Foreign Linguistic System Construction Based on Computer-aided Technology

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Abstract. From the perspective of constructivist linguistics, modern information and network technologies are applied to explore the project contents and methods of foreign language practice teaching under the mode of foreign language practical teaching based on the construction of computer-aided technology.

Keywords: Construction of Computer-aided Technology, Computer-aided, Foreign Language, Practical Teaching

1. Introduction
For higher vocational education, the simple mode of “foreign language + business” can no longer meet the training requirements of talents “with comprehensive skills” and the training objectives of “applied” talents [1-3]. With the continuous development of multimedia technology and network communication technology, the computer-aided language learning (CALL) has gradually become an essential part of foreign language teaching reform [4-6]. From the perspective of constructivist linguistics, the foreign language practical teaching mode based on the construction of computer-aided technology, modern information technology, and network technology is explored in this paper.

2. Based on the construction of foreign language practice teaching mode of computer-aided technology
In the constructivist learning theory, the primary role of learner cognition is emphasized, and importance is also attached to the instructive role of teachers. It believes that teachers are helpers, collaborators, facilitators, organizers, and mentors of the meaning construction of students' knowledge. When imparting knowledge, teachers should pay attention to the student's subjective status, and change their roles from knowledge providers to guidance and facilitator to inspire and promote the meaning construction in students. Teachers' role is reflected in their rich experience and accurate overall grasp of subject knowledge, guiding students to consolidate local knowledge bit by bit into a...
complete knowledge system, helping students to construct new and old knowledge while offering students with great room for construction.

In recent years, educators and Theorists represented by Professor He Kekang have advocated the construction of learning theory and teaching practice. The popularization of multimedia technology and network technology provides favorable conditions for constructivism teaching theory. The four elements (context, cooperation, conversation, and meaning construction) are fully reflected in the network multimedia environment. Through communication and cooperation with teachers and learning companions, it can be finally achieved by the meaning construction. Under the guidance of constructivism, the schema of multimedia network teaching mode is as follows:

![Figure 1. multimedia network teaching mode](image)

In this mode, students are the active constructors of knowledge meaning; teachers are the organizers, directors, helpers, and promoters of teaching process; teaching materials and other teaching resources are the objects of active meaning construction in the students. The audio-visual media are used to create situations for collaborative learning and conversation exchange, that is, they are used as cognitive tools for students to perform active learning and collaborative exploration.

Based on the modern information technology and network technology, foreign language practice teaching can provide a learning environment of meaning construction, simulate business activities to carry out various practice projects and comprehensive training of business knowledge and language skills for students, mobilize their enthusiasm and initiative in learning, and cultivate and develop their practical ability and cooperation ability. The advantages of multimedia technology in listening, speaking, reading, writing, translation and other aspects in foreign language teaching are particularly evident. Abundant pictures, words, and images are provided through the slide show and DVD player, creating excellent visual effects and attracting students' attention. Electronic dictionaries and other databases can help teachers and students learn and master relevant vocabulary and grammar knowledge and provide testing and other functions so that students can have the chance of self-assessment of their learning. In the aspect of listening and speaking, the listening equipment in the speech room enables students to listen while reading, and record it to correct their own pronunciation problems. In other words, students' self-study ability can be strengthened. Taking the software made according to the textbook “Market leader intermediate” as an example, it focuses on foreign language vocabulary, listening and reading comprehension and negotiation skills, and adopts multimedia technology. In this way, the students can conduct self-study and self-assessment in combination with teachers' explanations, to achieve the effect of positive construction. In addition, the software “talking business” which focuses on a specific skill and the teaching CD-ROM BBC stepping into the business world, can not only focus on listening but also consider the systematic nature of business knowledge. In foreign language writing, the application of the Internet is an excellent supplement. It can stimulate
students’ learning motivation and enthusiasm better through local area network (QQ, email) so that they can get more environment of using the target language. In a meaningful context, they will have the opportunity to integrate reading and writing skills better and develop problem-solving and critical thinking skills. In the foreign language laboratory, through the simultaneous interpretation equipment, based on the translation software, the real scene translation situation is simulated to improve the oral and written translation practice abilities of students. In addition, the Internet can provide more and more real language materials. Students can perform simulation tasks, role-playing, and other activities and analyze them to improve their communicative competence. The combination of modern information technology and network technology with the construction of computer-aided technology has undoubtedly injected new vitality into the exploration of foreign language practical teaching and provided new ideas for building a new foreign language teaching mode.

3. System design of individualized teaching of college English

The so-called design refers to a systematic planning process or a plan implemented to solve a problem before something is done. Teaching is a purposeful activity, “design is a decision-making activity to achieve a certain goal”, while the so-called teaching design “aims to obtain an optimized teaching effect. The main basic theories involve communication theory, learning and teaching theory, etc. through the systematic analysis of the problems, characteristics, and needs in teaching, the teaching activities are planned, the arrangement process, and decision making.”

To improve the overall foreign language quality and ability of school students, we should find out the deficiencies in the teaching process in time and correct them in time. In the whole process of foreign language teaching, the construction of a valid foreign language teaching evaluation system plays an irreplaceable role. Only by adopting a suitable evaluation system can schools effectively adjust specific teaching methods. The evaluation of teaching quality can recognize the particular teaching situation in time, monitor the foreign language teaching in a planned and organized way, and adapt to the changes in the ability requirements of students in various aspects in the process of social development. Meanwhile, teachers can understand students’ foreign language comprehensive ability deeply, set different goals and develop appropriate exercise methods according to various situations of each student, and effectively improve students’ overall foreign language level.

It is assumed that there are \( n \) evaluated objects \( u_1, u_2, \ldots, u_n \). The multi index evaluation system is composed of \( m \) indicators \( x_{ij}, x_{i2}, \ldots, x_{in}, x_{ij} = x_j(i = 1, 2, \ldots, n; j = 1, 2, \ldots, m) \) are the observed values of the evaluated object \( u_i \) about the index \( x_j \). The evaluation data matrix (decision matrix) can be expressed as follows

\[
A = \left[ \begin{array}{cccc}
  x_{11} & x_{12} & \cdots & x_{1m} \\
  x_{21} & x_{22} & \cdots & x_{2m} \\
  \vdots & \vdots & \ddots & \vdots \\
  x_{n1} & x_{n2} & \cdots & x_{nm}
\end{array} \right]
\]

(1)

Where \( m, n \geq 3 \), the data in \( A \) are the standardized data after preprocessing.

The evaluation process of foreign language teaching is described as the general transformation in the following
\[ y_i = f(x_{i1}, x_{i2}, \ldots, x_{in}), i \in N \]

Where \( f \) stands for positive transformation function; \( y_i \) stands for the comprehensive evaluation value of the evaluated object \( u_i \), \( u_1, u_2, \ldots, u_n \) are sorted in descending order according to the value of \( y_1, y_2, \ldots, y_n \) to compare the superiority/inferiority of \( u_1, u_2, \ldots, u_n \).

4. Enlightenment of computer-aided technology construction on foreign language practical teaching

The construction of computer-aided technology emphasizes the experience of learners' learning process and the cooperation of the learning process. In the foreign language teaching process, the computer-aided technology construction is used to build a foreign language practice teaching mode in higher vocational education based on the network environment: "students as the center, led by teachers, creating and using situations, guiding students to cooperate and speak, to give full play to their initiative, enthusiasm, and innovative spirit, and finally achieve the goal of implementing the meaning construction for the current knowledge. The model includes four steps, i.e., "situation-exploration-cooperation-evaluation", which allows students to construct the meaning of the knowledge through Comprehension → Consolidation → Communication → Conformation → Creation. The basic teaching process is as follows: Teachers → knowledge imparting → creating situations → designing tasks → evaluating communication; students → knowledge preparation → information collection → defining tasks → simulating actions → collaborative completion.

In the process of training, students can independently search and index literature, reading materials (including text materials, books, audio-visual materials, CAI and multimedia) according to the tasks assigned or questions raised by the teachers, the task division within the group, the use of the network, within the specified time, via the powerful functions of multimedia and network and the teachers' appropriate tips for professional knowledge Courseware, etc.), induction and arrangement, independent thinking, construction of knowledge. Students use online classroom resources to perform a lot of practices in listening (online audio materials), speaking (self-recording or pairing recording through tapes, MP3, etc.), reading (online reading), writing (BBS interaction in foreign languages, email, etc.), translation (translation software, simultaneous translation equipment, etc.), thereby enhancing their own learning abilities.

5. Conclusions

The combination of multimedia teaching approach based on teaching design and learning theory of constructivism has important practical significance for promoting the overall reform of teaching, optimizing the teaching process, and improving the teaching quality. Based on the construction of foreign language practical teaching mode, it emphasizes “student-centered, using the elements of the learning environment such as situation, cooperation, conversation, etc. to give full play to the initiative of students under the organization, guidance, help, and promotion of teachers”. In this practical teaching mode, the students can combine listening, speaking, reading and writing organically to apply the language and business knowledge they have learned and truly combine business communication activities with language learning. Through the practical teaching mode of “situation creation -
information provision - consultation conversation - significance construction”, the students' hands-on abilities are significantly improved. It can help them accelerate the transformation of theoretical knowledge into skills, facilitates their understanding of theoretical knowledge, and enhance their proficiency in skill operations, which is conducive to developing and cultivating their comprehensive application and autonomous learning abilities.

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