



Research on the Establishment and Application of Russian Examination System Based on AI Technology

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Abstract. With the development and application of artificial intelligence technology, the establishment and application of a Russian exam system based on AI technology has become a research hotspot. Such an examination system uses Natural language processing, speech recognition, machine learning and other technologies to provide a more efficient, accurate and personalized Russian examination experience. Firstly, we have designed a relatively comprehensive network intelligence based intelligent dialogue learning teaching mode based on students' intelligent dialogue learning needs through design based research methods. Then, based on the actual needs of intelligent dialogue teaching and the characteristics of the platform, we constructed an intelligent dialogue teaching platform for Russian exams and applied it in practice. This platform gradually guides learners to think and engage in dialogue through a series of comparative analysis, promoting the teaching process. The research results show that compared to other classmates, through dialogue teaching, learners' teaching effectiveness is slightly improved, and the degree of achievement of learning objectives is also slightly advantageous. This experimental result fully verifies the feasibility and effectiveness of the "human-machine dialogue teaching platform for the Russian proficiency test", and validates our research hypothesis. In summary, the Russian exam system based on AI technology has potential advantages in providing personalized learning support and improving exam evaluation. By building an intelligent dialogue teaching platform, learners can gradually improve their thinking and dialogue abilities, thereby achieving better results in Russian learning and exams. This study provides strong support for the development and popularization of Russian education.

Keywords: AI technology; Russian test; Establish; Dialogue teaching; man-machine interaction

1 Introduction

People's communication always takes place in specific situations. Without context, language loses its meaning. Therefore, the study of specialized Russian is no longer limited to learning grammar and vocabulary knowledge. Linguists analyze language skills and language behavior as a whole, and gradually bring social, contextual and language users into the scope of language research. Russian majors should not only

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master Russian language knowledge, but also have the ability to use it. The best way to measure students' language communicative competence is to directly test their language behaviors, that is, oral test, which is an extremely important aspect of language testing and can best reflect the basic characteristics of real communication, such as context, interactivity and poor related information[1]. Russian intensive reading course is an important link to cultivate students' communicative competence. The oral Russian examination and the teaching of Russian intensive reading are interrelated and mutually influential partnerships. On the one hand, oral examination can promote students to study hard, on the other hand, oral examination is an effective way to promote classroom teaching to achieve its goals. Teachers should strive to make it a concrete practice of intensive reading teaching, a bridge between classroom learning and future needs, and give full play to its role [2-3]. Therefore, this paper makes an in-depth theoretical discussion on the organic combination between the basic technology of artificial intelligence and the basic theory of pedagogy.

2 Methods

2.1 Design and development of man-machine dialogue learning platform

(1) Design of function module of man-machine dialogue learning platform.

According to the functional requirements of the man-machine dialogue teaching platform for Russian proficiency test, which was obtained from the previous questionnaires and interviews, and combined with the corresponding teaching design mode and implementation scheme, the functional modules of the platform were designed, as shown in Figure 1:

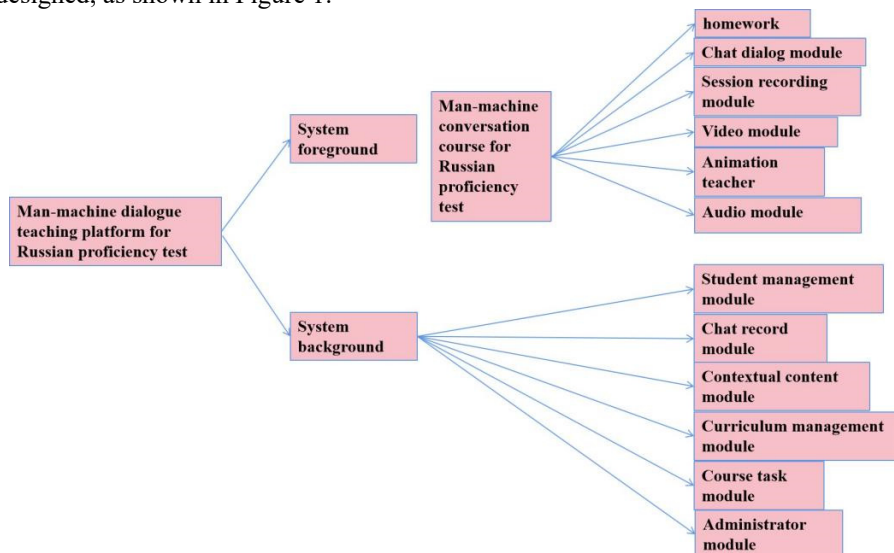


Figure. 1. Platform function module

(2) System program of man-machine dialogue teaching and learning platform

The main program flow of this system is based on Web site. First of all, enter the system homepage of the website and browse the announcements and open teaching resources[4]. Visitors click on the upper right corner, log in and pass the authentication, and then they can enter the corresponding page. If it is a teacher user, you can enter the teacher page, where you can carry out teaching management, material management, course management, context content editing, dialogue record viewing and course task module. If the login is a student user, enter the student page, course list and learning page.

(3) The design of intelligent dialogue based on AIML for man-machine dialogue teaching and learning platform.

The situational intelligent response corpus described in this paper is based on artificial intelligence markup language (AIML), which is mainly used in intelligent response systems. AIML and xml have good compatibility. It is an improved language based on xml. Many chat bots based on alice framework use AIML. In view of AIML's situational intelligence, compatibility of corresponding corpora and high accuracy, this paper has compiled a large number of software engineering corpora in the knowledge base to provide users with professional answers[5-6].

The following is an example that demonstrates the dialogue process of a human-machine dialogue platform based on AIML language providing text on a learning platform or interface:

User: Hello, I am very interested in learning programming. Do you have any suggestions?

AIML human-machine dialogue platform: I'm glad you're interested in programming! Programming is an interesting and challenging skill. I can provide you with some suggestions and resources.

User: Yes, please tell me how to start learning programming.

AIML human-machine dialogue platform: Firstly, you can choose a programming language as the starting point. Common choices include Python, JavaScript, and Java. These languages have rich learning resources and community support. You can find learning materials on online learning platforms, programming tutorial websites, or reference books.

User: Are there any recommended online learning platforms?

AIML human-machine dialogue platform: Of course! Some popular online learning platforms include Coursera, Udemo, and Codecademy. They offer a wide range of programming courses, suitable for beginners and experienced learners. You can browse their course directory to find the suitable learning path for you.

User: Thank you for your suggestion! Are there any other resources that can be recommended?

AIML human-machine dialogue platform: In addition to online learning platforms, you can also join programming communities and forums to exchange and share experiences with other learners. Some well-known programming communities include Stack Overflow and GitHub. In addition, you can also try to solve some programming challenges and projects to improve your actual programming skills.

User: Okay, I will try the advice you provided. Thank you!

AIML human-machine dialogue platform: You're welcome! Wishing you a pleasant and successful journey in learning programming. If you have any questions or need further assistance, please feel free to ask me.

In this example, the user interacts with an AIML based human-machine dialogue platform using text input. The user expressed interest in learning programming and sought advice. The dialogue platform provides advice and resources on learning programming based on predefined rules and a knowledge base written in AIML language. The dialogue platform recommends steps such as choosing a programming language, online learning platform, and joining the programming community to users, and provides some well-known resources and websites. The user thanked the conversation platform for their suggestions and expressed that they would try to provide them. The human-machine dialogue platform based on AIML language can provide interactive dialogue services tailored to specific fields through pre-defined rules and knowledge bases. It can match corresponding rules based on user input and provide relevant replies and information, thus achieving basic Q&A and suggestion functions.

AIML can be used to realize a dialogue robot, but it has the following problems when used in Russian:

The traditional automatic word segmentation corpus is a space-based word segmentation corpus, which is very suitable for western languages, but not for Asian languages, so it is necessary to write its own word segmentation database, which brings many problems. The IKAnalyzer used in this paper is an open source, lightweight Russian word segmentation toolkit developed based on java language. It can well support China people to have the functions of logical memory, thinking, self-defining, punching and matching, random response, many-to-one response and so on[7]. The specific implementation method is as follows:

Environment configuration: Using IK Analyzer is an open source lightweight Russian word segmentation toolkit developed based on java language. The development environment should be able to run normally in the environment above IntelliJ IDEA 2019. 1.3 x64.

Context design: In order to better understand and remember the context, MYSQL database is introduced here to realize the context. According to the stored context content and user input content, the system remembers the user's last sentence when answering the next sentence. The Id is the current chat level, and the parent id is the upper level chat, which helps us remember some attributes. The database is used to operate this content information table [8]. Specific fields are shown in Table 1 Context Information Table:

Table 1. Table of Content Information

field	Data class	length	remarks
id	Int	11	principal linkage
course	var char	50	-
chapters and sections	var char	50	-

ask	var char	50	-
answer	var char	50	-
Parent id	var char	50	-

The historical chat information table is used to store the user's input information and the reply information of the reply corpus, and operate and chat the record array by issuing tags such as content and reply content. Every time the program starts to run, the program will load data from this table into this array, and then it will be stored in this table when the program ends. The unique identification of the table is id and specific fields, as shown in the historical information table in Table 2:

Table 2. Chat Information Table

field	data type	length	remarks
id	Int	11	principal linkage
group	var char	50	-
Send out content	var char	50	-
Reply content	var char	50	-
time	var char	6	-
Student ID	var char	50	-
Student name	var chat	50	-

2.2 Mani-mach ne dialogue as a learning platform for trial operation

In order to ensure that all kinds of dialogue teaching activities oriented to intelligent dialogue teaching are carried out smoothly when the platform is put into operation, 42 students from physics major were invited to try it out from November 3, 2020 to December 1, 2020. During the experiment, the course "Russian" was chosen. It mainly includes explaining the instructions for the use of the Russian intelligent dialogue teaching platform to teachers and students of all ethnic groups; Teachers and students of all ethnic groups are required to use chat dialogue to learn in the platform [9].

3 Results and analysis

3.1 Student-oriented intelligent dialogue teaching contrast experimental results

In this study, students who study on the platform and students who study independently through other software enter the Russian simulation exam, and compare the scores of students in the two learning modes, which can effectively improve students' learning motivation and Russian level.

The subjects of this experiment are mainly sophomores of Physics in A College, with a total of 120 students, 60 of whom have completed courses related to man-machine dialogue and teaching platform for Russian exams, and the other 60

students have studied independently through other software and materials, all of whom have not obtained Russian grade certificates. Their understanding of Russian, age characteristics, cognitive level, learning ability and necessary basic knowledge should be similar, excluding the interference factors of controlled experiments.

This experiment is divided into two groups of students, one is the students who study through the man-machine dialogue teaching platform for Russian exams, and the other is the students who study through other learning software and materials. By using the man-machine dialogue teaching platform for Russian examination, and completing all courses, another group of students with good learning ability in daily study at the same time learn through other teaching software and materials. This study was conducted from December 3, 2020 to January 12, 2021.

3.2 Performance analysis

Comparison of students' scores and total scores according to the two learning methods. The results of the Russian mock exam for students with two learning styles are as follows: Table 3, Figure 2 Comparison of the results of the two groups of students:

Table 3. Comparison of scores between two groups of students

project	Dialogue teaching	Autonomous learning
average score	232.37	214.25
top score	333	323
lowest points	96	112
standard deviation	51.852	48.140

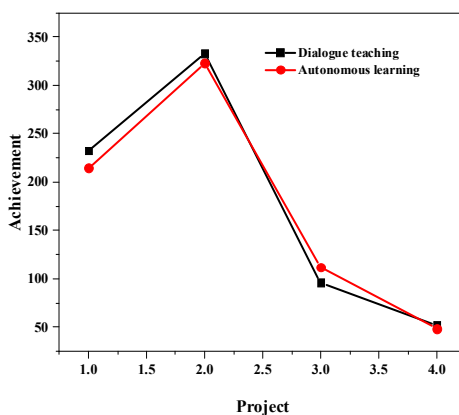


Figure. 2. Comparison chart of students' performance between the two groups

After a series of comparative analysis, dialogue teaching leads learners to think and talk step by step, and promotes teaching. Its teaching effect is slightly higher than that

of other students, and dialogue is also slightly superior, which fully affirms the feasibility and effectiveness of the "man-machine dialogue teaching platform for Russian proficiency test" and verifies the hypothesis of the experiment. However, there are still many problems: although the number of components in dialogue teaching is high, there are also many low scores; Compared with the students' grades in tower learning, dialogue teaching may be polarized [10].

4 Conclusion

Based on the rapid development of educational informatization, this study selected a college student as the research object, combined with the characteristics of traditional classroom teaching and current online learning platform, based on behaviorism learning theory and combined with artificial intelligence technology to carry out research and design. This study aims at improving Russian ability, combines artificial intelligence technology with teaching, and adopts design-based research methods to explore and try to put forward a set of practical teaching design mode of artificial intelligence man-machine dialogue which is suitable for students' language learning and teaching. The realization and application of this research and design will effectively improve the efficiency of college students in Russian learning. Combining artificial intelligence technology with dialogue teaching will greatly help students to learn Russian. Accurately grasping these will help us to integrate and innovate in teaching practice. A man-machine dialogue language learning system is designed, which provides important theoretical value and practical support for college students to exercise and improve their Russian expression level through the man-machine dialogue function of the system, and also for the study of improving the quality of Russian teaching.

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