

AN ENGLISH NEEDS ANALYSIS OF CHINESE AUTOMOTIVE ENGINEERS

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ABSTRACT

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In order to maintain a competitive edge in a quickly changing industry, automotive companies in China partner with local and international universities to provide continuous training for their engineers. This case study presents an English needs analysis of Chinese automotive engineers who participate in a professional development program offered by a partner US university. Through interviews, surveys, and observation of key stakeholders, this study identified the language skills that the stakeholders perceived to be important and difficult and the English tasks that the engineers faced during their six months of graduate coursework, six months of internship, and in their jobs. Findings showed that listening and speaking were perceived as most difficult and important. Identified academic tasks included writing reports, participating in group discussion, listening to lectures, and giving presentations. Internship and work related tasks included discussing technical issues, writing emails and reports, giving introductions, and shadowing a mentor. Considering these needs, recommendations are presented for revisions to the curriculum of the English for Specific Purposes course which is provided to the cohorts of engineers in this study.

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CHAPTER I: INTRODUCTION

1.1 Background to the study

Since Deng Xiaoping's Reform and Open Policy of the late 1970s, China has seen phenomenal economic growth, which has been abundantly evident in one of the pillars of the Chinese economy, the automobile industry. Chinese automobile manufacturing output went from slightly more than 200,000 automobiles in 1980 (Chinese Academy of Engineering, 2003) to “about 26 million light vehicles forecast to be built in 2019” which is just over a fourth of global volume (Robinet, 2019, p. 4). Chinese automobiles have become increasingly sophisticated thanks to growing partnerships with global OEMs (Original Equipment Manufacturer) such as Ford, GM, and Toyota (Tang, 2009). In addition to expanding partnerships between domestic and foreign automobile companies, collaboration between domestic Chinese automobile companies and universities and research institutes has also increased exponentially since China joined the World Trade Organization in 2001 (Wang et al., 2014). These partnerships are realized in many ways, one of which is through professional development programs which are provided by domestic and foreign universities.

The context for the present research is such a professional development program. This program is provided by a mid-western, private STEM university to annual delegations of five to seven engineers from one of the university's partner companies. This professional development program has continued for more than a decade. As an optional part of the program, the university offers English courses. As of 2016, the university has expanded its ESL course offerings and created an ESL program. As a part of these changes, the English language course for the Chinese engineers has increased from four hours a week to ten hours a week. From 2016 until now, the course syllabi have been designed through (1) discussions between students and instructors, and (2) instructors' intuitions. However, designing the courses in such a way lacks input from other

stakeholders, lacks depth and systematicity, and is prone to misunderstandings due to the non-technical background of myself and the other instructors. To address these issues, I began this needs analysis with open ended interviews with key stakeholders, as suggested by Lincoln and Guba (1985), since I am reliant on them as insiders and I do not know what I don't know (Lincoln and Guba, 1985, as found in Long, 2015, p. 150). These interviews led to surveys and were accompanied with an on-site observation of two delegates at work in China. This study presents and explores the identified needs of the automotive engineers in this program.

1.2 Theoretical background

A needs analysis is a first step in curriculum development (Brown, 2009). This study aims to investigate the target-situations and tasks of a professional development program from Chinese automotive engineers at a university in the United States and identify their communicative wants and lacks. This information will then be used to identify appropriate foci and tasks for the ESP curriculum that is a part of the professional development program.

1.3 Overview to the thesis

In Chapter 2, I will provide a brief overview of needs analyses within English/Language for Specific Purposes and their role in English for Engineering as well as some of the issues that must be addressed before, while, and after conducting an needs analysis. Chapter 3 describes the methods used for the study, the research questions, procedures, and instruments. Chapter 4 presents the results and Chapter 5 discusses the results and their implications for the ESP courses. It also presents the next steps to be taken and the limitations of this study.

CHAPTER II: LITERATURE REVIEW

2.1 Introduction to Needs Analysis

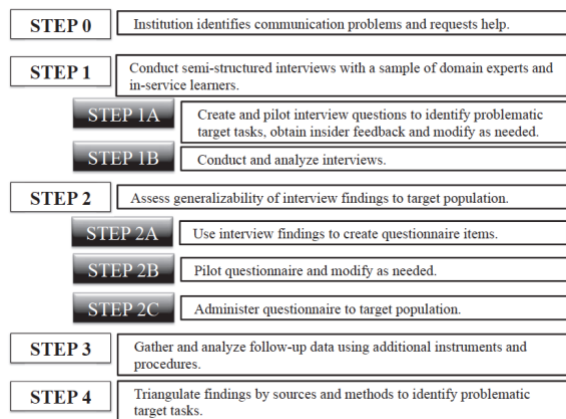
The definition for needs analysis used in this study follows Brown's (2009, p. 270) definition, "Needs analysis (NA) is the systematic collection and analysis of all information necessary for defining a defensible curriculum." Brown then goes on to define a defensible curriculum as, "one that satisfies the language learning and teaching requirements of the students and teachers within the context of particular institutions(s) involved." The successful development of a defensible curriculum will depend on the quality of the data collected from the needs analysis. And, therefore, the method of conducting the needs analysis itself must be well designed. Because as Long (2005) points out, a well conducted needs analysis, improves the quality of the language program, which in turn, better serves the language learners and increases their likelihood of success. Hyland (2002) also argues that identifying the specific language, skills, and genres of particular groups is what will make teaching effective.

As stated in Long (2005), needs analyses are a prominent feature in course development for ESP/LSP. Needs analyses can be used to avoid what Hyland (2002) describes as GESP, General English for Specific Purposes, which overemphasizes the commonalities found in the discourses of different fields and does not aim to meet the specific needs of the target group of language learners. Long (2005) notes that despite needs analyses being commonplace in ESP, issues regarding the methodology of conducting needs analyses are often neglected. As an example, he points out that curriculum developers who conduct needs analyses often use students as the principle or only source of information. They may also use only written questionnaires or only semi-structured interviews as their instruments. Needs analyses conducted in this way then compromise the reliability and validity of their results since students and researchers often lack the required specialized knowledge of the target discourse community and do not know what

their future needs are.

In a review of the methodologies of ten needs analyses from 1984 to 1999 and another twenty-three needs analyses from 2000 to 2014, Sefarini, Lake, and Long (2015) observed that the majority of the more recent needs analysis had improved in quality when compared to pre-2000 needs analyses. However, they also observed several problems still remained: (1) only two of twenty-three studies described their sampling procedures, (2) the majority of studies did not describe data collection procedures, or the data collection procedures were not in a desirable order (for example, first using open-ended interviews and then using questionnaires), (3) only eight studies reported pilot testing interview questions or survey questions prior to collecting data, and (4) less than half reported “true *source x method* triangulation” (p.16). In response to these issues, Sefarini, Lake, and Long proposed the procedures outlined in Figure 1.

Figure 1 Sefarini, Lake, and Long (2015) NA Procedures (p.22)



Chapter 3 of this thesis describes how the four problems identified above were addressed and how Sefarini, Lake, and Long’s suggested procedures were followed. This thesis also addresses one of the limitations that was identified by Sefarini, Lake, and Long’s in their example needs analysis, to investigate not only the difficulty and frequency of a task, but also its importance.

Finally, Long (2015) and Brown (2009, 2016) have emphasized a need to improve the validity and reliability of needs analyses. Brown (2016), however, uses the terms *dependability* and *credibility* because he sees needs analyses as primarily qualitative in nature. Due to the small number of participants, the size of the program that this study is being used to for, and the primary methods that were used, this study will follow Brown and treat this needs analysis as primarily qualitative.

2.2 Triangulation in Needs Analysis

The first three issues outlined above (explanation of sampling procedures, description of data related procedures, the use of pilot testing) are important independently, but they also each impact the quality of the fourth issue, triangulation. Long (2005) defines triangulation as “the researchers comparing different sets and sources of data with one another... to increase the credibility of their data and thereby, eventually to increase the credibility of their interpretations of those data” (as quoted in Brown, 2016). Serafini, Lake, and Long (2015) identified the most common types of triangulation found with previous literature as source (stakeholder) triangulation and method triangulation. Of the twenty-three needs analyses they reviewed, twelve had triangulated sources (or stakeholders) and seventeen had triangulated methods. These two types of triangulation, source (stakeholder) triangulation and method triangulation are also reported by Brown to be the most common across needs analyses. However, there are additional types of triangulation. After reviewing published needs analyses, Brown (2016) listed nine types of observed triangulation. Brown’s list is introduced in the table below.

Table 1 Brown's (2016) nine types of triangulation (p. 141)

<i>Triangulation Type</i>	<i>Definition</i>	<i>Examples</i>
<i>Stakeholder</i>	This type of triangulation includes multiple stakeholders as the sources of information.	Students, teachers, administrators, employers, customers, etc.
<i>Method</i>	This type includes multiple types of data gathering procedures.	Interviews, surveys, meetings, questionnaires, etc.
<i>Location</i>	This type includes multiple sites for data collection.	Factory, classroom, office, etc.
<i>Time</i>	This type includes analyzing data from various points in time.	Beginning, middle, and end of an internship.
<i>Perspective</i>	This type includes “using multiple perspectives to analyze data.”	Positive and negative viewpoints.
<i>Investigator</i>	This type includes multiple investigators collecting and analyzing data separately.	Multiple applied linguistics researchers.
<i>Theory</i>	This type is using multiple theories to analyze the data.	Tasked-based theory, error analysis theory, etc.
<i>Interdisciplinary</i>	This type includes analyzing data from multiple academic fields.	Linguistics, SLA, ESP content area.
<i>Participant-role</i>	This type includes participants themselves becoming the analysts.	Teachers and students take on the analysts role.

Brown (2016) then also went on to advise that researchers should be selective of the type of triangulation that they choose. He argues that within an needs analysis each triangulation type should have a strength that makes up for the other types' weaknesses and that each type of triangulation be appropriate for the context of the study. For example, stakeholder triangulation by itself is often limited by not being able to use random sampling and the power relationships between researcher and stakeholder. This weakness can be addressed by triangulating methods, such as using interviews and then questionnaires with the various stakeholders. Likewise the findings of the interviews and questionnaires can be strengthened by triangulating results across multiple stakeholders.

The context of this thesis, a needs analysis is required for both English for Academic Purposes and English for Occupational Purposes because the students, or delegates, are attending graduate courses, interning, and returning to work in China or abroad where they will continue to use English in their work place as they work with English speaking managers, suppliers, and customers. Therefore, two studies of needs analyses in the context of English for Academic

Purposes (EAP) within the US or Canada and two studies of needs analyses in the context of English for Occupational Purposes (EOP) for engineers in East Asian countries are reviewed below respectively. The review summarizes each study's context, describes the types of triangulation used, points out the results, and discusses possible limitations. The studies were chosen for close review due to their similarities with this study.

2.3 EAP studies

Caplan and Stevens (2017) conducted an EAP Needs Analysis as a part of a curriculum revision for the University of Delaware's English Language Institute (ELI). Due to the large numbers of Chinese students attending the ELI's conditional admissions program, their study paid particular attention to undergraduate L1 Chinese speaking students' needs, lacks, and wants. The researchers used interviews and surveys, but collected and analyzed them concurrently (p. 17). And, therefore, they did not follow Sefarini, Lake, and Long's (2015) recommendation to use open (inductive) methods first and then move to closed (deductive) methods, such as using interviews to inform survey creation. However, Caplan and Stevens's survey did ask stakeholders about how important they perceived various tasks, which was a limitation of Sefarini, Lake, and Long's (2015) study. Additionally, Caplan and Stevens did use prior research, input from ELI instructors, and pilot surveys to create their surveys.

Caplan and Stevens used stakeholder triangulation: they gathered data from multiple sources, namely, current ELI students, degree students, ELI teachers, and faculty. They also used methods triangulation through surveys with Likert scale items, open-ended survey questions, and interviews with five exemplar L1 Chinese degree-seeking students. Surveys of faculty and student ratings of perceived importance and success of twenty-one academic tasks were each compared using two-way χ^2 statistics. Open-ended survey questions were then used to help explain the ratings. According to the study, faculty rated *asking questions* and *participation in*

discussions as of higher importance than students did, whereas students felt that tests and exams were more important (p. 18). Results from the needs analysis also showed a large gap between student and faculty perceptions of student success on a variety of academic tasks. Eleven tasks were rated as unsuccessful by over half the participating faculty members, whereas student responses showed that they believed themselves to be successful on every task. Qualitative data, such as open ended survey questions and interviews, revealed that students faced challenges due to linguistic differences, classroom interactions, cultural challenges, academic problems (p. 22), and also highlighted the strategies of successful students. The differences in the perceived importance of a task across the various stakeholders is an example of why stakeholder triangulation is important.

The second study was also conducted with the intent to develop EAP courses. The University of Victoria's Academic Language Support Center triangulated sources (stakeholders) consisting of undergraduate and graduate students and undergraduate and graduate faculty. The researchers sought the perspectives of students and instructors (both across and within degrees and disciplines) on the importance of academic writing skills and the status of writing skills (that needed additional development) after identifying writing as the most important of the four skills for undergraduate and graduate students. All students were surveyed and 55% of undergraduates, 68% of graduate students, and 55% of instructors completed it. Although this is a high response rate, the results remain incomplete. It is possible that higher performing students and highly frustrated instructors completed the survey (p. 534-535).

Huang reported that *disciplinary writing* (theses, proposals, research papers) was the only shared skill for graduate students across disciplines, whereas *demonstration of a command of standard English* was the only common skill for undergraduates across disciplines. For

instructors, three of the five top ranked items were (1) *organize writing in order to convey major and supporting ideas*, (2) *demonstrate competence in discipline-specific writing tasks*, and (3) *demonstrate a command of standard written English* (p. 526-527). However, all of the differences between groups were non-significant. Graduate students rated writing as the only skill which needed help and, within this skill, demonstrating *competence with discipline specific writing tasks* was rated as the only item that students felt they needed help with. According to Huang, “undergraduate students did not see themselves in need of developing any skills” (p. 529), however, writing was the skill ranked lowest in terms of status.

Huang compared the perceived status of graduate students’ language skills with instructors’ ratings which showed significant differences and overconfidence on the part of the graduate students. However, the perceptions of faculty and students contrasted even more sharply when comparing undergraduates and their professors much like the Caplan and Stevens (2017) survey found. Huang found that undergraduates did not perceive themselves as needing any language support, whereas instructors identified 35 items that needed support. In contrast to these survey findings, however, open-ended questions showed that students did recognize areas in writing where they needed to improve despite displaying over-confidence in the rated survey items (p. 533). This shows the need for the use of multiple methods.

2.4 EOP studies

In Spence and Liu (2013)’s study, the researchers investigated the English language needs of Taiwanese process integration engineers (PIE) working for a high-tech multinational company in Taiwan. Spence and Liu triangulated stakeholders and methods by using online survey questions, semi-structured interviews, and observations. PIEs were surveyed and interviewed, a customer was interviewed, and two teleconferences were observed by the analyst.

The procedures for these methods are as follows: a sequence of three online surveys were distributed and collected, then eleven in-service PIEs were interviewed, and this was followed by an interview of a customer, and onsite observations of two teleconferences. Based on Sefarini, Lake, and Long's (2015) recommended procedures, Spence and Liu's procedures could have been improved by conducting the interviews first and then using the results to create the surveys.

Spence and Liu's three online surveys asked about (1) background, (2) current language needs, and (3) engineering duties, respectively. The first survey was completed by 39 PIEs (ages 21-40, with a MS or PhD), the second by 31 PIEs, and the third by 51 PIEs all from the same company in Tainan. The face-to-face interview consisted of nine questions about English background, the consequences of a lack of English, and work tasks that needed English to be completed. The researchers had also conducted a pilot study, but the results were not included in this study. Respondents (N=31) to survey 2 (current language needs) identified writing and reading as the most commonly needed skills and speaking and listening as the most difficult skills. Results from survey 3 (N=51) indicated that for 84% of the respondents, reading English emails was a daily task. Reading instructions or advice was a daily task for 53% of respondents. Writing emails was a daily task for 92% of respondents and writing reports was a daily task for 49% of respondents. The most common speaking task was meetings, with about 50% of respondents doing this daily. For listening, the most common task was receiving spoken instructions, which occurred monthly or more for 80% of respondents (p. 102). From the face-to-face interviews, nervousness and foreign accents were most commonly reported as causing difficulties, whereas email communication was reported as the easiest mode of communication. Spence and Liu also reported on frequently mentioned consequences of poor English, which were identified as miscommunication with customers and an inability to describe problems

precisely (p. 103). From the data collected, the researchers reported the benefits of English as (1) improved customer relations and (2) promotions. The customer interview revealed similar answers to the surveys and PIE interviews that spoken English was the most common cause of miscommunication, but that the barrier could often be overcome (p. 105). Observation of two telephone meetings identified English as being needed to create a relationship with customers.

Finally, Kaewpet (2009) sought to identify the English needs for work and professional study of Thai civil engineering students (EAP and EOP) and therefore this study most closely resembles the present thesis. This study only used stakeholder triangulation, but the 25 stakeholders who were interviewed for this study were very carefully chosen. Stakeholders included both domain insiders and outsiders as suggested by Serafini, Lake, and Long (2015). The study interviewed five employers, five civil engineers, five civil engineering lecturers, five ex-civil engineering students, and five ESP teachers. These stakeholders were sampled based on three principles: multiple perspectives, purposeful sampling, and having an appropriate number of insiders and outsiders.

From the interviews, Kaewpet identified reading as the most important skill, he identified thirty-three communicative events, and then adopted the four of the five most recommended events into his course. These events are listed as (1) *talking about daily duties*, (2) *reading textbooks*, (3) *reading manuals*, and (4) *writing periodic reports* were adopted into the technical English course. *Applying for a job* was also identified but not added into the course due to the amount of time needed to prepare students for this task. *Talking about daily duties* was a work-related event that could occur in the office or on a construction site. *Reading textbooks* and *reading manuals* were both work and educational tasks and *writing periodic reports* was a work-related task. The researchers found that communication for such tasks occurred among engineers

and their managers, fellow engineers, and customers and was typically formal, academic, and professional. The target level of communication was identified as international English at the intermediate level with the ability to use technical vocabulary. The four studies are summarized below.

Table 2 Summaries of the four reviewed studies

<i>Study/Country/Context</i>	<i>Stakeholders</i>	<i>Methods</i>	<i>Results</i>
<i>Caplan and Stevens (2017)</i> <i>University of Delaware</i> <i>ELI</i> <i>EAP</i>	International degree seeking students (N=191) Faculty (N=226)	Surveys (qualitative and quantitative) Interviews	Different perceptions of success Identified challenges
<i>Huang (2010)</i> <i>University of Victoria's</i> <i>ALS</i> <i>EAP</i>	Undergraduates (N=337) Graduates (N=95) Faculty (N=93)	Surveys (qualitative and quantitative)	Different perceptions of needs
<i>Spence and Liu (2013)</i> <i>Taiwan, Tainan</i> <i>EOP</i>	PIEs (N=51) Customers (N=1)	Three surveys (qualitative and quantitative) Eleven interviews with PIEs Interview with a customer Observation of teleconference call	Identified most common skills and tasks.
<i>Kaewpet (2009)</i> <i>University in Thailand</i> <i>EOP and EAP</i>	Employers (N=5) Civil engineers (N=5) Civil engineering lecturers (N=5) Ex-civil engineering students (N=5) ESP teachers (N=5)	Interviews (qualitative)	Four of the five most common communicative tasks adopted into English curriculum

2.5 Implications for the present study

From the studies in an EAP context, it is clear that both faculty and students should participate. However, only Kaewpet (2009) used graduated, former students as a source. Based on these studies, past and present students as well as their graduate course instructors should provide sufficiently reliable and valid data. In terms of methods triangulation used for these EAP needs analyses, surveys with qualitative, open-ended questions and ratable Likert scale questions as well as interviews were used. Both of these studies had large sample sizes for their surveys,

however their findings were limited by sampling methods and could have been improved with interviews prior to survey creation. For this thesis, EAP findings were gathered by first interviewing delegates and professors and then creating a questionnaire.

The studies conducted in an EOP context made use of multiple sources (key stakeholders) for triangulation, using in-service professionals, employers, and customers. Spence and Liu (2013) used multiple methods for triangulation including observations. However, like the EAP studies discussed, they surveys were not created from the results of surveys. Kaewpet (2009) made use of interviews with a wide variety of stakeholders, but did not use questionnaires or observations. Interviews are subject to interpretation and therefore may be strengthened with observation or surveys. For this thesis, interviews, observation, and a questionnaire were used to collect and triangulate EOP findings. Triangulation procedures will be further explained in the following chapter (see Table 7).

CHAPTER III: METHODS

3.1 Research Questions

This needs analysis explores the following questions:

1. What are the English skills needed by engineers while participating in a professional development program, while interning at an American automotive company, and at work in China or abroad?
2. What tasks do engineers perform that require English during the professional development program, while working at an American automotive company, and at work in China or abroad?

These questions are investigated as a case study and (1) via interviews, questionnaires, and observation, (2) with key stakeholders, and (3) across various locations and moments in time.

3.2 Needs Analysis as a case study

Three of the four reviewed needs analyses that were discussed previously were described as mixed methods studies. Due to the small sample size of this needs analysis, I consider this study to be primarily qualitative in nature and therefore have used qualitative research methods.

Case studies are a qualitative research method. Although not stated in Duff (2014)'s lists of example topics for case study research, Brown (2009) lists case studies as a viable method for conducting an needs analysis. Case studies are a strong option for conducting an needs analysis because they are qualitative in nature and have the goal of gaining "a thorough understanding of the phenomenon being studied, of which the case is an exemplar" (Duff, 2014), they allow for deeper understanding of particulars (Duff, 2012), and they allow researchers to "better understand the experiences and issues affecting people in various socioeducational and linguistic settings" (Duff, 2014). Duff also describes critiques and weaknesses against case studies and

writes that methods, such as oral interviews, create data that has been co-constructed between research and participant, is susceptible to power differentials between researcher and participant, and is therefore incomplete (Duff, 2012). Also, she writes that data can be easily interpreted in a way that is biased in favor of the researchers pre-existing beliefs (Duff, 2014). This incompleteness of oral interviews can be remedied in part through thorough content analysis as well as triangulation.

3.3 Sampling procedures

The steps taken for this needs analysis follow the three general stages and ten secondary steps outlined by Brown (2009). The first stage, Brown calls the *Get Ready to Do NA*. This constitutes the first five secondary steps, the first of which is to *define the purpose of the needs analysis*. Of the philosophies listed by Brown (2009) on p. 271, this study will define needs as in a *democratic philosophy* framework. Brown defines needs in this framework as “any learning goals that are preferred by the majority of the stakeholders involved.” The following secondary step is to “delimit the student population.” For this situation, a local level needs analysis is most appropriate due to the uniqueness of the university’s professional development program. Brown (2016) identified key stakeholder groups as students, teachers, and administrators (p.44). And those are the three main stakeholders that are present in this study. For students, which we call delegates, our university currently has three annual professional development programs for three separate Chinese automotive companies. Each program runs a different length: one three months, one six months, and one twelve months. Delegates from each program are encouraged to take an ESL course in the first term (three months) that they are at the university. From the year that the ESL program started, the length of each program and the enrollment number of delegates in the ESP program are listed below according to partner company.

Table 3 Chinese partner companies and their program lengths, year, number of delegates in ESP

<i>Partner Chinese Company</i>	<i>Year 1 (Number of delegates)</i>	<i>Year 2 (Number of delegates)</i>	<i>Year 3 (Number of delegates)</i>
<i>Company A (length of program, 12 months)</i>	5 of 5 delegates in ESL	6 of 6 delegates in ESL	7 of 7 delegates in ESL
<i>Company B (length of program, 6 months)</i>	3 of 11 delegates in ESL	1 of 12 delegates in ESL	10 of 10 delegates in ESL
<i>Company C (length of program, 3 months)</i>	1 of 11 delegates in ESL	11 of 11 delegates in ESL	12 of 12 delegates in ESL

Although preparation for this thesis began in Year 1, all of the interviews were conducted in Year 2. Due to the length of Company A's program (six months in graduate programs and six months of internships at an American auto manufacturing company) all the delegates from Company A were chosen to serve as the focus of this study. Three of the five delegates of Year 1 from Company A were able to do thirty-minute interviews conducted via WeChat in June of Year 2 (about nine months after their program had ended.) All six delegates from Year 2 were able to do 45-minute interviews via WeChat in April of Year 2, four weeks after completing their six months of graduate coursework and three weeks after beginning their six-month internship at a US automotive company. The questionnaire was conducted in Year 3; four of seven delegates from Company A and ten of ten delegates from company B in Year 3 completed Questionnaire 1 during March of Year 3. Ten of eleven delegates from Year 1 and Year 2 completed the survey. Table 4 below provides overview of how the data collection.

Table 4 Overview of data collection

<i>Year 2</i>	<i>Year 3</i>
April Six Year 2 Delegates interviewed (3 weeks into internship) Five professors interviewed (Recently completed Winter term coursework for delegates)	January Questionnaire 1 and 2 piloted
May Year 1 Delegates 1 and 3 (observed one day at work)	March Year 3 delegates from company A and B surveyed with Questionnaire 1 (completion of coursework) Year 1 and 2 delegates surveyed with Questionnaire 2
June Year 1 Delegates interviewed	

All eight professors who had taught delegates in the winter quarter term (January through March) of Year 2 were asked via email to be interviewed. Five of the eight responded and were interviewed.

Table 5 Interviewee information

<i>Participant Group</i>	<i>Position</i>	<i>Level of Education</i>	<i>Age</i>
<i>Year 1 Delegates</i>	Lead CMM Quality Engineer Lead Design Engineer SQ Manager	3 Bachelors	31-40 years
<i>Year 2 Delegates</i>	Supervisor Senior Engineer Project Manager Robot Engineer Vehicle Subsystem Engineer Battery Testing Engineer	4 Bachelors 1 Masters 1 Doctorate	31-40 years
<i>Professor</i>	3 Engineering Professors 2 Business Professors	5 Doctorates	45 years +
<i>Executive</i>	Quality Director	Unknown	45 years +

3.4 Location

All interviews were recorded using Audacity. Interviews with delegates were conducted over WeChat (with the exception of Year 2 Delegate 6's second interview, which was conducted face-to-face on campus.) With professors, interviews were conducted face-to-face on campus. The interview with the company executive and the observation of Year 1 Delegate 1 and Delegate 3 was conducted on-site in China.

3.5 Instruments

Semi-structured interviews were conducted using open-ended questions with the goal of triangulating data collected for this group of engineers. Interviews for the nine delegates aimed to identify English-related listening, speaking, reading, and writing tasks that they completed on a typical day in China at work, in the US during the six months of graduate coursework, and in the US during the six-month internship as well as any perceived difficulties and how difficulties were overcome. A total of eleven interviews were conducted with the delegates. Their interviews' average length was about 30 minutes. The five professors interviews averaged 20 minutes. Professors were interviewed regarding (1) the delegates use of English in three technical courses and two management courses and (2) perceived difficulties that the delegates faced. Finally, while in China and on-site observing graduated delegates, one of the delegates introduced me to an American executive there, who happened to be an alumnus of our university and agreed to be interviewed. The interview lasted 20 minutes and focused on how English is used at work and perceived difficulties. Table 6 below provides the length of each interview as well as the number of quotations (or responses) created in ATLAS.ti for each interview.

Table 6 Interview length and number of quotations per interview

<i>Participant Group</i>	<i>Name</i>	<i>Length of interview (in minutes)</i>	<i>Number of quotations (out of 557)</i>
<i>Year 1</i>	Delegate 1	20	40
	Delegate 2	22	35
	Delegate 3	27	22
<i>Year 2</i>	Delegate 1	41	27
	Delegate 2	46	55
	Delegate 3	45	34
	Delegate 4	41	41
	Delegate 5	46	37
	Delegate 6	41	56
<i>Year 2</i>	Delegate 2 Interview 2	27	29
	Delegate 6 Interview 2	30	32

Table 6 (cont'd)

<i>Participant Group</i>	<i>Name</i>	<i>Length of interview (in minutes)</i>	<i>Number of quotations (out of 557)</i>
<i>Professors</i>	Professor 1	20	18
	Professor 2	33	35
	Professor 3	33	33
	Professor 4	11	18
	Professor 5	29	29
<i>Executive</i>	Executive 1	20	16

The information gathered from the semi-structured interviews on tasks as well as reviewing relevant literature were used to create two questionnaires, which are provided in the Appendix. Questionnaire 1 was given to delegates who had just completed their six months of graduate coursework and Questionnaire 2 was given to delegates who had completed the year in the US and had returned to China. The questionnaires were piloted in Year 2 on paper (three months into coursework), revised, and then distributed via Qualtrics. The interviews and field notes from observations on-site in China, were coded using ATLAS.ti.

3.6 Coding procedures

Interview content was analyzed using Friedman (2012) and Baralt (2012) for qualitative research methods and qualitative coding procedures and with the qualitative research software, ATLAS.ti. Coding procedures began with transcription and open coding, iterations to create and confirm themes (see table in Chapter IV). Then, codes were merged and reviewed for accuracy, relationships and patterns were identified as will be discussed in Chapter IV.

Interviews were recorded using Audacity, labelled, and uploaded into ATLAS.ti. Then, I transcribed the data within ATLAS.ti by listening to an interview response, then selecting its corresponding audio segment, and writing in the transcription within the tab labelled *Quotations*. While transcribing, I also began to add descriptive coding to each quotation. Having codes directly connected to the responses, or *quotations*, proved to be efficient and practical for a

number of reasons. First, when reviewing for accuracy of themes and codes, the whole response and its context was immediately available using ATLAS.ti's *Quotation Manager*. There, I could simply click on a code and a list was generated of each quotation within that code, information on who said the quotation, and where in the interview the quotation was located. Coding quotations was also useful for identifying patterns and relationships because ATLAS.ti's *Code Concurrence Table* showed which codes were frequently coded together and provided each of the corresponding quotations. Finally, the number of quotations with a certain code are easily available countable within and across documents which makes it easy to understand if only one interviewee discussed a certain topic or if it was common across all interviews.

3.7 Triangulation

Triangulation was needed for each of the three phases in this study: during coursework, during internship, and at work. Table 7 below serves as the guideline used for triangulating data. The triangulation used for the coursework portion of the program was the strongest. Delegate and professor interviews helped to inform the creation of the Questionnaire 1 and the questionnaire was given to Year 3 delegates. As such, triangulation of stakeholders, methods, and time was achieved. In addition, Year 1 delegates and the executive also commented on coursework as well and are included in the results and decision making found in Chapters 4 and 5. Triangulation for the internship was the weakest, with six Year 2 delegates self-reporting their experiences near the beginning of the six-month internship and two near the end. Year 1 delegates also talked about their experiences in the internship and this helped to strengthen the findings. However, only triangulation of time was achieved. For the data collected regarding English use at work, stakeholder, method, and location triangulation were achieved. In addition, Year 2 delegates also described how they used English prior to their participation in the twelve-

month program. This too was included in the findings and implications described in the following chapters.

Table 7 Triangulation

<i>Time and Location</i>	<i>Triangulation</i>
<i>Six-months of coursework in USA (EAP)</i>	Year 2 Delegate Interviews + Professor Interviews + Questionnaire 1
<i>Six-months of internship in USA (EOP)</i>	Six Year 2 Delegate Interviews (at the beginning of internship) + Two Year 2 Delegate Interviews (at the end of internship) +
<i>Pre or post program at work in China (or abroad) (EOP)</i>	Year 1 Delegate Interviews (post course work and post internship) + Onsite observation of two delegates + Executive Interview + Questionnaire 2

CHAPTER IV: RESULTS

4.1. RQ1

4.1.1 RQ1 Overview

1. *What are the English skills needed by engineers while participating in a professional development program, while interning at an American automotive company, and at work in China or abroad?*

The four skills, listening, speaking, reading, and writing, were investigated for three reasons. First, the original structure of the ESP program divided the ten hours a week between the four skills as well as an American culture course and a grammar course. Second, the delegates were familiar with this traditional framework for learning languages and therefore they mentioned the four skills frequently. Finally, discussing the perceived importance and difficulty of a skill helps to determine which tasks (see 4.2) deserve focus in the ESP course.

In order to answer RQ1, interviews were uploaded into ATLAS.ti, quotations were created, transcribed, and coded. From the 17 interviews, 557 quotations were created. While transcribing, the quotations were also coded. Each quotation was coded for the *Time* it was referring to, either (1) during coursework, (2) during internship, or (3) at work. Then, the content of the quotation was coded. As the content was being coded, clear themes became apparent in the responses. As themes emerged, quotations were coded in the following pattern, *Theme - Description*. Code groups were then created in the Code Manager based on theme.

Table 8 Themes

<i>Themes (Code groups)</i>	<i>Sub-categories (Codes)</i>	<i>Number of Quotations (Out of 557)</i>
<i>Opinions (29)</i>	Each skill's: difficulty, importance, improvement, frequency	198
<i>Suggestions (21)</i>	Suggestions for ESP, for future delegates, and for professors	78
<i>Tasks (33)</i>	No subcategories	263
<i>Time (3)</i>	Only three categories: during coursework, during internship, at work	472

As similarities in quotation's content became clear, codes were merged for the quotations within each theme. For RQ1, the theme *Opinions* provided the best answers. The theme name, *Opinions*, was chosen because in the comments coded as such the interviewee frequently began with *I feel that* and then went on to explain how difficult, important, successful, or frequent the interviewee perceived something to be. The subcategories of difficulty and importance are used in the answering of RQ1 for two reasons. The first reason is a task or skill can be difficult but not important, and, likewise, it can be important, yet not difficult. For the limited amount of time that is available to provide English instruction for these delegates, it seems best to address skills and tasks that are found to be both difficult and important. The second reason comes from Serafini, Lake, and Long's (2015) study, in which they identified a limitation of their own study as one that addressed only the frequency and difficulty of the target tasks and did not collect information on their perceived importance. Therefore both difficulty and importance will be used to answer RQ1.

The theme *Opinions* began with nearly 100 separate codes using largely in-vivo coding. Although the large number of codes clearly showed the complex nature of the topic and theme, it was not useful in making generalizations to this group. I therefore merged codes to achieve "a slightly higher level of abstraction" (Corbin and Strauss, 2008, p. 636) Merging codes allowed clear groups to be formed included skills (which in this study includes listening, speaking, reading, writing, vocabulary, and grammar) and their perceived difficulty, frequency, importance, and improvement. ATLAS.ti's Code Concurrence table allowed me to check for inconsistencies when compared with the code group, *Time*. Table 9 below shows all the codes used and the number of quotations that are coded as such (in ATLAS.ti this is called the code's *groundedness*) within the theme *Opinions*. For the tables below, the word *frequency* refers to

how many times that code was assigned throughout all interviews.

Based on the large number of quotations referring to the difficulty of different skills, quotations coded as *Opinions - skill difficult* are further discussed below and used to answer RQ1. In addition, the sub-category *Importance*, although less frequently commented on compared to *Difficulty*, is still directly applicable to RQ1 and is therefore also discussed below.

Table 9 Opinions and the frequency of each code

<i>Code</i>	<i>Frequency (of 198 quotations*)</i>
Opinions - Listening difficult	37
Opinions - Speaking difficult	34
Opinions - Ability improved	25
Opinions - Vocabulary difficult	24
Opinions - Other difficulties - Differences among cultures	15
Opinions - Speaking important	15
Opinions - Vocabulary important	15
Opinions - Writing difficult	13
Opinions - Writing important	9
Opinions - Other difficulties - Wide variety of communication skills	9
Opinions - English important	8
Opinions - Speaking frequent	8
Opinions - Listening important	6
Opinions - Other difficulties - Register	6
Opinions - Reading difficult	6
Opinions - Reading not difficult	6
Opinions - Ability not improved or deteriorated	5
Opinions - Grammar not important	5
Opinions - Speaking not difficult	5
Opinions - Speaking not frequent	5
Opinions - Grammar difficult	4
Opinions - Writing not difficult	4
Opinions - Writing not frequent	4
Opinions - Writing frequent	3
Opinions - Reading not frequent	2
Opinions - Grammar not difficult	1
Opinions - Reading frequent	1
Opinions - Reading important	1
Opinions - Writing not important	1

* Note that the total of this table is 268 because some quotations were assigned multiple codes.

4.1.2 RQ1 Difficulty

The table below shows theme *Opinions* and its sub-category *Difficulty* related to skill and along with their frequency.

Table 10 Difficulty and frequency of code across interview groups

	<i>Frequency (out of 198)</i>	<i>Executive Interview (out of 16)</i>	<i>Professor Interviews (out of 133)</i>	<i>Year 1 Delegate Interviews (out of 97)</i>	<i>Year 2 Delegate Interviews (out of 250)</i>	<i>Year 2 Delegate Interview 2 (out of 61)</i>
<i>Listening difficult</i>	37	3	10	1	20	3
<i>Speaking difficult</i>	34	0	7	4	22	1
<i>Vocabulary difficult</i>	24	0	8	2	12	2
<i>Other difficulties - Differences among cultures</i>	15	2	6	0	7	0
<i>Writing difficult</i>	13	0	6	0	5	1
<i>Other difficulties - Wide variety of communication skills</i>	9	0	9	0	0	0
<i>Other difficulties - Register</i>	6	0	0	0	3	3
<i>Reading difficult</i>	6	0	4	0	2	0
<i>Grammar difficult</i>	4	0	3	0	1	0

Table 11 Difficulty across time and location

	<i>During coursework (out of 217)</i>	<i>During internship (out o 119)</i>	<i>At work (out of 142)</i>
<i>Opinions - Listening difficult</i>	23	9	6
<i>Opinions - Speaking difficult</i>	23	5	7
<i>Opinions - Vocabulary difficult</i>	12	5	8
<i>Opinions - Other difficulties - Differences among cultures</i>	12	1	3
<i>Opinions - Writing difficult</i>	9	2	2
<i>Opinions - Other difficulties - Register</i>	0	5	1
<i>Opinions - Other difficulties - Wide variety of communication skills</i>	9	0	0
<i>Opinions - Reading difficult</i>	5	0	1
<i>Opinions - Grammar difficult</i>	4	0	0

As can be seen in the tables above the subcategories of listening, speaking, and vocabulary make up the largest number of quotations coded for difficulty. Speaking and listening were also identified by Spence and Liu (2013) as most difficult for Taiwanese process integration engineers when communicating with customers. When looked at across interviews as in the table below, they also show that a large number of delegates and professors discussed these three issues. They therefore will be further analyzed below followed by relevant examples from the interviews.

Table 12 Listening, Speaking and Vocabulary Difficulty across interviews

	<i>Opinions - Listening difficult (out of 37)</i>	<i>Opinions - Speaking difficult (out of 34)</i>	<i>Opinions - Vocabulary difficult (out of 24)</i>
<i>Year 1 Delegate 1</i>	0	1	0
<i>Year 1 Delegate 2</i>	1	1	1
<i>Year 1 Delegate 3</i>	0	0	0
<i>Year 2 Delegate 1</i>	2	2	0
<i>Year 2 Delegate 2, Interview 1</i>	5	9	4
<i>Year 2 Delegate 3</i>	1	3	1
<i>Year 2 Delegate 4</i>	7	1	2
<i>Year 2 Delegate 5</i>	2	2	3
<i>Year 2 Delegate 6, Interview 1</i>	3	4	2
<i>Year 2 Delegate 6, Interview 2</i>	2	1	1
<i>Year 2 Delegate 6, Interview 2</i>	2	1	1

Table 12 (cont'd)

	<i>Opinions - Listening difficult (out of 37)</i>	<i>Opinions - Speaking difficult (out of 34)</i>	<i>Opinions - Vocabulary difficult (out of 24)</i>
<i>Year 2 Professor 1</i>	1	1	0
<i>Year 2 Professor 2</i>	3	4	1
<i>Year 2 Professor 3</i>	0	1	1
<i>Year 2 Professor 4</i>	3	0	2
<i>Year 2 Professor 5</i>	3	1	4
<i>Year 2 Executive</i>	3	0	0

4.1.2.1 RQ1 Listening difficult

I downloaded the 37 quotations coded as *Opinions - Listening difficult* and read through them a second time looking for patterns. The result was that 11 of the 37 cited speaking speed as a reason for difficulty with listening and seven quotations referred to accents as a source of difficulty in listening. Nine quotations pointed out difficulties in listening comprehension in lectures, four quotations were about difficulties understanding group discussions, and two were about difficulties in one-on-one discussions.

Year 2 Delegate 5 described difficulties with understanding spoken varieties of English that occurred in group discussions with fellow students in graduate courses in the following way:

And as you know all kinds of students they have a different speaking way. And maybe some Indian guys give me the Indian English and the American students give me the American English, it is difficult to understand. Several times I don't know what they said, I just give my Chinese descriptions about these issues, it's not good.

Professors also noted that listening is an issue for some of the delegates and caused concern as to whether or not they were being understood. Professor 5 described the problem in the following way:

Right now, every time I talk to a Chinese delegate, I'm afraid to start because is this guy going to understand what I am going to say. Right, there is this uncertainty because

everyone is at a different level. But most are doing better now, and what you said about confidence really rings true. Some can talk just fine, can communicate just fine. They just lack the confidence to do it.

Year 2 Delegate 2 in the second interview stated that listening was quite different during the six-month internship than during their time in graduate course work for a number of reasons:

I think people in the university are, they use English more formally. But in reality, I mean outside the campus, I feel that English is not formal, and so most of the time it is not very formal, not very serious. They talk very nice, they talk, how to say... I think if we focus on this, if we listen to, I think, just use the ordinary language is okay. Not so serious, because most of the time they talk very, very informally. Most of the time they will speak jokes, something like that. And their talk is not very standard and very fast. I think I have spent at least a half of a year till I can hear them, understand what they are talking about.

Finally, delegates also faced difficulties in listening when working with English speaking suppliers due to accents, speed, and quality of connection. Year 2 Delegate 3 stated that:

But if we do have a call it is a little bit difficult to understand some meanings of the suppliers side. Especially, someone from the suppliers' side, they, they're not the English, not an English speaker, they are not a native English speaker. So it is difficult for us to understand what they are talking about. But someone from America or Europe, maybe they can speak English, but they talk too fast and it is also difficult to understand. As far as international calls, sometimes the quality of the connection is not very good and it is totally different from the face-to-face communication. It is more difficult to understand.

4.1.2.2 RQ1 Speaking difficult

I followed the same process with the 34 quotations that were coded as *Opinions - Speaking Difficult*. Eight of the quotations in this category made by delegates and professors

stated the Chinese character or culture made speaking difficult. For example, several delegates stated that asking questions in public and talking with strangers are not part of Chinese culture and therefore they found it difficult to do tasks that required this in English while in the US. Eight quotations referred to the lack of time to think of a response and the speed of conversations that made speaking difficult. In four quotations, delegates describe the lack of vocabulary as a problem that lead to difficulty in speaking. Three quotations referred to pronunciation as a difficulty. Other quotations mentioned that difficulties in speaking came from a lack of confidence or not knowing how to tell jokes with co-workers. In four quotations, delegates and one professor described speaking in group discussions and role plays as a difficulty. However, four of five professors mentioned that the delegates seemed to do better speaking in group discussions than listening to lectures.

Below are examples of quotations referring to Chinese character or culture being one of the factors that makes speaking difficult. Year 2 Delegate 1 said that:

I mean if there is an opportunity, or the professor talk to you, of course we respond to the professor. Or, sometimes, if there is group work, I am willing to talk with the other students in the classroom. I mean only after years of study in China, we all get used to not asking a question in public. Maybe, I don't know, maybe it is one of the Chinese character.

Similarly, Year 2 Delegate 2 suggested that it may be simply a lack of opportunities to speak English in China that led to speaking feeling difficult:

It is very hard the first time that you talk with a foreigner so it is a little hard for us. Not because we don't know English we just don't use it frequently, fluently. I think the biggest problem is to encourage yourself to talk with them and force yourself to talk with them. I

think that is the key point to communicate with foreigners. I think that is the biggest problem for us to solve.

Year 2 Delegate 5 believed that it may be a lack of experience to move a conversation past a simple greeting:

And for, at the university, um, as you know, Chinese always stay in a group with Chinese. And Americans maybe they are very willing to share everything with us. But you know that Chinese always is quiet. But we didn't know how to open a conversation. For example, we just say, "Hi, how are you?" and you say, "Fine, thank you. And you?" And then fine, and then no words.

4.1.2.3 RQ1 Vocabulary difficult

As was found in a large number of delegates and professors commented on the difficulties that vocabulary caused. Within the 24 quotations, 12 quotations described technical automotive vocabulary as being difficult. One reason given for such vocabulary's difficulty is that different students in graduate courses and different companies at work may use different English terms for the same thing. Another reason was that such technical words are hard to look up and cannot be found in dictionaries. And, finally, some delegates believed that the English words used in their own company were incorrect or not standard.

Delegates also encountered a wide variety of technical vocabulary from various fields such as automotive part names, manufacturing processes, software logic and installation procedures, equipment names, mathematic terms, and academic English terms. Year 2 Delegate 4 wrote that while at work and in a training program from a US partner company she encountered problems due to vocabulary:

Especially the software and the process, the process of like the with the software installation. And the software simulation, the software installation is easier because

everyone can enter the booth and then see. Everyone will look at the exact part and then know the process how it is run. But then for the process software and logic software its quite difficult to understand and follow the directions in English because of the vocabulary.

Six quotations came from two professors who mentioned that wording and phrasing from delegates was often difficult to understand. Two delegates admitted that they only used the words they knew and avoided new or unfamiliar vocabulary for fear of using it incorrectly. Year 2 Delegate 6 said:

I'm afraid when I'm doing, when I was doing a presentation I forgot these new words, so I won't use these new words. It's when I have the confidence that I could say, speak them very correctly, I will use them correctly.

4.1.2.4 RQ1 Other difficulties

During their time in their coursework of the professional development program, professors and delegates both agreed that differences in culture caused difficulty for the delegates and that academic writing was difficult. Two of the three engineering professors mentioned that writing is an issue overall in the field of engineering and regardless of language background. But, both mentioned particular concern for the delegate's writing and urged practice prior to taking their courses particularly in writing concisely and accurately. Eight quotations from three of the five professors indicated that the wide range of delegates' English abilities caused difficulty for them in assessing the delegates' work, evaluating their understanding of course materials, and gauging their interest.

4.1.3 RQ1 Importance

In relation to RQ1, perceived importance was the second most common sub-category of the theme *Opinions* that emerged from the interviews. As discussed above, both importance and

difficulty together are critical for making decisions on what should be addressed in the ESP classroom. First, it should be noted that eight quotations stated the importance of English for the delegates. Of particular interest were two comments: one of which was made by Year 2 Delegate 6 and one by the company executive. These two comments stated the importance of learning English for when the delegates complete the program and return to work and advance in their careers. These comments express a belief that matches Evans (2010)'s findings that "as an employee's career advanced so too did their need for English proficiency" (as found in Spence and Liu, 2013, p. 99). Year 2 Delegate 6 explained why learning English will be important for the future:

But that will change very, very quickly I think. You know, now more and more of my colleagues want to improve their English because we have more and more overseas projects and also the car industry has a very big change. In the past two days they will lower the tax of the import car of the foreigner. Also, now in China the car companies, the shares owned by the government in almost every JV (Joint Venture) in China currently is over 15%, share is owned by the government. But in the future, the foreign company, they can have 100% share, that is a very big change. Also the native brand in China is very big, and so once they change the policy in China more and more foreign car companies from other countries will enter China. And we will use English more and more frequently.

The American executive in China also saw the importance of English for engineers within the company as they expand to overseas projects in Indonesia:

We now have an operational plant building vehicles in Indonesia. It's the first overseas venture. So, right away you're the leading candidates to backfill people that are there.

First of all, Indonesian people don't speak Chinese, and Chinese people don't speak Indonesian. But both of them speak English to some degree. So some of the first criteria is can you speak English. And the Professional Development program plays a key role. I don't care what the student's English level is originally, the Professional Development helps them get it better.

This belief that English was an important part of the professional development program and needed for the delegates' futures seemed to be widely held. The specific English skills that were perceived to be important are presented below:

Table 13 Importance across interview group

	<i>Frequency</i>	<i>Executive Interview (out of 16)</i>	<i>Professor Interviews (out of 133)</i>	<i>Year 1 Delegate Interviews (out of 97)</i>	<i>Year 2 Delegate Interviews (out of 250)</i>	<i>Year 2 Delegate Interview 2 (out of 61)</i>
<i>Speaking important</i>	15	0	1	4	10	0
<i>Vocabulary important</i>	15	0	0	5	10	0
<i>Writing important</i>	9	0	6	0	3	0
<i>English important</i>	8	3	1	1	3	0
<i>Listening important</i>	6	0	0	0	6	0
<i>Grammar not important</i>	5	0	0	0	5	0
<i>Reading important</i>	1	0	0	0	1	0
<i>Writing not important</i>	1	0	0	0	1	0

Table 14 Importance across time and location

	<i>During coursework (out of 217)</i>	<i>During internship (out of 119)</i>	<i>At work (out of 142)</i>
<i>Opinions - Speaking important</i>	6	2	7
<i>Opinions - Vocabulary important</i>	2	4	9
<i>Opinions - Writing important</i>	8	0	1
<i>Opinions - English important</i>	2	0	6
<i>Opinions - Listening important</i>	3	1	2
<i>Opinions - Grammar not important</i>	4	0	1
<i>Opinions - Reading important</i>	1	0	0
<i>Opinions - Writing not important</i>	1	0	0

Based on the table above, delegates and professors comments focused on the importance of speaking, vocabulary, and writing. Interestingly, although frequently commented on in terms of its difficulty, listening was commented on less frequently here. The absence of comments referring to the importance of listening does not however mean that the delegates and professors thought of it as unimportant, but rather, that speaking, vocabulary, and writing were comparatively more important for this group and worth mentioning. Also, similarly the quotations coded as *Opinions - Grammar not important* are worth reviewing so that their context can be better understood. Each of these subcategories will be discussed further below.

4.1.3.1. RQ1 Speaking important

When all six delegates from Year 2 were asked which skill they thought was most important, all six replied saying that they believed speaking was the most important for them and the most that they wanted to improve. Delegate 2 believed listening and speaking to be equally important, while Delegate 4 said that speaking and writing were most important.

4.1.3.2 RQ1 Vocabulary important

Although the importance of vocabulary was commented on across coursework,

internship, and work, it seemed to be most important in handling work situations. One delegate seemed frustrated with English translations that seemed inconsistent or wrong:

I know very clearly in Chinese, but in English its, I don't know how to say, that part, I know what the part is, but in English, I don't know. I have to search in the dictionary.

And it more things than that, part's English name, because we just use the Chinese name in China, also we do have the English name, beside that, but the translation in my company is not very correct.

Another delegate expressed the importance of vocabulary when talking to international suppliers, “when I express what I think in this word, it is not the usual word that others use. So, we must communicate a lot, and more communication and more mess.”

4.1.3.3 RQ1 Writing important

The ability to write in clear, accurately worded prose was very important for two of the three Engineering professors. One professor commented:

Now, I feel very, very strongly that to be successful as engineers, we have to be able to communicate and we have to be able to communicate in writing. I'm an industry person, I've only been here for three years as a professor. Every last project that I ever did ended with me writing something about it.

In addition, one of the business professors commented on how important writing was for preparing for in-class discussions. The professor had the delegates read a case study on management, form their opinion on the issue it described, and write down their thoughts before class. Then during class, the professor worked through a case study with the delegates. The professor commented:

It also meant that I had some indication that they had done this ahead of time. So that there was a foundation from which to have a discussion. And I think that is important, it

gave them a chance to think through what they were going to say. And I think that works much better.

4.1.3.4 RQ1 Grammar not important

4 of the 6 delegates from Year 2 all commented that grammar was not important in the context of coursework and at work. Each of these comments were made comparing the importance of speaking and listening to grammar and was said as a comment that stated a belief that it was not worth spending time in the ESL course on grammar. For example, one delegate said:

Sometimes I thought I mean from the experience I think for example the grammar seems like very important when we are learning English in China it was very important I think when I was a student the teacher told us. But actually it seems like it is not as important as I was told. When I actually talk to an American person, they usually can understand even if the grammar that you spoke was a little bit wrong.

4.2 RQ2

4.2.1 RQ2 Overview

What tasks do engineers perform that require English during the professional development program, while working at an American automotive company, and at work in China or abroad?

Prior to answering RQ2, I will first define the term task. For this study, I followed Long's (2016) definition of a task, which he says "are the real-world communicative uses to which learners will put the L2 beyond the classroom--the things they will do in and through the L2" (p. 6.). The following section categorizes the things delegates will do in English into the tasks former delegates did during the three major times and locations of interest (during coursework, during the internship, and at work). Completing real-world tasks requires the language learner to

use various combinations of multiple of skills, including listening, speaking, reading, and writing.

To answer RQ2, merely counting the number of times a task was mentioned is not sufficient to indicate how important, frequent, or difficult a task is. In order to address this issue, the results of Questionnaire 1 and Questionnaire 2 are also discussed here to help confirm or refute what was found in the interviews. It should be noted that the sample sizes for Questionnaires were quite small, (Questionnaire 1, N=14; Questionnaire 2, N=10). And as such, questionnaire results do not truly confirm or refute any tasks. As will be discussed in the chapter five, these questionnaires will continue to be used as new groups of delegates participate in this program.

During the semi-structured interviews, a common opening question for delegates was, “Describe what you do on a typical day during/at ____.” As a result, the theme *Tasks* quickly emerged. Roughly half of all quotations were coded as referring to some type of task. After initial coding, the theme, *Tasks*, had roughly 150 separate codes. I then merged like tasks to create a final list of 33 tasks. This list is presented in Table 14 below in order of frequency as well as their distribution across time.

Table 15 Tasks and their frequency across time

<i>Name</i>	<i>Frequency (out of 263)</i>	<i>During coursework (out of 217)</i>	<i>During internship (out o 119)</i>	<i>At work (out of 142)</i>
<i>Tasks - Discuss technical issues, problems</i>	35	1	5	29
<i>Tasks - Write reports</i>	30	19	10	1
<i>Tasks - Participate in group discussions</i>	25	24	1	0
<i>Tasks - Write emails</i>	25	2	8	15
<i>Tasks - Introduce or be introduced to</i>	20	3	9	8
<i>Tasks - Shadow experts/mentor</i>	20	0	20	0
<i>Tasks - Small talk</i>	19	5	10	4

Table 15 (cont'd)

<i>Name</i>	<i>Frequency (out of 263)</i>	<i>During coursework (out of 217)</i>	<i>During internship (out o 119)</i>	<i>At work (out of 142)</i>
<i>Tasks - Listen to lectures</i>	18	17	0	1
<i>Tasks - Receive training</i>	12	0	8	4
<i>Tasks - Describe problems, issues</i>	11	1	2	8
<i>Tasks - Give presentations</i>	10	10	0	1
<i>Tasks - Read reports</i>	10	4	2	4
<i>Tasks - Work abroad</i>	10	0	0	10
<i>Tasks - Ask questions</i>	9	1	6	2
<i>Tasks - Use standards</i>	9	0	8	1
<i>Tasks - Collect and analyze data</i>	7	0	7	0
<i>Tasks - Participate in business trips</i>	7	0	4	3
<i>Tasks - Describe technical things</i>	6	0	4	2
<i>Tasks - Go about daily life</i>	6	4	0	2
<i>Tasks - Read standards, regulations</i>	6	1	2	3
<i>Tasks - Define technical vocabulary</i>	5	2	1	2
<i>Tasks - Go to office hours</i>	5	5	0	0
<i>Tasks - Take notes</i>	5	1	3	1
<i>Tasks - Text coworkers/boss in WeChat</i>	4	1	2	1
<i>Tasks - Watch videos</i>	4	5	0	0
<i>Tasks - Read questions and read to answer questions</i>	3	3	0	0
<i>Tasks - Research</i>	3	3	0	0
<i>Tasks - Take part in meetings</i>	3	0	3	0
<i>Tasks - Take surveys</i>	3	3	0	0
<i>Tasks - Use Blackboard</i>	3	3	0	0
<i>Tasks - Read job descriptions</i>	2	0	2	0
<i>Tasks - Read processes, sequences</i>	2	0	2	0
<i>Tasks - Role play</i>	2	2	0	0

Clearly the most common tasks, the first thirteen, are those with codes that are the most abstract or vague and therefore require further unpacking. In the sections below these most

common tasks will be further described in detail with the aim of answering questions such as: (1) what made the task difficult or easy, (2) how frequently the task was performed, (3) how the task was structured, and (4) who else participated in the task. Then, interview quotations and questionnaire responses are compared. For the tasks at work, these will be further triangulated with the observations made in China.

4.2.2 RQ2 Tasks during coursework

The most frequent comments on tasks during the six months of graduate coursework were participating in group discussions, writing reports, listening to lectures, and giving presentations.

The comments coded as *Tasks - Participate in group discussions* pointed to in class discussions with American and international classmates. Speaking speed, accents, being unable to respond quickly, being unable to form logical response quickly, and lack of background knowledge were identified as areas of difficulty. Group discussions were perceived to be easier when delegates were grouped with other Chinese delegates or when a delegate had strong background knowledge of the issue being discussed. Group discussions of questions were reported as being much more frequent than being singled out by a professor to answer a question. The general structure of group discussions was reported as follows: the professor (1) posed a problem or a situation, (2) placed the students into groups, (3) required groups to decide on the method that they would use to solve the problem, and (4) required groups to present their method and provide a rationale for their choice.

The responses in Questionnaire 1 confirmed that group discussions were both frequent and important. Of the 14 respondents, three delegates reported that they happened daily, nine responded that they participated in group discussions two to three times per week, and two said that they happened at least once a week. In terms of importance, 11 of 14 responded that being

able to participate in group discussions was very important and three of fourteen saying that it was important for their time during coursework.

The task, *write reports*, was most frequently talked about by professors. 15 of the 19 quotations on this task during coursework came from the professors. Working individually, working within relatively short-time frames, writing concisely and accurately, and avoiding plagiarism were all difficulties addressed by professors. Two professors mentioned that delegates performed better when writing in groups. The frequency of writing assignments varied by professor from as often as once a week for one business professor and one engineering professor, to twice a term for others. The length of the writing assignments varied, examples include: (1) a formal research paper with literature review, methods, results, and discussion, (2) weekly one to two-page essays or reports describing and interpreting data from MATLAB Simulink, and (3) informal reflections on case studies.

The responses from Questionnaire 1 confirmed the importance of this tasks for the delegates time in their graduate courses. For Questionnaire 1, writing reports was divided into three separate questions, formal research papers, short essays or reports like described above, and group reports. Unsurprisingly, research papers were the least frequent, with nine delegates responding that they wrote such papers either once a month or once per term, and two responding that they did not need to write a research paper. Despite low frequency, being able to write a research paper received a strong importance rating, with seven rating it as important and seven rating it as very important. Writing shorter reports, or essays, was described as being fairly frequent, four responded that it happened two to three times a week, five said once a week, and five said once a month. Delegates also rated the ability to write these as important as being able to write research papers. Eight rated this ability as being important and six rated it as being very

important. Interestingly, delegates found that being able to write reports in a group was very important. Ten of fourteen rated it as very important and four rated it as important.

Based on the comments from the delegates and professors, *listening to lectures* was very difficult for the delegates. Difficulties included responding to questions during a lecture (due to lack of time to organize their thoughts), lacking technical vocabulary, lacking background knowledge, and lacking confidence to ask questions. However, when delegates could volunteer answers, work in groups, or had background knowledge, this made lectures easier. Professors noticed that delegates struggled with lectures as well, with one professor commenting that, “We started with more lectures, and I think there is some appropriateness to that. And sort of getting some baseline of understanding. But that really didn't work well for them.” And another professor expressing a worry for how much delegates were retaining from lectures. Professors said that they increased their use of visual aids and increased group discussions and group projects to adjust to this difficulty. Frequency of lectures was not addressed in comments, but was in Questionnaire 1.

The results from Questionnaire 1 support the findings from the interview. Interestingly, this task's frequency had a large range. Four delegates reported that they listened to lectures daily, one reported two to three times per week, four reported one a week, and five reported once a month. This task received a very high rating in terms of importance, thirteen delegates rated it as being very important and one reported it as being important for their time in graduate courses.

Unlike the task listening to lectures, giving presentations received more mixed results in terms of difficulty. Two delegates and two professors made comments that giving presentations was not a large challenge when compared to other tasks. However, one delegate did identify using vocabulary accurately as a difficulty they faced. Three delegates said that presentations

were very common, with one or two presentations required per course per term. Types of presentations ranged from presenting research findings to giving a quick three minute “elevator pitch” type of presentation to give an update on the progress of a project. Presentations were done as group projects or individually.

Questionnaire 1 confirmed the interview results in terms of frequency. Presentations were fairly frequent, with six delegates reporting that they presented once per week, seven once month term, and one once per term. All fourteen delegates who responded to the survey rated being able to give an individual presentation as very important and all fourteen also rated being able to give group presentations as very important.

4.2.3 RQ2 Tasks during internship

The most frequent tasks for the delegates’ time during their internships include shadowing mentors, writing reports, introducing or being introduced, and engaging in small talk. Although slightly less frequent, the tasks using standards, collecting data, asking questions, writing emails, and going on business trips were also relatively common.

The task of shadowing mentors or experts was a part of all of Year 1 and Year 2 delegates’ experiences during the internship. At the beginning of the internship delegates spent several weeks shadowing and meeting with experts from various departments. Generally one department was shadowed for a week or two. The delegates would learn what each department did, was encouraged to ask questions, take notes, and one delegate was asked to write a report comparing practices in China and the US based on their observations. After learning about each department, delegates then shadowed one expert and would work together on projects as directed by that expert for the remainder of the internship. Shadowing was co-coded with several other tasks. Three quotations of six referring to asking questions were co-coded with shadowing. Three of eight quotations referring to the task of using standards were also co-coded with shadowing.

One delegate shared his experience shadowing experts during the first three weeks of the internship as follows:

Now the daily work in the internship usually, there are still different groups in the laboratory like for the testing group, and software group, and maybe the quality manager. So there are different roles everybody makes, right? So, for example, they give me two weeks to work with the division to learn how to build the batteries, the harness, and how to tear down the battery pack and maintain the equipment, and measure the isolation values and the torque values of the screw. So, maybe after these two weeks then I, I mean, work with the software guys to see how they write the test script and another two weeks with the quality manager to see how he manages the quality system of the laboratory. So, that's what I am doing now.

Writing reports were also common during the internship. Two types of reports were identified during the internship. The first type included collecting and analyzing data, describing a problem or an issue, and offering a suggestion. These reports were often submitted via email to the delegate's mentor. The second type was discussed by the delegates from Year 1 as a monthly report written in Chinese and English for their company in China. The report was written on PowerPoint slides described what was learned over the past month.

Small talk was discussed almost entirely by one delegate in Year 2. However, it should be noted that three of the other delegates admired this delegate for his ability to “talk with anybody” and expressed a wish to be able to do the same. Of the nineteen quotations on small talk, ten of them were from this one delegate, with four quotations from his first interview and six from his second. This delegate commented that small talk was particularly important for building relationships with coworkers and his mentor. Based on his experience it was important

to start out being very respectful and polite. But, as time went on, it was just as important to be able to tell jokes, talk about travel and food, and ask questions.

Introducing and being introduced was particularly common in the first few weeks of the internship and each time that the delegates worked with a new department. Delegates would not only introduce themselves and their own background, but they also introduced their company to the various departments. Delegates would also be introduced to the department's engineers, their responsibilities, and projects. One delegate found learning the names of the various departments' engineers as being particularly challenging to the point where he would take photos of names on walls and practice at home.

Several delegates commented that their English improved the most during the internship because they were seldom with their fellow delegates and had to speak with their mentor for several hours each day. However, many still found listening and quickly responding to their coworkers to be difficult due to issues with register and with technical vocabulary as was discussed in Chapter 4, Part 1.2.

4.2.4 RQ2 Tasks at work

The most frequent tasks for the delegates at work in English were discussing technical issues, writing emails, and working abroad.

Discussing technical issues or problems and describing them in English was identified by Spence and Liu (2013) as being a major concern for process integration engineers in Taiwan. Likewise, Kaewpet (2009) also found that Thai civil engineers needed to be able to discuss “work completed, work in progress, problems occurring, and problem-solving methods.” For the automotive engineers in this study, discussing technical issues or problems was by far the most commented on task at work. This also matches what I observed while in China with two of the Year 1 delegates at their work.

I observed a delegate from Year 1 discuss technical details with foreign experts in his department from the US, England, Japan, and Mexico. The company was clearly concerned with accurate communication between the non-Chinese automotive experts and the Chinese engineers. And, therefore, each of the foreign experts was provided a translator who was typically a student from a local university. For day-to-day issues and common technical problems, English was used. However, for more unique or difficult technical matters, the translators were brought in. The second delegate whom I observed needed English less frequently. But, he needed English to discuss details of advanced equipment from the US or Germany such as the equipment's dimensions, size, and costs before making an order. While observing, the computer software that was used to organize and report data collected by the imported equipment was also in English. But, as the delegate explained, knowing English was not necessary to run and understand such reports.

For other delegates, discussing technical issues and writing emails were closely linked. Emails seemed to be the preferred mode of communication because as one delegate said, "it is quite easy to use email to communicate with other people because we have time to prepare and we also have some tools to check our vocabulary." Therefore, emails were used first to contact suppliers or equipment manufacturers in the US, Germany, and India or coworkers in foreign branches of the company such as Indonesia and South Korea. In the email, the delegates would do a number of things, such as ask for clarification of a standard in their field, request information, and describe a problem. But, due to miscommunication or misunderstandings, this would often result in phone calls or face-to-face discussions to resolve the misunderstandings and eventually to resolve the issue. Year 2 Delegate 1 gave an example of such a situation:

So, for example, once our equipment, I mean, there was a problem with the value measurement of the voltage. So, first of all, we tried to fix it. And we sent some emails to the German engineers, and they responded maybe after one or two weeks and they asked us to show an example of it, I mean, to get them to better understand the phenomenon. They asked for some of the original code of our test script. But, my boss thinks that it is confidential in our company. So, after several months of this kind of email contact, the problem still remains unsolved, so after that finally they decided that, I mean, there happened to be one of their engineers who came to China to solve a problem with other equipment, the equipment bought by other companies. So, they decided to solve the problem of ours by this chance. So, there is an engineer who came to our lab and worked with us to see what the problem is. And, finally, yeah, they admitted there is something, a physical fault of one component.

Emails had other uses too. For example requesting technical papers on newly purchased equipment, coordinating with foreign project managers, confirming component specifications, or scheduling visits. According to responses in Questionnaire 2, there was a wide range of frequencies for writing emails in English. One reported writing emails daily, two did so two to three times a week, two once a week, one once a month, three once every three months, and one once a year. In terms of importance on Questionnaire 2, one delegate responded that it was unimportant, seven rated it as important, and two rated it as very important.

Working abroad came up first in the interview with one of the delegates from Year 1, because he had just begun a three year position in India as a Supplier Quality manager. For him, “everything is English.” For English related to work, he expressed difficulty with pronunciation to make himself clear as he addressed quality issues with Indian supplier companies. Like

Serafini, Lake, and Long (2015, p.12) referenced from Mauranen, Hynninen, and Ranta (2010), this delegate believed that having a standard American pronunciation would help him to be better able to communicate in his position. Year 2 delegates believed that English would be needed in their future positions. Their company was expanding and building operational plants in Indonesia and India, and there English speaking engineers would be needed to train local engineers and work with suppliers. The interview with the executive confirmed this, and he believed that those engineers who had completed the professional development program were the prime candidates for such positions. According to the ten responses from delegates in Questionnaire 2 regarding work abroad, one delegate lives and works abroad, two work abroad on brief trips (a week long) once per month, five work abroad on short trips once per year, and two do not work abroad. Countries visited while working abroad ranged from Indonesia, Austria, Germany, US, India, and Thailand. As a result, six of ten rated the ability to use English while working abroad as very important, three as important, and one as unimportant.

4.3 Suggestions from delegates and professors

Suggestions for how to improve the ESP program were asked at the end of interviews with delegates and professors and at the end of both questionnaires. These suggestions help to understand which tasks and skills the delegates believe should be addressed in the ESP coursework and therefore better understand the results discussed above. The 21 codes for *suggestions* were divided into three subcategories: (1) fourteen suggestions for the ESP program, (2) four suggestions for future delegates, and (3) three suggestions for professors. These suggestions are provided below along with their frequency. As can be seen, speaking and listening were emphasized. Increasing time spent interacting with non-delegate students, building up confidence (in speaking abilities), daily communication and culture were also common.

Professors strongly encouraged that delegates receive additional English training prior to their arrival.

Table 16 Suggestions and their frequency

<i>Name</i>	<i>Frequency (out of 109)</i>
Suggestion for ESP - Address plagiarism	1
Suggestion for ESP - Build up delegates' confidence	5
Suggestion for ESP - Focus on American culture, history	4
Suggestion for ESP - Focus on daily communication skills	4
Suggestion for ESP - Focus on listening	6
Suggestion for ESP - Focus on speaking	5
Suggestion for ESP - Focus on technical/manufacturing English	2
Suggestion for ESP - Focus on writing emails	1
Suggestion for ESP - Give professors more info about the delegates before they arrive	8
Suggestion for ESP - Increase interaction with others	6
Suggestion for ESP - Present this study to the faculty	1
Suggestion for ESP - Provide English training prior to program	5
Suggestion for ESP - Read literature	1
Suggestion for ESP - Reduce time on grammar	1
Suggestion for future delegates - Explain your answers in class	2
Suggestion for future delegates - Prepare what you want to say beforehand	10
Suggestion for future delegates - Tell jokes (after you get to know someone)	1
Suggestion for future delegates - Use the internet	1
Suggestion for professors - Make adjustments for delegates	14
Suggestion for professors - Slow down speech	2
Suggestion for professors - Use simpler words	1

As was found in suggestions from the interview, delegates strongly suggested that ESP program focus on listening and speaking. In their responses to Questionnaire 1, three delegates suggested dividing the course into two terms. As one delegate wrote, “The course is relatively intensive. It can be divided into two semesters appropriately, so that students have more time to

practice phonetics, reduce the amount of homework after class, and give more time in class for everyone to speak and listen more.” Similar to comment above about dividing the course, one professor expressed concern that delegates were taking 10 hours of English per week, while taking two graduate credits in their first term, and suggested dividing the class across terms if possible. From Questionnaire 2, seven of the ten suggestions recommended that more time be dedicated to speaking and listening tasks.

CHAPTER V: DISCUSSION

5.1 Overview

This chapter interprets the results of interviews, questionnaires, and observations to provide recommended target tasks and structure for the ESP program based. The suggestions below are provide are based on the perceived difficulty, importance, and frequency of skills and tasks that the delegates perform during coursework, during the internship, and at work (See the overview of recommended tasks presented in below in Table 17). The engineers of this program were found to have EOP needs similar to the engineers whom Kaewpet (2009) and whom Spence and Liu (2013) researched in their studies. Additionally, the delegates were found to have EAP needs similar to those needs that were identified for graduate students in Huang (2010) and international students in Caplan and Stevens (2017). This chapter also addresses the need to develop course material based on these findings. It discusses the limitations of the study and concludes the study.

The recommended tasks in Table 17 were chosen using the following criteria: (1) the task was mentioned frequently across interviews, (2) it was confirmed to be important and frequent in questionnaires, (3) it required the one or more of the main skills identified in the interviews as being both difficult and important for the delegates (namely listening, speaking, writing, and technical vocabulary).

Table 17 Overview of recommended tasks

<i>Task</i>	<i>Category</i>	<i>Skill(s)</i>	<i>Description</i>
<i>Participate in group discussions</i>	EAP (During course work)	Primarily Speaking, Technical Vocabulary, Listening (understanding questions)	Professor (1) posed a problem or a situation, (2) placed the students into groups, (3) required groups to decide on the method that they would use to solve the problem, and (4) required groups to present their method and provide a rationale for their choice.
<i>Listen to lectures</i>	EAP (During course work)	Primarily Listening, Technical Vocabulary, Speaking (answering questions)	Professor (1) presents lecture, (2) asks questions or initiates group discussion. Students (1) pre-read, (2) take notes, (3) ask follow-up questions or discuss.
<i>Give presentations</i>	EAP (During course work)	Primarily Speaking, Technical Vocabulary, Reading	Includes (1) introducing or being introduced, (2) collecting and analyzing data, (3) reading reports. Examples include (1) self and company introductions, (2) description of a technical issue, (3) description of data collected, (4) summary of work completed.
<i>Write reports</i>	EAP and EOP (During course work, during internship)	Primarily Writing, Technical Vocabulary, Speaking (group writing) Reading (for background information)	Includes (1) collecting and analyzing data, (2) reading reports, (3) describing technical issues. Example reports include (1) descriptions of data, (2) literature review, (3) reflections.
<i>Job shadow mentor</i>	EOP (During internship)	Listening, Speaking, Writing	Includes (1) small talk, (2) discussing technical issues, problems, (3) writing emails. Examples include (1) auditing a car, (2) evaluating an assembly line, (3) comparing company standards with Chinese company.
<i>Discuss technical issues, problems</i>	EOP (During internship, at work)	Primarily Listening, Speaking, Technical Vocabulary, Writing (emails)	Includes (1) describing problems and issues, (2) using standards, (3) writing emails. Examples include (1) purchasing equipment, (2) negotiating with suppliers, (3) arranging visits, (4) solving equipment malfunctions, (5) solving design issues.
<i>Write emails</i>	EOP (During internship, at work)	Primarily Writing, Reading	Includes (1) describing problems. Example emails include (1) scheduling meetings, (2) summarizing work, (3) describing a technical issue or problem.

5.2 Current program

In order to better understand the findings of difficult and important skills, frequent and important tasks, as well as suggestions from the key stakeholders regarding the structure of the

ESP program, a brief history of the ESP program structures is described here. For Year 1 and Year 2, the ten-hour per week ESP program was divided into five two-hour courses: Grammar, Listening and Speaking, Reading, Writing, and American Culture. Based on initial findings in interviews conducted in Year 2, the structure of the ESP program in Year 3 changed to provide a greater focus on speaking and listening. Thus, the structure changed slightly, removing the two-hour per week Grammar course and replacing it with a Presentations and Pronunciation course. This course focused on the presentational mode of communication whereas the Listening and Speaking course focused on the interpretive and interpersonal modes of oral communication. Based on Questionnaire 1, which solicited feedback from Year 3 delegates, tasks related to listening and speaking during coursework continued to be seen as very important and frequent, and many of the suggestions recommended focusing even more time on them. In regards to time, suggestions were quite clear that the current instructional time is too intensive and suggestions were made to divide the course into two terms.

5.3 Recommended course design and tasks

The recommendations from this qualitative study could easily be influenced by my own biases and pre-existing beliefs about what the delegates should learn. In order to strengthen the results of this study and provide dependable and reliable recommendations, close attention was paid to triangulation as outlined by Sefarni, Lake, and Long (2015) and Brown (2016). Sampling procedures were described, but were neither random nor did they consist of all the stakeholders. Data collection procedures were described and pilot testing was used for both the interviews and questionnaires. Finally, source \times method triangulation was clearly described in Chapter 4.

Based on the triangulation of interviews, questionnaires and observation as well as the triangulation of information provided by the key stakeholders, I recommend the following changes to the course design. First, the structure of the ESP classes should be organized

according to task and not skill. Tasks were defined as how the delegates will use the L2 in real life. Tasks can be completed in a variety of ways and require the use of multiple skills. The tasks which I recommend here for the ESP program require the use and control of multiple skills in order to be accomplished. As mentioned above, the tasks that are recommended for this context were chosen because they require listening and speaking and have a secondary focus on writing and vocabulary development. These skills were identified as being both difficult and important for the delegates.

Second, it seems advisable to divide the 100 hours of ESP instruction into two terms with one term online prior to the delegates arrival on campus, and the first term on campus.

Table 18 Overview of recommended course design and tasks

<i>Term</i>	<i>Mode of delivery</i>	<i>Hours of instruction per week, number of weeks</i>	<i>Tasks</i>
<i>Term prior to arrival</i>	Online	50 hours, 10 weeks	(1) Listening to lectures (2) Writing technical reports, emails (3) Giving presentations (self and company introduction)
<i>First term of PD program</i>	Face-to-face	50 hours, 10 weeks	(1) Discussing technical issues, problems (2) Group discussion (3) Giving presentations (4) Job shadowing (small talk, email)

Therefore, time permitting and pending approval of the partner company, five-hours of ESP instruction should be provided online per week in the term prior to the delegates arrival and five-hours of ESP instruction should be provided in their first term. Term lengths are ten weeks. The online pre-arrival course should focus on tasks that are able to be completed asynchronously (due to challenges with time) and prepare them for their time in graduate coursework. Thus, participating in group discussion, though most commented on, might not be able to be addressed in the online portion. However, listening to lectures and writing technical reports are both recommended to be addressed at this time due to their high level of difficulty and importance and

also their comparative ease to be worked on asynchronously. In addition, the task of introducing themselves and their company should also be addressed in this time. This task was frequently identified and, as seen in the suggestions section of Chapter 4, professors would like to know more about the delegates prior to their arrival. Thus, the completion of a written or video-recorded self-introduction could both prepare delegates for this task when they arrive and provide professors with helpful information prior to classes, and therefore two needs could be met at once.

During the first term of the professional development program, the five-hours a week of ESP instruction should focus on developing proficiency in completing the following tasks: (1) discussing technical problems at work, (2) participating in group discussions during coursework, (3) giving presentations, and (4) engaging in job shadowing during internships. These four tasks are chosen because they are difficult, frequent, important and oral interpersonal communication. As several delegates mentioned background knowledge and vocabulary play a large role in being able to participate in such interactions. And, as noted in Table 17, reading standards, reading reports, collecting and analyzing data, and asking technical questions can all be included in these four tasks and could be used as a step in helping prepare the delegates' background knowledge and expand vocabulary for the five main tasks listed above.

5.4 Next steps

While interviewing and surveying delegates and professors, I asked for interviewees to describe or provide examples of tasks that were completed during the various stages of and after the professional development program as well as preferred topics to discuss. Delegates and professors have both submitted example written reports, presentations, and readings as identified below. Importantly, professors and delegates have agreed to review any instructional material made from such authentic materials in order to ensure accuracy.

Table 19 Overview of authentic materials and task

<i>Task</i>	<i>Materials</i>
<i>(1) Listening to lectures</i>	(1) ACES (Automated, Connected, Electric, Shared) ,Vehicle 2.0 podcast
<i>(2) Writing technical reports, emails</i>	(2) Example student work from professors and delegates
<i>(3) Giving presentations (self and company introduction)</i>	(3) Example student introductions; SAE Online Forum Engineer introductions
-----	-----
<i>(1) Discussing technical issues, problems</i>	(1) Examples from SAE Online Forum, discussion board
<i>(2) Group discussion</i>	(2) Examples from professors and delegates
<i>(3) Giving presentations</i>	(3) Examples from professors and delegates
<i>(4) Job shadowing (small talk, email)</i>	(4) Examples from delegates

In order to best prepare future delegates to complete these tasks, the following research needs to be done: (1) samples need to continue to be collected, (2) prototypical examples need to be identified, and (3) prototypical examples need to undergo genre analysis in order to develop course materials, and finally (4) tasks should be sequenced. This will require yet further research and I plan to continue with these next steps in the coming year(s).

5.5 Limitations

This study is clearly limited by its small sample sizes and that it used samples of convenience, since participation was voluntary. To make up for this weakness, the study could be strengthened by interviewing whole populations as suggested by Serafini, Lake, and Long (2015, p.24). For this study, that would have meant interviewing all five delegates from Year 1 and all eight professors. Furthermore, triangulation could have been strengthened for the delegates time in their internships in multiple ways: (1) by interviewing all six delegates instead of just two at the end of their internship; (2) by interviewing the delegate's mentors; (3) by using the interviews to create and distribute a questionnaire; (4) by on-site observation. Finally, the findings of delegates time in their coursework could have been strengthened by increasing

interviews to the various offices on campus that work with the delegates and creating and distributing a questionnaire to all professors who have taught delegates.

5.6 Conclusion

As stated in the introduction, needs analyses are only the first step in curriculum development (Brown, 2009; Bocanegra-Valle, 2016). Furthermore, needs analyses should be treated as a continuous process, and therefore the results from this study need to be further explored, evaluated, and revised as new groups of delegates join the program. The recommendations for the structure of the ESP program and the corresponding target tasks provided above should therefore be subject to review, critique, and adjustment as needed. Additionally, since needs change, key stakeholders should continue to be interviewed, surveyed, and approached to request authentic materials.

APPENDIX

Questionnaire 1

Q1 Below, please answer questions about your English use in classroom activities/assignment while studying in graduate classes (专业课).

Q2 In my graduate classes, I wrote short answers on tests...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q3 In my graduate classes, I wrote essays outside of class...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q4 In my graduate classes, I wrote research papers...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q5 In my graduate classes, I took essay exams...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q6 In my graduate classes, I wrote papers or reports in a group ...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q7 During graduate courses, I wrote English for other reasons, like:

Q8 In my graduate classes, I read textbooks...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q9 I most frequently read the following textbook(s):

Q10 In my graduate classes, I read and wrote from sources (websites, magazines, books, other online material)...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q11 I most frequently read English from the following websites, magazines, books or other online material:

Q12 In my graduate classes, I read journal articles...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q13 During graduate courses, I read English for other reasons, like:

Q14 In my graduate classes, I asked questions...

- ☐ Daily (1)
- ☐ 2-3 times per week (2)
- ☐ 1 time per week (3)
- ☐ 1 time per month (4)
- ☐ 1 time per term (5)
- ☐ Never (6)

Q15 In my graduate classes, I participated in class discussions...

- ☐ Daily (1)
- ☐ 2-3 times per week (2)
- ☐ 1 time per week (3)
- ☐ 1 time per month (4)
- ☐ 1 time per term (5)
- ☐ Never (6)

Q15 In my graduate classes, I participated in group discussions/activities...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q16 In my graduate classes, I gave individual presentations...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q17 In my graduate classes, I gave group presentations...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q18 In my graduate classes, I led discussions...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q19

During graduate courses, I spoke English for other reasons, like:

Q20 In my graduate classes, I listened to lectures...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q21 In my graduate classes, I took notes...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q22 In my graduate classes, I listened to videos online...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q23 In my graduate classes, I listened to podcasts ...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per term (5)
 - ☐ Never (6)
-

Q24 I frequently watched videos or listened to podcasts such as:

Q25 During graduate courses, I listened English for other reasons, like

- ☐ Click to write Choice 1 (1)
- ☐ Click to write Choice 2 (2)
- ☐ Click to write Choice 3 (3)

End of Block: Block 2

Start of Block: Block 3

Q26 Below, please answer questions about how important you found each of the activities while studying in graduate classes (专业课) .

Q27 During graduate courses, being able to write short answers on tests was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q28 During graduate courses, being able to essays outside of class was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q29 During graduate courses, being able to write a research paper was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q30 During graduate courses, being able to write essays for exams was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q31 During graduate courses, being able to write papers or reports in a group was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q32 During graduate courses, it was important for me to be able to write English for other reasons, like:

Q33 During graduate courses, being able to read English websites, magazines, books, other online material was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q34 During graduate courses, being able to read English textbooks was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q35 During graduate courses, being able to read journal articles was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q36 During graduate courses, being able to read test or exam questions was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q37 During graduate courses, it was important for me to be able to read English for other reasons, like:

Q38 During graduate courses, being able to ask technical questions in class was...

- ☐ not important at all (1)
- ☐ unimportant (2)
- ☐ important (3)
- ☐ very important (4)
- ☐ no comment (5)

Q39 During graduate courses, being able to participate in classroom discussions was...

- ☐ not important at all (1)
- ☐ unimportant (2)
- ☐ important (3)
- ☐ very important (4)
- ☐ no comment (5)

Q40 During graduate courses, being able to participate in group discussions was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q41 During graduate courses, being able to give an individual presentation was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q42 During graduate courses, being able to give a group presentation was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q43 During graduate courses, being able to lead a technical discussion was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q44 During graduate courses, it was important for me to be able to speak English for other reasons, such as:

Q45 During graduate courses, being able understand a lecture was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q46 During graduate courses, being able to take notes was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q47 During graduate courses, being able to understand videos was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q48 During graduate courses, being able to understand podcasts was...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q49 During graduate courses, it was important to be able to understand/listen to English for other reasons, like:

Questionnaire 2

Q1 Below, please answer questions about how you use English currently at work. You may use English or Chinese to respond.

Q2 At work, I read technical instructions in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q3 At work, I read automotive standards in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q4 If you read automotive standards in English, which country's standards do you read? (Ex. United States, European Union, etc.?)

Q5 At work, I read technical manuals for new equipment in English...

- ☐ Daily (1)
- ☐ 2-3 times per week (2)
- ☐ 1 time per week (3)
- ☐ 1 time per month (4)
- ☐ 1 time per quarter (three months) (5)
- ☐ 1 time per year (6)
- ☐ Never (7)

Q6 At work, I read documents related to my work projects in English...

- ☐ Daily (1)
- ☐ 2-3 times per week (2)
- ☐ 1 time per week (3)
- ☐ 1 time per month (4)
- ☐ 1 time per quarter (three months) (5)
- ☐ 1 time per year (6)
- ☐ Never (7)

Q7 If you read documents related to your projects in English, please briefly describe the type of project below and what type of documents you read:

Q8 At work, I read documents related to office matters in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q9 At work, I read emails in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q10 If you read emails in English, who usually sends the email (a supplier, coworker, customer, etc.)?

Q11 If you read emails in English, please briefly describe a typical email below.

Q12 Do you read English at work for any other reasons? Please describe the reasons below.

Q13 At work, I read text messages in English (via WeChat or other text messaging apps)...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q14 If you read texts in English, who usually sends the text (a supplier, coworker, customer, etc.)?

Q15 If you read texts in English, please briefly describe a typical text message below.

Q16 At work, do you read English for any other reasons? Please explain below.

Q17 At work, I write emails in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q18 If you write emails in English at work, to whom do you write? (Ex. coworkers, suppliers, customers, etc.)

Q19 If you write emails in English at work, what do you typically write about? Briefly describe below.

Q20 At work, I write text messages (via WeChat or other messaging apps) in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q21 If you write text messages in English at work, to whom do you write? (Ex. coworkers, suppliers, customers, etc.)

Q22 If you write text messages in English at work, what do you typically write about? Briefly describe below.

Q23 At work, I write notes from meetings in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q24 At work, I write reports on projects in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q25 At work, I write proposals for new projects in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q26 At work, I write memos in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ Never (7)
-

Q27 At work, I create presentation slides in English...

- ☐ Daily (1)
 - ☐ 2-3 times per week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (7)
 - ☐ Never (8)
-

Q28 At work, do you write English for any other reasons? Please explain below.

Q29 At work, being able to read technical instructions in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q30 At work, being able to read technical instructions in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q40 At work, being able to read manuals in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q41 At work, being able to read documents related to projects in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q42 At work, being able to read documents related to office matters in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q43 At work, being able to read emails in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q44 At work, being able to read text messages in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q45 Is it important to be able to read English for other reasons at work? Please explain the reasons below.

Q46 At work, being able to write emails in English is...

- ☐ not important at all (1)
- ☐ unimportant (2)
- ☐ important (3)
- ☐ very important (4)
- ☐ no comment (5)

Q47 At work, being able to write text messages (in WeChat or other message apps) in English is...

- ☐ not important at all (1)
- ☐ unimportant (2)
- ☐ important (3)
- ☐ very important (4)
- ☐ no comment (5)

Q48 At work, being able to write notes during meetings in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q49 At work, being able to write reports on projects in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q50 At work, being able to write proposals for new projects in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q51 At work, being able to write memos in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q42 At work, being able to create presentation slides in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q53 Is it important to be able to write in English for other reasons at work? Please explain below.

Q54 If possible (and it doesn't break any company rules), please email examples of things you have read or written at work that might be useful to teach in the ESL course. (Ex. any reports, proposals, emails, presentation slides, or text messages that you think are important to be able to read or write). Email them to Kevin Fedewa.

End of Block: Reading and Writing English at Work

Start of Block: Listening and Speaking at Work

Q55 Below, please answer questions about how you use English currently at work. You may use English or Chinese to respond.

Q56 At work, I give presentations in English...

- ☐ daily (1)
 - ☐ 2-3 times a week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ never (7)
-

Q57 At work, I speak at meetings in English...

- ☐ daily (1)
 - ☐ 2-3 times a week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ never (7)
-

Q58 At work, I speak at technical seminars in English...

- ☐ daily (1)
 - ☐ 2-3 times a week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ never (7)
-

Q59 I speak in English when I visit foreign countries for work...

- ☐ daily (1)
 - ☐ 2-3 times a week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ never (7)
-

Q60 If you visit foreign countries and speak English, where do you go?

Q61 If you visit foreign countries and speak English, how long are you there?

Q62 If you visit foreign countries and speak English, what do you use English to do?

Q63 At work, I talk about daily work tasks or duties in English...

- ☐ daily (1)
- ☐ 2-3 times a week (2)
- ☐ 1 time per week (3)
- ☐ 1 time per month (4)
- ☐ 1 time per quarter (three months) (5)
- ☐ 1 time per year (6)
- ☐ never (7)

Q64 At work, I make phone calls in English...

- ☐ daily (1)
 - ☐ 2-3 times a week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ never (7)
-

Q65 If you make phone calls in English at work, whom do you call?

Q66 If you make phone calls in English at work, what is a typical phone call about? Please briefly describe below.

Q67 At work, I have informal conversations in English (about daily life)...

- ☐ daily (1)
 - ☐ 2-3 times a week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ never (7)
-

Q68 Do you need to speak English for other reasons at work? Please explain the reasons below.

Q69 At work, I have informal conversations in English (about daily life)...

- ☐ daily (1)
 - ☐ 2-3 times a week (2)
 - ☐ 1 time per week (3)
 - ☐ 1 time per month (4)
 - ☐ 1 time per quarter (three months) (5)
 - ☐ 1 time per year (6)
 - ☐ never (7)
-

Q70 At work, being able to give presentations in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q71 At work, being able to speak English in meetings is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q72 At work, being able to speak in English at technical seminars is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q73 Being able to speak English while visiting foreign countries for work is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q74 Being able to talk about daily work tasks and duties in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q75 At work, being able to make phone calls in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q76 At work, being able to have informal conversations (about daily life) in English is...

- ☐ not important at all (1)
 - ☐ unimportant (2)
 - ☐ important (3)
 - ☐ very important (4)
 - ☐ no comment (5)
-

Q77 Are there any other important reasons for you to speak English at work?

End of Block: Listening and Speaking at Work

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