The Construction of a College English Test Bank Based on the Rain Classroom Platform and AIGC

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Abstract: With the rapid development of artificial intelligence technology, its application in the field of education is becoming increasingly prevalent. This paper explores the methodology for constructing a college English test bank based on the Rain Classroom platform and artificial intelligence-generated content (AIGC) technology. The study examines the necessity of test bank construction, the platform and technology it relies upon, the construction process, the application of the test bank in college English instruction, as well as recommendations for improvement. In terms of teaching effectiveness, the developed test bank significantly enhances English instruction, enabling educators to accurately assess students' weaknesses in learning and fostering greater motivation among students to engage with the English language. This research aims to provide valuable insights for the reform of college English instruction, thereby improving teaching efficiency and quality.

1. Introduction

The Department of Higher Education of the Ministry of Education stated in "Artificial Intelligence Leading the Digital Innovation and Development of Higher Education" that artificial intelligence technology is instigating profound changes in the field of higher education and facilitating the innovation of teaching models, learning methods, and evaluation systems. As one of the foundational courses in higher education institutions, college English must adapt to contemporary developments in its instructional reform and actively pursue the deep integration of artificial intelligence technology with English instruction.

The traditional model for constructing college English test banks presents challenges such as high technical barriers, prolonged development times, and slow updates, which hinder its ability to meet the demands of college English instruction in the contemporary era. In recent years, the emergence of the Rain Classroom intelligent teaching platform has introduced new methodologies for teaching and assessment in college English. The Rain Classroom platform enables comprehensive data collection and analysis throughout the teaching process—before, during, and after class—thereby providing robust support for educators' precise instruction and online assessment. Concurrently, the rapid advancement of artificial intelligence-generated content (AIGC) technology has also created new opportunities for the development of test banks.AIGC technology can automatically generate high-quality questions based on specific themes, levels of difficulty, and question types, significantly enhancing the efficiency and quality of test bank construction.

2. The Necessity of Constructing a College English Test Bank

Students' English proficiency varies significantly upon entering college. Some students lack a solid understanding of the grammar and vocabulary acquired during middle school.

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Consequently, in college English instruction, educators must not only cover the unit teaching content outlined in the syllabus but also assist these students in strengthening their foundational knowledge to achieve the instructional objectives. However, given the constraints of limited class time, utilizing a test bank to help students identify and address gaps in their knowledge after class, as well as to reinforce their foundational skills, becomes a viable strategy.

Assessment is an effective means of evaluating instructional efficacy. Many students' English learning strategies and habits require improvement. In non-small-class language instruction, regular formative assessments provide educators with a convenient method to diagnose the challenges students encounter in their learning in a timely manner[5]. Analyzing the results of these assessments can effectively inform the teaching process.

With the advancement of information technology and the ongoing enhancement of the information literacy of both educators and students, the integration of artificial intelligence-generated content (AIGC) technology with instructional materials, along with the implementation of online assessments through the Rain Classroom platform, has provided substantial technical support for the development of college English test banks. This approach aligns with the requirements outlined in the "Guidelines for College English Teaching," which advocates for the full utilization of information technology to track and collect fundamental data on students' learning behaviors, construct individual student learning profiles, and analyze the characteristics of students' learning behaviors[2].

3. Platforms and Technology used for the Construction of the Test Bank

The construction of the college English bank is based on the Rain Classroom platform and AIGC.

3.1 "Question Bank" and "Tests" on the Rain Classroom Platform

The question bank of the Rain Classroom platform facilitates the storage of questions through methods such as directly adding exercises online or importing exercises via templates. The supported question types include multiple-choice questions, multiple-selection questions, true-or-false questions, polling questions, fill-in-the-blank questions, and subjective questions. The editing capabilities for question titles support text, images, audio, and other media. These features adequately meet the requirements for commonly tested question types in the English subject. While entering questions, it is also possible to differentiate the difficulty level (ranging from 1 to 5, with 1 being the easiest and 5 the most difficult). Typically, in the initial stage of question entry, the difficulty level is not differentiated. The difficulty level can be assigned later based on students' response data after the questions are published through the "Tests" module or the "Slides" of the Rain Classroom platform. This process allows for the creation of a difficulty-level label tailored to the specific student population of the institution. When composing a test paper through the "Tests" module, the required questions can be directly imported from the question bank, and scoring settings can be established simultaneously. The question bank import function includes search and filtering capabilities, enabling the selection of required questions by entering keywords (tags), filtering by question types, and specifying difficulty levels.

3.2 Generating Questions Using AIGC

Generative artificial intelligence (AIGC), or Artificial Intelligence Generated Content, refers to the technology that produces relevant content based on the learning and recognition of existing data, utilizing artificial intelligence techniques such as generative adversarial networks and large-scale pre-trained models, while demonstrating appropriate generalization capabilities. The fundamental principle of AIGC technology is to employ artificial intelligence algorithms to generate content that exhibits a certain degree of creativity and quality. By training models and learning from extensive datasets, AIGC can create content in accordance with specified input conditions or instructions. Given the characteristics of the content that can be generated by

AIGC, and in conjunction with the analysis of students' responses to after-class exercises, textbook-related exercises, and existing questions available on the Internet, prompts can be input into the large language model. In some cases, multiple rounds of interaction with the artificial intelligence may be necessary to iteratively enhance the generated content. Ultimately, through manual inspection, the desired questions can be produced.

4. The Construction of the College English Test Bank

The primary objectives of constructing a college English test bank are twofold: first, to assist students in consolidating their foundational grammar and vocabulary; and second, to aid educators in promptly diagnosing the content that students have not firmly mastered during the instructional process. Through repeated practice, the ultimate goal is to enhance students' final examination scores at the conclusion of each semester, as well as their performance in the College English Tests Band 4 and Band 6. The college English curriculum spans four semesters; accordingly, the test bank is divided into College English Test Bank I, II, III, and IV. Notably, College English Test Bank IV also includes actual questions from previous national Band 4 examinations. The principal aim of constructing the test bank is to support college English instruction and provide educators and students with more convenient means for assessment and instructional feedback.

4.1 Question Types and Sources

Combining the commonly tested question types in domestic English examinations, the test bank primarily consists of two categories of questions: objective questions and subjective questions. The former predominantly includes multiple-choice questions, supplemented by fill-in-the-blank questions that require word selection, as well as matching questions, which primarily target practice in listening, reading, and grammar. The latter encompasses fill-in-the-blank questions and questions related to translation and writing. Considering the students' foundational knowledge, some questions in the test bank are derived from the textbooks utilized in class, including exercises covered during lessons and those assigned for after-class practice. For grammar reinforcement, certain exercises are sourced from grammar texts. Additionally, a substantial portion of the exercises is generated using large language models.

For instance, teachers can generate multiple-choice practice questions focused on a specific grammar point while controlling the difficulty level of the vocabulary employed in the questions.The prompts are as follows:

Please create 10 grammar multiple-choice questions that guide students to select the best answer from the four options. The grammatical focus is on the subjunctive mood as it pertains to past, present, or future hypothetical situations. Kindly provide the answers along with explanations. Please ensure that the vocabulary used in the practice questions is at the CEFR B1 level.

With the assistance of large language models, educators are able to customize reading materials. First, teachers select articles on appropriate topics from English-language websites, and then they modify the difficulty level of the articles by entering specific prompt words.

Please revise the provided text to align with a CEFR B1 proficiency level, making it suitable for intermediate language learners.

The text for revision is as follows: (Attach the original text to be revised)

Subsequently, based on the revised article, the prompts for generating reading comprehension questions are:

Please create five multiple-choice reading comprehension questions based on the provided text. These should include Detail, Main Idea, and Attitude questions. Additionally, provide the correct answers with explanations for each question.[1]

Here is the text: (Attach the article)

In addition to grammar and reading exercises, large language models can also create

translation exercises:

Please create five phrases, each appropriate for CEFR B1 level English learners, centered on the theme of "campus romance." These phrases should be interconnected and contextually relevant for discussions about campus romance. Following that, devise a translation exercise from Chinese to English, focusing on the topic of campus romance. In this exercise, students will utilize the previously generated five expressions, translating them to demonstrate their understanding of the theme and their language proficiency.[1]

4.2 Difficulty Level Marking

The difficulty levels of the questions in the test bank are categorized into five grades. When generating questions using a large language model, the difficulty of the generated questions can be specified through detailed descriptions in the prompt, for example, Please ensure that the vocabulary used in the practice questions is at the CEFR B1 level. Referring to the Common European Framework of Reference for Languages (CEFR), questions at CEFR A1, A2, B1, B2, and C1 levels are respectively classified as “Grade 1,” “Grade 2,” “Grade 3,” “Grade 4,” and “Grade 5.” Furthermore, during regular question-practice sessions, if the correct answer rate for a particular objective question falls below 20%, the question will be designated as “Grade 5”; if the correct answer rate is between 20% and 40%, it will be designated as “Grade 4”; if the correct answer rate exceeds 90%, it will be designated as “Grade 1”; if it is between 70% and 90%, it will be designated as “Grade 2”; and if the correct answer rate is between 40% and 70%, it will be designated as “Grade 3.”

4.3 Test-Paper Composition Strategy

Utilizing the Rain Classroom platform’s question bank, well-edited questions are entered into a “template” or directly edited online. During the question-editing process, difficulty level marks can be incorporated directly. Moreover, based on feedback regarding correct answer rates from regular classroom practice or after-class homework, and in conjunction with the difficulty-level marking method, these questions can also be directly entered into the question bank. When composing a test paper, the proportion of questions designated as “Grade 1” and “Grade 5” should not exceed 10% each. The total proportion of questions designated as “Grade 2,” “Grade 3,” and “Grade 4” should constitute 80%, with approximately 40% of these being “Grade 3” questions. In unit tests, the proportion of questions derived from regular classroom practice and after-class homework is set at 50%, which aims to encourage students to value course learning[3]. In final examination papers and end-of-term simulation exam papers, the proportion of questions covered during the semester should not exceed 30%. Over the past three years, the repetition rate of questions in the final examination papers should not exceed 30%.

4.4 Implementation of Online Examinations

Given that the Rain Classroom platform supports online examinations, all tests can be administered online. Educators publish well-edited test papers through the “Tests” module. Grammar and vocabulary exercises predominantly consist of specialized practice. Based on the actual needs in teaching, educators publish these exercises through the “Slides” module or the “Tests” module, and students complete their answers within the specified time frame. This approach is currently intended to identify gaps in knowledge and consolidate foundational skills.For more formal assessments, such as unit tests and pre-final examination simulation tests, the online proctoring function of the Rain Classroom platform can be utilized, or students can be organized to take the tests in a computer lab.

5. Application of the Test Bank in College English Teaching

5.1 Practical Application

The constructed college English test bank consists of several sub-banks: vocabulary, grammar, reading comprehension, translation, composition, and listening. In daily instruction,

educators create test papers using the “Tests” module of the Rain Classroom platform, selecting and importing previously edited questions from the question bank to conduct unit tests, mid-term examinations, simulation assessments, and other evaluations. Due to the school’s well-equipped hardware facilities, more formal examinations are conducted in the computer lab in a paperless format. Two classes at different levels from the cohort of students who enrolled in 2023 were selected to trial the teaching model that integrates the test bank for three consecutive semesters (See Table1).

Table1 average scores of each class for three semesters

	1st semester	2nd semester	3rd semester
Class A2 (average)	44.89	59.69	92.42
Class B2(average)	42.83	63.81	83.15

The continuous increase in the average scores of these two classes over three semesters indicates that the application of the test bank in English instruction is effective.

5.2 Positive Effects

The test bank developed through the Rain Classroom platform can be exported as an Excel file, which can subsequently be imported into the question banks or the “Tests” module of other teacher accounts for editing and utilization. During the construction of the test bank, the teaching team collaborates through a division of labor and employs templates to import and export questions, facilitating the sharing of the constructed test bank.

In unit tests, the online testing methodology provided by the Rain Classroom platform offers intuitive data analysis, enabling educators to obtain a comprehensive and accurate understanding of students’ mastery of the curriculum and to make necessary adjustments to their teaching plans.

Significantly, students’ English learning outcomes have shown considerable improvement. The establishment of the test bank has streamlined the process of test paper composition for educators. The online answering functionality of the Rain Classroom platform, along with the automatic grading of objective questions, has enhanced the efficiency of exam organization and paper grading for teachers. By targeting students’ areas of weakness, educators can administer multiple assessments. Through consistent feedback from these assessments, students can tangibly observe their progress, thereby fostering confidence in their English language learning and enhancing their overall proficiency.

5.3 Problems for future research

The initial construction of the test bank has been completed; however, continuous updates are necessary. The teaching team must maintain and enhance the test bank throughout its utilization, consistently accumulating new materials for question formulation and expanding its capacity. In particular, reading comprehension passages and translation texts must remain current, necessitating the selection of newer articles from both domestic and international websites for rewriting and question generation.

The quality of the questions must be rigorously verified by a team of experts, both within and outside the institution, to prevent over-reliance on the generative capabilities of large language models while neglecting the scientific and rigorous analysis of the produced questions[4]. Furthermore, in light of the evolving English proficiency levels of incoming students, the difficulty levels of certain questions within the test bank require dynamic adjustments to reasonably regulate the difficulty ratio of the test papers. The test bank is anticipated to be employed in the final examinations across the entire institution in the future; however, the supporting hardware facilities must be strengthened to accommodate the simultaneous examination needs of all students in the grade.

6. Conclusion and Suggestions

With the continuous advancement of network technology platforms and the in-depth integration of large language models within the educational sphere, the construction of a college English test bank has become feasible. The primary objective of college English education is to "develop students' English application abilities, enhance their cross-cultural awareness and communicative competence, and simultaneously foster their autonomous learning abilities and comprehensive cultural literacy, enabling them to use English effectively in academic pursuits, daily life, social interactions, and future professional endeavors to meet the needs of the nation, society, educational institutions, and personal development"[2]. The manner in which the test bank can collaborate with existing English courses to achieve this goal warrants further in-depth consideration.

During the construction of the test bank, the Rain Classroom platform provides conducive conditions for the implementation of online testing and data collection, while large language models enhance the efficiency of question generation. However, the challenge lies in utilizing artificial intelligence-based technology to formulate questions that meet established requirements, which poses a significant challenge to English educators' information literacy, particularly in the design of prompt words when interacting with artificial intelligence. *The Applications of Large Language Models in Foreign Language Teaching and Research* and its accompanying website, which offer reference prompt words, have proven invaluable in the construction of the test bank. Nonetheless, the generated questions still require testing, adjustment, and review by educators to ensure their quality. In light of the rapid development of artificial intelligence-based technologies, it is evident that large language models will play a supportive role in language education. However, "human-machine collaboration" remains the central theme, and the predominant role of human educators cannot be supplanted[1].

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References

[1] Xu Jiajin, Zhao Chong and Sun Mingchen, Application of Large Language Models in Foreign Language Teaching and Research, 1st ed., Foreign Language Teaching and Research Press, 2024, pp. 64,99,224.

[2] Advisory Committee on College Foreign Language Teaching, Guidelines for College English Teaching, Higher Education Press, 2020, pp. 15.

[3] Wang Guofeng, "A Tentative Exploration of the Construction and Application of Text-based Test Item Bank of College English", Shandong Foreign Language Teaching Journal, vol.135, no. 2, pp.63-68, 2010.

[4] Wu Xinglan & Su Meijuan, "Preliminary Exploration on the Construction of Final Exam Question Bank for College English in Local Undergraduate Institutions", Modern English, vol.2, pp. 124-126, 2021.

[5] Li Ping, "Study on Construction of Test Database of Traditional Chinese Medicine English", CHINESE MEDICINE MODERN DISTANCE EDUCATION OF CHINA, vol.15, no. 13, pp. 8-10, 2017.