A student profile model based online English learning

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Abstract

Many Chinese universities have begun reforms to enhance educational competitiveness in our globalizing economy. This study aims to ascertain the status of English education and English-medium instruction at a Chinese engineering school and to offer workable suggestions for English communication training for Chinese graduate engineering students. Colleges and universities across China are adopting bilingual education to meet the need for well-rounded personnel with sound knowledge in specialized areas and competency in foreign languages. The development and difficulties of current bilingual education in China are discussed. First, the short-term English word context is generated to identify related concepts of the word. Second, the user context is generated based on the click through data of users. Finally, a forgetting factor is introduced to merge the independent user context in a user session, which maintains the evolution of user preferences. It is significant to the reform from teacher-centered to student-centered teaching mode. It is helpful to the cultivation of the students' collaborative ability and spirit, and has important theoretical significance and practical value.

Keywords: English education, online learning, student profile

1 Introduction

Under the increasing influence of globalization, many Asian governments have begun university reforms to enhance educational competitiveness and national competence in a globalizing economy. Subsequently, internationalization has impelled the restructuring of higher education institutions in a number of Asian nations, including China, Hong Kong, Japan, Singapore, South Korea, and Taiwan [1]. Individual governments have taken different approaches and measures to enhance the competitiveness of their institutions of higher education. The Chinese government has taken quantitative and qualitative measures such as the massification of higher education and the development of world-class universities since the mid-1990s [2]. With financial support from the government, Chinese universities have actively recruited high-quality academics from around the world to improve their educational quality [2]. The Japanese government has had concerns about the diminishing positions of their universities and has supported international collaborations and exchanges to facilitate the repositioning of Japanese higher education institutions [3]. In the case of Singapore, the government has carried out extensive university reforms with the intention of establishing the island country as a center of education in the Asia-Pacific area. To achieve this goal, the government has promoted the establishment of branch campuses of reputable foreign universities in addition to the reformation of university curricula [4].

The English-Chinese bilingual education in China has two main objectives. The first one is to empower China's elite youths to get advanced sciences and technologies directly from English literatures. Second, it helps students develop bilingual skills for efficient and effective worldwide communication. For these purposes, research has been conducted nationwide to help promote English-Chinese bilingual education, which includes evaluations of the training of bilingual teachers, and revisions of college curriculums for bilingual requirement. However, little research is done on the network aided learning environment for bilingual education. Current e-learning systems in China are mostly focused on continuing education and adult education. They are incapable of providing an original English environment and are often not suitable for bilingual courses.

The extensive use of digital technologies in China has greatly changed the college English teaching methodologies. College English Curriculum Requirements was issued to replace the Syllabus, and from then on it has served as an outline in the transformation effort. Accordingly, The Testing Syllabus for College English Test-Band 4 states, the objective of College English is to develop students ability to use English in a well-rounded way, especially in listening and speaking, so that in their future studies and careers as well as social interactions they will be able to communicate effectively in both oral and written forms. In this sense, CET-4 and CET-6 are aimed at measuring precisely college students' comprehensive employment of English and thus play an active role in realizing the objective of college English teaching." With the new orientation of the test objectives in The Testing Syllabus, college English teaching is expe-

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riencing a change from the test whether the students have attained the various purposes established in the Teaching Syllabus after they have finished the four-year college learning to test how well the students can use English, which means developing students' all-round English abilities and The Requirements symbolizes that an era demanding a uniform teaching requirement is over, and a new era stressing the individualized and diversified college English teaching starts. After working under the guidance of the Syllabus and its refined version for about a decade and half, CE was found to be less and less up to date because of challenges from globalization, student demands, enrollment expansion, and changes in primary and middle school curricula. Therefore, in the new e-learning environment college English teaching must set up a new teaching system according to the societies' needs, the teachers' strong points and students' interests. In order to meet the students' requirements, some universities already started to offer some enrichment courses for undergraduates who have passed CET Band 4 & 6. College English teaching is changing from fostering English language knowledge to cultivating practical abilities. The main features of the transforming period is that the terms and the hours per week for college English teaching is shortening, while the number of the enrichment courses (the elective or optional courses) which emphasize developing ability is increasing.

In this paper, first, the short-term English word context is generated to identify related concepts of the word. Second, the user context is generated based on the click through data of users. Finally, a forgetting factor is introduced to merge the independent user context in a user session, which maintains the evolution of user preferences. It is significant to the reform from teacher-centered to student-centered teaching mode. It is helpful to the cultivation of the students' collaborative ability and spirit, and has important theoretical significance and practical value.

2 Related Works

As higher education rapidly accepts the notions and practices of e-Learning, the learning and teaching processes are experiencing ever-increasing changes [5-7]. Several universities, including Iranian universities, are currently providing online learning courses and facilities for students' use [8], which have significantly increased the quality of each field of study especially language education including language learning, language pedagogy, and language use [9]. However, the integration of leT tools in language classroom setting offers a broader concept of e-Learning which is defined variously in many studies. The most general educational demotion of e-learning is provided by Urdan and Weggen [l0] as a term for all types of electronic-supported learning and teaching which deliver the knowledge through electronic media such as the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, CD-ROM. Moreover, sveral studies have compared the traditional language learning to e-learning of language and revealed a number of e-Learning benefits. Fageeh [11], for instance, indicated that e-Learning has effectively reduced the shortcomings of traditional learning including inadequate time devoted in the classroom, limited opportunities for students to discuss freely in the classroom as a result of their shyness or time restraints, lack of well-organized and better interaction with their peers and teachers synchronously or asynchronously. To confirm his comparison, Fageeh [11] carried out a descriptive research, including a survey and in-depth interview, to make out the perceptions of EFL students and their teachers towards e-Learning. The participants declared that e-Learning environment not only decreases the affective obstacles or inhibitors which motivate students to be more active and less silent and shy but also enhance inputs, outputs, and the processes of educational practices. Similarly, Mohammadi, Ghorbani and Hamidi [12] asserted that learning language via ICT resources is a learner centered, self-paced, cooperative, comprehensive, communicative learning which is dynamic and convenient any time and any place. Moreover, e-Learning provides opportunities for language learners to get familiar and interact with target language culture via online videos, chat rooms and videoconferencing [13].

Nevertheless, despite the growing numbers of e-Learning benefits, some studies have focused on the inhibitors in the implementation of e-Learning. One of the major obstacles seems to be related to the characteristics of ICT key users in e-learning settings, namely, language learners. Several research studies indicated that user-related inhibitors include lack of ICT literacy and computer anxiety [2], age and gender [14] as well as lack of readiness to use ICT resources [7].

Since the emergence of ICT tools in education in the 70s, language programs have enjoyed the implementation of these beneficial tools in language classes. It is suggested that ICT with its different forms from educational software to using networking has created a revolution in language teaching and learning [16]. ICT has not only been increasingly used in the practice of the skills of reading, writing, speaking, and listening as well as into corpus linguistics and testing but also provided lots of opportunities for language learners to enhance their communicative abilities [16]. Also, Beatty [17] characterized ICT-based language education as a process in which learners use computers and as a result of that they improve their language proficiency.

In sum, in line with the vital need of e-learning readiness assessment, this study investigated e-learning readiness among EFL students for the implementation of the e-learning language education in Shiraz Azad University. Moreover, the relationship between EFL students' English proficiency and their readiness was investigated.

3 The Proposed User Profile based Method

3.1 THE BASIC FRAMEWORK

An investigation of e-learning products leads to the fact that teaching materials are usually prepared in advance

and then lose flexibility in customer's interests as well as up-to-dateness in contents. On the other hand, abundant online resources (dictionaries, thesaurus, lexicons or encyclopedia etc.) are separated from contexts and becomes hence to some extent to be "big white elephant". The conceptual guideline of the framework here is thus allocated on the pedagogical motivation of "The customers decide what to learn and we help it to be well learned". The concrete technical measures to support this idea consist of three parts:

1) The texts to be processed are supplied or selected by customers;

2) related analytical measures based on web service discovery are introduced in the process of text analysis and teaching explanation generating, including language point determination, looking-up online dictionaries for new words;

3) the output of analytical results can be individually represented according to the specific need of customers both in forms and contents. The schematic framework is illustrated in Figure 1.

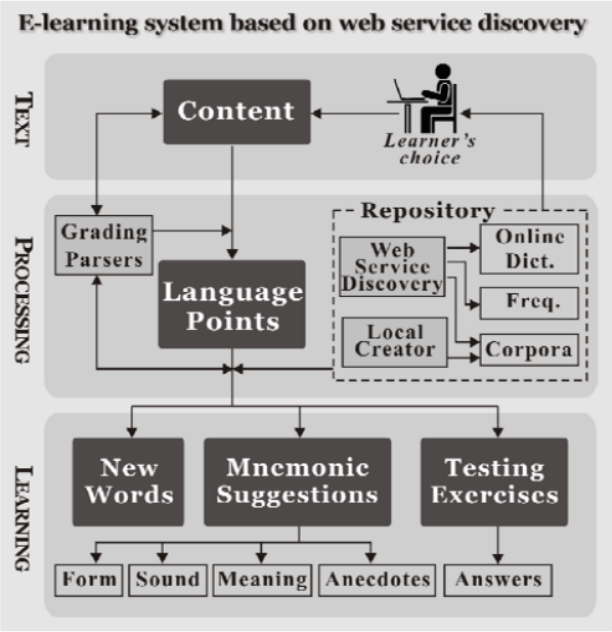

Figure 1 Flowchart of E-learning system

3.2 BUILDING THE WORD CONTEXT

Context, in its general form, refers to any additional information associated with the query [14]. In this paper, we narrow the context to represent a piece of text (e.g., a few words, a sentence, a paragraph) that has been authored by the users. Generally speaking, a word context can be represented as a concept vector. An obvious choice for extracting concepts of the query q is mining the Web pages returned by Web search engines, such as Google which provides the URLof each search result. However, the above choice is impractical. The reasons are given as follows:

1) Time consuming. Though Google provides the URL of each search result, it is time consuming to download these Web pages;
2) Parsing infeasible. Due to the huge number of Web pages and the high growth rate of the Web, it is impractical to analyze each Web search result pages directly and separately. Meanwhile, different Web sites have different HTML format, it is infeasible to parse the different Web sites at the Web scale.

Therefore, the web-snippets of the word are used for extracting concepts instead of the Web pages. Snippets are useful information resources provided by Web search engines, which are brief summaries of Web pages along with the search results. Generally speaking, a snippet contains a brief window of text selected by a Web search-engine around the query *q* in a Web page. Since many stopwords such as preposition, pronoun may occur on the snippets, it is necessary to do some preprocessing steps to reduce noise from the snippets before extracting concepts. Given the real time of building query context, we do not use some time consuming language dependent preprocessing steps such as part-of-speech tagging. Instead, we only remove the stopwords using standard SMART stopword list. After preprocessing the snippets of the query *q*, it is time to extract concepts of the query q. Our concepts extraction method is inspired by the famous problem of finding frequent patterns in data mining. When the query q is submitted to the Web search engine, a set of snippets are obtained for identifying the concepts. According to the theory of cognitive science, if a concept appears frequently in the snippets of the query q, it represents an important concept related to the query q since it coexists in close proximity with the query q in the top Web search results.

Besides the weight of concept ci, the relations between concepts can also be mined from the snippets. A famous formula named Pointwise Mutual Information (PMI) from information theory [20] is used to compute the relation between concepts.

3.3 BUILDING STUDENT PROFILE

The query context reflects the related concept of the query *q* in the Web search result pages, which can be derived without any user click through data. Different from query context which is static, the user context is dynamic and based on the click through data of the users. In other words, the user context is user-oriented. Given the query *q*, the problem of building user context can be viewed as a three-stage process.

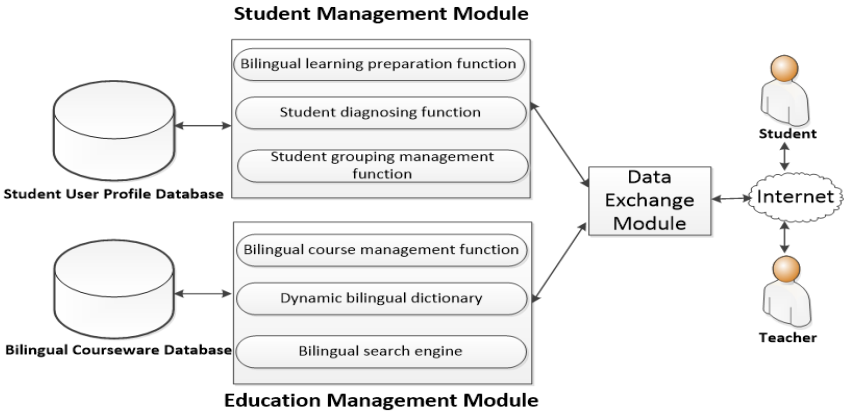

Figure 2 System organization

1) Obtain the explicit concepts of user context. The explicit concepts mean the concepts appear in the click snippets of the users. For example, when the user searches the query "apple," then he/she clicks the snippet which contains the concept "iPhone," thus the concept "iPhone" is the explicit concept of the user.
2) Obtain the implicit concepts of user context. The implicit concepts mean the concepts do not appear in the click snippets but may be interested by the users. For example, if the user is interested in the concept "iPhone," the concepts which are related to the "iPhone" such as "iPod" may be the implicit concepts of the users.
3) Process the sequential click snippets of user context. Each click snippet of users can be used to generate a context, respectively. The merging of these user contexts in a user session should be considered.

Intuitively, the concepts which appear in the user click snippets can be thought as the explicit concepts of the user context. For instance, if a user submits the query "apple," and he/she is interested in the concept "iPhone," then he/she may click the snippet containing the concept "iPhone". In other words, the concepts which appear in the snippets of the Web search result may be interested by the user who clicks it. Besides the concepts which appear in the snippets clicked by the users, other concepts may also be interested by the users. The implicit concepts mean the concepts do not appear in the click snippets but may be interested by the user which is shown in Figure 2.

The concept relationship graph of query context gives us a chance to find the implicit concepts of the user context. If a user is interested in the concept ci, the concepts which are the neighborhood of the concept ci in the concept relationship graph are the implicit concepts of the user context, which means these concepts are more likely interested by the users. For instance, if a user submits the query "apple," and he/she is interested in the concept "iPhone," then he/she may click the snippets containing the concept "iPhone". Obviously, the concepts which are neighborhood of the concept "iPhone" in the concept relationship graph of query "apple" such as "stock" and "store" may be interested by the users. Therefore, we compute not only the weight of the explicit concepts appearing in the click snippet, but also the weight of the implicit concepts which are the neighborhood of the explicit concepts in the concept relationship graph. An intuitive method for computing the weight of the implicit concepts ci is using the strength of the link between the implicit concept ci and the explicit concept cj. Unfortunately, this method is impractical since one implicit concept may relate to many explicit concepts. For example, suppose "iPhone" and "iPod" are two explicit concepts appearing in the click snippet, but the implicit concept "Mac" may link to both "iPhone" and "iPod." In that case, it is difficult to select which link should be the weight of the implicit concept "Mac" to the user context. To address this problem, three strategies are proposed to compute the weight of the implicit concepts of the user context.

3.4 RESEARCH INSTRUMENTS

For the purpose of this study two major instruments were used including e-learning readiness questionnaire and a retired version of Test of English as a Foreign Language (TOEFL). First, EFL students' e-learning readiness was assessed by using e-Learning readiness questionnaire adapted from Watkins, Leigh, and Triner. The privilege of using this scale is to provide practitioners with tools for improving both individual and organizational performance through useful e-learning experiences. The questionnaire has two major sections. The first section includes demographic characteristics such as age, gender, computer use, computer ownership, internet use for academic activities. The second part consists of 27 closed-ended items categorized under six factors in order of:

1) technology access (three items),
2) online skills and relationships (nine items),
3) motivation (three items),
4) online audio/video (three items),
5) internet discussion (four items),
6) importance to one's success (five items).

The participants were asked to rate their readiness in e-learning environment on a 5-point Likert scale based on Strongly Disagree (1 point), Disagree (2 points), Unsure (3 points), Agree (4 points), Strongly Agree(5 points).

The overall reliability for this questionnaire was found by estimating Cronbach's alpha (0.75) making it acceptable in terms of internal consistency. The results of reliability analysis for six components of the scale indicate acceptable levels of internal reliability for all components ranging from 0.63 to 0.87. Secondly, a retired version of TOEFL test was used to investigate the proficiency score of the participants. This test consists of 30 questions in three parts (reading comprehension, structure and written expression).

4 Analysis

Digital technology makes it possible to construct a system of teaching contents, which can combine words, pictures, sounds and visual clips together, and thus content-based and multi dimensional approach of college English enrichment course teaching arises. This teaching mode is based on the digital technology and multimedia teaching environment, so it can embody the principle of combining practicality, interest and knowledge together. It can be realized both in the classroom activities and after-class Internet-based autonomous learning. During the classroom activities, the teachers will concentrate on some role play activities, so as to develop the students' autonomous and initiative learning spirits.

Then how to adopt the content-based teaching mode of CEEC in the e-learning environment? Before class activities: This technology provides a very good environment for both the students and the teachers to finish their tasks before each lesson. With online accessibility, they can read up-to-date English materials on the websites of the BBC or The New York Times, visit English learning websites to complete various after-class assignments online. They can also easily find English-speaking partners through the Internet or participate in online forums in English. After the students collect the materials closely related to the certain theme, they can discuss and communicate in various online ways and make some PPT documents so that they can present group work in class. This process must involve students' autonomous and cooperative learning. Compared with the confinement of the traditional classroom, an e-learning environment gives them many more opportunities to improve their English ability dramatically. Incorporating digital technology to college English enrichment courses is not only effective in improving students' English proficiency, but also offers teachers many more possibilities. At our university, we can teach every multimedia college English class, which means we can incorporate video and other visual aids into classroom work.

The students are enthusiastic about using video clips of English movies for a lesson with the particular theme. In class activities: In the e-learning environment, tasks are more easily assigned to cater to students' needs and interests. The teacher design some pair work, group work role play and imitating activities to improve students' oral expressing abilities. The e-learning environment will surely make it feasible for the students to be immersed in authentic English learning environments, so as to enhance their sense of language and cultivate their culturally communicative abilities. The e-learning environment also makes it possible to combine after-class work with the in-class work, combine the online work with the offline work, and combine the multimedia teaching with the traditional teaching. Thus, the maximum amount of authentic communicative activities make students strongly stimulated by audio video clips, enrich their intellectual functions and train their cooperative and initiative consciousness.

A sectional interface of the online teaching and learning system is illustrated. It is composed of three sections: (1) text display; (2) new word annotation and mnemonic suggestion; and (3) new word association (e.g. synonyms and antonyms). The Gettysburg Address by U.S. President Abraham Lincoln is selected as a demonstrative built-in text in our created repository to illustrate the functionalities of our system. The entire speech consisted of 272 words as Encyclopedia tells. Our system gives exactly the same result and uncovers more facts about it as illustrated in Table II. Of the total 272 words, 138 are distinct. From the results, readers could find that easy texts for primary learners (like B in the table) are with a lower coefficient and a condensed reading text for advance learners (like C) has a higher value. A speech, which is usually composed of colloquial expressions, is often a medium degree of difficulty and medium coverage of new words.

The facts of texts B, C and D in Table II reveal that text B belongs to essential course with easy words and low degree of difficulty; text C advocates an intensive expanding of vocabulary; and text D in the last volume of the series does not have the largest vocabulary coverage but rather tackle with cultural issues as the author designed, as can see from the series names: First Things First, Practice And Progress, Developing Skills, and Fluency in English. Such an arrangement is also introduced in author's pedagogical instructions. The analytical results of the example texts demonstrate the important function of text evaluation for teachers to select a proper text aiming a specific group of students. After the reading text is scanned through above algorithm, new words come out from the distinct words that are equal or higher than the level the customer has assigned. They are marked by bold and blue letters. Once the list of new words is determined, the list is sent to the repository system, where the standing MAS serves for vocabulary data collection and administration in advance and real-time if necessary. It sends back all word information on the list, including vocabulary notes, mnemonic suggestions, learning points, and test questions. Under the category of mnemonic suggestions and learning points, useful learning materials are provided there. Distinction notes on similar words in form, for example "repository" and depository, are compared. Similarly, "sun" and "son" are pronounced the same; both "attain" and "obtain" have a meaning of "to gain or get" etc. They are all served for improving the impressive memory of learners to new words. Some anecdotes about certain words are also recorded in the mnemonic corpus of the repository, for example, "arithmetic" as the acronym of "a rat in Tom's house may eat Tom's ice cream". The webpage frame of test questions shows the test question of corresponding

new word to deliver practice for learners to master new words. After all new words are learned and tested, a score is then fed back to the learners to reminder them the degree of their understanding and digestion.

5 Conclusion

This paper first brings about three problems in the traditional teaching mode of college English interpretation class. They are disconnection between teachers' instruction and students' learning, shortage of interaction between teachers and students, the out-of-date content and the single teaching methods, static instruction and shortage of authentic practice. Then, the author points out that applying E-Learning in college interpretation instruction may help solve the three problems. e-learning, as a new way of education, has many characteristics, such as individuality of the subject, interaction of the learning process, integration of learning content and the opportunity for life-long learning. In the e-learning environment, college English interpretation teaching shows a new development trend. The roles of teachers and students will be changed. Students become the subject of teaching and they have more autonomy. While teachers play the role of monitoring and directing and they become the designer of the learning, the organizer and the attendant of teaching activities, and also the guidance and the consultant of the students' learning. In order to meet the requirements of the modem college English interpretation course, teachers have to learn the computer and network techniques well, or they will encounter some difficulties and problems. Altogether, nowadays e-learning and network learning have become the new trend of education and their advantages must greatly facilitate college English interpretation teaching and learning in the future.

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