An Exploration of the Teaching Model of English in the Environmental Science and Engineering

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Keywords: The reform of higher education, The teaching model of English in environmental science and engineering, The curriculum setting, The selection of teaching references, The comprehensive abilities of teachers.

Abstract: With the change of national and international situations and the development of Chinese higher education, traditional education model is meeting the fierce challenge and the reform of it is imperative. In order to meet the requirement of the society to environmental engineering majors and improve their English ability in oral English and science paper writing, the reform of environmental engineering professional English teaching has become an important subject for teachers and students. This paper tries to explore a new model of environmental engineering professional English teaching from three aspects: the curriculum setting, the selection of teaching references and the comprehensive abilities of teachers.

Introduction

Nowadays, the environmental problems caused by human activities have aroused great attention from the global society. The remedy of these problems requires effective cooperation of all the countries in the world. In order to enhance this kind of cooperation, different countries need to communicate in a better way, which requires Chinese environmental engineering majors are able to write their academic papers and communicate with foreign scholars in English. Then, how to improve the professional English abilities of environmental engineering majors has become a key point.

Presently, college teachers and scholars are exploring effective ways to solve this problem, and many good ways have been raised out, which had made some achievements in improving the environmental engineering majors’ English abilities, such as bilingual teaching model, the introduction of MOOC (Massive Open Online Course) [1]and Flipped Class Model[2]. However, these models either require teachers to be excellent in oral English or require students to have a good ability in self-learning in English, which seems at least presently to be a problem.

This paper tries to explore a new teaching model of environmental engineering professional English from some different aspects: the curriculum setting, the selection of teaching references and the comprehensive abilities of teachers.

Problems in Present Teaching

Impractical Curriculum Setting

Environmental Engineering is an intercourse of many different subjects, relating to microbiology, physiology and chemistry, etc.[3] It includes systematic academic knowledge in Environmental protection and treatment technology and the corresponding professional English expressions. For example, in a lesson about ‘Conventional Technology of Air Pollution Control’, students will learn some basic types of dust removers such as cyclones, fabric filters, and water scrubbers, etc.[4] Traditional teaching method has separated the English expressions from its academic context and made them into unrelated words, which are quite boring and difficult for students to learn and remember. We may look into the traditional curriculum setting and make clear the problem.

According to the present curriculum setting, Chinese environmental engineering majors need to learn basic English courses for two years at college, which used to be effective for the past college
students with little English language base, while quite in vain for present college students who have begun their English learning from their primary education. This setting also causes their confusion about the purpose of learning English. Actually, it’s not difficult to find out the addresses from them about the uselessness of learning basic English courses and that most of them can pass the CET4 when they come to college.

The professional English courses will be available to students in the third year and so will be the professional academic knowledge. It’s a great challenge for them to digest the advanced academic knowledge and corresponding English expressions separately in different courses. While the professional English courses will be finished in only 32 periods, which is so inadequate for the task.[5]

Difficult Selection of Teaching References


The first two kinds of textbooks are similar in its selection of the original English version of textbooks, English reports and academic books. They are original in English, and advanced in theory. Obviously, the combination of native professional English expressions and the advanced systematic professional knowledge are beyond the capacity of environmental engineering juniors with little professional English base and only a little academic base in only one term.

The third kind of textbook by Yaojie, Youhong is quite different. It introduces the basic environmental scientific theories and problems and related professional English language knowledge, including word-building skills, sentence grammars and chemical terms. It can be a good textbook to guide the juniors into the professional English world, but can’t help them explore further sophisticated problems or write an advanced paper.

The Imbalanced Comprehensive Ability of Teachers

Presently, in most Chinese universities, teachers are using complete English textbooks while giving lessons in complete oral Chinese.[2] Scholars are discussing the possibilities of bilingual teaching. It’s a good way to try to improve the English level of environmental engineering majors, but it has to face the inadequate abilities of professional teachers in oral English and of English teachers in academic knowledge. Oral Chinese lessons are more like a way of translation or science English grammatical explanation, but can’t stimulate the students’ usage of professional English. The less can it improve the students’ abilities in communicating in professional English or writing science papers in English. In one word, an effective professional English class requires oral English, academic knowledge and the professional English base of students.

A New Model of English Teaching in Environmental Science and Engineering

A New Curriculum Setting

Table 1. A new curriculum setting.

<table>
<thead>
<tr>
<th>Years</th>
<th>courses</th>
<th>periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first year</td>
<td>Basic English</td>
<td>128</td>
</tr>
<tr>
<td>The second year</td>
<td>Introduction to English in Environmental Science and Engineering</td>
<td>128</td>
</tr>
<tr>
<td>The third year</td>
<td>English in Environmental Science and Engineering</td>
<td>128</td>
</tr>
<tr>
<td>The fourth year</td>
<td>Advanced English Writing in Environmental Science and Engineering</td>
<td>128</td>
</tr>
</tbody>
</table>

With the reformation of English teaching all around the nation, the CET4 seemed to be more difficult with news report listening and more science articles. It will lead students further in comprehensive English while covering too many fields with little relations to their majors. A more
reasonable way seems to be that more time and energy of students need to be put into their professional English rather than more difficult basic English. Hence, the new curriculum setting could be as in Table 1.

In this way, the basic English curriculum will be lightened and the professional English curriculum will be heightened. More time and energy of students will be put into professional English learning, which will increase the students’ interest and motivation of English learning and the practical efficiency of these English courses.

A New Selection of Teaching References

The selection of teaching references will also change along with the change of the curriculum setting. The key point of choosing teaching references is to help students make the transition from basic English to professional English naturally and gradually over time. The basic requirement is to help students establish an academic system in English with relatively solid foundation of basic English abilities. However, in the present professional English textbook market, it’s not easy to find appropriate textbook for every step. Most English textbooks are related to American or other western countries’ environmental problems while seldom dealing with those problems in China.[2]

Therefore, the authoritative press may undertake the responsibility of editing some new textbooks for the environmental science and engineering. These textbooks may include three steps: preliminary professional English textbook, professional English textbook, advanced professional English writing textbook. Those textbooks may adopt complete English while its degree of difficulty will transmit from preliminary to middle level to advanced level. And in order to erase the linguistic obstacle in thinking, the middle level and advanced level textbooks may contain Chinese notes or interpretations if necessary.[6]

Considering the time of editing new textbooks, now another possible compromise may be the flexible usage of present textbooks, just as following:

<table>
<thead>
<tr>
<th>Years</th>
<th>courses</th>
<th>New textbooks</th>
<th>Flexible usage of present textbooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first year</td>
<td>Basic English</td>
<td>College English</td>
<td>College English</td>
</tr>
<tr>
<td>The second year</td>
<td>Introduction to English in Environmental Science and Engineering</td>
<td>preliminary professional English textbook</td>
<td>&lt;The English in Environmental Science and Engineering&gt; by Yaojie, Youhong</td>
</tr>
<tr>
<td>The third year</td>
<td>English in Environmental Science and Engineering</td>
<td>professional English textbook</td>
<td>&lt;The English in Environmental Science and Engineering&gt; by Zhongli; or &lt;Environmental Science&gt; by Miller Spoolman[9]</td>
</tr>
<tr>
<td>The fourth year</td>
<td>Advanced English Writing in Environmental Science and Engineering</td>
<td>advanced professional English writing textbook</td>
<td>&lt;How to Write and Publish a Scientific Paper &gt; by Robert A. Day and Barbara Gastell[9]</td>
</tr>
</tbody>
</table>

A New Arrangement of Teachers

Now the biggest problem in the arrangement of teachers is that Professional teachers are not so excellent in oral English while the basic English teachers are lack of professional knowledge. With the further deepening of reform of college English and the reform of professional English teaching, the two kinds of efforts may come into a cooperation which will enhance the teaching efficiency of both courses and will make a better use of present resources of teachers.

That form of cooperation may appear in quite flexible forms such as the training of college English teachers for professional knowledge by professional teachers and the training of professional teachers for oral English by college English teachers or a more challenging way of bilingual teaching model with both teachers in one class who will deal with problems of students from different aspects, in this way, two teachers may prepare the same class together from different aspects, for example, the professional teachers may take the responsibility of preparing academic knowledge and related references, answering the questions of students about academic aspects;
while the college English teacher who have received training about basic academic knowledge will be responsible for the linguistic aspect, the explaining or interpretation of the professional knowledge in oral English.

In terms of the language adopted in class, it may be better to use English in giving a lesson and answering the questions of students, while in the questions part, teachers may decide to explain in English or in Chinese if necessary. A possible arrangement of teachers may be as follow:

<table>
<thead>
<tr>
<th>Years</th>
<th>courses</th>
<th>The arrangement of teachers</th>
<th>language</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first year</td>
<td>Basic English</td>
<td>College English teachers</td>
<td>English</td>
</tr>
<tr>
<td>The second year</td>
<td>Introduction to English in Environmental Science and Engineering</td>
<td>College English teachers with basic academic knowledge in Environmental science and engineering</td>
<td>English</td>
</tr>
<tr>
<td>The third year</td>
<td>English in Environmental Science and Engineering</td>
<td>Professional teachers with oral English ability</td>
<td>English and Chinese</td>
</tr>
<tr>
<td>The fourth year</td>
<td>Advanced English Writing in Environmental Science and Engineering</td>
<td>Professional teachers with oral English ability or the combination of college English teacher and professional teacher</td>
<td>English and Chinese</td>
</tr>
</tbody>
</table>

Epilogue
The reform of the teaching model of the environmental engineering professional English need to be blended with the reform of other fields in a more effective way.

To simply change some superficial forms of the traditional teaching model, such as using both Chinese textbooks and English textbooks or to use both English language and Chinese language in the class may arouse more attention of students to their English abilities or improve their English level to some extent. But it cannot solve all the problems in the existing traditional model of professional English teaching based on the reality ten or twenty years ago, at that time, students’ English level is quite poor and the English teaching ways are at the preliminary stage.

In the long term, a new teaching model of English for specific purpose is sure to be explored and established. This paper just tries to contribute some ideas about the curriculum setting, selection of teaching references and rearrangement of teachers.

References