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Personalized learning path design of English course based on intelligent teaching platform

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ABSTRACT
With the rapid development of information technology, smart teaching platforms have gradually become an important tool in education, especially in teaching English courses. Personalized learning, as a teaching mode tailored to the needs and characteristics of students, can effectively improve the learning effect. Based on the intelligent teaching platform, teachers can rely on the data analysis function of the platform to accurately grasp students' learning progress, interest points and weak links to design personalized learning paths to promote students' autonomous learning and English skills. Based on the analysis of the functions and advantages of the intelligent teaching platform, this paper discusses how to meet the needs of different students and improve their English language ability through personalized learning path design, and it is expected to provide practical reference and practical guidance for educators.

KEYWORDS
smart teaching platform; English curriculum; personalized learning; learning path

With the continuous innovation of modern education modes, traditional teaching methods have been unable to meet the increasingly diverse learning needs of students, especially in English courses, there are significant differences in students' language levels, learning habits and interests.

The concept of personalized learning has gradually become an important direction of education reform, and the intelligent teaching platform has become an important carrier for realizing personalized learning with its strong data analysis ability, learning management function and interactivity. The intelligent teaching platform can adjust the teaching content in real-time according to the student's learning performance and tailor the learning path for each student through the tracking and analysis of learning behavior. However, designing an effective personalized learning path in actual teaching and combining the characteristics of the intelligent teaching platform to optimize the allocation of learning resources and feedback mechanisms is still a problem worthy of further study. This paper aims to explore how to design personalized English learning paths for students through the technological advantages of intelligent teaching platforms to promote students' autonomous learning and language skills. Moreover, it is expected to provide a theoretical basis and practical guidance for English teaching, and promote the development of personalized teaching applications in the process of educational informatization.

1 Definition of related concepts

1.1 Smart learning platform

The intelligent teaching platform is a digital teaching environment supported by educational big data and artificial intelligence technology. Its core lies in the accuracy and interactivity of the teaching process through algorithm analysis and resource integration. Such platforms construct individual learning portraits by collecting multi-dimensional learning data such as student login frequency, exercise accuracy, and video viewing time.

For example, a student's frequent pauses in recitation during an English listening exercise may be labeled "Phonological discrimination needs." The repeated grammatical errors in the writing exercises are classified as "Weak points of sentence structure"[1]. In terms of technical framework, the platform usually includes three modules: Intelligent Diagnosis, Dynamic Resource Database and adaptive engine——The intelligent diagnosis module analyzes the pronunciation deviation in students' oral recording through natural language processing technology; The dynamic resource library pushes differentiated learning materials according to the learning progress, such as giving priority to supplementing high-frequency vocabulary for those with weak vocabulary; the adaptive engine adjusts the difficulty gradient in real-time according to the learning effect, for example, when the accuracy of students' Cloze test exceeds 80% three times in a row, the system automatically increases the proportion of academic words in reading materials. This technology integration makes teaching from "One size fits all" to "Teaching students according to their aptitude." Teachers can monitor the overall learning trend of the class through visual panels and, at the same time, generate specific intervention programs for individuals.

1.2 The concept and characteristics of personalized learning

Personalized learning is an educational paradigm based on learners' cognitive characteristics and differences in needs. Its essence is to achieve "Private customization of courses" through accurate diagnosis and dynamic adaptation. Compared with traditional standardized teaching, its characteristics are reflected in three dimensions: first, the autonomy of the learning path, students can choose the order of learning modules according to their foundation. For example, those with a weak English foundation can preferentially activate the"Grammar consolidation" path, while those with clear test preparation needs can directly enter the topic"Test-taking skills" . Secondly, the adaptability of content push strengthens exercises by intelligent matching through error attribution analysis, such as automatically introducing students with high error rates in the past perfect tense into virtual situation dialogue training. The fixed schedule no longer constrains the pace of learning. Those with advanced ability can accelerate the learning process through the pass-through mechanism, and those with difficulties can trigger the cycle of supplementary teaching resources[2].

2 The need for English curriculum design based on a smart teaching platform

2.1 Students' individual needs analysis and learning behavior tracking

The smart teaching platform accurately identifies the differences in students' English learning needs through multi-dimensional data collection. Learning behavior tracking records explicit indicators such as test scores and homework completion rates and captures implicit features in-depth, such as a student's frequent word lookups in reading comprehension reflecting insufficient vocabulary, and the repetition of certain dialogues in listening practice indicating the difficulty of phonetic discrimination. The platform analyzes these behavioral patterns through machine learning, categorizing students as “Visual," "Auditory," or “Hands-on" learners, then customized learning strategies: visual learners get more picture and text memory cards, and auditory learners give priority to receiving audio explanation resources. The dynamic demand recognition mechanism updates the learning profile in real-time. When the system finds that the frequency of connectives in a student's recent writing increases, it automatically pushes higher-order sentence expansion exercises, and forms a closed loop of “Finding problems-matching resources-strengthening ability”[3].

2.2 Differences in learning path design among students with different English proficiency

Learning path design should be based on the English ability gradient to establish a differentiated support system. For students with a weak foundation, the system constructs a progressive path of"Laying a solid foundation-building confidence": in the initial stage, the basic grammar is decomposed through fun animation, and the word memory adopts the picture engaging mode to ensure efficiency of knowledge absorption in the initial stage; intermediate-level students enter the"Skill enhancement-application expansion" stage, systematically recommend news listening and reading and situational dialogue resources, and set up cross-cultural communication virtual tasks, for example, when simulating a restaurant order conversation, the students dynamically adjust the speed and vocabulary difficulty according to their performance; advanced learners activate the"Academic promotion-thinking training" path, it provides the training of literature speed reading skills and the guidance of academic writing framework, and embeds the module of logical fallacy analysis. The design of the path branch has dynamic adjustment characteristics——after a student completes the grammar reinforcement of three units, the system automatically unlocks the debate skills course that originally belonged to the higher-order path. At the same time, the system retains quick access to return to the basic module. This flexible design avoids the mismatch of abilities and ensures that each student is always in the zone of proximal development for effective learning.

2.3 The impact of personalized learning paths on English language skills

The individualized learning path achieves the coordinated development of language skills through targeted training. In listening skills training, the system pushes special training according to the students' weakness of sound discrimination: strengthening the comparative practice of phrase linking for those with difficulty in linking recognition, and adding scene training such as telephone appointments for those with slow numerical response. The improvement of Oral English is based on the strategy of hierarchical reinforcement——the basic level is to correct pronunciation through AI speech assessment, the advanced level is to participate in the dialogue of virtual characters, and the advanced level is to engage in the debate module with intelligent opponents. Breaking through the traditional hierarchical text limits, the system recommends materials based on students' interest tags: tech enthusiasts receive articles on artificial intelligence topics, and literature lovers are matched with excerpts from classic novels, this kind of content preference matching increases learning engagement significantly[4].In teaching writing, intelligent correction not only marks grammatical errors but also

points out "Chinglish" expressions through corpus analysis, and recommends a synonym replacement lexicon to enrich language expression.

3 The design scheme of the English personalized learning path based on an intelligent teaching platform

3.1 Design principles and methods of personalized learning

3.1.1 Learner difference analysis and path design

The primary task of designing personalized learning paths is accurately identifying students' uniqueness. The system divides students into different learning types by recording students' learning habits, ability levels and interest preferences. For example, some students are good at memorizing words through images so that the system will design a combination of graphic learning modules embedded in the word card scene illustration. Students who are sensitive to hearing will receive a listening kit that includes a comparison exercise. The system adopts the "Step-by-step" strategy for the weak students, starting from simple life scene dialogues and gradually transitioning to complex sentence analysis to avoid initial frustration. At the same time, attention is paid to the difference in learning pace, allowing students to jump freely between modules——students who have completed grammar reinforcement can enter the writing exercise ahead of time, and those who are slower will receive additional foundation consolidation resources packages.

3.1.2 Construction and adjustment mechanism of dynamic learning paths

The flexibility of the learning path is reflected in the real-time response to the change in the learning state. The system automatically adjusts the subsequent learning content by continuously tracking the performance of the exercises. When students in reading comprehension frequently query the same kind of words, the expansion training package of the word family is automatically generated, and the vocabulary difficulty of related articles is reduced. The adjustment mechanism includes an early warning function. If students continuously make mistakes in a certain knowledge point, the system will pause the current path and insert the remedial course with animation. The dynamicity is also reflected in the cross-module linkage. A student exposed the problem of tense confusion in the oral exercise. The system strengthens the explanation of grammar and intentionally increases the application requirements of the corresponding tense in the subsequent writing task. When a student avoids listening training for a long time, the teacher can manually adjust the allocation of resources and gradually increase interesting film and television clips to help students overcome their fear of difficulties.

3.1.3 Provision and selection of personalized learning resources

The key to resource matching is to build an accurate "Demand-supply" connection network. The system labels each learning material with multiple attributes, including difficulty level, skill focus, and content theme. When students choose test preparation targets, the system prioritizes the delivery of mock test analysis and test-taking skills courses, while interest-driven learners receive original articles related to topics such as music and technology that they care about. Intelligent recommendation breaks through simple content associations, such as a student repeatedly watching a teacher's grammar class. The system will analyze its teaching style characteristics (such as case teaching) and recommend other curriculum resources with similar characteristics. Gradient permissions are designed for access to resources, with system-led push at the beginning, and gradually open choice as learning ability improves——students can select interesting clips from British and American dramas by filtering through tags, and self-assembled into a personalized film single[5]. This design not only ensures the systematic learning but also meets the individual needs, so that the resource library from the "Standard package" into the "Cafeteria.

3.2 The implementation and feedback mechanism of personalized learning path in the English curriculum

3.2.1 Learning effect evaluation and adjustment after the implementation of the learning path

The evaluation of the learning effect needs to break through the traditional score orientation and establish a multi-dimensional and process-oriented evaluation system. The system continuously tracks the students' behavior trajectory and ability changes, such as recording the error rate fluctuation of the same grammar point in different exercise scenarios, and analyzing whether they really master the core of knowledge. When a student is found to be able to use the present perfect tense correctly in a virtual conversation, but still frequently confuses the tense in his writing, the system automatically marks the knowledge point as a "Weak point of scene transfer" and inserts specific training modules, such

as writing templates to translate dialogue into written narration. The adjustment mechanism focuses on progressive optimization. A student's reading speed is up to standard, but his reasoning ability is insufficient. The system gradually increases the logical complexity of the text, from simple story material to editorial analysis. The guiding question of "Gist refinement-argument analysis" is embedded at each stage. The teacher's dashboard aggregates the common difficulties in the class, such as the poor performance of many students in continuous listening recognition, triggering the system to generate dialect comparison training units and reminding the teacher to carry out thematic live Q&A.

3.2.2 Incentive mechanism of students' participation and learning enthusiasm

The incentive mechanism design should be in accordance with learners' intrinsic motivation and emotional needs. The scoring system breaks through the simple task exchange logic. A student can unlock the audio library of celebrity speeches and meet his psychological expectation of pursuing high-level learning resources by continuously completing the "Perseverance value" of morning reading. The virtual achievement system reinforces self-identity——when a student defeats an AI opponent for the first time in a debate module, the system awards a "Logical knight" title. It generates an ability analysis report, demonstrating in detail the trajectory of progress in its argument structure. Social incentives activate group dynamics, and the learning platform has established a "mutual assistance workshop." When students share writing tips marked as "helpful" by other classmates, their influence level increases, allowing them to participate in online roundtable discussions with foreign teachers as a priority. The artistic design of personalized feedback is critical, and the system, according to the student's personality traits, chooses the way to encourage the pursuit of efficiency to push "This week's study time optimization suggestions" for emotionally dependent learners, a heartwarming AI-generated summary is sent.

4 Conclusion

The design of an English personalized learning path driven by an intelligent teaching platform marks the profound transformation of foreign language education from industrial production to precision cultivation. The research shows that the dynamic path construction mechanism based on learners' differences can effectively solve the dual dilemma of "Ability mismatch" and "Resource waste" in traditional classrooms, so that English teaching can truly realize the leap from "Unified progress" to "On-demand supply."

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