The Design of Support System for Computer Assisted Interpreting Training

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INTRODUCTION

Interpreting is considered a highly skilled job. In order to improve the interpreting skills, a lot of training and practice are needed. Especially for personal circumstances, the self-training methods are suitable for their own [1]. With the development of computer technology, the function is more perfect and powerful. Therefore, using computer technology to improve the interpretation training skills is the current trend of development, which is of great development space [2]. In the middle of 1960s, there was a new term-CAIT, namely Computer Assisted Interpreter. It is a profound expression of an auxiliary role of the computer network technology on the interpreting training as well as the improvement of network technology to the interpretation skills [3]. It has two meanings: the first is that a teacher or trainer carries out interpreting training for interpreters or learners with the help of computer technology; the second is that the interpreter or learners to make interpreting self-training by means of computer technology. In this paper, we mainly take the second meaning [4]. Because the acquisition of interpretation skills needs a lot of individual self-training and practice, how to use computer technology to assist the interpretation self-training of learner so as to improve learners' interpretation skills is of great significance [5]. Therefore, based on the CAIT, this paper focuses on computer assisted interpreter self-training, abbreviated as CAIST [6].

With the rapid development of computer network technology, computer aided translation (CAT), as a new industry, has been paid more and more attention by education and translation circles [7-8]. At present, at home and abroad, a variety of computer aided translation software have been developed based on the computer network technology developed, and the mainstream of several software include Wordfast, Youdao Dictionary, Catalyst, Across, and Google Translate. Learners can be very convenient to use a lot of computer aided translation system to complete their project work. However, in the current environment, the auxiliary software for interpreting is still very scarce. The translators are isolated and helpless with the lack of computer network software [9]. When carrying out the investigation of the translator's requirements for the auxiliary software, a new computer aided interpretation training concept is proposed, which is based on the special features of the CAT tool [10].

In reality, many translators have been exposed to computer aids, such as headphones, microphones, audio players, recording tools and other professional aids. More important is that in the era of network, the software can help establish professional staff for your own database and memos, which also belongs

ABSTRACT: With the promotion and development of foreign language translation aided by computer technology, interpretation has higher special requirements for software and technology. In order to meet the needs of modern development, it is an inevitable trend for the development of education to design a new software assisted instruction system. In this paper, based on the theoretical model of McCombs and Zimmerman, a unique and practical theoretical model was established, and a new autonomous training system was designed. Different subjects were designed for different learners. Starting from the perspective of teachers and students, online communication, online data resources, online feedback and online evaluation, the training requirements of interpreting skills were combined to design the network interpretation training system with C/S structure and NET technology. In addition, the online training, online correction and feedback have obvious advantages compared with the traditional teaching system, which is of great significance to promote the training of interpreting training.
to the category of independent training using computer network in principle [11]. In fact, the role of computer aided work to help professionals should be analyzed from three aspects, namely, before the interpretation, during the interpretation and after the interpretation [12]. In particular, it should be in the aspects of the data processing before the interpretation, the real-time data transmission in the interpretation, and the feedback, the collation and backup of the database after the interpretation [13]. Based on the current research on computer aided tools, the application of computer network technique for interpreting training and the theoretical model are expatiated, and an Online Autonomous Training System for the current professionals is set up in this paper. Learners are able to be trained in real-time online, and improve their interpretation skills to a certain extent. In addition, it can reduce the burden of the current interpreters, which is of great significance to the development of the interpreting industry and the future planning [14].

2. Self-learning theory and enlightenment

2.1 McCombs and Zimmerman self-learning theory

McCombs, a representative figure of autonomous learning, has proposed an autonomous learning model [15]. According to his theoretical model, the self-learning system consists of the static and dynamic process. The static structure of learners, including self-awareness, self-image, self-monitoring and self-improvement, can express the individual learner's motivation. The dynamic process mainly includes the source of individual learners in the learning process, and self-feedback, which largely depends on the static process, but also is a kind of static process evaluation. The development of individual self-learning cannot be separated from the foundation of static process, but also cannot be separated from the development and inspiration of dynamic process. Therefore, through the theoretical model, we can realize that in order to improve the self-learning of individual learners, on the one hand, they need to carry out systematic training in the static process, and make clear their self-learning motivation; On the other hand, they need to make self-evaluation, self-feedback, self-control, and self-reward to help the individual learners to establish confidence.

Zimmerman, a famous American independent learning social cognitive school, also presented an autonomous learning model. He believed that self-learning involved the interaction between himself, behavior, and environment. Autonomous learners should not only make active control and adjustment for their own learning process, improve the negative emotions, and enhance positive emotions, but also be not affected by adverse external environment, and make self-adjustment and relaxation. In the process of self-training, the individual must constantly monitor and adjust the cognitive and emotional state, try to keep a positive attitude towards web-based autonomous learning, do not be fooled by the observation network, use a variety of strategies to adjust their learning behavior, set up their own learning plans, and must learn to adapt to the existing learning environment, material and social resources. To sum up, the auxiliary training principle of Zimmerman's personal theory model is similar to that of McCombs self-regulation system, as well as the independent training and evaluation behavior, self-improvement, self-adjustment and self-feedback. In addition, Zimmerman also emphasized the role of the environment in self-earning, and thought that autonomous learners should make full use of the learning resources in the learning environment, so as to better carry out autonomous learning. According to the theoretical model of Zimmerman’s self-learning, it can be concluded that in the field of computer network self-training, interpreters should improve their self-interpreting training models in three aspects: self-awareness, self-learning and self-feedback, make rational use of cyber source computer environment and resources, and improve their own deficiencies and shortcomings, so as to enhance their computer network interpretation training skills, which can promote the development of the computer network system and consolidate the interpreting training.

2.2 Enlightenment and Reflection on the theory of autonomous learning
According to the research of the first section, the theory of McCombs and Zimmerman conducts training from the aspects of self-understanding, self-learning, and self-feedback based, so the computer learning assisted self-learning theory is mainly studied from the three aspects. In view of the auxiliary function of computer network technology to the interpreter, combining with the theory model of autonomous learning (abbreviated as CAIST), we can draw the theoretical model as shown in Fig.2 and Fig.3.

According to the above theoretical model, we can obtain that: (1) There is a self-interpretation system (McCombs theory) for each independent learner; (2) Learners use the system to acquire the interpreting skills and promote their own development (A-2) through self-training (A-1). They adjust their own learning and promote their own development (B-2) through self-assessment (B-1) (the combination of McCombs and Zimmerman theory); (3) In a computer supported learning environment, learners use autonomous learning resources (C-1) to conduct interpreting skills (C-2) in order to acquire skills and promote their development (A-2). At the same time, self-evaluation (C-3) is used to promote the further development of the self-learning system (B-2) (Zimmerman theory). It must be pointed out that the training mode has periodicity.

Based on the computer technology which can help the teaching, the application of computer, multimedia and network has improved the teaching of interpretation to a great extent. Through the powerful computer network technology, students use the computer network teaching resources to establish computer network independent training program according to their own conditions, so as to achieve their special talents. Moreover, the computer can make self-improvement based on the targeted requirements of each teacher, enrich the database, and provide the correct teaching content for students to learn. At the same time, the computer can provide teachers with the analysis tools for learning results to track and manage students’ learning, help teachers make scientific decisions, in order to guide students to learn. The theoretical model shows as following: (1) Computer assisted interpretation of self-learning mainly includes the factors such as teachers, learners, learning resources, learning management, self-evaluation, self-training, computer learning environment and computer assisted learning tools; (2) The most important problem of the theoretical model is that improving the interpreter's personal ability is the ultimate goal of the independent training support system, which can promote the rapid development of computer aided interpretation system; (3) For each student, teachers should set up a targeted, networked interpretation self-learning environment, provide learning resources, self-learning and management tools, so as to improve learners' self-learning interpreting; (4) Learners use the system to acquire the interpreting skills and promote their own development (A-2) through self-training (A-1); They adjust their own learning and promote their own development (B-2) through self-assessment (B-1); In a computer supported learning environment, learners use autonomous learning resources (C-1) to conduct interpreting skills (C-2) in order to acquire skills and promote their development (A-2); At the same time, self-evaluation (C-3) is used to promote the further development of the self-learning system (B-2). All of the above steps are repeatedly carried out in order to promote the formation and development of the self-system of interpreting skills.

3. Construction of the theoretical model of self-training support system

In order to better understand the relationship among teachers, learners, network resources and auxiliary tools in the theoretical model of computer network self-learning system, the structural model method (ISM method) is used to simulate. The 8 elements of the CAIST theory model are expressed by S1-S8, and make the comparison between the two, so as to determine whether there is a causal
relationship. If so, a symbol O is marked. The logical relationship between the various elements is obtained as shown in Table 1.

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Where, S1: teachers; S2: learners; S3: learning resources; S4: learning management; S5: learning evaluation; S6: self-training; S7: network learning environment; S8: self-learning tools; Available shows that the various elements can support each other, to set up independent training system.

According to the logic relation table, we can get the factor relation matrix, adjacency matrix and reachability matrix. Through the decomposition of reachability matrix, and according to the conditions of \( R(S_i) \cap Q(S_j) = R(S_j) \), the hierarchy decomposition and extraction are carried out to draw structural relationships among the factors of the CAIST theoretical model. Learning management (S4) is very important in computer assisted interpretation, which affects the establishment and effective operation of the whole system. Learning management includes creating an independent learning environment, provide and continuously improve online interpretation tools, develop, apply and improve network learning environment. In addition, it can also provide and update network interpretation resources, and make effective monitoring and evaluation of the students' self-interpreting training quality. This is exactly unified with the connection of the big circle and their relationship in the theoretical model. Secondly, the structural model also shows that the establishment of the web-based autonomous learning environment (S7), the provision of online interpretation tools (S8) and the role of teachers (S1) are very important. In the process of computer assisted interpretation, "teacher" includes teacher, technical support and teaching assistant. They design and create a web-based self-learning environment for interpreting, select and compile the resources of interpretation learning, evaluate, monitor and manage the students' learning. The learning evaluation system (S5) is used to test the results of learner’s self-training (S6), and to make better recommendations for the selection and arrangement of learning resources (S3) through the appropriate feedback. Finally, learners can improve their interpreting skills and develop their own interpretation system through self-training and the use of learning resources. The improvement of the interpreter's ability demonstrates the effect of the whole system, that is, the forming of learner's interpretation system. The improvement of interpreting skills can help explain the effectiveness of self-learning in computer assisted interpretation. This is consistent with the theoretical model that promotes the development of learner interpreting self-system.

4. Design of self-training support system

4.1 System design objectives

With the development and popularization and application of information technology and network technology with the core of network and multimedia technology has created a network of independent learning environment, which facilitate the conditions that learners have access to information. How to deal with the problems encountered by the learners in the network self-learning is the key to measure the effect of network learning. Therefore, it is an important part of the network learning system to build a web-based course learning support system, which can make the learners get better learning effect through the network learning environment. Learner is the main body of service in education. The purpose of education is no longer the cultural heritage and the mass production of talent, but for learning services for learners. Education should be around each learner's learning, give full play to its "help" function, and "service" function through information technology, and promote the diversification of the school system, personalized teaching, curriculum integration and the development of students' self-harmony.
The ultimate goal of education is to cultivate people's creative spirit, and maximize the overall development of different individuals, so as to improve the overall quality of the whole people. Such a goal is difficult to achieve in traditional education. Only in the network learning environment, it is really possible to turn it into reality with the learning supported by technology using the network technology and multimedia technology as the core. Based on the network environment, the design of self-learning support system is mainly aimed at that learners can scientifically control the learning behavior patterns and operating essentials of learning objects in the network learning environment. In addition, the dynamic process of learner's main intelligence and non-intelligence factors in Web-based self-learning can be described so that learners can better understand and evaluate their own ability, and find the most suitable for their own learning.

4.2 System architecture design

In this study, the training system of computer network technology has a clear logic structure. It is divided into three levels according to teachers, students and learning resources. The mainstream includes: application layer, logic layer and data layer. Each layer can be divided into several branches. They are mutually dependent and interdependent, and each layer cannot exist independently. The specific representation is shown in Fig. 5.

According to the above logical icon, students, teachers and administrator form the application layer. The system has a direct impact on the experience of the application layer feeling, so that three branches of the application layer is the crowd support of computer self-training system. In addition, the application layer (teachers, students and administrators) is the key to data initialization, maintenance and management. Students are learners and practitioners of the system, and teachers and administrators are the support of this layer. Application layer data makes the initialization, maintenance and management of data. The function of the logic layer in the self-training support system is to realize the logic processing of the task, improve the logic and the assignment of the task, supervise and manage learners' online learning task. The data layer is the data processing CPU in the computer self-training system, which is responsible for summarizing, sorting and classifying each student's own data, and establishing a perfect database. The database of network data is set up using learners, teachers and other relevant information for individual learning and use. At this point, it reflects the application and the necessity of the third main level. The data is generated from a variety of data sources, and it stores the data of the whole learning system, including the learning resource library and the user library (the student library, the teacher library and the administrator library). At the same time, the data layer also displays the data.

The design and development of computer network autonomous training system is completed in two steps. The first step is to analyze the learning conditions, clear the purpose of the analysis, and make the detailed planning of the content of independent training courses and follow-up plans, so as to maintain the integrity of the system. At the same time, it is necessary to design a unified interface layout, network course structure for all the
document interfaces. This allows the system to maintain a unified style of the document, and it is conducive for learners to quickly adapt to the characteristics of the document, reducing the learner's adaptation time. In addition, a complete system should ensure that all learners can adapt to the personality and the style of all learners, and it can encourage learners to avoid their loss of motivation to a certain extent.

The System second step of design and development is to document design. The system Web document should be a sound document, which includes all the browsing help. It is convenient for users to operate and use the document system easily, and it will not lead to the unsuitable study and confusion. At this point, a unified system interface design is needed. Learners can focus their attention on the learning content, avoid the insertion of advertising design on the document web page, prevent learners from distracting, and other factors. Finally, learners can operate the document system according to the way they like, and choose different topics in different content.

4.3 System function design

The computer network assistance system is an interactive learning system for students and teachers based on the traditional education, using modern education computer network as reference and computer network technology as methods, which is a network assisted online teaching learning system. It is based on the promotion of learners' learning skills, which supports a variety of teaching models. In addition, it has a good human-computer interaction function, which can provide a variety of services, and an open online support system.

Students can learn independently, and the biggest feature is that there are a wealth of resources can be used. The course generally includes course introduction, teaching outline, teaching plan, multimedia courseware, teaching experiment, and learning toolbox. These resources can effectively promote students' self-awareness and participation in learning. Its structure is shown in Fig.7.

Course learning is teaching content. The content of computer network teaching is an important database of computer network assisted instruction, which is the basic knowledge for learners to master and learn. The teaching content is composed of several knowledge points of each node in the computer network system. The student must study his preliminary knowledge before learning a part of knowledge, and the knowledge has the dependence on the order. For learners, the system should give the whole knowledge structure relation (Fig. 8) on the basis of the explicit teaching objectives of each knowledge point. In addition, the system should provide the learners with sufficient learning content, and also provide the interface to the teachers or administrators who have the authority to maintain the teaching content.
In addition to the rich learning resources, the commonly used means of online communication include online messages, online forums, online Q & A and online homework correcting functions, which can be used for asynchronous communication between teachers and students. When the user exits the system, the replies from other users are kept in the database. Once the user logs on to the system again, the information can be immediately displayed to the user so that the user can process the information in a timely manner. The discussion structure is shown in Fig. 9 and online Q & A design is shown in Fig. 10.

To sum up, students can browse through the various theme plates of the computer network system, learn their own subject knowledge, and online review the contents of class teaching. In the event of a problem, the student can give feedback to the teacher or inquire the relevant problems and their analysis and resolution process, or through the discussion area and other students or teachers to discuss exchanges. What’s more, students can also test their own level of online self-testing module, to consolidate the knowledge learned, identify weaknesses, and improve their skills.

5. Conclusions

The learning of interpreting skills has its particularity. It requires a large number of systematic training to enable learners to gradually form a conscious sensitivity, thereby enhancing the ability to interpret. The development of computer technology and its application in language teaching make the application of advanced computer technology to assist students in interpreting training has become an important issue in the field of interpreting teaching and research at home and abroad. In this paper, through the research on computer aided interpretation training which has been used for many years, we have been thinking about it in practice. Under the guidance of the theoretical model, the author carried out many practical studies and achieved good results. However, how to use computer and network technology to support learners' autonomous training, improve their interpreting skills, and how to make full use of computer technology’s advantages, integrate the characteristics of interpreting knowledge, the characteristics of subject teaching and the idea of excellent teachers, and provide effective support, so as to more effectively serve the interpreting teaching need further study.

6. Acknowledgement

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7. REFERENCES