

# Education Reform and Teaching Improvement in the Era of Big Data

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**Abstract.** Big data expands the time and space for education. The combination of traditional education methods and modern technology facilitates the quality of education. Canada's English education for overseas immigrants from non-English speaking countries differs from English education in China in terms of teaching environment, teaching philosophy, teaching content, teaching materials and teachers. In the present, big data can be used to create a good English language environment for learners, infiltrate the learner-centered teaching philosophy in the teaching process, increase the input of real language materials, update the teaching content with the times, and build the comprehensive evaluation system combined with summative and formative assessment, and ultimately guarantees English teaching quality from multiple dimensions.

## Introduction

In recent years, the rapid development of Internet big data made online education software, especially mobile phone education applications funnier and more targeted. People can use fragmented time and space, which greatly enriched the learning conditions and improved the quality of learning. Internet big data and English education are most closely linked, because English education is more market-oriented. Taking the English education in the era of internet big data as an analysis blueprint, we can take a look at the direction and path of education improvement in the era of big data.

English education, especially non-native English education, for the sake of the non-native language teaching environment, is unable to stimulate imitative learning in the early stages of the Aibinhaus forgetfulness curve to enhance memory, or to provide a good language practice platform to supplement the stimulus. ESL (English as a Second Language) is "English as a second language" English language education. It began in the mid-20th century in the United States and Canada, supported by national governments or universities, and is intended for non-native speakers of native language. The purpose is to improve learners' English ability to adapt to life, study, and work abroad. EFL (English as a Foreign Language) is the English teaching in our country. The main difference between the two lies in the teaching objects they are facing and where they occur. Both are English education for learners whose native language is non-English, but the specific environment is very different. ESL is more conducive to English. EFL teaching in the age of internet big data tends to move closer to ESL teaching than traditional EFL teaching. Combining internet big data resources, selectively drawing lessons from Canadian English teaching experience, and making corresponding adjustments according to China's specific conditions, will provide reference for our country's long-time, low-effective English teaching over the years.

## Education Reform in the Context of Big Data

**Big Data.** In 1980, the famous futurologist Alvin Toffler praised big data as "the third wave of Chinese music" in *The Third Wave*. Since about 2009, "big data" has become a popular vocabulary in the Internet information technology industry. Big data, or huge data, massive numbers according to the data collection is a data collection composed of a large number of data, a complex structure, and a large number of types of data. It is a data processing and application model based on cloud computing. Through the integration and sharing of data, cross-reuse forms the intellectual resources and knowledge service capabilities. To some extent, big data is the cutting-edge technology of data

analysis. In short, the ability to quickly obtain valuable information from various types of data is big data technology. The characteristics of big data have four aspects. First, the volume of data is huge. Second, there are many types of data. Including network logs, audio, video, pictures, geographic information, etc., many types of data require higher data processing capabilities. Third, it has low value density and high commercial value. With the wide application of the Internet, information awareness is ubiquitous, information is vast, but the value density is low. How to complete the "purity" of data more quickly through powerful machine algorithms is an urgent problem to be solved in the era of big data. Fourth, the processing speed is fast and the timeliness requirements are high. Big data distinguishes itself from the most salient features of traditional data mining.

**The Negative Impact of Internet Big Data on Education.** Classroom teaching in our country is increasingly linked with Internet big data. While enjoying the convenience of science and technology, it also faces a series of problems, especially the issue of over-reliance. In a large amount of information in English, the ability of teachers to identify valuable information has yet to be strengthened. How to extract information from massive information requires teachers to spend more time and energy. Teachers sometimes misuse Internet information, overuse images and audio effects, and are vulnerable to ignoring the subject in terms of teaching content and ignoring student interaction. The use of various emerging technologies has made data generation easier and faster, and the data has grown exponentially. The rapid growth of data will inevitably require faster data processing. Otherwise, a large amount of data cannot be processed at all. In addition, data is always in a constant flow. Once it is not processed in time, it may become obsolete and lose its value. A large amount of data will have no meaning. Therefore, learning to analyze, interpret, and process the collected data in a timely and accurate manner imposes higher requirements on the ability of the teacher.

### **Comparison between Canada ESL Teaching and China EFL**

The ESL program at the Northern Alberta Institute of Technology (NAIT) in Canada has its unique experience in terms of teaching environment, teaching philosophy, teaching model, quality of teachers, and selection of teaching materials.

**Natural Teaching Environment.** From the perspective of language input, Canadian English teaching has a natural language environment and there are numerous native speakers of English. The teacher's language level and classmate's language level all provided him with an ideal "intelligibility input," including "conversations for foreigners," "teachers' language," and "peer language." At the same time, since English is a kind of official language, news media, official documents, advertisements, etc. provide learners with a more realistic and natural language environment. Whether in the classroom or outside the classroom, all the written materials that students see at a glance, such as advertisements, street signs, instructions, etc. are all in English. Most of the surrounding people's words are in English. Students can use English in a natural way.

In sharp contrast to Canadian English learners, domestic students lack such a language learning environment. Even in English classes, many English teachers cannot guarantee pure English teaching, even if they are taught in "all" English or "pure" English. The teacher's voice and expression cannot be compared with the native English teachers of Canada, but out of the classroom, students have less chance of coming into contact with English, and basically can't speak English.

**Student-centered Teaching Philosophy.** China's traditional teaching philosophy is teacher-centered. Although the English education community has gradually begun to study learners in recent years and has attempted to turn student-centered, it is still far from the practice of NAIT. Before and during ESL training, teachers send survey questionnaires from time to time. The questions of the questionnaires include what the students are most interested in, what they have gained after learning through a certain period of time, and so on, so as to formulate or adjust the teaching contents according to the student's achievements and interests. There is little time for the teacher to use the PPT in class, not to mention that the showing PPT for a long time to pull away from the students. PPT is not a must-have item in class, and it is only used when it is really

necessary. The desks and chairs of the classroom are not fixed. Teachers often change the seat combination during class time, either in groups of two or in groups of four, or in a semi-circular sitting in the whole class. The arrangement of seats serves the teaching activities. Students can communicate with different peers.

Different with ESL, most of the English classes in China are still teacher-centered, as there are as many as forty to fifty or even seventy to eighty people in English classes in China. The time in the class is mainly taught by teachers. Many teachers are very dependent on the PPT, and some of them have changed from the original textbooks to lecture notes.

In short, in the teaching of large classes, the interaction of the classroom is very scarce.

**Practical Teaching Content.** ESL teaching emphasizes practicality, which can be reflected in vocabulary, grammar, writing and reading lessons. (1) There is a dictionary of popular ESL courses. The vocabulary around the words “clothing, food, shelter, and exercise” is mostly the English expressions of the things that are seen and used in daily life. All are equipped with color pictures, and students can intuitively see each word represents the items. (2) The grammar lesson emphasizes students' observation and discovery of language laws. The NAIT teachers' grammar lessons are not boring. They use many of the things that happen in their lives as example sentences, put similar grammar points together, let students compare and discover new grammar points, and they must also learn what they have learned. Compare the relevant grammar points and actively acquire new grammar knowledge. Students learn grammar knowledge through some simple, everyday sentences. (3) In terms of writing, NAIT's teacher prefers to help students shift from quantitative to qualitative change. Every week, the teacher asks students to write a propositional composition within half an hour. During the writing process, you can't stop writing. You can't spend time thinking about grammar and wording. Just write your true thoughts as much as possible. The teacher basically does not correct grammatical errors in student writing. They believe that overcorrecting students' grammar and vocabulary spelling mistakes will make students be afraid of writing English and learning not to express their true meaning. They value whether students can express their opinions clearly in essay, function more than grammar and spelling. The proportion of shares is significant. (4) There are dozens of English novels in the reading class. There are about 30 English novels (enough for a class of students to read at the same time). Each week, the teacher specifies a novel for the whole class to read at the same time. A certain part of the class discussion. After reading the novel, the student returned the school to exchange with other classes. This will not only ensure the amount of reading, but also save teaching resources.

Chinese students' memory vocabulary is usually carried out through articles with little relevance to life and outdated articles, or some vocabulary manuals for examinations. The words are memorized in isolation and repeatedly, and it is difficult to have them in life after leaving the books. Vocabulary memory has become boring and self-confidence destroying thing. The grammar lesson gives students a general impression of being boring, having endless grammar knowledge and endless grammar questions. Correcting the composition is a headache for the Chinese teacher. The teachers use the red writing to carefully formulate the grammatical mistakes and spelling mistakes in the composition of the students. Sometimes the correct words are written next to the students. Seeing a large area of red essay is undoubtedly a blow to one's ability to learn. As far as reading teaching is concerned, the traditional Chinese reading class usually uses an article to explain vocabulary, grammar, and sentence patterns, and the amount of reading is extremely limited.

**Textbooks that Retired in the Second Place often Use a Complete set of Grammar Textbooks in EFL Teaching.** In ESL teaching, especially in English-speaking countries, although there may be teaching materials, the role of the teaching materials has already relegated to the auxiliary status, and a large number of audio-visual materials and newspaper articles are used as the main learning content. This situation is taught with NAIT

The school situation is consistent. NAIT teachers have a lot of autonomy in the selection of teaching materials. ESL classes do not have uniform teaching materials for all courses. For example, grammar and integrated English courses have unified teaching materials, while reading and listening lessons do not have uniform textbooks. Students' needs and interests independently choose

teaching materials. The materials are distributed to students in the form of handouts.

### **English Teaching Improvement in the Era of Big Data**

In the age of internet big data, there are already possibilities to use technical means to improve the teaching environment and teaching conditions. As long as we improve the teaching philosophy, we can obtain teaching achievements that leapfrog development.

**Making Full Use of Big Data to Create an Environment Conducive to English Learning.** Big data, cloud computing, and mobile internet have created favorable conditions for English teaching, allowing English learners to place themselves in a large number of English information and realistic English environments. They can not only serve students' studies, but also serve teachers. Teaching also provides a scientific basis for education decision makers to make decisions. Combining big data in the Internet with the environment suitable for specific teaching in traditional teaching methods, simulating the ESL teaching environment and designing time-limited teaching tasks and plans can make EFL teaching more efficient.

For the second language and foreign language teaching, the communicative teaching method and the task teaching method can make use of the task extensively to teach. The use of different types of tasks makes the teaching more communicative, and makes the classroom activities not only limited to language exercises, but also gives the classroom Activities for specific purposes. Both pedagogies believe that true communicative activities are essential for language teaching; they can facilitate the use of language for the execution of content-rich task activities to advance the learning process; and for learners, content-rich tasks can support the learning process. In English teaching, Internet resources can be used to design real language learning tasks. Tasks can provide language input and output necessary for language learning. At the same time, it can also stimulate the interest of learners.

**Change Teaching Concept.** First of all, English teachers should update their teaching concepts and establish a new learner-centered teaching philosophy based on constructivism. We must change the teaching of foreign languages in China. The most important thing is to change the ideas of the entire people. The teacher's role is to be a loyal supporter, active helper, and guide for students to construct knowledge. They should inspire students' interest in learning and inspire and maintain their motivation. The teacher should fully study the teaching objects, understand their learning characteristics, motivations and needs, organize collaborative learning as much as possible; use contemporary mobile students to easily accept the characteristics of mobile digital information, fully use instant social networking tools, RSS readers and other software to help Students receive as much as possible fragmented knowledge information.

China's large classes cannot be changed in the short term, but teachers can design through classroom activities. Through group learning, guide students to make more use of extracurricular time, use Internet resources to develop the second class, and leave more time for students.

**Update and Improve Teaching Content.** Language is used as a communication tool. Learning languages is ultimately for communication. Therefore, English learning should pay more attention to the content that is closely related to life, change the traditional teaching methods that emphasize too much emphasis on teaching English knowledge, and turn learning language into linguistics.

In China efforts are made to study grammar knowledge and analyze the structure of sentences to make them more thorough than English native speakers. Poor listening and speaking ability leads to the appearance of English in English and dumb English. Language knowledge and language application ability are out of touch. In teaching, expression is the most important thing to master first. English teaching should include real language materials in life so that English can be brought close to students' lives and become lively and realistic, thus bringing up students' interest in learning. Learn from Canadian experience in the teaching of vocabulary, grammar, reading and writing, and use practicality as a guide. The ingenious design of the teaching content is integrated into real life, and language learning is combined with real life, such as searching for documents, reading online newspapers and magazines, and making self-guided travel plans. In the reform of English new curriculum, the implementation of service learning that satisfies both individual

development needs and social development needs can promote the fundamental change of foreign language education from exam-oriented education to quality education.

## Conclusion

Using Internet big data to evaluate can be used in teaching process. If so, adjust the teaching plan and goals. Change the traditional exam-oriented English education in our country, change the content of the examination and the examination form, and let the examination play a more scientific and reasonable role in guiding the teaching. The focus of the development of the times on English demand has begun to shift to oral language, and English teaching in China must be changed.

In order to adapt to the needs of the English talents in the era, we have gradually changed our focus on teaching and learning, and we have gradually shifted to “hearing, listening, and reading”. English exams should increase the proportion of listening and speaking, college English has increased the proportion of listening, but the student's written test scores must reach a certain score to qualify for the oral exam. Spoken language is marginalized. Therefore, it is absolutely necessary to join the speaking part in all kinds of English exams.

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