

# The Strategies for Ecological Construction of College English Teaching under the Background of Big Data

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**Abstract:** Big data brought about a lot of challenges for college English teaching; countless opportunities have been shown to us it is necessary to reconstruct ecological balance in college English class. We should affix much value to deepening the core concept of the integration and development of information technology and English classroom teaching reform. According to the principle of educational ecology, we should also use big data to study the interdependence and restriction of various factors in English teaching, and make full use of the role of big data information technology in improving college English teaching. Here a number of strategies are offered to strengthen college English teaching in the big data era.

**Keywords:** Strategies, Eco-construction, College English teaching, Big data

## 1. Introduction

The well-known futurist Alvin Toffler first put forward the term “big data” in the early 1980s, which was called “the third wave’s cadenza”, either. Big data doesn’t use Stochastic analysis, instead all the data is analyzed and processed and it is being generated by everything around us at all times. Every digital process and social media exchange produces it. Systems, sensors and mobile devices transmit it. Big data is arriving from multiple sources at an alarming velocity, volume and variety<sup>[1]</sup>. It not only affects all aspects of our life, but also deeply affects the development of education<sup>[2]</sup>. With regard to college English learning, big data and ubiquitous Internet expands the quantity of information that college students have access to, including various information and diverse services of English learning. English learning is not restricted by time, space or even teachers anymore. Both teachers and students will have to meet the new challenges which are brought about in the big data era. Just like ecology in nature, college English teaching should also gain a kind of ecology balance in the big data. It is a necessity to study the interaction and mechanism between learning ecology and educational elements by using the principles and methods of ecology under the background of the big data. In the requirements of College English course teaching, it has been clearly pointed out that it should conform to the international teaching concept, the routine planning of network application and the construction of ecological environment teaching. Constructing an eco-English education environment and realizing a balanced co-education is of great significance to continuously improve the quality of teaching in the big data. Therefore, strategies for ecological construction of college English teaching in the big data are what we aim to explore. The integration of modern information technology and education is an evitable trend for college English teaching in the big data era.

## 2. New challenges in college English teaching in the big data era

Big data refers to the massive, high-growth rate and diversified information assets with stronger decision-making, insight and process optimization capabilities under the development of the Internet and information technology. The rapid development of computer technology and the wide application of the Internet in the education industry have led to the emergence of advanced modern teaching technology. Facing the vast college English web teaching resources, comprehensive mining and in-depth analysis on college English network teaching resources is rising in educational field, to explore college English network teaching resources integration and utilization strategy under the background of big data era, so as to provide students with personalized learning experience, improve the teaching quality, and give references for decision-making at different levels in education system.

Compared with the situation of students' passive learning under the traditional teaching mode, the inverted classroom pays more attention to pre-class learning. At the same time, teachers should actively use modern methods and means to promote teaching. College English teaching mode, curriculum setting, teaching resources, team building and other aspects are facing new challenges based on network and information technology.

### **3. Strategies for eco-construction college English teaching in big data era**

#### ***3.1 Utilize online education resources fully to ensure the healthy ecology***

With the further development of education information, E-learning and open education is flourishing all over the world. Online education resources experiences the following several stages, such as OER, khan academy, video course, MOOC & SPOC [3]. While in China, since the launching "national excellent course" construction projects in 2003, as far as the college English teaching resources are concerned, domestic universities have built various online teaching platforms, such as written materials, audio-visual materials, PPT courseware, CAI courseware, VBI data broadcasting and TV class, and massive teaching resources data are created [4]. When each college students learn English through the computer terminal, including reading, taking notes, doing experiment, participating in discussion and interaction, which are all the data sources [5].

So it is necessary yet not tough for individual university to utilize online education resources fully and build English learning ecology of its own. College English network teaching resources integration and utilization is the extension of classroom, school-based characteristics network teaching resources can be constructed into "one database and three platforms" ecological network teaching resources, one database is a massive network English teaching resource library, three platform s are network English teaching platform, learning platform & test platform, which combines traditional teaching resources with network resources.

Moreover, school-based characteristics network teaching resources platform should be equipped with massive illustrated, melody English songs, image data and selected classic teaching cases to perfect automatic speech and composition measurement test system; English teachers access local area network (LAN) database through sorting, refining, processing, editing, constantly enrich and update resources sharing platform to meet the requirements of mobile, individualized and hierarchical learning for different majors to stimulate their interests in the three-dimensional virtual learning environment.

#### ***3.2 Build personalized college English learning environment***

The full text of the article must be typeset in single column. In SLA researches, linguists found language acquisition follows natural law and different learners' learning paths are almost of the same kind. The well-known input hypothesis states that learners progress in their knowledge of the language when they comprehend language input that is slightly more advanced than their current level. Krashen called this level of input "i+1", where "I" is the learner's interlanguage and "+1" is the next stage of language acquisition [6]. However, in college English classes, student have different language levels, and it is impossible to satisfy every student's learning demand. Personalized education is definitely an ideal form of language teaching. However, it could not be implemented in most stated universities in the past, because it requires more teaching resources and more energy and efficiency. But now in the big data era, with the assistance of the Internet and various English learning resources, it is more likely for educators to design and offer personalized English learning environment.

First, the colorful and multi-dimension English teaching resources are available, say, text, video and audio files, multimedia courseware, e-portfolio, online resource database, English learning software, and English learning websites and so on. For instance, various English learning apps, ranging from the spoken English practice to words training, are developed and available in smart phones. Since practices of different levels are provided in many of the apps, teachers can select different practice for students of different level. Many of these apps are designed full of fun, such as Fun Dubbing, Fluent English, which increase the enjoyment of English learning.

Second, for students of different language levels, they are evaluated respectively. Multi-dimensional assessment is part of personalized learning environment. Teachers' review, peer review, and system review are adopted to evaluate students. Process evaluation is paid much attention to, which show the differences among students.

Third, as to the way of monitoring learning process, besides online learning platform, the popularity of social network helps teacher a lot after class. QQ and wechat are the top two social software college students use. A QQ or wechat group is important communicative channel, so keeping the line of communication open is vital for the relationship between teachers and students.

### 3.3 Encourage effective and diverse interaction in the learning process

Effective learning is proposed to solve the problem of low learning efficiency and unsatisfactory learning effects. It refers to the learning behavior that students adopt suitable learning strategies for learning content under the guidance of teachers, actively participate in the learning process, and complete knowledge construction efficiently in order to achieve learning goals and optimize their own knowledge structure. Big data technology with interactive and intelligent features provides a feasible way for the development of effective college English learning. First of all, big data technology will collect and store relevant materials about English learning through the Internet, such as various English teaching resources, open classes, English culture, English novels, English movies and TV series, etc., to provide convenience for students to carry out learning. At the same time, the language scenario simulation service of big data can also create real scenarios, simulate the learners to use them, which can enhance the students' sense of involvement and increase their interest in learning, and ultimately help realize real-time interaction between students and learning content. Moreover, the big data analysis system will carry out real-time analysis, feedback and guidance according to the specific situation of different students to realize human-computer interaction. At the same time, it can also help the interactive learning between students-teachers, students-scholars, students and students through the big data interactive learning system. The interactive learning system can help participants communicate with each other, solve problems, share experiences, inspire and give suggestions to each other, and realize dynamic interaction between people. The above real-time interaction finally realizes the interaction of the old and new knowledge in the students' minds, so that the students can deeply understand English knowledge and realize the transfer and application of knowledge to new problems. As shown in Figure1, the information technology provided in the big data era has promoted students' effective learning and interaction. The teaching process falls into three steps, online autonomous learning, offline classroom teaching and mixed promotion respectively. During the first step, students can conduct audio-visual learning, get some information and knowledge about learning content, and they can also learn words, sentence structure as well as paragraph on their own. If they have any understanding problems, they can leave them alone, anticipating them solved during offline classroom teaching. In the second step, the teacher can lead in the topic, check autonomous learning, solve difficult language points, have a discussion and assign homework. With regard to the last step, students can either finish assignment online or complete communication tasks offline.

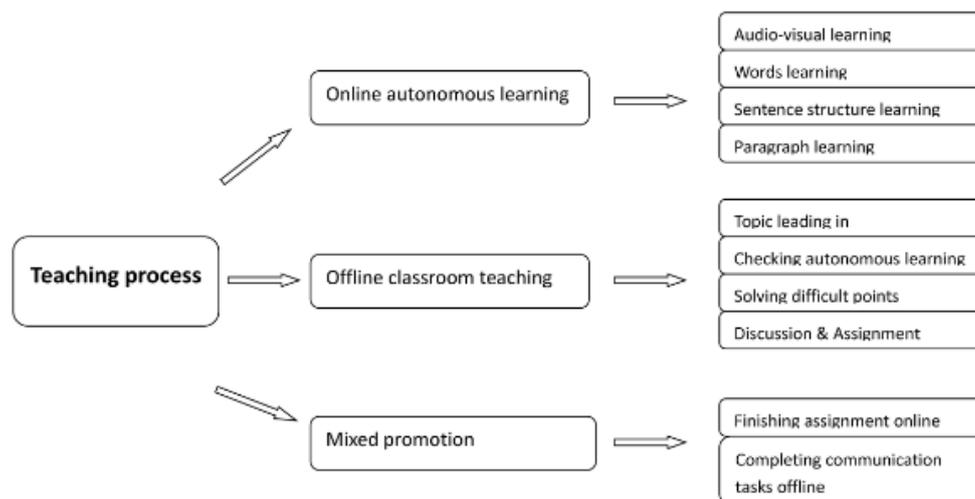


Figure 1: The interactive teaching & learning process.

### 3.4 Enhance teachers' professional literacy

Lifelong learning is the evitable trend for people in the new era, especially for teachers. College English teachers should raise the awareness of self development and promote their comprehensive

capacity, or else they would be eliminated by the new society. Teachers should possess solid foundation and good command of skills, rather than limited to the “knowledge + pedagogy knowledge”. The big data era sets higher requirements for college English teachers, and it brings more learning opportunities and learning methods to students. So it is very important for teachers to distinguish useful information from large quantity of learning resources. Students are often confused by the overwhelming information they are exposed to. Teachers have to enhance their ability to use information technology and help students select the proper information. Through online learning platform, teachers can collect, read and analyze the data from students to find out information related to their students, such as their English level, their cognitive style, their preference, their learning hours, their weakness and their strong points. Only keeping the key information in mind can teachers design the best teaching plan for students. If college English teachers are equipped with information thinking consciousness and information processing they can actively create three-dimensional language learning situation, the multidimensional density display technique, restore ecological college English classroom environment. If college English teachers master information retrieval, data mining and data analysis, they can discover the profound reasons behind data that affect learner’s performance, provide personalized, intelligent learning experience for students. Through the questionnaire analysis of teachers in ten colleges and universities in China in the past six years, it is concluded that among the five abilities of teachers, teachers’ recognition and demand for improving their information technology ability have increased significantly year by year, and they also have higher requirements for their general knowledge ability. There are not too obvious changes in the demand cognition of the other three abilities, language ability, teaching design ability and classroom organization ability.

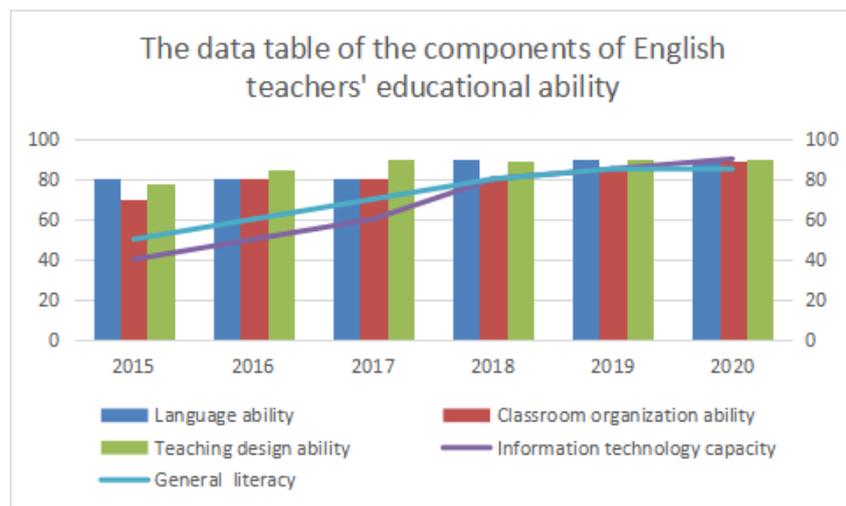


Figure 2: Changes in college English teachers' recognition of their own ability.

As shown in Figure 2, more than 85% English teachers think highly of information technology ability. It is favored by teachers among the components of English teachers' comprehensive ability. Since the end of 2019, that is to say, the beginning of “COVID-19 pandemic”, most teachers consider that information technology capacity is very important and exert a great influence on their teaching, and they are willing to improve their information technology ability and increase the general knowledge reserve, which also brings enlightenment to the education departments at all levels and universities. In terms of teacher training and career development needs, they should increase investment in information technology training, carry out more training about information technology and general education, and build a multi-dimensional training mechanism.

#### 4. Conclusion

In the big data era, ecological construction of college English teaching will greatly improve the motivation and efficiency of students' learning. Teachers' professionalism and capacity are vital and play a leading role in the ecological system. To meet the changes and challenges, college English teachers have to change our minds, have the ability to judge, keep moving forward, and actively learn and master the corresponding teaching theories and teaching models. In the big data era, related governments and schools also give a hand to construct the ecological environment of college English teaching. However, there are still lots of questions that need solving and researching. We have a long journey to go. Big data transformed the form of class teaching, the role of English teachers, the concept

and even purpose of learning English. It will inspire us to explore more and research further.

### References

- [1] Information on <http://www.ibm.com/big-data/us/en/>.
- [2] Huang Y N, Hong Z R. *The effects of a flipped English classroom intervention on students' information and communication technology and English reading comprehension*. *Educational Technology Research and Development*, 2016, vol. 64, no.2, pp. 175-193.
- [3] Cao Chao. *The information literacy improvement for foreign languages teachers in big data era*[R], Shanghai international studies university, foreign languages development forum in big data era, 2014, (10).
- [4] Tian Tian. *The research on integration and sharing of teaching resources under open education* [J], *Journal of China Adult Education*, 2014, (10).
- [5] Zhang Yun. *Big Data Change Education-the advent of big data*[J], *Journal of Shanghai Education*, 2013, (4).
- [6] S. D. Krashen, *The Input Hypothesis: Issues and Implications*, Longman, London and New York, 1985.