaborative interactions, discussions, and shared experiences with others, learners can access diverse perspectives and multidimensional information, thereby enriching and deepening their understanding and construction of knowledge.

1.2 Gamified Teaching

According to the Oxford Advanced Learner’ s English - Chinese Dictionary, a game is defined as an activity incorporating entertainment, rules, and competition. Gamified teaching is an instructional approach that incorporates game elements into the teaching process, creating an engaging learning environment that blends knowledge with enjoyment [2]. This innovative teaching model integrates constructivism and experiential learning theories.

Gamified teaching aligns with students' cognitive and psychological development, stimulating their interest in learning and allowing them to practice and experience knowledge within games. Through active exploration and social interaction in a relaxed and enjoyable atmosphere, students can internalize knowledge more effectively. In this process, students are not passive recipients of information but rather active constructors of knowledge systems. By engaging in experiences, reflection, and conceptualization, they transform their game-based experiences into deep understanding, ultimately achieving better educational outcomes.

2. Functional Design of Seewo Whiteboard 5 Based on Constructivism

Adolescents in middle school are at a critical stage of physical and psychological development. They have a strong desire to excel and seek attention from their peers and teachers, but they often lack patience in learning and have relatively weak self-control. [3] Traditional grammar teaching methods are often dull and monotonous, causing students to fall into a passive learning state. However, grammar is a crucial and challenging aspect of English learning and one of the most difficult parts to understand. To enhance students' interest in grammar, teachers can optimize classroom teaching models by incorporating Seewo Whiteboard 5 and AI-driven gamified teaching. This approach fosters a joyful and relaxed learning atmosphere, helping students stay focused and improving learning efficiency. It also encourages active thinking, changes students' perceptions of their own learning experiences, and enhances their learning strategies. [4]

2.1 Functional Features of Seewo Whiteboard 5

The Seewo Whiteboard system is equipped with essential teaching tools, subject-specific resource tools, and interactive classroom activity tools, supporting mobile teaching. The essential teaching tools include a magnifier, countdown timer, masking tool, and mind mapping function. The subject-specific resource tools cover Chinese pinyin, classical poetry, geometry, planets, drawing boards, and musical instruments. The interactive classroom activity tools, such as super classification, knowledge matching, group competitions, and memory cards, serve as the core elements of gamified teaching, effectively capturing students' attention. Commonly used functions for English teaching include dictation, an English-Chinese dictionary, and a resource question bank.

2.2 AI Capabilities

The integration of AI technology in education requires innovations in human-machine interaction. With rapid advancements in AI algorithms, computing power, and data processing, AI-generated content has become a newly emerging application with great potential. AI possesses distinctive technological features, such as large-scale data processing, content innovation, multimodal integration, and cognitive interaction. [5] Leveraging multimodal capabilities, AI can generate images, text, music, videos, and programming content, with its generative technology evolving at a fast pace. [6]

2.3 Advantages of Seewo Whiteboard 5 + AI Gamified Teaching

Traditional English classrooms often struggle to engage students due to a lack of contextualized learning and monotonous teaching methods. However, Seewo Whiteboard 5 integrates traditional teaching with multimedia technology and AI-driven resources, highlighting the advantages of gamified teaching. This approach not only enriches classroom interactions but also is highly consistent with the core principles of constructivist learning theory.

Firstly, constructivism emphasizes that learning is an active process where students construct knowledge rather than passively receiving information from teachers. In this teaching approach, AI functions as an intelligent assistant that interacts with students in real time. For instance, when a student is unsure about the comparative form of "big," the AI provides examples to guide the student in discovering the pattern of adjective changes. This interactive learning process stimulates students' interest and increases classroom engagement, fully embodying the constructivist view that knowledge is actively constructed by learners.

Secondly, the design of gamified teaching activities is closely aligned with constructivist principles. In competitive quiz sessions, students actively think, explore answers, and apply their prior knowledge to analyze newly learned grammar rules in order to win. Additionally, collaboration and communication among team members reflect the constructivist perspective that social and cultural contexts play a crucial role in knowledge construction. This method allows students to build their knowledge framework in an engaging environment, internalize learning concepts, and experience the joy and sense of achievement that boosts their confidence in learning English.

Furthermore, gamified teaching incorporates feedback mechanisms that identify students' weak areas based on their performance, providing teachers with valuable insights for adjusting their instructional strategies. This data-driven approach further enhances students' learning outcomes and improves overall teaching quality. [7]

By leveraging multisensory teaching methods, Seewo Whiteboard 5 + AI gamified teaching not only enhances students' motivation but also facilitates knowledge construction through active exploration and collaborative learning, ultimately leading to a comprehensive improvement in learning effectiveness.

3. Principles of Gamified Teaching Design Based on Constructivism

3.1 Goal-Oriented Principle

According to constructivism, learning objectives serve as a guide for learners to construct knowledge. The New Curriculum Standards (2022) emphasize a student-centered approach, advocating for teachers to guide students in developing a love for learning and mastering effective learning strategies, while promoting an integrated "teaching-learning-assessment" model. [8] Gamified teaching should closely align with the instructional objectives of junior high school English grammar, incorporating game elements into the teaching content. This approach ensures that students actively construct their grammar knowledge system while completing game tasks, providing a clear learning direction and avoiding aimless exploration.

3.2 Student-Centered Principle

Students are the primary agents in knowledge construction. The Seewo Whiteboard 5 + AI teaching design should be tailored to the needs, interests, age characteristics, and cognitive levels of junior high school students. Teachers should maximize students' active roles by encouraging their participation in teaching activities, shifting from a traditional teacher-led model to a new approach where teachers guide students while fostering independent thinking. [9] Additionally, teachers must pay close attention to individual differences among students and adhere to the principle of differentiated instruction to meet diverse learning needs.

3.3 Principle of Engagement

Constructivism suggests that engaging learning environments can stimulate learners' initiative. Understanding students' common interests and preferences allows for the design of relevant game themes. Game elements should be creative, grounded in real-life scenarios, and continuously updated. Integrating

diverse interactive game mechanisms with multiple teaching methods, such as task-based and situational teaching approaches, enables students to actively explore knowledge in an enjoyable manner, leading to knowledge internalization and the development of comprehensive competencies.

3.4 Principle of Feedback

In constructivist learning, feedback plays a crucial role in refining knowledge construction. Traditional junior high school English grammar teaching often follows a one-way instructional model, making it difficult for teachers to obtain accurate feedback. [10] Gamified teaching can leverage Seewo Whiteboard 5 and AI to provide real-time feedback. For example, post-class group grammar challenges allow AI to analyze data and offer personalized recommendations and targeted feedback, helping students adjust their learning strategies and refine their knowledge construction. Interactive feedback fosters two-way communication between teachers and students, enabling discussions based on feedback from gamified learning activities. This interaction strengthens the teacher-student relationship, making feedback more relevant to students' needs and promoting effective knowledge acquisition.

These principles are interconnected and mutually supportive, forming the foundational framework for gamified teaching design. In practical applications of using Seewo Whiteboard for junior high school grammar instruction, teachers should flexibly apply these principles based on real classroom scenarios to achieve optimal teaching outcomes.

4. Case Analysis and Application of AI-Powered Gamified Teaching with Seewo Whiteboard

4.1 Case Analysis

In the academic festival "Smart Education: Advancing with AI," English teacher Fang Wenxin seamlessly integrated digital intelligence technology into English instruction, delivering a highly creative and interactive lesson. The lesson, themed "Ideal School Creative Design Competition," showcased the immense potential of information technology in enhancing English teaching through the deep application of Seewo Whiteboard 5 and AI technology.

4.1.1 Classroom Implementation Process

In the introduction phase, the teacher initiated the lesson with a Free Talk activity to introduce the topic, sparking students' interest in "Ideal School" and creating a relaxed and engaging classroom atmosphere. In the design-thinking phase, students engaged in group discussions to explore design elements, using smart pens and Seewo Whiteboard to record and display their progress in real time. In the AI-assisted creation phase, students input their sentences through voice recognition into Doubao AI, which provided intelligent corrections and refinements to enhance their language expression. Additionally, AI-generated images aligned with students' descriptions of their ideal school. In the final presentation and evaluation phase, each group used the smart pen system and Seewo Interactive Classroom’s photo-uploading feature to showcase their designs on the big screen. Teachers and students collaboratively evaluated the work, ensuring an efficient and structured assessment process.

4.1.2 Student Feedback and Teaching Effectiveness

Students demonstrated a high level of enthusiasm and creativity throughout the lesson. The integration of AI technology made language learning both engaging and practical. The interactive features of Seewo Whiteboard enhanced students' confidence and teamwork skills. Students expressed great interest in this technology-integrated teaching model, finding the lesson both enjoyable and effective.

4.1.3 Specific Roles of Technological Tools

Throughout the teaching process, Seewo Whiteboard 5 significantly improved classroom interaction and efficiency by supporting real-time display, interactive assessment, and photo uploading. The smart pen system enabled students to quickly record and share their design ideas, seamlessly integrating traditional handwriting with digital technology. Meanwhile, Doubao AI provided personalized learning support through intelligent correction, text refinement, and image generation, making the lesson more dynamic and engaging.

4.2 Simulated Application

Referring to the innovative design elements of Teacher Fang Wenxin's lesson, the author simulated a teaching activity based on Unit 3 of the Grade 8 (First Semester) English Textbook by the People's Education Press, focusing on the positive and comparative degrees of adjectives and adverbs.

In the introduction phase, the teacher used Seewo Whiteboard 5 to play an AI-generated short video depicting various students with different personalities—some lively and outgoing, while others were quiet and reserved. After the video, the teacher used the annotation tool on the whiteboard to highlight different students' behaviors, introducing descriptive words such as "outgoing" and "quiet." This naturally transitioned into the topic of comparative adjectives and adverbs. The teacher then interacted with AI to generate an engaging dialogue, such as "Tom is more active than Jack in the debate club." This conversation compared the personalities of two students, helping learners intuitively grasp the use of comparatives while sparking their interest.

During the explanation phase, the teacher used Seewo Whiteboard 5's mind-mapping function to systematically outline the rules for forming the comparative degree of adjectives and adverbs. For regular adjectives that simply take "-er", such as "tall - taller," the teacher employed an animation effect on the whiteboard, making the "-er" gradually appear at the end of "tall" while playing a standard pronunciation audio to reinforce memory. For words ending in "-e" that only require adding "-r", such as "nice - nicer," the magnifying glass tool was used to emphasize the word-ending change. When introducing irregular adjectives like "good - better" and "bad - worse," the teacher asked AI to generate additional examples of irregular comparisons and demonstrate their usage in various contexts, expanding students' vocabulary knowledge. Additionally, the teacher displayed engaging images on Seewo Whiteboard 5, such as a long scarf and a short scarf, prompting students to describe them using comparatives, e.g., "The scarf is longer than that one."

In the practice phase, the teacher designed a variety of interactive exercises using Seewo Whiteboard 5's interactive templates. For example, in a fill-in-the-blank chain game, the whiteboard displayed a series of sentences with missing comparative adjectives. If students filled in the correct word, the sentence changed color and played cheerful sound effects; if incorrect, a detailed hint appeared to explain the mistake. AI then generated personalized mistake collections based on students' answers, identifying weak areas and pushing additional targeted exercises for improvement. For instance, if a student struggled with the rule of doubling the final consonant before adding "-er" (e.g., "big - bigger," "thin - thinner"), AI provided more similar practice questions to reinforce understanding.

In the interactive phase, the teacher leveraged AI's role-playing function, creating lively and relatable scenarios such as a sports meet or an English corner activity for students to practice speaking. For instance, in a sports meet scenario, a student might ask, "You run faster than me. How do you practice?" AI would respond, "I practice running every day. Do you want to join me?" This interactive experience allowed students to apply comparative adjectives in real-life contexts while improving their oral communication skills.

In the final review phase, the teacher compiled key knowledge points into digital flashcards and uploaded them to Seewo Whiteboard 5's resource library, enabling students to access them anytime. Additionally, Seewo Whiteboard 5 provided a collaborative learning platform where students could share notes and discuss learning difficulties. AI automatically analyzed students' questions, identified high-frequency problems, and provided centralized explanations. This interactive and personalized learning approach significantly enhanced the review process, helping students consolidate their knowledge in an engaging and stress-free environment, ultimately achieving a deeper understanding of the material.

Conclusion

This study systematically analyzed the application of Seewo Whiteboard 5 + AI in junior high school English grammar teaching, clarifying its value and operational model from both theoretical and practical perspectives. This teaching approach aligns with the learning characteristics of junior high school students by integrating the rich functions of Seewo Whiteboard 5 with AI technology, creating an engaging and efficient grammar classroom. It enhances students' learning interest and participation while offering teachers valuable insights into students' learning progress.

However, this model is still in the exploratory stage and faces challenges such as insufficient equipment, limited information technology proficiency among teachers, and students' adaptability to the

approach. Future research should expand the scope of practice, further deepen the integration of Seewo Whiteboard 5 and AI, and extend its application to more subjects and educational levels. Additionally, teacher training in technology should be strengthened. With advancements in technology and the increasing demand for educational innovation, this teaching approach has the potential to drive the transformation of teaching models, making valuable contributions to the progress of education.

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