Teaching Automotive English to Translator and Interpreter Students: Course design at Zhejiang University of Science and Technology

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Abstract

This thesis discusses the syllabus design of Automobile English at Zhejiang University of Science and Technology (ZUST). The subjects were 120 third year English majors of ZUST. The data were collected regarding the students’ requirement for the course, teaching materials and teaching methods through needs analysis. The data regarding the teaching contents were also collected through interviews with industry experts. The syllabus and teaching materials were designed according to the collected data. After 17 weeks of instruction, the students were given the final test and post test to check whether they had mastered the subject knowledge that had been taught and their ability to translate the subject matter. A post questionnaire was given to the students to measure the students’ attitudes towards the course, the syllabus, the teaching materials and the teaching methods. The results of the tests and the post questionnaire were analyzed, indicating that the students were able to learn the subject knowledge through the course. The results also suggest that the syllabus, teaching materials and teaching methods are suitable for most students.

1. Introduction

Translators of technical English account for the majority of translators in China, and they have the closest and most direct relations with the market economy (Li Haijun & Peng Jinsong, 2002). With the development of economy and trade with other countries, ever increasing numbers of qualified translators of science and technology are needed in China. Qualified interpreters are also needed in seminars,
business talks and trade fairs. In China, high school students are classified into students of science and students of liberal arts from the second year. From then on, the students of liberal arts do not study mathematics, physics and chemistry. They focus on Chinese, history, geography, politics and English. The reason they choose this branch is that their interest lies in this aspect, not in science and technology. In general, they lack knowledge of science and technology, and common sense. Most of the English majors fall into this “students of liberal arts” category. Through three years of studying English at university, they have a relatively solid foundation in English language, but their lack of the knowledge of science and technology (or subject knowledge) limits their abilities to translate certain subject matter.

In China, an ESP course is offered to English majors in many universities. However, the ESP course offered to the English majors is mainly limited to “English for Tourism” and “English for Business”. The main branch of ESP, EST, is seldom taught. Business English seems “transferable across different disciplines and occupations” (Hyland, 2002). The students think that with “Business English” they can do anything. However, in the business discussion, people are not always talking about such business terms as L/C, FOB or CIF. People sell things and buy things through business discussions, such as selling automotive components, electronic components, steel, chemicals, or knitted garments; or buying the computer hard drives. Translating such subject matter is totally different, and subject knowledge is needed. Without the knowledge of science and technology or the subject knowledge, it is still very difficult for the students of English majors who will work as translators after graduation to translate technical articles or instructions. Some engineers and technicians even do not want to read the translations of technical documentation translated by the English major students, because the translation fails to convey the original, and the translation of some terminology is bewildering (Fan Wuqiu, 2002). However, the translations done by the professional engineers and technicians are not better either. There are two main reasons for the poor translations of technical documentation: one is that the translators whose major is English do not have the related background knowledge or subject knowledge; the other is that the translators...
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who are engineers or technicians have limited abilities in both the source and the target languages (Li Haijun & Peng Jinsong, 2002). Fan Wuqiu (2007) claims that “in recent years 90% of the translated publications of science and culture have mistranslations”, and universities should cultivate comprehensive (universal) EST translators from the English majors (Fan Wuqiu, 2002, 2007).

To be a qualified translator or interpreter, a certain amount of knowledge of science and technology is needed in addition to the foreign language. With the constant improvement of English teaching programs for the students of science and technology, the role of English majors might be of no importance if they cannot combine the knowledge of language with that of science and technology. However, EST is too broad, and there are so many fields: mechanics, electronics, automobile, chemistry, textile, printing, architecture or medicine. It is impossible for the translator to have such a wide range of background knowledge. A good translator can only manage one or two fields in translation of science and technology. It might be practical for the students of English majors to have the basic knowledge of one or two subject matters. Different universities can offer different ESP courses to the students of English majors according to their specialties.

The automotive industry is expanding very fast to meet the ever increasing demand at home and abroad, and playing an important role in the Chinese economy. All the big Chinese motor companies have joint-venture programs with American, German and Japanese motor companies. The company language used is usually English (For example, the Japanese motor company NISSAN, an international company, has French and Brazilian high level officials and employees, and English is the company language). There is a great potential for the English majors to gain employment in the motor joint ventures. Additionally, a great quantity of technical documentation of the field, such as motor service manuals or instructions, needs translating from English to Chinese or from Chinese to English. Zhejiang University of Science and Technology (ZUST) is a comprehensive university which offers a major in Automotive Engineering. Based on the reasons discussed above, ZUST has planned to offer Automobile English to its English majors, so as to highlight its
unique features and to train the translators for work in the motor industry. The purpose of the course is to teach the students the basic knowledge of the automobile and necessary vocabulary, so that they can work as translators for the industry, and have more employment opportunities.

This article studies the course design of Automobile English for the third year English majors at ZUST.

2. Research Design

Course design is the process by which the raw data about a learning need is interpreted to produce an integrated series of teaching-learning experiences. Its aim is to lead the learners to a particular state of knowledge. This process includes the use of theoretical and empirical information to produce a syllabus, to select or write teaching materials according to the syllabus, to develop a methodology for teaching, and to establish evaluation procedures to measure the progress towards the specified goals (Hutchinson & Waters, 2002).

This research studies the course design of Automobile English for the English majors of ZUST in the second term of 2006 - 2007.

2.1 English for Automobile – A Sub-Branch of ESP

The motor vehicle is a form of mechanical transport and is composed of many different working units, parts and systems: the engine, transmission, steering mechanism, chassis, suspension or the electrical system. As far as the engine is concerned, there are around 30 important components. In the finished motor vehicle, various components are involved. Automotive components are very heterogeneous and a clear cut classification of products is impossible. Electronic and plastic components are involved, apart from the metal components. Modern motor vehicles are equipped with more and more electronic devices in such systems as ignition, transmission, braking, display or climate control, resulting in more subject knowledge and more lexicons. In motor vehicle production, at least five main manufacturing processes are involved: pressing, forging, foundry, painting and assembly, each again
requiring respective subject knowledge and lexicons.

Like Business English and Medical English, Automobile English is a branch of ESP. It has the specificity, and the needs. Automobile English can be taught to the technicians and engineers of the industry for academic (EAP) or occupational purposes (EOP), and can be taught to the English majors for occupational purposes.

### 2.2 Research Questions

This course deals with “delayed needs” (Dudley-Evans & St John 1998: 146), and a narrowed focus, and was a pre-experience course. The objective is to train the students into translators of the subject matter, not the experts or designers of the subject matter. ZUST limits the course duration and the course length to 17 weeks and 34 hours respectively, and the course is offered two hours a week. The research questions focused on in this study are:

1) Can the students learn the necessary subject knowledge from the course of Automobile English so that they can work as translators for the motor industry?

2) What kind of syllabus should be used?

3) What teaching materials are appropriate?

4) What teaching methods should be applied?

This research uses needs analysis (NA) to investigate the needs of the students for the course, on which the suitable syllabus, teaching materials and teaching methods are developed. Then, the teaching results are checked through the teaching practice. The learners’ attitudes towards the course, syllabus, teaching materials, and teaching methods are checked through the post questionnaire after the course.

### 2.3 Subjects

The subjects were the third year English majors of ZUST. There were three classes: Class A, Class B1, and Class B2. The class size was 30 each, altogether 90 students. Female students accounted for 91%. There were 29 females in Class A, 26 females in Class B1, and 27 females in Class B2. The students of Class A had a higher
level of English knowledge; the students of Class B1 and Class B2 had a lower level. The scores of Advanced English of the second term of 2006 - 2007 are presented in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Score, 90-00</th>
<th>Frequencies (Class A)</th>
<th>Frequencies (Class B1)</th>
<th>Frequencies (Class B2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 30</td>
<td>f</td>
<td>f</td>
<td>f</td>
</tr>
<tr>
<td>90 -</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>80-89</td>
<td>7</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>70-79</td>
<td>20</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>60-69</td>
<td>3</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Below 60</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

2.4 Needs Analysis at ZUST

Before the 1970s, a “needs analysis” (NA) was generally very informal and little research was done. The 1970s saw a much more detailed analysis of NA, with Munby having a considerable influence with his instrument of profiling students’ needs by creating lists and ticking boxes. Munby’s performance-based approach has been broadened since it first appeared. Recently, task-based NAs are receiving greater recognition. These use multiple sources and methods, so that a wide variety of data can be collected and compared. Focus is now veering away from outsiders’ views (such as pre-experience learners and applied linguists) to insiders’ views (such as experts who have subject knowledge in their domain, for example, the company employees in the target language situation) (Cowling, 2007). However, most NAs are still based on the views of outsiders.

This Automobile English course was a 17-week course, the objective of which was to teach the students necessary subject knowledge through the course, so that they could work as translators for the motor industry. The texts of the course were used as
“a vehicle for information rather than as a linguistic object” (Johns and Davies 1983, qtd. in Dudley-Evans & St John, 1998: 26). The questionnaire for the needs analysis was given to the students to collect the necessary data for the course. Since the learners had no work experience and subject knowledge, the multiple source approach was used. Dudley-Evans and St John (1998: 132) suggest eight main sources for NAs:

1) the learners
2) people working or studying in the field
3) ex-students
4) documents relevant to the field
5) clients
6) employees
7) colleagues
8) ESP research in the field

For the NAs at ZUST, the following sources were identified:

1) students attending the course
2) teachers teaching motor technology and engineers of the motor industry;
3) employees working in the motor import & export company
4) translators working in the information department of the motor company
5) authentic texts of motor vehicle

2.5 Data Collecting

The data collecting process required five steps in which the sources were analyzed and compared to make a syllabus which fulfilled the needs of the learners and the future work.

Step 1: Questionnaires for students to complete. These informants were “outsiders”. However, they could provide the data about how much they knew about the motor vehicle, what teaching methods they preferred, what their aims were, and what they lacked, which were useful to material selection and inspiration of their motivation. The questionnaire can be found in Appendix I.

Step 2: Interviews over the phone with the teachers who teach motor technology,
and the engineers of the domain. These informants were “insiders”, who could give suggestions in material selection, and classify what contents were necessary and what unnecessary, and identify needs and filter out inaccurate needs. They could also provide the latest development of the industry since motor technology has been developing.

Step 3: Interviews over the phone with the employees of the motor import & export company. They are also “insiders”, who could provide information about teaching material selection, and what subject knowledge they needed the most in their work.

Step 4: Interviews over the phone with the translators of the information department of the motor company. They are also “insiders”, who could provide information about teaching material selection, and also what subject knowledge they needed the most in their translation.

Step 5: Analysis of authentic texts. Service manuals of the motor vehicle and related texts from web sites were analyzed for target situation analysis. “Analyzing authentic texts is a crucial stage of needs analysis. . . . Authentic texts are invaluable for learning about real and carrier content. They can also form the basis of classroom material.” (Dudley-Evans & St John, 1998: 136).

2.6 Analysis of the Questionnaire

The questionnaire consisted of 14 questions designed by the author according to Communicative Syllabus Design (Munby, 1978), Research Methods in Foreign Language Teaching (Liu Runqing, 1999) and Applied Linguistics: Research Methods and Thesis Writing (Wen Qiu Fang et al, 2004). Of the 14 questions three were open ended. Responses to closed questions are easier to collect and analyze. However, more useful information can be obtained from open questions. “It is also likely that responses to open questions will more accurately reflect what the respondent wants to say” (Nunan, 2002: 143). The response was good with more than 94 % of questionnaires returned. The feedback was useful and provided some unexpected results.
2.6.1 Closed Questions

Through the closed questions the data was measured, such as the students’ background, the teaching materials, the students’ requirement and attitudes towards the course.

The data collected from the closed questions is summarized as follows:

1) 21% of the students had never read any EST materials before.
2) Approximately 61% of the students suggested that reading EST materials or instruction manuals was difficult and required subject knowledge.
3) 84% of the students believed that it was necessary to study EST course.
4) The motivation of classes B1 and B2 was not high.
5) Only 23% of the students suggested that they took the course for purpose of their future work as translator and interpreter of some fields. Approximately 61% wanted to have a general understanding of the course.
6) More than 60% expected a course covering 2 – 3 more widely used fields.
7) 54% of the students preferred to have teaching materials from foreign technical books, journals and paper.
8) Approximately 69% of the students expected the course to cover both English-Chinese and Chinese-English translation.
9) 72% of the students expected to have such activities as classroom discussions.

The above data should be balanced and considered accordingly in the course design. Some of the data was not as inspiring as had been expected.

2.6.2 Open Questions

Three open-ended questions were used obtain more accurate information from the respondents. The responses were summarized as follows:

1) a course which could raise student interest
2) a course which was easy, interesting and close to life
3) a course which was practical, such as translating instruction manuals
4) a course with informative illustrations
5) a course with visuals such as films, videos
6) a course with more detailed explanation by the teacher

Open questions reflected what the subjects really expect, and these factors could be taken into consideration in syllabus design and material selection.

2.7 Analysis of the Interviews

Interviews over the phone were made for the purpose of the teaching material selection. Two teachers, two employees of the motor import & export company, and two translators of the information department of the motor company were interviewed over the phone.

Through the interviews with the “insiders”, the teachers of the motor technology and the engineers of the domain, useful information was obtained for the contents to be included in the course. The experts of the motor industry specified the areas, components, assemblies and systems which should be covered in the teaching material:

1) motor development and production system
2) motor production process and related machine tools
3) conventional motor vehicle
4) electric vehicle (EV), including the hybrid car
5) some electronic knowledge
6) safety features

As “insiders”, the employees of the motor import & export company provided information about what aspects of the motor vehicle they handled the most in their work. They suggested that the following was very important:

1) main motor components and assemblies
2) terms and lexicons about after-sale service, including service manual
3) terms and lexicons about motor vehicle marketing

They listed the terms and lexicons they used the most often.

The translators of the information department of the motor company provided
information about what subject knowledge they needed most in their translation work. They suggested the following aspects:

1) main motor components and assemblies
2) motor production system both home and abroad
3) motor production process and related machine tools

They also listed the terms and lexicons they often used in their translation work.

Based on the interviews, a small “motor industry lexis corpus” was made, which was of a help for the selection of the teaching materials. This corpus was made up of the most commonly used vocabulary of the motor industry, and names of the main motor components, and was also used as a guide for specifying what contents the teaching materials should include. The important and necessary terms and lexicons were put into the small “motor industry lexis corpus” according to the interviews. For language learning and teaching smaller corpora can be more useful, because they are designed to represent the specific part of the language under investigation and are tailored to address the aspects of the language relevant to the needs of the learners (Mudraya, 2006). The respondents outlined areas which they believed would be useful to the course.

3. Course Design

3.1 Syllabus

The syllabus in this context means the specification of a teaching program or pedagogical agenda which defines a particular subject for the students of the course. The syllabus specifies both the selection and ordering of what is to be taught. A syllabus is an idealized schematic construct which serves as reference for teaching (Widdowson, 1999: 127). The syllabus to be used for the Automobile English course should be designed according to the learners who were going to attend the course. After a 3-year English study, the learners’ English language level was relatively high, and they could make use of their GE in the learning of Automobile English. The syllabus should include:

1) Study areas: The motor industry is a big industry, involving wider disciplines.
The area has to be narrowed down accordingly so as to reduce the learners’ burden. Subjects required include the development of the industry, motor production, engine construction and selected electronics contents.

2) Classroom activities: Specify the required activities in class, e.g. group work, in addition to the teacher’s actual lesson.

3) Teaching aids: The motor vehicle is a new field to the learners. Videos or pictures will help their understanding.

4) Teaching materials: Specify the teaching materials.

The syllabus was a “topic based syllabus” for the teacher to go by in teaching, and was flexible, allowing room for change according to the feedback from the learners during teaching. To achieve the objective most efficiently, the content of the teaching material, the sequence of the texts, classroom activities, etc. might be changed according to the feedback of the learners. In the teaching, some other content, e.g. translation of advertisements of the electronic products, and analysis of the genre of the advertisements could be added to relax the learners who learned the automobile matter for too long before they got tired, “fostering a friendly, relaxed atmosphere” (Richards & Rogers, 2000: 135).

The purpose of using a topic type syllabus is to “break down the mass of knowledge to be learnt into manageable units” (Hutchinson & Waters, 2002: 85), because the motor vehicle is a big subject consisting of many components and involving such fields as mechanical engineering, material engineering, electrical engineering, etc. The breakdown and proportion of each component should be based on certain criteria, in this case the purpose of the course, the data of the multi-source needs analysis and the background of the learners.

One cannot talk about the motor vehicle without talking about the production of the motor vehicle, which involves various kinds of machining and processing: turning, milling, drilling, welding, pressing, forging, foundry, painting, and assembling, each of which contains many processes and terms. The study area should be narrowed down, and reduced to the need: to translate the technical articles in the field, not the expert or designer of the field. This can be realized through the multi-source needs
analysis.

The sequence of the materials should be arranged from the less specific to the more specific so that the learners have “a buffer” between GE and ESP. Considering the cognitive and affective factors (Hutchinson & Waters, 2002: 46), materials of different disciplines should also be arranged appropriately and alternately, and therefore the learners would not get bored because of the same materials being taught to them.

The syllabus should be a flexible one so that it has room to add additional or “latest” contents accordingly. Automobile English is sometimes tedious, and the teacher should adjust the teaching material to the situation in class to improve the learning atmosphere so to motivate the learners.

3.2 Teaching Materials
3.2.1 Selection and Evaluation of the Teaching Materials

There are arguments of pro- and anti-textbooks in the EAP field. The anti-textbook argument claims that textbooks can help teachers develop – but only when they are properly based on research, and contain what they should. At present the textbooks fail both teachers and learners, since the very fact that the textbook is a commercial product reifies its content, however inaccurate the content might be. The pro-textbook argument claims that the commercial textbook is systematic and is based on research (Harwood, 2005). Fan Wuqiu (2007) also claims that “EST teaching is not going on very well in China because we lack a nation-wide unified systematic teaching syllabus . . . and have limited types of textbooks, which are generally out-of-date”.

Different ESP courses have different learners and purposes, and technology is developing. Therefore the teaching material should vary accordingly and keep up the pace. Commercial textbooks cannot cater for the varied set of needs in classroom around the world. Teachers and learners need the independence and autonomy to take responsibility for their own teaching and learning (Harwood, 2005). It is necessary for the ESP teacher to make use of the existing materials to design the teaching material
for the course.

Hutchinson and Waters (2002: 96) suggest three possible ways to design teaching materials:

1) Select from existing materials: materials evaluation.
2) Write your own materials: material development.
3) Modify existing materials: materials adaptation.

Choice 2) should be based on research, and therefore is time-consuming and costly. It is not feasible in this context. Choices 1) and 3) are very practical. According to the results of the NAs, the teaching materials should be selected from related sources comprising development of the motor industry, motor production, engine construction, and some electronics contents. Adaptation should be made where necessary.

Dudley-Evans and St John (1998: 173) suggest that what all ESP practitioners have to be are good providers of materials. They will be able to:

1) select appropriately from what is available;
2) be creative with what is available;
3) modify activities to suit learners’ needs; and
4) supplement by providing extra activities (and extra input).

As a result, teaching materials were selected from the existing materials, i.e. motor service manuals, related commercial textbooks, Internet sources, literatures. Several criteria were considered:

1) The background of the learners
2) The aims of the course
3) The text-types
4) The level of knowledge
5) Organization of the course
6) The Sequence of the texts
7) Exercises for each unit
8) The teaching aids

In the process of material selection, such criteria as “common-core or specific
material” (Dudley-Evans & St John, 1998: 152) were considered according to the objective of the course. Common-core material refers to the material that uses carrier content which is either of a general academic nature or of a general professional nature. Specific material refers to the material that uses carrier content drawn directly from the learners’ academic or professional area.

3.2.2 Analysis of the Teaching Materials

The selected materials covered motor vehicle production, the engine, and some electronics contents.

All the selected materials were analyzed against the “motor industry lexis corpus” to make sure the necessary contents were covered, matching carrier content to real content. The learner’s needs were considered also. Automobile English in reality involves several fields.

Technical vocabulary is part of a system of subject knowledge, and a major concern for the learners (Chung & Nation, 2004). The percentage of the different vocabulary categories was analyzed. Hutchinson and Waters (2002: 165) suggest that there are four types of vocabulary:

1) structural: e.g. are, this, only, however
2) general e.g. table, run, dog, road, weather, cause
3) sub-technical: e.g. engine, spring, valve, acid, budget
4) technical: e.g. auricle, schistosome, fissure, electrophoresis

Dudley-Evans and St John (1998: 80) consider sub-technical vocabulary as semi-technical vocabulary. Hutchinson and Waters (2002: 166) claim that Category 4) shows “any significant variation with the subject. But the variation is small”. According to Inman’s (1978, qtd. in Hutchinson & Waters, 2002: 166) research, in an extensive corpus of science and technical writing, technical vocabulary accounted for only 9% of the total range of lexis. These figures would drive away the worries of the English majors who were afraid of the technical vocabulary.
3.3 Teaching Process  
3.3.1 Teaching Methods  
There are many teaching methods, but there are no best or universal ones. Teaching methods vary according to the content and subjects; teaching methods may also vary even in the situation where the content is the same and the subjects are of the same grade (Liu Runqing, 1999). The teaching method which is not used in some countries does not indicate that it is awkward and cannot be used any longer. Grammar-Translation, Communicative Language Teaching and other teaching methods have their respective advantages. Automobile English has specificity, and the teaching method should be the combination of the above.

Learning is a cognitive process, and therefore the affective factor should be considered. The learners cannot be seen as “more like machines to be programmed (‘I’ve taught them the past tense. They must know it.’) than people with likes and dislikes . . . and prejudices” (Hutchinson & Waters, 2002: 46). ESP learners, in this case the English majors, are people. They learn about machines, electronic circuitry and motors, but they still learn as human beings. The cognitive theory suggests that learners will learn when they actively think about what they are learning. “The emotional reaction to the learning experience is the essential foundation for the initiation of the cognitive process” (Hutchinson & Waters, 2002: 47).

Grammar-Translation, Communicative Language Teaching and other teaching methods have their respective advantages. Combination of the above teaching methods was used. The methodologies of other disciplines can also be integrated.

The course was taught once a week in three separate classes, two periods a time. The learners’ linguistic knowledge might be of a high level (The level of Class B1 and Class B2 was relatively lower.), but their knowledge of automobile was very low. Teaching should respect both levels of the learners. Many terms and basic components were explained in the mother tongue. New words or phrases were taught in the sentence context. Difficult sentences were also translated by the teacher or the learners. Translation may be used where the learners need or benefit from it (Richards & Rodgers, 2000). Complicated long sentences were analyzed. Visuals. such as
illustrations, diagrams and photographs, were used to make the technical vocabulary and texts more interesting. See Table 2 for time allocation of the course.

Table 2

<table>
<thead>
<tr>
<th>Teaching and Activities</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Teaching</td>
<td>26</td>
</tr>
<tr>
<td>In-Class Discussion</td>
<td>8</td>
</tr>
</tbody>
</table>

3.3.3 Class Activities

Apart from normal teaching, in-class discussions were organized accordingly, and were preferred by 72% of the students as the data of the NAs indicated. The class was divided into groups of five or six people to discuss the assigned paragraphs, and then they were asked to provide the translation, following “learning-centered approach” (Hutchinson & Waters, 2002, Dudley-Evans & St John, 1998). This problem solving approach “reflects the real situation where students will be reading on their own and trying to work out the meaning of a text” (Dudley-Evans & St John, 1998: 27). The aim of the course was to teach the students how to translate articles on automobiles, and the discussions were in Chinese. Sometimes, however, they were asked to describe in English the function of certain motor components.

Group discussions exhibited a positive effect on the course. For the texts about the motor itself, more discussions in the form of problem-solving tasks were held, and more satisfactory results were obtained. The percentage of such activities, therefore, should be increased.

3.4 Evaluation

There is no sound theoretical or empirical basis for ESP testing (Hutchinson & Waters, 2002). The testing technique books for GE can still be used as the guide. Heaton’s Writing English Language Tests (2000) offers several practical testing techniques. For this Automobile English course at ZUST, an achievement test consisting of 7 sections was used after 17 weeks of instruction, to check whether the
learners had mastered the necessary subject knowledge, the necessary technical words, and their performance in translating the subject materials. Three sections of the final test were designed according to the techniques introduced in Heaton’s *Writing English Language Tests* (2000).

Section 1 was to measure the mastery of the technical terms. The students were asked to write 10 engine components.

Section 2 was “word sets (associated words)” (Heaton, 2000: 58), a method to test vocabulary. Five groups of words were given, each related to a particular subject. The students were asked to write down the particular subject related to each group of words. The aim was to test the students’ common sense, or “the encyclopedic knowledge”. Like other domains, motor industry is heterogeneous, overlapping many subjects. Therefore, common sense is very important.

Section 3 was a blank-filling test on the engine, to test the students’ subject knowledge through reading. Some words of engine components were deleted, and the words for deletion were selected subjectively. The missing words were not given, and the students were required to fill in the appropriate words.

Section 4 was a blank-filling on electronics, to test the students’ knowledge of electronics through reading. The words for deletion were selected subjectively. Certain letters of missing words were given.

Section 5 was to test the student’s correct use of register. Matching tests are well-suited to test register. The tests can be constructed both at word and sentence level (Heaton, 2000: 152). Sentence level matching was used in the test. Two lists of sentences were given, and the students were instructed to put the letter of the most appropriate sentence in List B with the number of each sentence in List A. The sentences had been taken from instructions, advertisements, newspapers, and scientific English.

Section 6 was a reading comprehension, measuring the common sense again. The students were given an advertisement of a FM radio receiver, and asked to complete the sentences after reading.

Section 7 was to test the student’s translation of the subject matter. In this section,
the students were given two passages. Part 1 was selected from what they had learned about the engine construction, Part 2 from the authentic material they had never read before, a material on electronic equipment.

Four months after the course had ended, a post test, in reality a translation task, was given to the 90 learners. The target of the course was the application ability. Therefore the post test only consisted of two parts:

1) A passage on the car technical features, an authentic material from “Technology” of Financial Times
2) A passage on car production of Skoda, an authentic material from EIU International Motor Business

3.5 Post Questionnaire

An attitude questionnaire of 15 items was designed by the author according to The Theory and Application in English for Specific Purposes (Huang Ping, 2007), and Research Methods in Foreign Language Teaching (Liu Runqing, 1999). The questionnaire attempted to measure the students’ attitudes towards the course, the syllabus, the teaching materials, the teaching methods, and the test. The post questionnaire was conducted after the post test had been given. The students answered the questionnaire. 77 copies of the questionnaire were returned.

4. Results and Discussion

4.1 Validity and Reliability of the Test

According to Hutchinson and Waters (2002: 145) “. . . there is a general lack of discussion or guidance on ESP testing. Munby (1978) . . . while lay down highly detailed procedures for the specification of learning objectives, makes no mention at all of how these objectives might be tested.” In English for Specific Purposes (2002) Hutchinson and Waters discuss the course design in details, but have not mentioned the ESP testing and validity and reliability. Dudley-Evans and St John have not discussed ESP testing and criteria in Developments in ESP: A Multi-disciplinary Approach (1998). There is no sound theoretical or empirical basis for ESP testing (Hutchinson and Waters 2002: 146). ESP involves many different fields, and at
present it is very difficult to obtain effective data to measure the validity and reliability of the test. The author only measured the face validity and content validity of the final test in limited degree.

The validity of a test is the extent to which it measures what it is supposed to measure. If a test item looks right to other testers, teachers, moderators, and testees, it can be described as having at least face validity (Heaton, 2000: 159). According to the data obtained from the post questionnaire and the comment of the “insiders”, the test has face validity. Content validity depends on whether the contents specified in the syllabus are tested, or, to what extent the test items represent the objectives to be measured. The final test of the course is mainly designed according to the contents specified in the syllabus, and the content validity of the test is achieved in certain degree.

4.2 Overall Results of the Tests

The final test result indicates that the learners have learned the subject knowledge taught to them. Scores from 60-69 account for 12 %, 70-79 account for 31%, 80-89 account for 43%, and 90 above account for 11%. The students who failed the test account for only 2%. See Tables 3 for details.

Table 3

<table>
<thead>
<tr>
<th>Final Test Scores</th>
<th>Score / Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>Frequencies</td>
</tr>
<tr>
<td></td>
<td>(Class A)</td>
</tr>
<tr>
<td></td>
<td>N = 30</td>
</tr>
<tr>
<td></td>
<td>f</td>
</tr>
<tr>
<td>90 -</td>
<td>7</td>
</tr>
<tr>
<td>80-89</td>
<td>17</td>
</tr>
<tr>
<td>70-79</td>
<td>3</td>
</tr>
<tr>
<td>60-69</td>
<td>3</td>
</tr>
<tr>
<td>Below 60</td>
<td>0</td>
</tr>
</tbody>
</table>
The scores of the post test are not as high as those of the final test. See Table 4 for details. The reason is that Part 2 of the post test is a passage on the car production in Skoda. Car production was not covered enough in the course, and most of the students failed this part. The students had no problem in Part 1, a passage describing the features of the 6-speed Fiat car, Punto, except for the mistranslation of the word hill, which is discussed later in this section. Scores ranging from 70-79 account for 51%; 80-89, 24%; 90 and above, 11%. Scores below 60 account for 6.7%.

Table 4

<table>
<thead>
<tr>
<th>Score Scores</th>
<th>Score / Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>Frequencies (Class A)</td>
</tr>
<tr>
<td>N = 30</td>
<td>f</td>
</tr>
<tr>
<td>90-</td>
<td>5</td>
</tr>
<tr>
<td>80-89</td>
<td>10</td>
</tr>
<tr>
<td>70-79</td>
<td>14</td>
</tr>
<tr>
<td>60-69</td>
<td>0</td>
</tr>
<tr>
<td>below 60</td>
<td>0</td>
</tr>
</tbody>
</table>

The results of the tests indicate that the teaching materials used in this course quite suited the learners. However, the coverage was not wide enough. From the test results it is obvious that the motor production part which was of macro-type in the teaching materials still had room to improve. In the future teaching, content such as the important manufacturing facilities and process should be covered, e.g. foundry, pressing, forging, painting and general assembly. Motor production cannot be separated from the motor vehicle.

4.3 Analysis of the Post Questionnaire

The 15-item questionnaire was given to the students, attempting to measure the students’ attitudes towards the course, the syllabus, the teaching materials, the teaching methods, and the test.
4.3.1 Student’s Attitudes towards the Course

Have the students learned some subject knowledge? Can the course attract them? Statements 1-3 of the post questionnaire were designed to collect the students’ attitudes towards the course.

The results of the questionnaire indicate that the students have learned the subject knowledge from the Automobile English Course.

However, from the results we can see 46% of students in Class B2 are not interested in the course. Their English level was the lowest of the three classes. How to motivate the lower-level students is a very important factor to be considered in the future teaching.

According to the data collected from the questionnaire, most of the students have learned the subject knowledge from the course. Most of them are interested in the course, and can translate the technical documentation in automotive field after taking the course.

4.3.2 Student’s Attitudes towards the Syllabus

The students’ attitudes towards the design of the syllabus were measured through statements 4 - 6.

According to the data in Class A and B1, more than 60% of the students agreed that the “topic syllabus increases the students’ interest and efficiency. In Class B2, 28% agreed with the statement.

The collected data suggest that most of the students are satisfied with the syllabus of the course.

4.3.3 Student’s Attitudes towards the Teaching Materials

Statements 7-10 of the post-questionnaire were designed to collect the students’ attitudes towards the teaching materials.

According to the data analysis, most of the students were quite satisfied with the teaching materials. However, the teaching materials still had some limitations. The area of motor production was not covered wide enough. Besides, the teaching
materials should also be adjusted accordingly to the GE level of the students. Visual aids should be reinforced.

4.3.4 Student’s Attitudes towards the Teaching Methods

Statements 12 and 13 of the post questionnaire were designed to collect data of the students' attitudes towards the teaching methods used in the course.

According to the collected data, in Class A 72.7% of the students agreed and 9% strongly agreed with Statement 12. Although the picture is different in Class B1 and B2, 50% agreed and 18% strongly agreed with the statement.

For Statement 13, the pattern coincides with that in of Statement 12. More students in Class A were in favor of the statement than Class B1 and Class B2.

As the data indicate, teaching methods should also be adjusted accordingly to suit the students of different GE levels.

4.3.5 Student's Attitudes towards the Test

Statements 14 and 15 of the post questionnaire were designed to collect the data of the students’ attitudes towards the design of the final test of the course.

The data shows that in Class A and B1 70% - 81% of the students agreed with Statements 14 and 15. However the percentage is only 32% in Class B2.

Most of the students think that the final test fully checks the knowledge and vocabulary which have been taught, and the test is comprehensive. The data also suggest that student’s GE level should also be considered when the test is designed.

5. Conclusion

This research discusses the course design of Automobile English for the English majors at ZUST, so as to train the translators, or such personnel as business assistants, promotions specialists and merchandisers in this field. Needs analysis, syllabus design, material selection, evaluation and teaching methods have been discussed in detail.

The course was a 17-week one. After the 17-week instruction, the 90 learners were given a final test consisting of technical term testing, blank filling, reading and translation to validate the effect and feasibility of the course design. For the purpose
of further validation, four months after the course had ended, a post test in the form of a translation task was given again to the 90 learners. The post test consisted of only two passages, serving the target of the course, i.e. the application ability. A post questionnaire was also given to the students after the course was finished, collecting the students’ attitudes towards the course, syllabus, teaching materials, and teaching methods.

According to the results of the two tests and the post questionnaire, the students have learned the necessary subject knowledge. 67.5% of the students have agreed that they can translate the technical documentation of the subject.

The flexible “topic syllabus” suits the course. According to the post questionnaire, more than 60% of the students prefer the syllabus used in the course. The syllabus can be made according to the NAs and the suggestions from the experts. The flexibility of the syllabus has such an advantage that it has room to add additional or “latest” contents accordingly, and the teaching contents can be adjusted to the teaching needs and the students’ feedback. Automobile English is sometimes tedious, and the teacher should adjust the teaching material to the situation in class to improve the learning atmosphere so to motivate the learners.

The data collected from the post questionnaire regarding the teaching materials show that the teaching materials compiled according to the needs suit such a course. The teaching materials can be selected from motor service manuals, related commercial textbooks, Internet sources, literatures, according to the NAs, interviews with the experts, and the corpus.

Automobile English is not taught merely as a linguistic object. Rather, the text is considered as a vehicle of information, i.e. a carrier of knowledge of the motor industry. The course offers the learners the knowledge of the field.

This research has limitations. The subjects are the third year students of English majors at ZUST, whose English level might be different from that of other universities, and the level of common sense or the encyclopedic knowledge might be different from that of other universities; and the samples were only 90. The course length (34 hours) was not sufficient to cover the subject content. The documentary film or video
disc of the motor production, which was planned to be part of the course, was not available and the learners did not have the chance to get familiar with the production process.

For the future teaching of Automobile English a more appropriate corpus should be built so that the material selection will be more practical. The “common sense” factor should also be taken into the small corpus, but how much “common sense” should be included needs further study. It is not practical for the course to cover all the possible terms in the field, and the learners can continue with their learning of the terms in their future work. The author now has started a new round of Automobile English course to the English majors. The class size is also 30 students in each class, altogether 120 students. The syllabus, teaching materials, and teaching methods are modified according to the research results, from which the students will surely benefit.

References


*English for Specific Purposes*, 25, 235-256.


