

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**Needs Analysis for an English for Specific Purposes (ESP) Course for
Thai Undergraduates in a Food Science and Technology Programme**

**A thesis presented in partial fulfillment of the
requirements for the degree of**

Doctor of Philosophy

in

Education

at Massey University, Palmerston North, New Zealand

PAWEENA CHATSUNGNOEN

2015

ABSTRACT

This thesis aims to explore the English language needs of students and relevant stakeholders for an English for specific purposes (ESP) programme for food science and technology students at Agriculture University in Thailand. The research was conducted using Dudley-Evans and St. John's (1998) needs analysis as a research framework, and multiple sources of data collection were used. The study investigated the English language skills needed in academic and occupational contexts in the area of food science and technology. The participants in this research included 45 third-year students, six former students, three subject teachers in the food science and technology programme, two ESP teachers, and six employers.

The study showed that the students had low levels of English proficiency. Their low levels of English then affected their study in the academic context and their work during the internship programme in the occupational context. Reading and translation were the most needed skills in their academic context, whereas speaking and listening were considered the most needed skills in the occupational context. The study also revealed a mismatch of the perceptions of the students' needs between the ESP teachers and other stakeholders in both academic and occupational contexts. The changes across two ESP courses in the students' needs depended on three main factors: learners, professional information, and environmental situations.

This thesis contributes to knowledge of the ESP branches required for food science and technology at Agriculture University and using a needs analysis as an on-going process within the overall process of course development. It proposes a redesigned needs analysis model which could be used for future ESP needs analyses at Agriculture University in different disciplines and possibly also be adapted for use in wider Thai and international contexts.

Recommendations for supporting the ESP programme at Agriculture University and implications for future research are also provided.

ACKNOWLEDGEMENTS

There are many people and organisations that have contributed to making this thesis a success. Words cannot adequately express my sincere and heartfelt gratitude, though I hope you can all accept the important role each of you has had in this journey.

First of all, I would like to express my deep gratitude and respect to Dr. Alyson McGee, not only my main supervisor, but also someone I have come to see as a mentor. She has given so many hours of her time to this study. I cannot enumerate all of the ways she has contributed to it. It is because of her enthusiasm and encouragement that I even began to believe in my interest as a possible topic for a dissertation. Besides her academic and intellectual support, she has also written countless letters of recommendation and support to help me secure the financial means to complete my study. I could not have finished it without her time, dedication and, most of all, her gentle care.

I also want to express my gratitude to Distinguished Professor William Tunmer, my co-supervisor, for his wisdom, knowledge, guidance, and encouragement, and for the unstinting time and effort he expended on my behalf over the duration of this study.

I wish to acknowledge Professor Ian Warrington for recommending and supporting me to study at Massey University. My sincere thanks go to Dr. Jenny Poskitt, who taught me about qualitative research and the Doidge family for their support of my family so that we could survive in New Zealand. I am eternally grateful to all of them.

Special thanks go to Mrs. Lois Wilkinson at the Center for Teaching and Learning, who generously gave her time to help me improve my academic English. I really appreciate your willingness to read through my English patiently, help me develop my ideas, and provide very helpful feedback on my work. My appreciation also goes to Julia Rayner at the Graduate

Research School, who helped me develop my writing skills in the writing group and helped me to develop my academic writing. I would like to thank Bruce Leeds, professor at Thammasat University, Thailand, for being a patient and professional proofreader.

I am indebted to the Higher Education Commission of Thailand for granting me a full-time doctoral scholarship to study at Massey University. I also thank Maejo University for granting me a study leave. Further, I thank my colleagues, who took over my job responsibilities during my absence from work. Also, I thank the Institute of Education at Massey University for granting me a scholarship for the data collection phase, and Massey University Library for offering me a part-time job, which gave me opportunities to work closely with many good books.

My sincere appreciation also goes to all of the students, teachers, and employers who kindly participated in this study and shared their valuable perspectives. This thesis would not have been possible without them. My special thanks are due to my international friends at the Institute of Education, my Thai friends at Massey University, and my friends on Facebook and Line for their spiritual support and valuable academic perspectives on my journey. Without them, my life would have been lonely and boring.

My eternal gratitude goes to my family and extended family for their support, understanding, and endless love through the duration of my study. Special thanks go to my husband Tawan, who has been with me through every good, bad, and in-between period in my life for the past 13 years. He epitomizes the best meaning of the word “husband,” and I am grateful for his absolute commitment to me and his unending love and support. My daughter Manee and my son Kawin, who are my sun and my side, have happily shared as well as quietly endured all my ups and downs. I love them all. I could not have sustained and completed this long and complex journey without their support and unconditional love.

TABLE OF CONTENTS

ABSTRACT	III
ACKNOWLEDGEMENTS	V
TABLE OF CONTENTS	VII
LIST OF FIGURES.....	XVI
LIST OF TABLES.....	XVII
LIST OF APPENDICES.....	XX
CHAPTER 1 INTRODUCTION.....	1
1.1 Rationale and Significance of the Study	1
1.2 Background and Context to the Research	3
1.2.1 The role and significance of English in Thailand.....	3
1.2.2 English language teaching at universities in Thailand	5
1.2.3 Background and programmes at Agriculture University.....	6
1.2.4 The importance of the food science and technology programme.....	7
1.2.5 English language teaching in food science and technology programme.....	7
1.3 An Analysis and Overview of the Current Problems	9
1.4 Outline of the Research and Research Questions.....	10
1.5 Overview of the Thesis.....	11
CHAPTER 2 LITERATURE REVIEW	13
2.1 Introduction	13
2.2 An Overview of English for Specific Purposes.....	13
2.2.1 Definitions and classifications of ESP	13

2.2.2	Background and development of ESP	19
2.2.3	Teaching approaches to English for specific purposes	22
2.2.3.1	Traditional English language approaches.....	24
2.3	Needs Analysis in ESP Contexts	43
2.3.1	Definition of needs analysis	43
2.3.2	Needs analysis in ESP course development	45
2.3.2.1	On-going needs analysis.....	46
2.3.2.2	Course evaluation.....	48
2.3.3	Definition of needs analysis in this study.....	50
2.3.4	Needs analysis approaches and models.....	51
2.3.5	Needs analysis model for this study	63
2.3.6	Needs analysis and English for specific purposes at university level in Thai contexts.....	64
2.4	Chapter Summary.....	65
CHAPTER 3 RESEARCH METHODOLOGY		67
3.1	Introduction	67
3.2	Research Questions	67
3.3	Research Paradigm.....	68
3.4	Research Approaches	69
3.4.1	A mixed methods approach.....	69
3.4.2	A case study approach.....	71
3.5	Needs Analysis Model.....	73
3.6	Research Participants	75
3.6.1	Students	77
3.6.2	ESP teachers	78

3.6.3 Subject teachers	78
3.6.4 Former students	79
3.6.5 Employers	80
3.7 Data Collection	81
3.7.1 Research instruments	85
3.7.1.1 English proficiency tests	85
3.7.1.2 Questionnaires	90
3.7.1.3 Interviews	97
3.8 Data Analysis	101
3.8.1 The two English proficiency tests	101
3.8.2 Questionnaires	102
3.8.3 Interviews	103
3.8.4 Data assessment	103
3.8.4.1 Trustworthiness	103
3.8.4.2 Dependability	105
3.9 Ethical Considerations	105
3.9.1 Gaining access	106
3.9.2 Informed consent	107
3.9.3 Privacy, confidentiality, and anonymity	107
3.9.4 Researcher's roles	108
3.10 Chapter Summary	108
CHAPTER 4 FINDINGS FROM THE ENGLISH PROFICIENCY TESTS	111
4.1 Introduction	111
4.2 Findings from the Two English Proficiency Tests	112
4.2.1 Findings from the TOEIC	113

4.2.1.1	The students' total score in phase one and phase two	114
4.2.1.2	The findings on the listening part from phase one and phase two	114
4.2.1.3	The findings on the reading part in phase one and phase two.....	124
4.2.2	Findings from the Scientific English Grammatical Structures Test.....	132
4.2.2.1	The total score and the <i>t</i> -test for the Scientific English Grammatical Structures Test.....	132
4.2.2.2	The scores of the students for the three main scientific grammatical structures	133
4.2.2.3	The strengths and weaknesses of scientific grammar structures of the students.....	134
4.2.3	Summary of the findings for the Scientific English Grammatical Structures Test	137
4.3	Summary of the Findings from the Two English Proficiency Tests	137
CHAPTER 5 FINDINGS FROM QUESTIONNAIRES		141
5.1	Findings from the Questionnaire on Language Difficulties	142
5.1.1	Findings on the background information	142
5.1.1.1	General information about the students.....	142
5.1.1.2	Prior learning experiences with other English language courses	143
5.1.1.3	Frequency of using English language outside the English classroom.....	144
5.1.1.4	Attitude towards the English language and the ESP programme.....	144
5.1.1.5	Self-evaluation of the English language skills	145
5.1.2	Findings on difficulties regarding general English language skills	146
5.1.3	Findings on the students' difficulties with English tasks	148
5.1.3.1	Listening	148
5.1.3.2	Speaking	150

5.1.3.3 Reading.....	151
5.1.3.4 Writing.....	153
5.1.3.5 Vocabulary	154
5.1.3.6 Grammar.....	155
5.1.3.7 Language functions	156
5.1.4 Summary of the findings from the Questionnaires on Language Difficulties..	157
5.2 Findings from the English Language Needs Questionnaire	158
5.2.1 Findings regarding the needs for general English language skills	159
5.2.2 Findings regarding the needs for English language tasks	160
5.2.2.1 Listening	161
5.2.2.2 Speaking	162
5.2.2.3 Reading.....	163
5.2.2.4 Writing.....	165
5.2.2.5 Vocabulary	166
5.2.2.6 Grammar.....	167
5.2.2.7 Language functions	168
5.2.3 Summary of the findings from the English Language Needs Questionnaire ...	170
CHAPTER 6 FINDINGS FROM THE INTERVIEWS	173
6.1 Introduction	173
6.2 Personal Information on the 23 Stakeholders.....	174
6.2.1 The sampled students	174
6.2.1.1 Interests and attitudes towards the ESP programme	175
6.2.1.2 Experience in learning the English language	176
6.2.2 The former students.....	177
6.2.3 The two ESP teachers.....	178

6.2.4 The three subject teachers	179
6.2.5 The six employers	179
6.2.6 Conclusion of personal information of the 23 stakeholders.....	179
6.3 Language Information about the Activities and Tasks in the Academic and Occupational Contexts.....	181
6.3.1 Activities and tasks in the ESP programme	181
6.3.1.1 Vocabulary	181
6.3.1.2 Listening.....	182
6.3.1.3 Speaking	184
6.3.1.4 Reading.....	185
6.3.1.5 Writing.....	186
6.3.1.6 Grammar and language functions.....	188
6.3.2 Activities and tasks in the food science and technology programme.....	190
6.3.2.1 Vocabulary	190
6.3.2.2 Reading.....	192
6.3.2.3 Listening.....	194
6.3.2.4 Writing skills integrated with grammar and language functions	194
6.3.3 Activities and tasks in food industry	195
6.3.3.1 Vocabulary	196
6.3.3.2 Integrated language skills.....	198
6.3.3.3 Reading.....	199
6.3.3.4 Writing integrated with grammar and language functions	200
6.3.4 Conclusion of language information about the activities and tasks in the academic and occupational contexts	201
6.4 Language Information about the Students in the Academic and Occupational Contexts	204

6.4.1 In the academic contexts	205
6.4.1.1 Perceptions of the sampled students and former students	205
6.4.1.2 Perceptions of the two ESP teachers	212
6.4.1.3 Perceptions of the three subject teachers.....	213
6.4.1.4 Language learning information	215
6.4.2 In the occupational contexts	219
6.4.2.1 Listening and speaking	220
6.4.2.2 Reading.....	220
6.4.2.3 Writing.....	221
6.4.2.4 Vocabulary	221
6.4.3 Conclusion of language information about the students in the academic and occupational contexts	222
6.5 Needs for the ESP Programme	223
6.5.1 Speaking and listening.....	224
6.5.2 Reading.....	226
6.5.3 Writing.....	227
6.5.4 Vocabulary	229
6.5.5 Grammar and language functions.....	230
6.5.6 Reasons for the students' needs changing.....	231
6.5.6.1 Awareness of the importance of the use of English in real world contexts	231
6.5.6.2 Opportunities to use English language skills.....	233
6.5.6.3 Distractions from other courses.....	233
6.5.6.4 The internship programme	234
6.5.7 Conclusions regarding the needs for the ESP programme	235

6.6 Environmental Situations	237
6.6.1 Perceptions of the sampled students and the former students	237
6.6.2 Perceptions of the two ESP teachers	240
6.6.3 Perceptions of the three subject teachers.....	240
6.6.4 Conclusion regarding the environmental situations	241
CHAPTER 7 DISCUSSION	243
7.1 Introduction	243
7.1.1 Overview of the discussion chapter.....	245
7.2 What Are the Students' English Language Difficulties?	247
7.2.1 Overview of difficulties.....	248
7.2.2 Speaking and listening.....	249
7.2.3 Reading.....	252
7.2.4 Writing.....	254
7.2.5 Vocabulary	256
7.2.6 Grammar and language functions.....	257
7.3 What Are the Students' English Language Needs and How Did Their Needs Change?	261
7.3.1 The most needed English language skills in the academic context.....	262
7.3.2 The most needed English language skills in the occupational context	264
7.3.3 Needs for the environmental situations of the ESP programme	266
7.3.4 Discrepancies in the participants' perceptions of the students' needs	267
7.3.5 How the students changed their perceptions of their needs	269
7.3.6 The discrepancy between students' needs and their difficulties	274
7.4 Chapter Summary.....	276
CHAPTER 8 SUMMARY AND CONCLUSIONS	281

8.1 Introduction	281
8.2 Summary of the Study	281
8.3 Research Contributions	284
8.3.1 Knowledge of the ESP branches required for food science and technology at Agriculture University	286
8.3.2 Knowledge of needs analysis as an on-going process within course development	289
8.3.3 Knowledge of using and adapting a needs analysis model	290
8.3.4 Knowledge of the importance of multiple stakeholders and data sources for needs analysis	294
8.4 Recommendations from the Study	295
8.4.1 Recommendations for supporting the ESP programme at Agriculture University	295
8.4.1.1 Recommendations for teaching the ESP programme	296
8.4.1.2 Recommendations for supporting the ESP teachers.....	308
8.4.2 Recommendations and implications for future research	309
8.4.2.1 Future research at Agriculture University	310
8.4.2.2 Future research regarding other ESP contexts.....	310
8.5 Limitations of the Study	311
8.6 Chapter Summary	312
REFERENCES	315
APPENDICES.....	355

LIST OF FIGURES

Figure 2.1 The tree model of English for specific purposes.	14
Figure 2.2 Continuum of ELT course types	17
Figure 2.3 Stages in the ESP process: reality	46
Figure 2.4 What needs analysis establishes.....	60
Figure 3.1 Needs analysis model of this study.....	74
Figure 3.2 Participants in the academic and occupational contexts of this case study	75
Figure 3.3 Data collection procedure and research instruments.	83
Figure 4.1 The two sets of the English proficiency tests at the beginning of the both phases	113
Figure 4.2 The distribution of the listening proficiency of the 45 students based on their scores in phase one and phase two	116
Figure 4.3 The distribution of the reading proficiency of the 45 students based on their reading scores in phase one and phase two	126
Figure 7.1 Needs analysis model used in this study.....	245
Figure 7.2 Framework for the discussion.....	246
Figure 8.1 ESP branches of English for students in food science and technology	287
Figure 8.2 The redesigned needs analysis model for an ESP programme	291

LIST OF TABLES

Table 1.1 Academic plan for the English language study of the students in the food science and technology programme	8
Table 2.1 Main sources and data collection methods of needs analysis and course evaluation	49
Table 3.1 Fifteen English grammatical structures	89
Table 3.2 Time schedule for interviewing the participants in phase one and phase two	101
Table 4.1 The differences between the mean values of the total score for the 45 students in phase one and phase two	114
Table 4.2 The differences between the mean scores for the listening part of the 45 students in phase one and phase two	115
Table 4.3 Mean per cent of the correct responses in the four listening sections of the 45 students in phase one and phase two (%)	118
Table 4.4 The differences between the mean scores for the reading part for the 45 students in phase one and phase two	125
Table 4.5 Mean per cent of the correct responses in the four reading sections for the 45 students in phase one and phase two (%)	127
Table 4.6 The differences between the mean scores of the total score of the 45 students in phase one and phase two	133
Table 4.7 Mean per cent correct for the three main scientific English grammatical structures of the 45 students in phase one and phase two	133
Table 4.8 Percentages of correct responses in the fifteen English grammatical structures of the 45 students	135

Table 5.1 Distribution of grades from the English language courses of the 44 students in the two phases (%)	143
Table 5.2-a The ratings on English language skill ability by the 44 students in the two	145
Table 5.2-b: The ranking of the abilities in English language skills of the 44 students (%)....	146
Table 5.3-a Distribution of the ratings on difficulties with general English language skills of the 44 students in phase one and phase two (%)	147
Table 5.3-b Descriptive analysis of the difficulties with English language skills of the 44 students in the two phases.....	148
Table 5.4 Descriptive analysis of the difficulties with listening tasks of the 44 students in both phases	149
Table 5.5 Descriptive analysis of the difficulties with speaking tasks of the 44 students in both phases	150
Table 5.6 Descriptive analysis of the difficulties with reading tasks of the 44 students in both phases	152
Table 5.7 Descriptive analysis of the difficulties with writing tasks of the 44 students in both phases	154
Table 5.8 Descriptive analysis of the difficulties with vocabulary tasks of the 44 students in both phases	155
Table 5.9 Descriptive analysis of the difficulties with grammar tasks of the 44 students in both phases	155
Table 5.10 Descriptive analysis of the difficulties with language functions of the 44 students in both phases	157
Table 5.11 Distributions of the needs for English language skills of the 44 students from both phases	160

Table 5.12 Descriptive analysis of the need for listening tasks of the 44 students in both phases	161
Table 5.13 Descriptive analysis of the need for speaking tasks of the 44 students in both phases	163
Table 5.14 Descriptive analysis of the need for reading tasks of the 44 students in both phases	164
Table 5.15 Descriptive analysis of the need for writing tasks of the 44 students in both phases	166
Table 5.16 Descriptive analysis of the need for vocabulary tasks of the 44 students	167
Table 5.17 Descriptive analysis of the needs for grammar tasks of the 44 students in both phases	168
Table 5.18 Distribution of the needs for language function tasks of the 44 students in phase one (%).....	169
Table 5.19 Distribution of the ranking of the needs for the language function tasks of the 44 students in phase two (%).....	170
Table 7.1 The students' English language difficulties	260
Table 7.2 Summary of the main English language skills needed by stakeholders in the academic and occupational contexts.....	273
Table 8.1 Current ESP teaching and recommended ESP teaching based on the needs analysis	297

LIST OF APPENDICES

Appendix 1 Administration of the TOEIC Test: English Translation.....	355
Appendix 2 Administration of the Scientific English Grammatical Structures Test: English Translation	356
Appendix 3 Questionnaire on Language Difficulties in Phase Two.....	357
Appendix 4 The English Language Needs Questionnaire in Phase Two.....	365
Appendix 5 Samples Interview Schedule and Interview Questions.....	372
Appendix 6 Documents Related to Ethical Requirements.....	375
Appendix 7 Descriptions of the TOEIC.....	382

CHAPTER 1

INTRODUCTION

The main goal of this thesis was to conduct a needs analysis in an English for specific purposes (ESP) context at a tertiary institution in northern Thailand. The needs analysis process explored the English language needs of undergraduates in a food science and technology programme with the aim of providing guidelines for redesigning and developing an appropriate ESP course.

1.1 Rationale and Significance of the Study

The purpose of ESP is to prepare learners to use English within academic or professional environments, and therefore it is important for ESP course developers to be aware of the needs of learners (Basturkmen, 2006, 2010; Brown, 1995; Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987; Rahman, Ming, Aziz, & Razak, 2008). According to Basturkmen (2006, 2010), conducting a needs analysis can help curriculum developers design effective ESP courses or programmes. Many recent ESP scholars (e.g. Arslan & Coskun, 2014; Tatzl, 2013) have supported Long's (2005) argument that a course without needs analysis does not have the detailed or selective goals that are necessary to provide the focus needed for successful outcomes. He suggested that ESP courses built without the aid of a needs analysis often contain too much or too little instruction to meet the learners' needs.

The critical role played by needs analysis in ESP course development has grown over the last 30 years. Conducting a needs analysis is now one of the integral stages of the ESP course development process, which also includes course design, materials development, the selection of pedagogical approaches, assessment criteria, and course evaluation strategies. Although these stages can often be cyclical, needs analysis is generally seen as an initial stage

in the process (Dudley-Evans & St. John, 1998). More recently, needs analysis has also been viewed as an ongoing process— a part of the process of course development (Hyland, 2006). In other words, once the language needs for an ESP course are identified, the important decisions regarding its learning outcomes, material selection, teaching strategies, and assessment can follow (Jin, Ying Liu, & Zhang, 2014). Thus, ESP practitioners need to acknowledge the essential role of the needs analysis process and become familiar with its historical development, methodologies, and implementation (Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987; Kavaliauskienė & Užpalienė, 2003).

Needs analysis today is used to identify the specific English language skills needed in a range of professions, over a wide range of disciplines and in many international settings. Examples are the language associated with the provision of services, offering help and giving information in English, within the Thai hospitality sector (Prachanant, 2012); the English used for writing research papers, note-taking, summarising, interpreting graphs, etc.; for a staff that has to teach in English at a Turkish university (Arslan & Coskun, 2014); and the English required by Indonesian nursing students related to giving advice, explaining drug usage, possible reactions, making phone calls, etc. (Saragih, 2014). Through the use of an effective needs analysis process, new ESP courses from a wide range of disciplines can be developed and existing courses can be reviewed and revised to ensure that the specific language skills being taught are relevant to the current requirements of the occupation or profession.

The food industry in Thailand is considered an important sector of the economy which plays a significant role in the development of the country (Chiadamrong & Sophonsaritsook, 2015; Chinda, 2012; ISI Analytics, 2010). As the food industry has developed and become more international, the use of English as a means of communication has also increased. Therefore, one way to prepare students for future careers in the food industry is by ensuring that they are competent in English. Specific demands related to the level and type of English

required are now being made by the industry. ESP courses or programmes at universities need to acknowledge these demands and ensure that the language that is taught reflects these real-world requirements. Thus, the content of university ESP courses related to the food industry should be informed by an understanding of its English language needs (Ngarmsak & H-Kittikun, 1995; Office of the Higher Education Commission, 2009).

Employing a good needs analysis process which reflects the needs of the students in relation to the English language needs of the industry, and explains what should be taught in universities, will bring benefits to all parties. If Thailand is to develop its food industry, this study will potentially make a significant contribution by highlighting the importance of using a needs analysis process as a starting point for designing and developing ESP courses in food science and technology programmes.

1.2 Background and Context to the Research

This section starts by providing a brief outline of the role and significance of the use of English in Thailand. This is followed by an overview of English language teaching at Thai universities. It concludes by describing the institutional context and background to Agriculture University and the food science and technology programme it offers.

1.2.1 The role and significance of English in Thailand

Along with the growth of globalization, international trade, international networks, economic integration, and science and technology, English has established dominance as a global language (Jiajing, 2007; Mauranen, 2009; Valle, Onate, & Lopez, 2007). As a consequence, students, academics, and professionals from many different fields are required to use English, and the demand for ESP language teaching has grown rapidly (Dudley-Evans & St. John, 1998; García Mayo, 2000; Johns, 2013).

In Thailand, a country that has never been colonized, English is considered a foreign language, but its importance has grown rapidly over the last 20 years. Many studies have noted the increasing demand for English-related academic improvement, international tourism, and career advancement in general (Hengsadeeikul, Hengsadeeikul, Koul, & Kaewkuekool, 2010; Khamkhien, 2010b; Pattanapichet & Chinokul, 2011; Wongsothorn, 2000). As a result, English is now a compulsory foreign language in educational institutions in Thailand—from the primary to tertiary levels (Wongsothorn, Sukamolsun, & Chintammit, 1996). Furthermore, it has become the language of mass communication and is used in many professions and businesses (Baker, 2009; Wiriyachitra, 2004).

The current English curriculum in schools and universities seeks to use learner-centred approaches with a focus on communicative language teaching, aimed to lift the level of students' language skills related to social interaction. In the tertiary or academic context, it is seen as a means of gaining economic competitiveness in the workplace in an increasingly globalised world (Darasawang, 2007). As stated in the 1999 Education Act and the subsequent National Educational Curriculum implemented in 2002, Thai students should develop global literacy, must know how to use English for social interactions, and understand the cultures of other countries in order to become world citizens (Baker, 2008; Office of the National Education Commission, 1999; Wongsothorn, Hiranburanan, & Chinnawongs, 2003).

Thailand is a member of the Association of Southeast Asian Nations (ASEAN) and in 2015 joined the Asian Economic Community (AEC), which has propelled it into the international and regional community (Chanseawrassamee, 2012). The 2009-2015 ASEAN community roadmap facilitates the cross-border flows of professional and skilled labour and investment-related activities, which have resulted in changes in the Thai labour market (Secretariat, 2009, pp. 29-30). According to Chanseawrassamee (2012), the Thai people will need to accept these changes and prepare themselves to take advantage of the possible benefits

of a highly-mobile, cross-border labour market, which is facilitated through the use of English as the language for communication. Given the importance of forthcoming English teaching reforms, much effort has been put into improving the English proficiency of Thai learners (Fry & Bi, 2013). The Ministry of Education expects Thai universities to play an active role in making their students attractive to international recruiters by delivering high-quality, content-based courses, using cutting edge technology, which include high levels of English to enable them to be employed anywhere in the highly competitive Asian Economic Community region.

1.2.2 English language teaching at universities in Thailand

Since 1891, when English language learning was first added to the national curriculum, the curricula and methods used for the teaching have continually changed (Darasawang, 2007; Fry & Bi, 2013). Rote learning, memorization, and grammar translation were emphasised during the early period. Reading aloud, as a means of improving comprehension of reading texts and developing correct pronunciation, was introduced in 1932; however, grammar translation methodologies remained widely used. In 1950, the aural-oral approach was introduced. However, it was later considered inappropriate in the Thai cultural context as it was felt that female teachers should not speak loudly in class or actively move around the classroom, encouraging conversations among students (Darasawang, 2007). As a result, the traditional methods of reading aloud and grammar translation remained the dominant approaches to teaching and learning until the 1977 curriculum reforms for schools and universities. These were based on the philosophy of life-long learning and the use of learner-centred approaches; however, they were only partially adopted (Darasawang, 2007).

In 2004, further reforms were introduced and English language teaching and learning in Thai universities included the requirement that students entering universities be streamed according to the Office of the Higher Education English Proficiency Test, which focused on

reading and knowledge or grammar (Wiriyachitra, 2004). In addition, it became mandatory for undergraduate students to take at least four English courses during their time at university. Two consist of fundamental English language courses, and the others are either English for academic purposes (EAP) or ESP courses related to a student's study programme. The time normally allocated for English teaching is currently three to four periods of 50 minutes per week, with a focus on improving communication and ESP (where relevant). These changes to the English curriculum have to be implemented at all Thai universities (Foley, 2005; Office of the National Education Commission, 1999), including Agriculture University, which is the focus for this research. Teachers are also responsible for the development of appropriate and successful teaching and learning strategies (Darasawang, 2007). In addition, universities are expected to develop learner-centered approaches which provide effective language learning and align with their learners' needs and the specific academic context (Darasawang, 2007; Wiriyachitra, 2004).

1.2.3 Background and programmes at Agriculture University

Founded in 1996, Agriculture University is located in northern Thailand and is a satellite campus of a large Thai university, under the direction of the Ministry of Education. It is a degree-granting institute that prepares students for agricultural and technological pursuits. It offers two types of undergraduate programme—two-year programmes in business information technology and agro-forestry, for senior vocational certificate students; and four-year programmes predominantly in agro-industry topics such as food science and technology, biotechnology, plant production, animal production, and agro-forestry for students from secondary schools. There are also four-year social science programmes, which include political sciences, business information technology, marketing, and accounting.

1.2.4 The importance of the food science and technology programme

Because of the importance of the food industry in Thailand and the increasing demand for processed food (Sriwichailamphan, 2007; Tipvanna & Aran, 1995), 85 of the 124 Thai universities offer undergraduate programmes in food science and technology (Office of the Higher Education Commission, 2009). In line with other universities, Agriculture University undergraduate programmes aim to provide high levels of appropriate English and prepare students to meet the demands of the developing global food sector (Ngarmsak & H-Kittikun, 1995; Tipvanna & Aran, 1995).

The food science and technology programme at Agriculture University was selected for this research for three main reasons. First, it is representative of the four-year agricultural-based degree programmes found in Thailand. Second is the importance of the food industry to the northern part of Thailand and the role that the university plays in preparing local graduates to enter the sector. Lastly, its food science and technology programme has been approved by the Ministry of Education and meets the standards set by the Thai Institute of Food Technologists (IFT). Therefore, Agriculture University's food science and technology programme and the students within the programme can be seen to be representative of many such programmes, and any findings from the research may be applicable to other universities throughout Thailand.

1.2.5 English language teaching in food science and technology programme

In accordance with the Ministry of Education regulations, students at Agriculture University are required to study 12 credits or four English language courses. There are three streams which form the main ESP programme: the English for specific purposes programme, which is designed for students in the food science and technology, biotechnology and agro-forestry programmes; the English for agriculture programme, for those that study plant production and

animal production programmes; and the English for social sciences programme, for students that study political sciences, business information technology, marketing, and accounting. Upon graduation, all students are expected to be able to use English effectively in their future professions or academic pursuits.

Unfortunately, the curricula of these programmes have not been updated in over ten years and are currently taught using commercial textbooks supplied by other universities or international publishers. While useful, the generic content of the textbooks reflect little of the Thai context or the language needs of its rapidly-developing food industry. Furthermore, the original programmes were developed without the benefit of needs analyses and consequently, fail to meet the language needs for the current ESP programmes. As part of the ongoing 2004 curriculum changes announced by the Office of the Higher Education, all universities, including Agriculture University, have to revise and redesign their ESP courses. Therefore, this research is timely and will provide important insights into how new programmes should be developed. It will also highlight the key contribution that needs analysis can make to course design.

The study plan for English language teaching in the food science and technology programme was prepared by the Academic Administration Office, which works in conjunction with the core subject teachers. Students begin fundamental English 1 in semester two of their first year, and fundamental English 2, in semester one of year two. The ESP programme consists of two English courses; namely ESP1 and ESP2. ESP1 is taught in semester two in year three and ESP2 in semester one in year four (see Table 1.1).

Table 1.1 Academic plan for the English language study of the students in the food science and technology programme

Year	1		2		3		4	
Semester	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd
Name of Course	None	Fundamental English 1	Fundamental English 2	None	None	ESP 1	ESP 2	Internship at a food factory

Currently, there are seven teachers responsible for the Fundamental English course and ESP courses at the Agriculture University. They are all Thai speakers that hold master's degrees in teaching English as a foreign language (TEFL) and applied linguistics from Thai universities. Their individual teaching experience ranges from one to more than ten years. Although the existing course descriptions and content are more than ten years old, teachers have the freedom to use supplementary materials to assist with their teaching and learning.

1.3 An Analysis and Overview of the Current Problems

My motivation for undertaking this research comes from my experience teaching in ESP programmes. I observed that despite having had fundamental English and ESP courses, many students still had difficulties using English. For example, in their fourth year, students take the Test of English for International Communication (TOEIC), which is an international standardised test. The results from the academic years 2005-2009 showed that the majority of students scored around 100-300 on the test, which is equivalent to a beginner level for English language learners. It is therefore clear that the students' levels of English language proficiency do not match the requirements of many Thai government agencies and private-sector employers, who seek candidates with TOEIC scores of 550 or more (Chanseawrassamee, 2012).

There are three possible reasons to explain these low levels of English proficiency. For example, ESP teachers have heavy teaching loads, which do not allow enough time for adequate preparation. Another reason given is large classes, which determine the type of teaching possible and the amount of time that can be devoted to individual student feedback and support. The other possible reason relates to the inadequacies and hurried nature of the original course design, which is now outdated and does not reflect the students' needs. This general analysis of possible causes related to the students' low levels of English competency

is anecdotally supported by unsolicited comments from past and present ESP teachers in the programme, who feel that these are serious problems that need to be to be addressed (Noom-Ura, 2013; Watcharapunyawong & Usaha, 2013). It is therefore crucial that the ESP programme be redesigned in order to help students and provide relevant learning opportunities that can improve learning outcomes and prepare them for the real world of food science and technology.

As proposed previously, any redesign of an ESP programme should start with a needs analysis. However, when the course already exists, a needs analysis may not be the first step but a step integrated into the evaluation process. The needs analysis should follow best practice by detailing the language needs of the subject-content courses, the language currently in use in the food industry in Thailand, and the requirements and expectations of the relevant stakeholders. Broad stakeholder involvement in the needs analysis process may also facilitate change and overcome resistance to change, which is often a feature of any education change process. Furthermore, it demonstrates best practice and provides a solid foundation for the development and improvement of the ESP programme.

1.4 Outline of the Research and Research Questions

The purpose of this research was to explore the English language needs of Thai undergraduate students in the food science and technology programme at Agriculture University. The outcome of the research would guide the programme's redesign. The needs analysis model proposed by Dudley-Evans and St. John (1998) was employed to generate information about the learners, learner differences, their strengths and weaknesses, and detail the language they need to complete their academic studies and move successfully into their chosen professions. The participants in the research included 45 third-year students, six sampled students, three subject-content teachers from the food science and technology programme, and two ESP teachers that

currently teach in that programme. In a bid to include stakeholders from the food industry, six employers from various factories in the region were also taken part.

The research seeks to address the following research questions which link to the needs analysis and course design as follows:

- 1) What English language skills did the students have difficulties with in the ESP programme?
- 2) What English language skills did the students and the teachers consider are needed to study in the food science and technology programme?
- 3) What English language skills did future employers consider the students need in the occupational context?
- 4) How did the students' needs vary according to their stages of study in the ESP programme?

1.5 Overview of the Thesis

The thesis consists of eight chapters, structured as follows:

Chapter 1 introduces the thesis, its background, and rationale and significance. It then provides a short history of needs analysis and outlines the key role it plays in ESP course development. It goes on to give a broad account of English language teaching in Thailand, followed by the background and importance of the food industry nationally. The institutional context of the study is then described, together with the programmes it offers and the structure of the English courses within the food science and technology programme. Problems related to final year students' low level of English and possible causes are discussed. Lastly, the purpose of the research is outlined, which leads into the four research questions that form the focus of the research.

Chapter 2 reviews the literature associated with ESP, needs analysis, and course design. It then provides a conceptual framework for the needs analysis process to answer the research questions.

Chapter 3 discusses the methodological framework of the research, its aims, and research questions. This is followed by an examination of the rationale for selecting a mixed methods case study research design and the use of pragmatism as the guiding research paradigm. The chapter concludes by describing the role of the researcher and the ethical considerations relating to the research process and procedures, data analysis, etc.

Chapter 4 describes the findings from the two phase-assessments of the students' English language which seek to identify changes in their English proficiency.

Chapter 5 presents the findings of the questionnaires, designed to uncover the perceptions of the students concerning their difficulties in learning English and perceptions of their needs.

Chapter 6 presents the findings from the interviews conducted with the relevant academic and industry stakeholders.

Chapter 7 discusses the results of the research, which are then linked to the ESP literature on the needs analysis within Thai and international contexts.

Chapter 8, the final chapter, provides a summary of the research's key findings, its contributions to the literature, and the wider implications for practice and policy related to ESP teaching at Agriculture University and other tertiary institutions in Thailand. Recommendations, implications for future research, and the limitations of the study are then addressed.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter critically reviews the literature relevant to the areas of this research and is divided into two main parts. Part one provides an overview of English for specific purposes (ESP), which includes the background and development of ESP, and approaches to ESP teaching. Part two provides an overview of needs analysis in the ESP context, discussing different approaches and models of needs analysis. It also reviews the needs analysis and ESP programs at the university level in Thailand. The chapter summarizes the key concepts used to generate the research framework and methodology for the needs analysis used in this research.

2.2 An Overview of English for Specific Purposes

2.2.1 Definitions and classifications of ESP

Internationalization of education, business and industry and corresponding learners' needs, have led to the development of ESP and, therefore, many definitions have emerged. García Mayo (2000) noted that it is not an easy task to define ESP because it can be applied to any situation and depends on what learners are facing. According to Munby (1978), "ESP syllabus and materials are designed by the prior communication needs analysis of the learners" (p.2). This definition is a useful starting point which reflects the state of ESP at a particular point in time.

Hutchinson and Waters (1987) considered ESP as "an approach to language teaching

which all decisions as to content and method are based on the learner’s reason for learning” (p.16). As for a broader definition, they preferred defining what ESP is not, by presenting a tree of English language teaching (Figure 2.1) which allows us to see the relationship between English for general purposes and ESP.

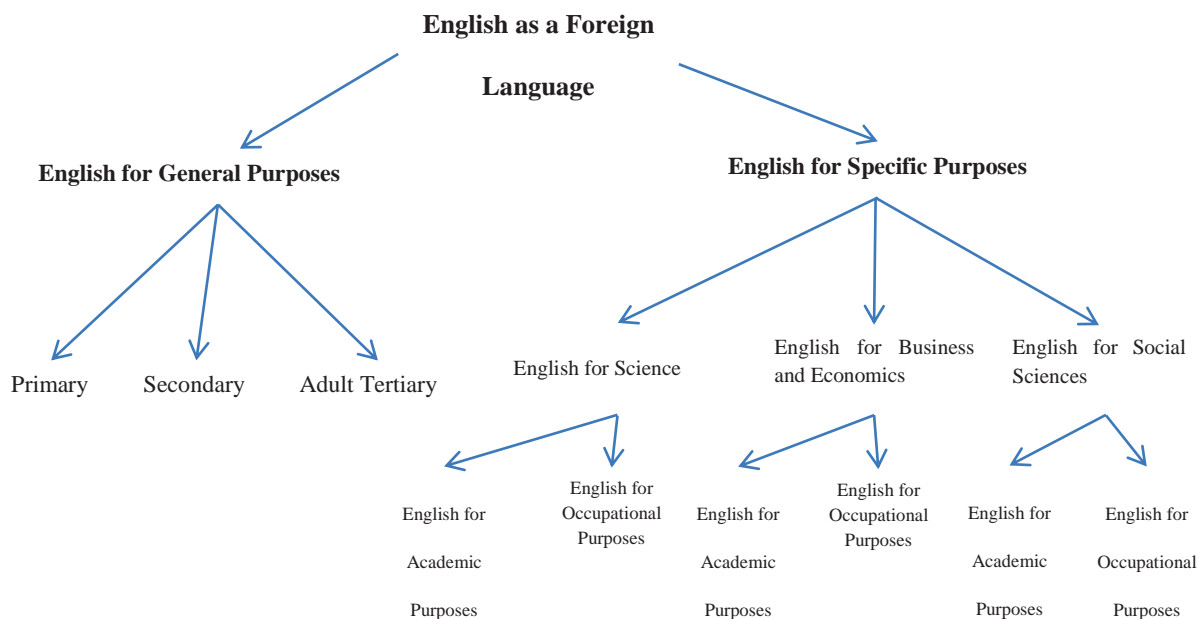


Figure 2.1 *The tree model of English for specific purposes (‘The Tree of English Language Teaching’ by Hutchinson and Waters, 1987, p. 17).*

According to Figure 2.1, ESP can be classified into three branches: English for science and technology, English for business and economics, and English for social science. English for science and technology is further classified into two branches, as English for academic purposes (EAP) and English for occupational purposes (EOP), which appear to be different only in situational context. However, since Hutchinson and Waters (1987) do not make an obvious distinction between EAP and EOP, Cummins (2008) made a more explicit distinction between these two terms. He explained that the aim of EAP is to provide academic proficiency, whereas, EOP leads to interpersonal skills. In addition, the target of learners for EOP learners

is to communicate with friends and co-workers in everyday life.

Stevens (1988, pp. 1-2) defined ESP according to absolute characteristics and variable characteristics. Regarding the absolute characteristics, Stevens described that ESP is in contrast to general English because it is designed to meet specified learners' needs, related in content to specific discipline, and centered on language appropriate to syntax, lexis, discourse, and semantics and analysis of the discourse. Regarding the variable characteristics, ESP may be restricted to the learning skills to be learned (for example writing only), and may not be taught according to any pre-ordained methodology.

Generally speaking, Stevens' (1988) definition concerning the course content confirms that ESP is always and necessarily related to the subject content. His definition is supported by that of Robinson (1991) who adds that ESP is constrained by a limited period, and taught in homogenous classes regarding the work and studies that the students are engaged in. To sum up, ESP relies on common vocabulary and functions, and the skills that belong to a particular academic discipline or business activities.

Dudley-Evans and St. John (1998) gave a definition of ESP, which is influenced by that of Stevens (1988). Although they removed the absolute characteristic about the distinctions between ESP and general English, they revised and added more variable characteristics. Their revised definition is:

I. Absolute characteristics

- ESP is designed to meet specific needs of the learners;
- ESP makes use of the underlying methodology and activities of the disciplines it serves;
- ESP is centred on the language (grammar, lexis, register), skills discourse and genres appropriate to these activities.

II. Variable characteristics

- ESP may be related to or designed for specific disciplines;

- ESP may use, in specific teaching situations, a different methodology from that of general English;
- ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level;
- ESP is generally designed for intermediate or advanced students. Most ESP courses assume basic knowledge of the language system, but it can be used with beginners (1998, p.p.4-5).

According to their definition of ESP, Dudley-Evans and St. John (1998) then presented the whole of English language teaching (ELT) on a continuum where general English courses are at one end, while ESP courses are situated at the other. As shown in Figure 2.2, courses in position 2 and position 3 are quite similar but different in terms of the overall context of the courses. For example, English for general academic purposes (EGAP) courses are for learners who have no experience in working or learners who are at the early stages of their profession, while English for specific business purposes (EGBP) courses teach learners who had job experience, so they can bring their business knowledge and skills to the specific language-learning situations. Courses in position 4 cover very specific skills but the learners may vary from different disciplines or professions. Courses in position 5 are really specific and serve the specific needs of the target situation, learners' needs, and use authentic material of the learners' discipline. This continuum adds to Hutchinson and Waters' (1987) ESP classification for the position of ESP courses and reflects the position of the ESP programme at Agriculture University.

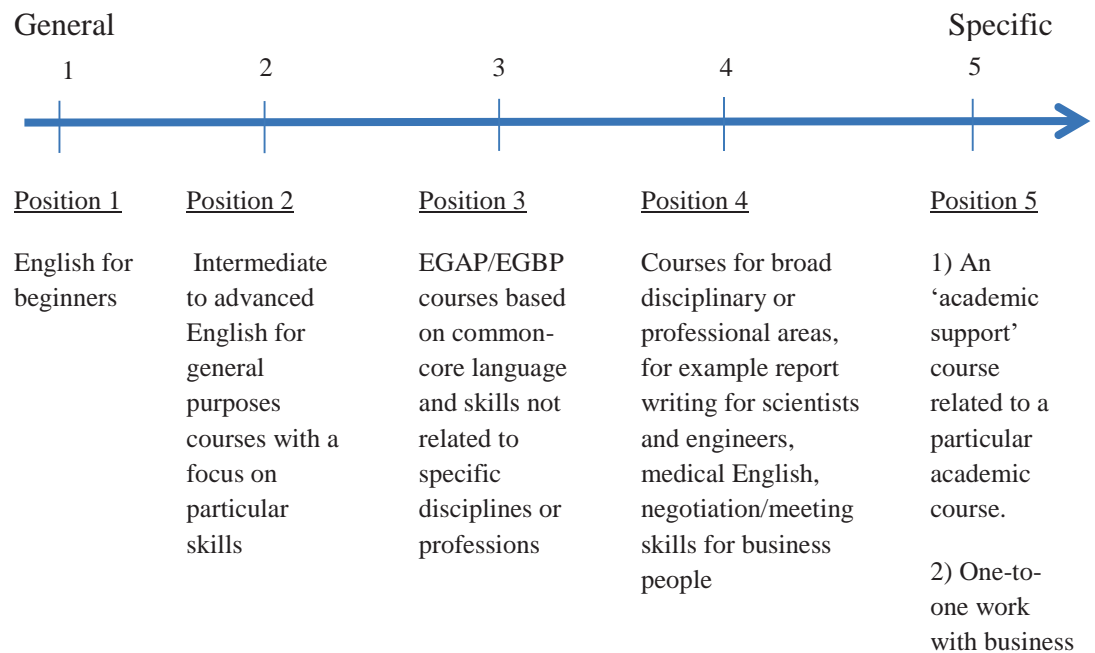


Figure 2.2 Continuum of ELT course types (Dudley-Evans & St. John, 1998, p. 9)

ESP researchers in the 21st century tend to define ESP based on the learners' needs for their subject-specific work and experiences. Basturkmen (2003) explained ESP as relevant to the needs of the language use that learners will encounter in their specific work or study-related situation. Similarly, Master (2005) argued that ESP focuses on the importance of various elements in the real language situations that learners will encounter. Johns and Salmani (2015) agreed with Dudley-Evans and St. John's (1998) definition of ESP and strongly supported the view that ESP is most effective when it is relevant to adults' academic and professional contexts.

Basturkmen (2010) further described themes of ESP courses that are narrower than English language teaching courses because they focus on learners' needs for work or study purposes. She classifies ESP into three areas: English for academic purposes (EAP), English for professional purposes (EPP), and English for occupational purposes (EOP). Like Strevens (1988) and Dudley-Evans and St. John (1998), Basturkmen highlighted that ESP has both

variable characteristics and absolute characteristics but she referred to these terms as ESP variability and ESP constants, respectively. Her ESP variability and ESP constants are shown below.

ESP variability

- ESP stems from the range of areas which ESP courses are developed. These range from the relatively general (for example, academic English writing courses) to the highly specific (for example, English for hotel receptionists);
- ESP stems from the differing relationships ESP learners have with their target community of practice;
- ESP stems from differences in how familiar ESP teachers are with the target disciplines, professions and vocations and their specialist discourse.

ESP constants

- ESP involves discussion of learners' needs and viewing learners primarily in work- and study-related roles.
- ESP courses of necessity require a narrowing down of language and skills that are to be taught.
- ESP courses make use of texts and draw on descriptions of language use and communication from the target communities of practice and disciplines (p.12).

Furthermore, Alfehaid (2011) added to these definitions, suggesting that besides developing learners' knowledge of English in context, ESP should focus on developing learners' language skills and study skills to help them to learn in their discipline.

The definitions of ESP above seem to focus generally on the three main concepts: the specific language needed, the learners' specific purposes for learning, and the specific contexts in which language is taught and used, whether in academic or professional contexts. These definitions also highlight variable and constant characteristics.

The definition of ESP of this study shares some parts of the definitions from the aforementioned ESP scholars and sees ESP as an approach designed to fulfill the particular needs of the learners and the use of specific language in relation to both academic and occupational contexts. This definition is the same meaning as Hutchinson and Waters' (1987)

definition in that the content and methods of ESP are based on the learners' reasons for learning. In this study, the students' reasons to study the ESP programme are to facilitate their understanding of the major subjects in the food science and technology programme, and also to prepare themselves for the internship programme at an international food factory. This study also takes its definition from one of Strevens' (1988) ESP absolute characteristics, in that ESP relates to the content, and centers on the language of the specific area of the students, which in this study is the food science and technology programme.

The definition of ESP in this study also has aspects of the ESP variable characteristics of Basturkmen (2010) and Dudley-Evans and St. John (1998) in that ESP is designed for learners ranging from learners who have no experience in working to job-experienced ones to understand the language used and communicate in their target disciplines. In this study, the ESP programme is provided for students who have no experience in working but have some background knowledge in their discipline. Also, there will be an investigation of learners' use of English and their needs arising from the different contexts they encounter. Also, like Robinson's (1991) ESP definition, the ESP programme of this study is in a homogeneous context, where all students are Thais and studying in the same area, year level and following the same courses. Accordingly, the position of the ESP programme of this study is situated at position 5 of Dudley-Evans and St. John's (1998) continuum of English language learning course types where the language, methodology, and activities are provided based on the learners' needs for the specific purposes in the target situations in their own discipline. These combinations of definitions suit the research study which will be implemented in both academic and occupational situations.

2.2.2 Background and development of ESP

Although it is difficult to establish a specific date for the origin of English for specific purposes,

many researchers agree that ESP was developed formally during the mid-sixties, after the Second World War and the transition period to the scientific and technical world (Basturkmen, 2010; García Mayo, 2000; Rahman, 2015). In addition, Hutchinson and Waters (1987) noted that three key factors influenced the emergence of ESP including 1) demands of a “Brave New World” at the end of World War II accelerated by the Oil Crisis of the early 1970s, 2) a revolution in linguistics, and 3) a change of teaching methods to focus on the learners themselves.

By that time, the English language had become the accepted international language of technology and commerce, in a variety of contexts and situations where the specific needs, demands, and wishes of the learners had to be considered rather than those of the teachers. A combination of these important factors expanded the demand for English to suit particular needs and thus the requirement for increased ESP courses. These needs then acted as a guide to design ESP course materials. The ESP courses designed to meet individuals’ needs were considered to motivate learners to learn, and to provide appropriate learning (Dudley-Evans & St. John, 1998; Gatehouse, 2001; Hutchinson & Waters, 1987).

The development of ESP research may be classified into several phases (García Mayo, 2000; Hewings, 2002; Johns, 2013; Pradhan, 2013). Recently, Johns (2013) investigated research published in the *English for Specific Purposes Journal (ESPJ)* and other sources, together with his previous experiences as an *ESPJ* co-editor and researcher. He divided the development of ESP research into four periods: the early years (1962-1981), the more recent past (1981-1990), the modern age (1990-2011), and the future (2011 plus). To him, research in the first period was mostly focused on English for science and technology in academic contexts. During the early year phase, research tended to focus on statistical counts of grammatical features across different types of genre (such as textbooks or research articles) in the English for science and technology area at a sentence level, but later shifted to determine the

relationships between English for science and technology grammar or lexicon and the authors' rhetorical purposes in texts. During this phase, many ESP coursebooks were designed and distributed throughout the world. This phase is interesting for this review as it is the beginning of English for science and technology and its focus on language characteristics which are similar to those found in the present ESP programme at Agriculture University.

During the more recent past phase (1981-1990), the scope of the research broadened to other disciplines, such as teacher training and vocational ESP. Importantly, research on needs analysis was first published in the *ESPJ* in this phase. In the modern age (1990-2011) period, many new international journals were published. Research in the modern age period was centered on genre and corpora. For example, Swales (2009) studied genre and genre production regarding the constraints of contexts and expectations of a discourse community which also focused on pedagogies and approaches to genre-awareness.

In Johns' (2013) future period from 2011 onwards, ESP research is seen to be moving in five directions: 1) international authorship, 2) researcher roles changing as researchers see themselves in one or several professional roles such as teacher, course-designer, collaborator, and evaluator; 3) varied methodologies and triangulation, such as case studies, task-based foci, corpus linguistics, and ethnography; 4) multimodalities- the interactions of the visual and the verbal in texts, academic and nonacademic visual rhetoric, and the use of visual information for business and vocational ESP; and 5) varied locales- from the point of view of different stakeholders in an ESP enterprise. The last direction implies the study of needs analysis and ESP is developing to encourage researchers and ESP practitioners to study less popular academic locales, such as regions where English is the lingua franca, rather than those in the English-speaking world, and direction 3 sees the strength of a triangulation of different perspectives from different stakeholders and data collection methods. Both directions 3 and 5 fit well with the aim of the present research study and research methodology which employed

a mixed method approach with both quantitative and qualitative data from multiple stakeholders.

The next section reviews the ESP teaching and language skills in ESP.

2.2.3 Teaching approaches to English for specific purposes

Traditionally, ESP teaching focuses on learning the language for professional communication in a specific area (Robinson, 1991). The traditional approach connects the language with the content matter of the students' target occupation, and the content matter is used as a tool for learning language forms and provides background for acquiring those forms. Traditional ESP teaching methodologies are concerned with separate skills and language aspects such as grammar and vocabulary, because they can interfere with the students' essential English language skills. In the field of ESP, the importance of teaching grammar and vocabulary has been extensively accepted by many scholars (Coxhead, 2013; Dudley-Evans & St. John, 1998; Zhou, 2009). In this approach, students are not expected to acquire new knowledge and skills directly related to their discipline but acquire the language forms of the target language for the target discipline. The content can be in related areas, such as, science, or technology. Accordingly, the traditional ESP approach is considered often to be suitable for the lower level students at the university because they have insufficient English proficiency and content matter in their ESP area (Tarnopolsky, 2013). This is similar to Dudley-Evans and St. John's (1998) concept, that ESP can be used with beginners.

Recently, ESP teaching approaches at tertiary levels in non-English speaking countries have shifted from primarily language focus for professional communication, to the integration of language with the content matter of the target disciplines (Tarnopolsky, 2013) including the integration of learning the target language and the target occupational content matter can be seen in two methods: content-based instruction, and content and language integrated learning.

These approaches are more integrated approaches to ESP teaching.

The content-based instruction approach balances language teaching and content teaching, but the main focus is the language (Tarnopolsky, 2013). In other words, this approach integrates reading, speaking, listening and speaking for occupational purposes in the teaching and learning process (Brinton, 2013). This approach uses functional and thematic syllabi with a focus on the language appropriate to the activities and content relevant to the specific discipline or occupation (Robinson, 1991). Learning the language is the major concern of content-based instruction, and the subject content is often adapted and simplified to suit the learner's proficiency level (Liew & Khor, 2014).

Another development of an integrated ESP approach is the content and language integrated learning approach, which has become popular in schools and higher education across Europe since the 1990s and with the political and social globalization of English (Arnó-Macià & Mancho-Barés, 2015; Coyle, 2012; Taillefer, 2013). The content and language integrated learning method is widely used, especially in European countries, rather than the traditional ESP approach and content-based instruction because teaching content subjects through English can be offered instead of ESP subjects and students can learn English and a subject at the same time (Räisänen & Fortanet-Gómez, 2008). The learning of content can help students learn the language naturally, and the language mastery facilitates students' access to their target subject matter too. ESP teachers apply scaffolding strategies to facilitate learners in mastering the content, without changing much of its content level in contrast to content-based instruction (Arnó-Macià & Mancho-Barés, 2015). However, studies have shown that for a successful integrated ESP learning approach, the learners should have basic language ability in English and have no major difficulties with vocabulary or syntax and can read and write at a minimally skilled level (Rosa Maria Jimenez Catalan & Fontecha, 2015; Tarnopolsky, 2013).

However, many scholars have pointed out major limitations of content and language integrated learning (e.g. Aguilar & Muñoz, 2014; Tarnopolsky, 2013). Firstly, an integrated ESP course cannot necessarily achieve two challenging goals, subject content and linguistic development. Once the subject content is integrated, the focus on the language is often substantially reduced. Secondly, many studies have shown that the integrated approach is not effective for students with low levels of English proficiency if the course does not provide enough language activity for linguistic development. Also, Arnó-Macià and Mancho-Barés (2015) discussed some issues with ESP in the integrated teaching approach as the role of the ESP instructors can become a subsidiary role to the content instructors.

These teaching approaches are relevant to the present study in Agriculture University context. as the students have low levels of English, and the ESP programme is currently being taught independently from the content courses, so a content and integrated language focus, is not currently part of the needs for the programme. Furthermore, the current programme is taught using traditional ESP teaching approaches. In addition, the content subject courses are taught separately from the ESP programme. The students study food processing, food engineering, food chemistry and other fundamental courses in Thai, and the ESP programme which is not related to the content subject courses. In the ESP classes, general English is taught in a traditional approach, not an integrated approach.

Awareness of these different ESP teaching approaches is useful because one of these approaches, whether a traditional ESP or an integrated ESP approach, is selected for the development of the redesigned ESP programme based on the results of the needs analysis.

2.2.3.1 Traditional English language approaches

While many general English courses integrate the skills of listening, speaking, reading, and writing, traditional ESP courses often teach individual language skills with the particular

register and styles needed in the target situations (Chalikandy, 2013; Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987). In addition, ESP courses focus on teaching language skills that are the most needed by the students determined by a needs analysis, and the courses and teaching methods are designed accordingly (Bojovic, 2006; Dudley-Evans & St. John, 1998; Fiorito, 2005; Jaglowska, 2012). Different skills are found to be needed more in different disciplines, such as writing and speaking for computer engineering students in Iranian universities (Zohoorian, 2015), vocabulary for computer science and information technology students in Saudi Arabia (Alsamani & Daif-Allah, 2016), and communication skills for engineering students in Taiwan (Spence & Liu, 2013), Korea (Hyun Hyo, 2013) and Thailand (Kaewpet, 2009a).

This chapter reviews the six English language skills (listening, speaking, reading, writing, grammar and vocabulary) for the reasons above and this fits with the work of many scholars, e.g. Basturkmen (2010), Dudley-Evans and St. John (1998), and Shing and Sim (2011), who viewed teaching a specific skill appropriate to the tasks and activities that learners will encounter within the target situations as an ESP constant or absolute characteristic.

As discussed previously, the definition of ESP for this study includes two sub-branches: English for academic purposes and English for occupational purposes. This section, then, reviews the literature on language skills and the teaching of these skills, the students' difficulties, and the tasks and activities relevant to the English language skills in English for academic and English for occupational purposes contexts. The literature will help the author focus on the requirements of each of these language skills needed for the tasks and activities in the target situations and will help with the framing of the language skills focus used for developing the research instruments of the study.

2.2.3.1.1 Listening

Listening is essential and is considered as a primary channel for learning a language (Bidabadi & Yamat, 2011; Nunan, 2001; Rost, 2001). In other words, listening affects the development of speaking, reading, and writing abilities in learning a language. Good listening skills are necessary for all learners to have and in order to become effective communicators. While learners are listening to a message, they apply three types of knowledge: “knowledge about the language (phonology, syntax, and vocabulary), knowledge about language use (discourse and pragmatic), and knowledge about context, facts and experiences (prior or background knowledge)” (Goh, 2013, p. 58). Learners need to integrate these three types of knowledge with two types of processing, which involve different cognitive skills, in order to recognise the sound they hear and to understand the message.

Many second language learners consider that listening is one of their most difficult skills because of the complexity of its process and the different types of knowledge required for successful listening (Kavaliauskienė, 2011; Nowrouzi, Shu Sim, Zareian, & Nimehchisalem, 2015). Moreover, second language learners require a wider range of word recognition and segmentation skills so that they can have comprehension than when they are listening to the first language. Their cognitive deficits lead to difficulties with processing information in the second language (Kavaliauskienė, 2011; Sura, 2013).

Listening in ESP has many similarities with listening in English as a second language, as it shares the same cognitive processes and requires the use of the same macro (core) skills in accord with the purpose for listening (Goh, 2013; Rost, 2001). The distinctions between two types of listening are that ESP listening requires more additional skills and specific types of knowledge and vocabulary required for English for academic purposes and English for occupational purposes. In addition, developing ESP listening may require more high-level

listening skills relevant to the requirement in English for academic purposes and English for occupational purposes situations than for English as a second language (Goh, 2013; Likaj, 2015).

Due to the requirements for high-level skills, teaching listening skills is a challenging task for ESP teachers as it takes much time and requires a lot of practice (Kavaliauskienė, 2011). Examples of teaching methods over the past decades include teaching important listening strategies for extensive listening (Renandya & Farrell, 2011), using bottom-up, top-down, and interactive models (Anusienė & Kavaliauskienė, 2009; Dudley-Evans & St. John, 1998; Nunan, 2001), teaching higher level cognitive and metacognitive strategies (Wilson, 2003), and shadowing for listening comprehension (Hamada, 2016).

The difference between listening in English for academic purposes and listening in English for occupational purposes depends on whether it demands additional listening skills to the learners' existing repertoires and additional types of knowledge (Goh, 2013). The ability to follow a monologue, especially a lecture, is important in English for academic purposes situations (Dudley-Evans & St. John, 1998). Also, listening to presentations, explanations given by teachers, and instructions is necessary for many academic contexts (Zohoorian, 2015). These listening skills are relevant to the present study so that the needs and competency of the students can be determined for these skills in the academic context.

Unlike listening in English for academic purposes, little research has been carried out on listening tasks in English for occupational purposes. For example, listening to presentations is important for doctors and professional people, listening to instructions for technicians, and listening to policy presentations for business people (Dudley-Evans & St. John, 1998). McDonough (2010) observed that listening to multimedia is mostly used for video conferencing, or meetings in international companies. Vandergrift (2007) argued that the

emerging technologies and the increasing of in their accessibility are important for listening development. Accordingly, listening to multimedia has been introduced in many ESP classrooms, for example, listening to Internet audio or watching video over the Internet.

In addition, Wei and Zhou (2002) observed that Thai students have pronunciation problems in three areas: pronunciation problems with consonants and vowels, intonation problems, and stress problems. They explained that Thai final consonants are always unaspirated and unvoiced so Thai students find it difficult to pronounce /p/, /k/, /m/, and /n/ in English words. Also, the Romanization of the Thai language influences the English pronunciation. Thai students, who have few opportunities to study English phonics, usually articulate all instances of /th/ into /t/, and /ph/ into /p/. This kind of articulation can cause a listening comprehension problem because different sets of phonemes have different meanings. Further, Thai students pronounce and apply intonation with many borrowed English words in Thai ways. They are not aware that these words are not Thai words, such as, computer, technology, and physics.

Cubalit (2014) noticed that pronouncing /r/, /l/, /v/, /w/, /s/, /z/ is difficult for Thais because some of these phonemes do not occur in the Thai language. In this regard, Ellis (2015) subsequently concluded that the most clearly evident pronunciation problems is from language transfer or the linguistic features of one language influencing those of another language. This study means the influence of the Thai language on the English language and vice versa. Furthermore, Liang (2015) explained that non-native learners, including Thais, face problems in pronunciation of fluently-connected speech because this speech involves various rules employed by natives speakers.

This research will fill in a gap in the literature of ESP listening, particularly regarding English for academic purposes and English for occupational purposes for the food science and

technology discipline, and will help to discover the needs of the students and stakeholders in this particular discipline and context.

2.2.3.1.2 Speaking

Teaching speaking is a challenging task for second language teachers and ESP teachers because it depends on many factors. Many studies have shown that teachers lacking a clear understanding of an approach to teaching second language leads to difficulty in teaching speaking (Rotschild, 2015; Tavit, 2010). Effective teaching of speaking provides students with opportunities to practise a range of speaking tasks and activities in the target situations. These tasks and activities should engage students at the cognitive and affective level (Goh & Burns, 2012), and to help them develop sociolinguistic competence (Qamar, 2016).

In ESP, speaking and listening are both employed within real communicative events, including one-to-one spoken interactions, and multi-person spoken interactions. Like second language teachers, ESP teachers should raise their awareness of their students regarding the features of successful interaction by paying attention to appropriate language and skills, and providing effective evaluation at the feedback stage (Dudley-Evans & St. John, 1998). To sum up, ESP teachers' roles are to help students assimilate and produce discourse for the purpose of interpersonal communication and comprehension and the production of academic language, and provide chances for students to practise speaking in a wide range of language functions and situations.

Several studies have investigated speaking difficulties faced by ESP students at the university level. For example, Gan (2012) pointed out that lack of vocabulary can be regarded as the main obstacle to spoken communication. Communication challenges frequently surface in the workplace for students during internship placements or active employment following graduation. In addition, the work of Myles (2009) showed that engineering students faced

difficulties with answering questions after a presentation, communicating in informal social interaction, understanding and using colloquial language (idioms, slang), and understanding native English speakers that talk very fast and change the topic to another one before the students continue their conversation. In the Thai context, studies have shown that speaking is the most difficult skill, for example for hotel receptionists (Srisitanon, 2009) and employees at shipping companies (Srabua, 2007). Thai learners have speaking and listening difficulties because they were taught mostly in the Thai language by non-native speaking teachers, have little interaction with native speakers, and rarely use English in their daily life (Khamkhien, 2010b; Prachanant, 2012).

Students' lacking perseverance in using more opportunities to practice English also contributes to their lack of confidence in using the language for communication. Noom-Ura's study (2013) found that Thai students lack exposure to English and have an insufficient background in the English language. Rahimi, Riazi, and Saif (2008) observed that the lack of exposure to the target language outside the language classroom entails a negative attitude among language learners. The students' limitation in their exposure to the language affects their progress in language production (Khamkhien, 2010a; Liu, Chang, Yang, & Sun, 2011; Park, 1997) and motivation to learn (Dehnad, Bagherzadeh, Bigdeli, Hatami, & Hosseini, 2010). In addition, studies in English as a second language context have shown that students fear the loss of face when speaking out in their English classes, as with cellular and molecular biology students in Algeria (Faiza, 2010) and undergraduates in Taiwan (Liu & Chu, 2010). However, Fujiwara (2014) observed that students with high proficiency levels were less likely to hesitate to speak English with other people compared to those with lower levels. The present study also investigates the speaking activities and tasks which the students in food science and technology had difficulties with in academic and occupational contexts.

Studies on speaking in ESP have been varied and insightful in both English for academic

purposes and English for occupational purposes contexts (Feak, 2013). According to Dudley-Evans and St. John (1998), the speaking tasks and activities in ESP refer to oral presentations, which are a feature of both English for academic purposes and English for occupational purposes. Speaking English for an academic purposes might be expanded to various situations such as informal and social interactions, participation in conferences, and oral presentations in seminars (Dudley-Evans & St. John, 1998; Jordan, 1997; Robinson, 1991). These tasks and activities are relevant to the present study in terms of determining the need for speaking tasks and activities in the academic context for students in the food science and technology area.

Unlike speaking situations in an ESP context, speaking in an English for occupational purposes context is much more complex. Speaking in some EOP situations is interchangeable with oral communication skills, which are seen to predominate at all levels in workplace situations (Kassim & Ali, 2010; Myles, 2009). Kassim and Ali (2010) carried out a survey of 10 multinational chemical companies in Malaysia and found that teleconferencing was the most used task and activity, followed by informal work-related discussions and meetings, giving oral presentations, and networking, which requires developing contacts for information. Other tasks and activities were also seen, such as the presentation of new ideas and alternative strategies and situations that require the handling of external correspondence and instructions, and explaining and demonstrating to subordinates and fellow colleagues. One of the purposes of the present study is to ascertain the need for speaking tasks and activities in the area of food science and technology.

Based on the literature in the ESP contexts, deciding on the needs analysis for speaking would help the author identify the speaking tasks and activities in the food science and technology discipline. Research into speaking in ESP contexts indicates that it is challenging for both teachers and learners. This is because speaking in both academic and occupational contexts is complex and occurs in both formal and informal situations. Learners also need

confidence and motivation to speak, as well as knowledge of relevant vocabulary and language functions in a variety of situations.

2.2.3.1.3 Reading

Research on reading in ESP began with the study of register analysis or sentence-level analysis and the use of reading in different communicative settings. Later, research in reading shifted to discourse or rhetorical analysis, which was often closely linked with writing discourse (Jordan, 1997; Trimble, 1985). Many studies have revealed that although reading is often seen to be the less difficult skills of all the language skills, reading difficulties are still addressed in some ESP contexts. For example, Thai engineering students were seen to have difficulties with reading engineering-related articles, inter-office documents, project reports, and manuals (Rajprasit, 2015). Additionally, engineers in Taiwan faced difficulties when they read emails, reports, and memos written in English (Spence & Liu, 2013), cellular and molecular biology students in Algeria had problems in reading scientific texts (Faiza, 2010), and chemistry students in Iran found that reading speed and reading comprehension of chemistry texts were difficult (Rostami & Zafarghandi, 2014).

Various strategies and skills have been seen to be paramount in developing ESP readers (Hirvela, 2013). Jordan (1997) identified some of the main reading strategies, skills, and sub-skills that can be applied in ESP involving prediction, skimming, scanning, distinguishing between factual and non-factual information, drawing inferences and conclusions, and understanding graphic presentation. Dudley-Evans and St. John (1998) highlighted skimming and scanning as the key skills that are useful in the first stages for ESP readers to decide whether to read all of the text or which parts to read carefully. The ESP readers in scientific contexts need to determine the author's attitude, which is important in scientific discourse. It is also useful for ESP readers to learn some of the key skills, such as selecting what is relevant for the

current purposes, identifying organisational patterns, and using cohesive and discourse markers.

Much of the more recent literature about reading in ESP relates to comprehension building. This comprehension revolves around core reading skills and discourses analytic skills, rhetorical features of texts, reading strategy-related approaches, and the development of reading skills and improved comprehension (Hirvela, 2013). Studies in ESP have revealed that insufficient vocabulary, inadequate knowledge of sentence structure, tenses and textual organization (Kavaliauskiene, 2002), and learners' prior knowledge (Kendeou & van den Broek, 2007) affect learners' reading comprehension process.

Many researchers have suggested that the reading passages should be relevant to the area of the learners because it generates learners' motivation (Nunan, 1988, 2015). Kaewpet (2009a) argued that it is not the responsibility of the ESP teachers to teach the students the content area, but it is the teachers' task to develop the students' English ability associated with their content area that the students already have. Further, many scholars have emphasised that ESP language teaching should not be separated from subject areas with which the learners are already familiar but there should include some integration (Nunan, 1988). Therefore, it is necessary for ESP readers to process the language, text structure and then link the ideas to their background knowledge. The reading component of an ESP course, thus, require a balance between skills and language development (Gatehouse, 2001; Richards & Rodgers, 2014) .

There are some similarities and differences in the need for a particular reading task and activity in English for academic purposes and English for occupational purposes contexts. In English for academic purposes, students typically need to read books or journals, to take notes, to summarise, to paraphrase, and then to write essays. In these settings, students must have some knowledge about reading strategies and sub-skills (Jordan, 1997). Further, Al-Tamimi and Shuib (2010) identified some similarities between the need for reading in English for

academic purposes and reading in English for occupational purposes that petroleum engineering students regularly encounter. The requirements for reading include reading textbooks, technical articles in journals, instructions for assignments/projects, and writing reports.

However, reading in English for occupational purposes depends completely on the particular work. For example, Dudley-Evans and St. John (1998) noted that it is necessary to read manuals for carrying out maintenance processes or for operating equipment. Other studies have revealed that hotel receptionists need to read, regularly, faxes or emails, and reservation letters (Jasso-Aguilar, 2005; Srabua, 2007), and engineers regularly read English textbooks, abstracts of projects, journals/publications, manuals, project documents, office documents, and safety signs (Kaewpet, 2009a; Spence & Liu, 2013). The literature shows there has been no investigation into the reading tasks and activities in either English for academic purposes or English for occupational purposes in the food science and technology areas. Therefore, the present study aims to fill in this missing literature.

2.2.3.1.4 Writing

Like other skills, writing is also one of the more difficult skills among second language learners. For example, students in Saudi Arabia had difficulties in academic writing, including using appropriate lexical items and organising ideas and grammar (Javid, Farooq, & Umer, 2013); and postgraduate students in ICT majors at a university in Japan faced difficulty with writing conference abstracts (Jie & Cross, 2014). In the EOP context, employers in Malaysia were not satisfied with the graduates' English writing competency and the students also perceived that their writing skills were their most difficult (Vaghari & Shuib, 2013).

Writing in English as a second language began back to the 1970s with a focus on form and grammar. During this period, students copied sentences and changed them in terms of

person or tense. In the 1980s, due to the study of composition techniques and strategies, the language-based writing classroom shifted to the focus on the teaching of the organizational patterns common in academic English writing (Reid, 2001).

Like speaking, writing is a productive skill with regard to modes of communication. Successful writers, who can achieve the appropriate purpose of the writing and meet the needs of the target readers, require several skills, especially the skills of planning, drafting, and revising (Reid, 2001). Accordingly, scholars have introduced a range of approaches to the teaching of writing, generally referred to as process and product approaches (Hashemnezhad & Hashemnezhad, 2012; Swales, 1990). The process approach emphasises the concept of problem-solving or the procedures involved. The first stage of this approach is the thinking stage and followed by the process, which involves dividing the plan for writing into paragraphs, reviewing the first draft, and revising the text to produce several subsequent drafts (Pasand & Haghi, 2013). The product approach focuses on the importance of the actual text features, and the end-product or the final text that the writer will produce. This approach involves the presentation of a model text which forms the path for a writer to write a similar or parallel text. This approach helps ESP writers adapt the model for their specific purposes in writing (Hyland, 2013; Nunan, 2015).

In teaching ESP writing, genre analysis has become the most widely-used and effective methodology (Bhatia, 2002a; Hyland, 2013). Unlike other approaches, genre analysis attempts to reveal the purposes and functions of the target genre. Building on the results of genre analysis and sociological studies of academic and professional discourse, Dudley-Evans and St. John (1998) proposed a constructionist approach which integrates the product and process approaches. This concept is similar to that of Nunan (2015), who noted that during the process approach, writers need to gather information to write multiple drafts and to receive feedback on successive drafts for a desired final product. Nunan also believes that the process and the

product approaches are complementary and can be integrated. Two well-known works on genre analysis focus on academic written texts (Swales, 1990), and professional written texts, such as business letters (Bhatia, 2002a). These works guide ESP writers to capture the patterns of how writers express their communicative purposes in those particular genres.

Many studies have investigated ESP writing according to disciplines and professional fields. ESP writing covers various genres, such as writing basic personal information, emails, resumes, and business letters (Kaewpet, 2009a; J.-Y. Liu et al., 2011). Written texts dominate all of the tasks of students of English for academic purposes. Writing lab reports, field trip reports, taking notes in lectures, writing test/exam answers, and abstracts for projects are specific writing genres used by science students (Al-Tamimi & Shuib, 2010; Kaewpet, 2009a; Liu et al., 2011).

The writing tasks and activities in the English for occupational purposes context are much wider than those of English for academic purposes. For example, studies related to engineering revealed a wide range of writing tasks and activities needed, such as safety checklists/forms, writing minutes of meetings, abstracts of projects, business letters, and preparing and presenting slides for oral presentation (Kaewpet, 2009a; Kassim & Ali, 2010). Writing tasks and activities in business communication include formal and informal emails, reports, instructions, brochures, memos, sales-related materials, contracts, resumes, and official notices and minutes (Vaghari & Shuib, 2013). The findings in the ESP area are important for this study as there may be similarities in the English for academic purposes and English for occupational purposes writing genres for students in the food science and technology area.

2.2.3.1.5 Grammar

Research studies have shown that knowledge of grammar and vocabulary is a fundamental aspect of the English language and students that receive no grammar instruction seem to be

unable to expand their linguistic competence (Robinson, 1991; Zhang, 2009). Importantly, some particular grammar features are typically found in scientific discourse and are relevant to this study. In ESP, Trimble (1985) noted that the rhetorical elements in scientific discourse exist at several levels and should be taught in ESP courses. These are descriptions, definitions, classifications, instructions, and visual-verbal relationships. He also found that passive-stative distinctions, modals, definite articles, tenses, and relative clauses have been found to cause non-native learners the greatest problems.

Unlike Trimble, who focused on teaching rhetorical elements, Dudley-Evans and St. John (1998) focused on teaching morphology and syntax as grammatical forms that are necessary for ESP learners. Their concept was expanded by the work of Jianfeng, Qingdong, and Shibo (2009), who analysed the sentence structure features in ESP contexts and revealed that basic tenses—the present tense, the past tense, and the perfect tense—should be taught. Their study also found that ESP written texts in ESP are organized with numbers of sentences using the passive voice, gerunds, participles, and the infinitive. Generally speaking, studies of teaching ESP grammar has varied from at morphology to rhetorical functions.

Chaiyai (1982) developed a scientific English grammar structure test for Thai science students that included 15 English complex sentence structures that Thai students usually use in scientific areas and that are typically taught in their ESP classes. They consist of complement, comparative, and relative structures. This test is relevant to the review of the present study because it is only a study conducted in a Thai university context. Although the test is limited to biology, chemistry, and physics, another specialized area—food science and technology—also warrants investigation for the grammatical structures used. It is therefore important to investigate the grammatical structures that the students have difficulty with and need. This concept corresponds many ESP scholars' in that teaching grammar in the ESP context should be relevant to learners' needs, and ESP teachers should be aware of the use of grammar forms

in specific contexts (Hinkel, Hinkel, & Fotos, 2002; Noom-Ura, 2013; Zhang, 2009) .

Grammar is an area of difficulty in the second language learning process, and teaching grammar is a problem for many language teachers (Al-Mekhlafi & Nagaratnam, 2011; Myhill, Jones, Lines, & Watson, 2012). These problems are also present in many ESP classes. For example, students in a business school at a Malaysian university had problems with prepositions, articles, tenses, and word order (Al-Khasawneh, 2010), and students at a Thai university encountered difficulties with relative clauses (Phoocharoensil & Simargool, 2010). In addition, Ming-chu and Hung-chun (2009) found a discrepancy between teachers' perception of teaching grammar and students' perception of learning grammar. In their study, the students wanted the teachers to correct their grammar error in their writing and speaking, while the teachers believed that focusing on grammar might hinder the role of communicative competence in their classes. Therefore, they preferred peer correction to save time and to create a positive atmosphere in their classes.

Teaching grammar in a second language context is similar to that in the ESP context, where there have been many arguments about the necessity of teaching grammar explicitly. In one view, teaching grammar is unnecessary because learners can learn grammar subconsciously once they engage in communicative tasks. The other view is that teaching grammar is still useful for second language acquisition (Cook, 2013). The extent to which the priority is given to teaching grammar relies on the English levels of the learners and whether there should be a focus on using grammar accurately or using the language fluently (Dudley-Evans & St. John, 1998; Nassaji & Fotos, 2012). Recently, Nunan (2015) described the approaches to grammar teaching in terms of the deductive and inductive. Teachers should employ a deductive approach in instructing their students in grammar rules and let the students complete tasks afterwards, while teachers that employ the inductive approach will ask the students to study examples and work out the grammar rules by themselves. The integration of

these two approaches to teaching grammar will make the learning more meaningful and memorable. This present study, then, will fill in the gaps of grammar in ESP regarding the amount of grammar to be taught, the features of grammar needed for undergraduates in a food science and technology programme, and the teaching of grammar in the ESP context.

2.2.3.1.6 Vocabulary

Vocabulary is an important element in second language acquisition (Piribabadi & Rahmany, 2014). When teaching vocabulary one should be aware of the eight dimensions of word knowledge. They are meaning, written form, spoken form, grammatical behaviour (patterns the word occurs), collocations, register, association (the relation to other words), and frequency (Nation, 2001). Vocabulary knowledge can be reflected in the students' productive use of the language, as with writing (Akbarian, 2010). For example, Laufer and Nation (1995) found that the vocabulary size of a student affects that person's writing production. Zhou's (2009) study also found that when students increased the amount of their vocabulary it contributed to their writing improvement. Recently, Al-Khasawneh (2012) pointed out that a student that lacks vocabulary learning strategies would lose his or her motivation and confidence in learning. The study suggested that the teachers should realise their students' needs when they teach vocabulary.

However, there are no simple answers to the enquiry about the vocabulary needs of ESP learners. Coxhead (2013) viewed ESP vocabulary as the vocabulary used in a particular context, which can include different terms, including special purpose, specialized, technical, sub-technical, and semi-technical vocabulary. Further, many highly-specialized language forms are needed, especially special terms and their meanings frequently used in ESP contexts, such as Greek and Latin morphemes, compound words, noun groups, contraction words, and formulaic expressions. Many ESP scholars believe that although some words may be used in

both ESP and general English, their meanings are often completely different. Accordingly, the actual meaning of words should be determined according to the context (Coxhead, 2013; Jianfeng et al., 2009). In short, technical vocabulary in ESP can be words from Greek, Latin or highly-technical words, and ordinary everyday words that have very specific meanings in a particular context.

Several ESP researchers have studied compiled word lists in English for the academic purposes context, but the most cited paradigms for dealing with vocabulary deficiency come from the work of Paul Nation and his associates (Coxhead, 2013; Jordan, 1997; Ward, 2009). For example, Chung and Nation (2004) categorised technical vocabulary in an applied linguistics textbook and an anatomy textbook and found that one in every three words in the anatomy textbook was technical, but one word in five was the same as in an applied linguistics textbook, which is an entirely different academic area.

Many scholars have considered that ESP students should first learn the 2000 words of the general core vocabulary, followed by a set of words common to all academic disciplines (Jordan, 1997; Nation, 1990; Nation & Waring, 1997). In a similar vein, many scholars, such as Dudley-Evans and St. John (1998) and Siyanova-Chanturia and Webb (2016) noted that the teaching of general technical vocabulary is not the responsibility of the ESP teacher; rather, the teacher should check whether the students understand the technical vocabulary that appears in an exercise.

However, many ESP scholars have disagreed with the concept of not teaching technical vocabulary (Strevens, 1972; Khaferi, 2015). Strevens (1972) pointed out that ESP teachers that lack knowledge of science may have great difficulty in explaining scientific terminology. This concept was supported by Coxhead (2013), who claimed that “ESP learners may face an extremely large learning task to fully develop their understanding and use of specialized vocabulary in their subject area at university or in a professional context” (p.116). Therefore,

it is important for ESP teachers to prepare their students to be familiar with these words.

Basturkmen (2006) proposed two approaches to teaching specialized words or technical vocabulary by categorizing words in every field as common core words or specialized words. The first approach to these categories is that common core words are those that second language (L2) students should know regardless of their study area. Once the students establish that common core, they should begin to learn the specialized words. ESP students at the university level should already know some of these core words. The second approach is to teach these primarily specialized words and their meanings at the same time as core words in a way that allows the students to retain them for a long time.

The vocabulary found in the English for occupational purposes context differs from discipline to discipline but covers some of the academic word list. Hyland and Tse (2007) pointed out that only 10.6 percent of the academic word list is used in sciences, engineering, and social sciences by professional and student writers. Accordingly, they recommended that practitioners consider using word lists based on their field or specific area, rather than the academic word list. They argued that even where word families are found in a range of areas, the meanings of the words and the ways they collocate are quite for each discipline. This concept was supported by Nunan (2015), who suggested that it is necessary to teach words that have a special meaning in the particular subject to make the vocabulary learning productive. Difficulties in learning the vocabulary of second language learners and ESP students may be connected to vocabulary size and the variation of words (Nunan, 2015). In addition, Kocaman (2014) suggested that different types of vocabulary knowledge are learned at different strategies. Furthermore, the use of English code-switching in the Thai occupational contexts for specialized vocabulary words and common nouns was found to be parallel with the content, drew the attention of listeners, and was trendy regarding what was going on in the community (Likhithongsathorn & Sappapan, 2013).

This present study aims to determine the need for vocabulary in academic and occupational contexts in the food science and technology area. The findings may provide some recommendations for ESP teachers to teach the vocabulary that is necessary for their students.

2.2.3.1.7 Translation

Although ESP classes do not teach translation separately, studies have shown that ESP students need and have difficulty with this skill. Translation in the academic context is required by students in other sciences areas, such as cellular and molecular biology students (Faiza, 2010), industrial design students (Adzmi, Bidin, Ibrahim, & Jusoff, 2009), and medical English Iranian students (Mazdayasna & Tahririan, 2008).

Many researchers have pointed out some of the limitations of translation in ESP classes. For example, Popescu (2013) argued that in order to succeed in translation, students must be at least at the upper-intermediate level of English proficiency because they already have good knowledge of both second language learning and learning to translate. Additionally, Kaewpet (2009a) argued that ESP teachers are advised not to teach students to translate the textbooks they read into Thai because the students in the Thai context are expected to be able to comprehend, rather than translate, the books. Moreover, Tatzl (2013) viewed that translation is not and should not be the main occupation of ESP teachers, but that it has the potential to increase the status of ESP and its representation through using translation to create displays of tangible linguistic work outside the classroom.

However, many researchers have recognised that translation can be used to verify the students' comprehension of the second language text in many ways, including vocabulary, main ideas, specific details, and textual organisation (Atai & Fatahi-Majd, 2014; Lim & Christianson, 2013; A. Mahmoud, 2006). Avand's (2009) study showed that translation was able to promote the reading comprehension of ESP Iranian learners by helping them to acquire

the ability to use the various components of the linguistic system of the target language and to activate the grammatical forms in their native language. Compared with the broader studies in ESP teaching, translation has been confirmed as an important activity in ESP (e.g. Faiza, 2010; Saz, Lin, & Eskenazi, 2015; Tudor, 1987) for the same reason.

The literature regarding the background and development of ESP shows that definitions of ESP in the 21st century are based on the learners' needs, their experiences and their language proficiency levels in relation to the specific context. This has led to ESP courses having a highly focused approach in comparison to general English for second or foreign language courses. In addition, an overview of the literature concerning ESP teaching approaches reveals traditional skills based approaches and more recent integrated ESP approaches, such as content-based instruction and content and language integrated learning. Consequently, the activities, approaches to teaching, and content have been selected to meet the needs of the students and stakeholders in a specific area. Therefore, needs analysis in ESP contexts are vital to understand the specific needs. This will be the focus on the next section.

2.3 Needs Analysis in ESP Contexts

This section reviews the notion of needs analysis based on its important contribution and interrelationship with ESP course development. The section provides a discussion of the definitions of needs analysis, signals the notion of needs analysis in the ESP context, and discusses the relationship between ESP course development and needs analysis. Then, the section critically reviews different models and respective components of needs analysis. Finally, needs analysis and ESP in the Thai context will be reviewed.

2.3.1 Definition of needs analysis

Needs analysis in English language teaching has been defined in several ways. According to Nunan (1988), needs analysis refers to “a family of procedures for gathering information about

learners and about communication tasks” (p.75). Expanding on Nunan, Brown (1995) explained needs analysis as the analysis of both subjective and objective data to set up the objectives of the course that meet the requirements of the students and the institute. He later simplified the definition by adopting a more holistic perspective. His revised definition of needs analysis was “the systematic collection and analysis of all information necessary for defining a defensible curriculum” (Brown, 2009, p. 269).

The term “needs analysis” is sometimes compared to “needs assessment,” as some scholars make a distinction between “needs assessment” and “needs analysis.” For example, Kaufman (1994) referred to “needs assessment” as a process of identifying and prioritizing language needs, whereas “needs analysis” is the process for identifying the causes of language needs to find an appropriate solution for improving the language. Graves (1996, p. 12) distinguished the term “needs assessment” and “needs analysis” in that “assessment” involves obtaining data, whereas “analysis” involves assigning a value to those data.

However, many scholars in the ESP area use the term “needs analysis” rather than “needs assessment” and consider them as the same concept or use them interchangeably (Brown, 2009; Edwards, 2000; Johns & Dudley-Evans, 1991; Johns & Makalela, 2011; Mehrdad, 2012). According to Brown (1995), “needs analysis” is also known as “needs assessment.” In Huang (2010), the concept of “needs analysis” was used interchangeably with “needs assessment” to assess the language learning needs of undergraduate and graduate students for a new academic language support center at a Canadian university. In İnceçay and İnceçay (2010), both terms “needs analysis” and “needs assessment” are used to identify the needs of foreign language teachers for teaching the language skills and strategies that the learners need. The present study uses the term “needs analysis” because it is widely understood by many ESP scholars and makes no distinction between the two terms.

2.3.2 Needs analysis in ESP course development

The term “needs analysis” first appeared in the 1920s but became central to ESP in the 1960s, as needs analysis became a significant part of ESP course development (West, 1994). Although Hutchinson and Waters (1987) highlighted that an awareness of needs distinguishes ESP from general English, their assumption was rejected by Seedhouse (1995), who felt that needs analysis theory and application can be applied in general English courses. Similarly, Long (2005) affirmed that any language course without a needs analysis does not provide detailed and selective goals or academic support to meet the learners’ needs in the course time frame.

However, using a needs analysis is still more common in developing ESP courses. Needs analysis is seen to be related to other specific phases of ESP course development: course design, materials selection, pedagogical approaches, assessment, and evaluation. Needs analysis is commonly considered as the initial phase in the linear process in course development, although Dudley-Evans and St. John (1998) viewed this as more cyclical (Figure 2.3). In other words, once overall needs for a course are established, decisions can be made in developing or re-developing the course in terms of learning objectives, material selection or production, the teaching and learning approach, and evaluation (Jin et al., 2014). Thus, many ESP practitioners have acknowledged that a needs analysis is fundamental to developing any language course successfully (Hutchinson & Waters, 1987; Kavaliauskienė & Užpalienė, 2003).

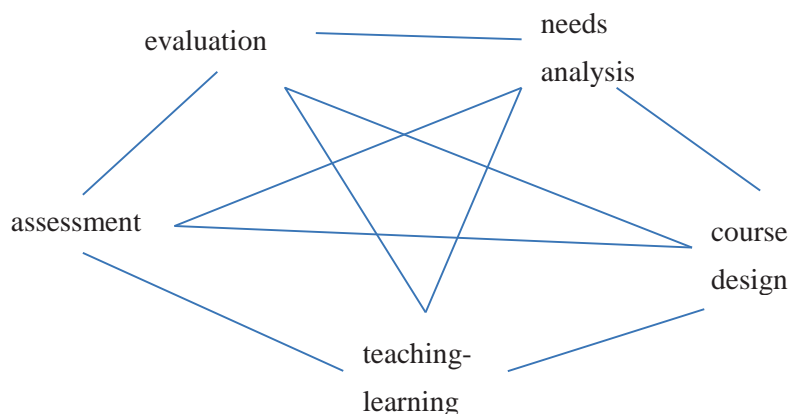


Figure 2.3 Stages in the ESP process (Dudley-Evans & St. John, 1998, p. 121)

Needs analysis in different disciplines can discover various situations and settings which will lead to different tasks and activities for students in that particular areas. For example, the needs analysis by Kusumoto (2008) investigated the needs of elementary school teachers in Japan for a teacher training program. Later, Arslan and Coskun's (2014) study investigated the language needs of research assistants enrolled in the teaching staff training programme and the instructors that were teaching these research assistants at a Turkish university. Research using needs analysis to develop ESP courses in the food science and technology discipline is rarely found in the Thai and international contexts, and never at the university being studied. Therefore, this study may fill in some of the gaps in the research in this area. In order to clarify needs analysis as part of a broader process, the following section considers how needs analysis fits with the ideas of on-going needs analysis and course evaluation.

2.3.2.1 On-going needs analysis

Needs analysis has been traditionally conducted during the initial stage of course development as the first step conducted before a course begins (Hutchinson & Waters, 1987; Jin et al., 2014; Mazdayasna & Tahririan, 2008). However, Dudley-Evans and St. John's diagram of the stages in the ESP process indicates that needs analysis can be conducted at different stages of the

course according to each situation. In many cases where the course is in place or an existing one is being revised, an on-going needs analysis may be carried out and justified (Dudley-Evans & St. John, 1998; Mohammadi & Mousavi, 2013). An on-going needs analysis later in a course may lead to a successful revision of an ESP programme (Ahour & Mohseni, 2015; Prachanant, 2012). The outcomes of an on-going needs analysis can then feed into the course re-alignment, which can be done by revising its objectives and modifying the teaching and materials (Dudley-Evans & St. John, 1998; Jocaitė & Petruševičius, 2006; Kavaliauskienė & Užpalienė, 2003). In this sense, an on-going needs analysis can be conducted at various points in a course because the perceptions of learners, teachers and other stakeholders may change as they learn more about their expectations of the course and the students' immediate needs (Lowe, 2009; Robinson, 1991). Therefore, it is essential to investigate potential changes in the perceptions of the stakeholders in different situations in order to assess whether the objectives of an ESP programme need to be revised and the changing needs of the students in the area.

The research about on-going needs analysis for redesigning existing courses has recently increased, particularly in countries where English is spoken as a second/foreign language. For example, Rahman, Ming, Aziz, and Razak (2008) conducted an on-going needs analysis for an ESP speaking course for science and technology students because no existing ESP courses had been based upon a needs analysis conducted in public universities in Malaysia. Also in Malaysia, Adzmi et al. (2009) conducted an on-going needs analysis of the English language needs of industrial design students because the existing English language courses did not prepare the students to function adequately in their field. In a South African university, a needs analysis conducted by Johns and Makalela (2011) aimed to create a new (and revised) English for academic purposes curriculum due to the lack of a previous needs analysis. In Thailand, a needs analysis was conducted to investigate the English language needs of the tourism employees working in international tour companies in order to establish guidelines to

develop the existing English for tourism course (Prachanant, 2012). Further, Alhuqbani (2014) carried out an on-going needs analysis to compare and contrast the existing teaching English courses for police cadets in four police colleges in the Middle East.

2.3.2.2 Course evaluation

The term needs analysis is related to course development, which includes program or course evaluation. Dudley-Evans and St. John (1998) argued that needs analysis and course evaluation share some similarities in collecting data, analyzing data, and implementing the results. However, a needs analysis and course evaluation have different aims and perspectives. The purpose of a needs analysis is to set the aims and goals of a course and to suggest how the course will be taught (Songhori, 2008; Vaghari & Shuib, 2013). Many aspects should be considered when conducting a needs analysis, such as the language in the target situation, the learners' competency and difficulty, the learning styles and learning strategies, and environmental factors, which will be discussed later (Basturkmen, 2010).

On the other hand, course evaluation aims to find out the effectiveness of a course or a program to ensure the course's continuous improvement (Hutchinson & Waters, 1987; Nunan, 1988; Tsou & Chen, 2014). Course evaluation measures effectiveness of the course by looking at the course objectives that may have been set by a needs analysis. A course evaluation aims to investigate three areas of a course: the fulfilment of the learners' needs, the authenticity of materials, tasks and assessments, and the learner's autonomy or sense of responsibility of the learners for their learning and their ability to be responsible for what they learn (Tsou & Chen, 2014).

A course evaluation may be conducted either in a formative or summative way (Frances & Roland, 2003). In general, a formative evaluation can be conducted by students and staff at various stages of the course and focuses on the program processes (Mohamadi, 2013).

Formative evaluation allows teachers to flexibly select suitable instructions for the next stage and helps the teachers teach based on the students' immediate learning needs (Bailey & Carroll, 2015). A summative evaluation assesses the impact of a course and provides information for the repeat versions or related activities of the course. This type of evaluation can be conducted during or after the end of the course. Summative evaluation outcomes can be fed into the improvement of the course by changing the current activities, influencing future ones (Hur & Suh, 2010; Hutchinson & Waters, 1987), or making a judgement about the program's success in meeting its objectives or not (Mohamadi, 2013).

A course evaluation could be seen as overlapping with an on-going needs analysis if the process aims to modify the existing course or provide information for the next version. However, Dudley-Evans and St. John (1998) pointed out the distinctions between needs analysis or on-going needs analysis and course evaluation in terms of the main sources of data and data collection methods, as shown in the Table 2.1. It can be seen that the data for a needs analysis and course evaluation can be gathered from insiders and outsiders. The main sources of data and the data collection methods for a needs analysis or an on-going needs analysis are much wider and more varied than those for a course evaluation. These distinctions make needs analysis more extensive than course evaluation.

Table 2.1 Main sources and data collection methods of needs analysis and course evaluation (Dudley-Evans and St. John, 1998, p. 132)

Needs analysis	Course evaluation
<p>Main sources:</p> <ul style="list-style-type: none"> - learners - people working or studying in the field - ex-students - documents relevant to the field - clients - employers - colleagues - ESP researcher in the field 	<p>Main sources:</p> <ul style="list-style-type: none"> - learners - people the learners work or study with - documents and records used - ourselves - colleagues

Table 2.1 Main sources and data collection methods of needs analysis and course evaluation (Dudley-Evans and St. John, 1998, p. 132) (Cont.)

Needs analysis	Course evaluation
<p>Data collection methods:</p> <ul style="list-style-type: none"> - questionnaires - analysis of authentic spoken and written texts - discussions - interviews - observations - assessments 	<p>Data collection methods:</p> <ul style="list-style-type: none"> - checklists and questionnaires - assessments - discussion - record keeping

2.3.3 Definition of needs analysis in this study

This present study adhered to the common term “needs analysis” in order to avoid the confusing plethora of understandings associated with other terms. First, this study used the term “needs analysis” similarly to many ESP scholars (e.g. Dudley-Evans & St. John, 1998; Jin et al., 2014; Mazdayasna & Tahririan, 2008), who have noted that a needs analysis is a stage in the ESP course development cycle. The term “needs analysis” was used in this study because the results of the needs analysis should guide the development of the course objectives (Ahour & Mohseni, 2015) and then this leads to further steps in the ESP course development cycle (Dudley-Evans & St. John, 1998). This definition is different from a “course evaluation,” which usually aims to measure the effectiveness of the course objectives.

The current ESP programme for the food science and technology students at Agriculture University did not have clear course objectives because no needs analysis was conducted before developing the programme. Therefore, a needs analysis is ideally carried out at the initial stage in course development that should also eventually include course evaluation. Tsou and Chen (2014) agreed that once the needs analysis establishes the course objectives, a course evaluation can be processed. In this study, the needs analysis will be an on-going one

(Dudley-Evans & St. John, 1998; Robinson, 1991) in order to assess the need to realign the present programme with the understanding that the perceptions of stakeholders are likely to change at different periods of time. Groups of stakeholders from both the academic and occupational contexts will be involved in the study to record their perceptions on the language used in their various contexts (Dudley-Evans & St. John, 1998; Long, 2005). The results of the needs analysis of this study will provide recommendations for the re-development of the ESP course corresponding to the immediate needs of the stakeholders in this particular area (Lowe, 2009; Robinson, 1991).

In order to conduct an effective needs analysis, several approaches and models will be discussed.

2.3.4 Needs analysis approaches and models

Several ESP researchers have discussed the development of needs analysis approaches and models. Huhta, Vogt, Johnson, and Tulkki (2013) classified the development of needs analysis approaches into two groups. The first group focused exclusively on functions and notions and on the four skills of speaking, listening, writing, and reading. This group refers to language-centred approaches. Examples of scholars in this group are Munby (1978) and Dudley-Evans and St. John (1998). The second group has emphasized a comprehensive task-based approach, as seen in the work of Long (2005), whose needs analysis is primarily based on tasks. However, a later approach by Huhta, Vogt, Johnson, and Tulkki (2013) did not suggest a clear division between the two groups of needs analysis approaches.

Munby (1978), who is acknowledged to be the first scholar working in the area of needs analysis, introduced a needs analysis approach through a communicative design. He linked the needs analysis to situations and functions and generated “a Communication Needs Processor” model that was the basis of the needs analysis approach. This model claims to “take account of

the variables that affect communication needs” (p. 32). However, many researchers have addressed the limitations of Munby’s model, saying that it is not very practical. The model is claimed to be inflexible, too time-consuming to report a target profile for each student, and fails to prioritize the list of micro-elements and their linguistic functions, and does not include other affective factors (Cunningsworth, 1983; Hutchinson & Waters, 1987; West, 1994).

Several approaches to needs analysis after Munby’s target situation analysis and his model aimed to eliminate the limitations of the model and to expand the areas of analysis. The broader areas of approach make the needs analysis more sophisticated and encompass many types of needs, discourses, and situations. Chamber (1980), for example, introduced the term “target situation,” which was derived from Munby’s model, where the needs analysis was focused on the linguistic features used in the target situation. They also added students, other relevant participants, and their contexts for a much more triangulated and rich approach to needs analysis (Johns & Makalela, 2011). Further, Sysoyev (2001) linked the needs analysis in ESP to the notion of Vygotsky’s (1978) “Zone of Proximal Development” according to two stages. The first stage is what the learners can do independently, and the second one is the potential of the learners and what they can achieve with the help of a mediator. In this notion, the “Zone of Proximal Development” links the two stages, and the mediator is the one that helps the learners shift to the second stage. In the ESP context, the mediator would be the ESP teacher, and the second stage would be the realization of the students’ needs.

The needs analysis approaches and models offered by Hutchinson and Waters (1987) and Dudley-Evans and St. John (1998) are the well-known models that are currently used among many ESP researchers. These approaches and models ultimately focus on the analysis of the learners needs (Dudley-Evans & St. John, 1998; Jordan, 1997; Songhori, 2008). Hutchinson and Waters (1987) promoted a learner-and-learning approach by focusing mostly on what and

how a learner learns a language, while Dudley-Evans and St. John (1998) covered other factors affecting and contributing to the learner's needs.

Hutchinson and Walters (1987) expanded the definition and model of needs analysis from Munby's (1978) needs analysis model and included the learning needs of the learners. They defined needs analysis in the ESP context as the kinds of linguistic features that learners are required to comprehend and/or produce in the situation in which they are engaged. Accordingly, their needs analysis model involves two factors: target situation analysis and learning needs analysis. They differentiated these terms in that the target situations analysis refer to "what the learner needs to do in the target situation" and the learning needs analysis refers to "what the learner needs to do in order to learn" (p. 54).

Hutchinson and Walters's (1987) target situation analysis can be derived from necessities, lacks, and wants. Necessities are considered as what the learners have to know in order to function effectively in the target situation or their demands for an ESP course. They are sometimes called objective needs (Brindley, 1989). Lacks refer to the gap between necessity and what the learner already knows. Wants or subjective needs mean what the learners actually want to learn or what they feel they need. They also argue that the learners' wants may or may not comply with those perceived by the teachers or course designers. Although the needs analysis model of Hutchinson and Waters (1987) included external factors in their deficiency analysis, their framework ultimately focuses on the learners.

Many researchers have applied the needs analysis model of Hutchinson and Waters (1987) because it advocates a learner-centred approach. For example, Kavaliauskienė and Užpalienė (2003) used this model and found that institutional constraints influenced students' needs. Eslami (2010) revealed a divergence of perceptions of needs between teachers and students. J.-Y. Liu et al. (2011) shed considerable light on the inconsistency between the students' needs and their actual course-taking action. However, there have been some

limitations found in the needs analysis model of Hutchinson and Waters (1987). For example, Basturkmen (2010) pointed out that this model focuses on broad academic skills or a variety of topics to be learnt when the learner may or may not want to learn all of them.

Many ESP scholars in the 70s and 1980s considered “target situation analysis” (TSA) as dominant in the needs analysis that was used by Munby in 1978, Chambers in 1980, and also by Hutchinson and Waters in 1987, and more recently by Mohammadi and Mousavi in 2013. The term “target situation analysis” refers to the analysis of identifying the requirements or goals of the English language in the target situations of the learners. “Target situation analysis” investigates the context of language, the language events, and the genres used in the target context. Belcher (2006, p. 136) argues that “the students’ self-knowledge, awareness of target situations, life goals and instructional expectation” inform their needs for learning and their perceptions of need surrounding English language skills, were relevant to a particular occupational context. The present study will look at the context of the language and will use elements of target situation analysis.

Unlike “target situation analysis,” “present situation analysis” (PSA) introduced by Richterich and Chancerel (1980) ascertains the state of the learners’ language development at the beginning of the language course. The information of the “present situation analysis” can be both objective (age, proficiency, prior learning experience) and subjective (self-perceived needs, strengths, and weaknesses (Dudley-Evans & St. John, 1998; West, 1994). Broadly speaking, “present situation analysis” addresses two aspects: “lacks” and “wants” (Hutchinson & Waters, 1987). Many scholars suggest using both “target situation analysis” and “present situation analysis” for a needs analysis in order to enhance the learning and to reach the desired goals for an ESP course effectively (Songhori, 2008).

The term “pedagogic needs analysis” was also proposed by West (1994) to eliminate some of the limitations of the “target needs analysis” of Munby (1978). Later, Dudley-Evans and St. John (1998) considered analyzing information about learners and the learning environment as “pedagogic needs analysis” in three main areas: deficiency, strategy, and means analysis. The term “deficiency analysis” refers to the discrepancy between what the learners already know or their current level and what is necessary for the students or the students’ target level (Hutchinson & Waters, 1987), and is often used interchangeably with “lacks analysis” (Lowe, 2009). Dudley-Evans and St. John (1998) suggested that ESP course developers can indicate the learners’ deficiency in using English language skills in a target situation by providing information about the skills that the students possess, and the language they may use in the target situation, and then evaluate the learners in order to see the language they lack. The present study analyzed the students’ deficiency in using their English skills to identify their present level of English proficiency.

“Strategy analysis” or “learning needs” is often a factor in needs analysis and refers to the route or the process of learning (Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987). In order to analyse “learning needs,” some considerations should be taken into account, including the learning situation, the learner’s knowledge, skills, strategies, and motivation (Hutchinson & Waters, 1987), how the learners learn the language, why they learn it, what resources are available to help them learn (Astika, 1999), and the fact that different learners have different ways of learning (Dudley-Evans & St. John, 1998). A learning needs analysis is linked to “target situation analysis” in that “target situation analysis” determines the destination or objectives of a course, whereas “learning needs” serve as the vehicle and guideline to get to the destination. It should be the learners themselves and the other learning factors that affect their learning. Kern (2013) suggested using technology to teach ESP because it makes learning the language more effective or efficient and simulates the real life work situation while giving

students the opportunity to acquire and practise essential professional skills. This concept is relevant to the context of this present study.

Within the wider area of “learning needs analysis” in the ESP context, many different learning styles and strategies have been seen to affect students’ learning. Learning styles can be seen as general approaches to acquiring and processing language. Learning strategies are specific processes that learners use to deal with language tasks in the target situations (Cohen & Macaro, 2007; Oxford, 1990). Oxford (1990) classified learning styles into four dimensions—“sensory preferences, personality types, desired degree of generality, and biological differences” (p.2) - regarding the learners’ learning activities in an English course. Some scholars believe that applying appropriate learning strategies can improve the second language learners’ perception, reception, storage, retention, and retrieval of language information (Anderson, 2005; Cohen & Macaro, 2007). Some scholars believe that lower proficiency learners would benefit from learning the strategies of higher proficiency learners (Horwitz, 2012).

In addition, studies have shown that students with higher levels of English proficiency use more learning strategies than those with lower levels. This finding is consistent with other studies (Bidabadi & Yamat, 2010; Chen & Intaraprasert, 2014; F. Liu, 2010; O’Malley, Chamot, Stewner-Manzanares, Kupper, & Russo, 1985; Wong & Nunan, 2011). Regarding Thai students, Patchanok (2011) and Phoocharoensil and Simargool (2010) pointed out that the learning strategies of Thai students related to some aspects of second language acquisition: overgeneralization (students try to formulate a linguistic rule without being aware of exceptions), first language transfer (students rely upon Thai language forms and meaning without being aware of significant distinctions in the forms and structures between the two languages), translation strategies, and transfer of training (students apply the grammar rules

they have learned without being aware of other constructions that are more advanced). Accordingly, teachers might be able to help their students develop more positive learning strategies to become better language learners (Horwitz, 2012).

Identifying and acknowledging learners' needs can help in course development. Teachers can design instructional strategies that enable learners to reach personal as well as course objectives. Additionally, the information from the analysis can be used to establish the language-learning skills that students need for their learning (Cohen & Macaro, 2007; O'Malley & Chamot, 1990). Thus, the results of the needs analysis in the present study will reveal the language learning strategies of the students in the food science and technology programme, which is considered as the "learning needs analysis." The results of this element of the needs analysis might guide ESP teachers in designing activities that are most compatible with the students' learning styles and help students to develop effective language learning strategies.

Another aspect of some needs analysis approaches, such as that of Hutchinson and Waters (1987), are the external factors in their "present situation analysis." Holliday (1994) called these external factors a "means analysis," which is the contextual, social, aspect of the language-teaching environment. "Means analysis" covers information about the environmental factors in which the course is organized and is an acknowledgement that "what works well in one situation may not work in another" (Dudley-Evans & St. John, 1998, p. 124). Swales (1989) suggested that ESP course developers consider five factors in a needs analysis that are related to the learning environment. These factors are "the classroom culture (learner factors), the English for academic purposes staff profiles (teacher factors), the pilot target situation analysis, status of service operations (institutional factors), and study of change agents" (Swales, 1989, p. 89). Basturkmen (2010) provided a more explicit meaning of "mean analysis" as the "identification of the constraints and opportunities in the teaching situation" (pp. 18-19). Her analysis included gathering information on the classroom culture, learner factors, teacher

profiles, and the status of language teaching in the organization. These considerations will provide a better understanding of the educational context and realistically depict the constraints and opportunities of ESP teaching and learning for the food science and technology students in the Thai university investigated here.

Learner factors are important for a needs analysis. Students who lack background knowledge entail their low level of motivation and English proficiency (Andrade, 2006; Lee, 2010). Similarly, Takahashi (2009) found a relationship between English competency and class performance. Furthermore, Lightbown (2013), and Murray (2011), confirmed that students with positive attitudes had a willingness to continue to learn.

Teacher factors are also important in a needs analysis. ESP teachers have powerful roles to play in the class and influence the teaching and learning in the ESP programme. Edge (2009) indicated that the teachers' beliefs about language acquisition and how the language should be taught influence the way in which they teach. He suggested that it is the teachers' responsibility to try to ensure that the lesson is interesting and stimulating enough to encourage the students to want to learn. The teachers plan and implement their teaching pedagogy, which is a significant factor in the students' difficulties, achievements, and attitudes towards learning (Eryilmaz, 2014; Hazrul Nik Hashim, Shah Alam, & Yusoff, 2014; Peiser & Jones, 2014). However, studies have found that teachers may not always be the best persons to determine their students' needs and challenges (Akyel & Ozek, 2010; Eslami, 2010; Hyun Hyo, 2013). Teacher factors are important for this study because many English classrooms in Thailand are considered to be dominated by a teacher-centred approach (Akkakoson, 2012).

Regarding the institutional factors, this study focuses on educational planning and facilities management. Ellis (2015) argued that the input that the learners receive and the interaction that they engage in influence the learners' language acquisition. Further, Baker (2012) viewed that a lack of available resources for teaching English in Thailand could be the

difference between wealthy urban communities and poorer rural communities. This study aimed to understand the context of teaching in an ESP programme at Agricultural University, so institutional factors are important for the analysis.

Dudley-Evans and St. John's (1998) model also includes "register analysis," which is related to vocabulary and grammar at the word and sentence level. They believed that the grammar forms in particular ESP contexts are similar to those of general English, but some grammar forms and vocabulary are used frequently. It would be useful for the ESP teachers and students in the present study to know what features of grammar and vocabulary are mostly used and needed in the academic and occupational contexts of food science and technology, which can be discovered in the needs analysis.

"Discourse analysis" focuses on the analysis at the sentence level concerning how sentences are used to communicate. This type of analysis focuses on the writers' purposes rather than the forms and generates materials based on functions (West, 1994). However, it is not recommended to investigate only discourse analysis in the needs analysis because this does not provide sufficient information on the communication used in the academic or occupational contexts (Dudley-Evans & St. John, 1998). It will be important to consider discourse analysis accompanied by other needs analysis factors described in this review in order to understand the context of food science and technology research.

Another aspect of some needs analyses is "genre analysis." Swales (1981) defined genre as "a more or less standardized communicative event with a goal or set of goals mutually understood by the participants in that event and occurring within a functional rather than a personal or social setting" (pp.10-11). In the ESP context, "genre analysis" refers to the investigation of communicative events focusing on purpose, style, and audience (Bhatia, 2002a). "Genre analysis" has been associated with needs analysis in that a needs analysis, which includes genre analysis, can help language learners make the relevant connection

between the use of the language and the aim of the communication (Bhatia, 2002a). For example, Bruce (2009) analysed the results sections in sociology and organic chemistry articles and found that the written text and the discourse that surrounded these subject texts were different. His study confirmed that using “genre analysis” provided a heuristic technique for the analysis of other texts within the same genre and helped the writers to create their texts within the same area. Similarly, Nima and Jooneghani (2012) espoused genre analysis while analyzing the students’ needs as it can enable teachers to become aware of the hidden assumptions and to gain insight into pedagogical implications.

Dudley-Evans and St. John (1998) developed their needs analysis model covering all aspects of the nine approaches of needs analysis, which aims to gather the needs of the relevant stakeholders for effective ESP course development. A needs analysis model covering all approaches would help ESP researchers identify the learner’s needs efficiently and practically (Flowerdew, 2013; Hutchinson & Waters, 1987; Khan, Ghulamullah, Mohsin, Dogar, & Awan, 2011; Robinson, 1991; Songhori, 2008; West, 1994). Figure 2.4 identifies the eight factors in the Dudley-Evans and St. John’s needs analysis model.

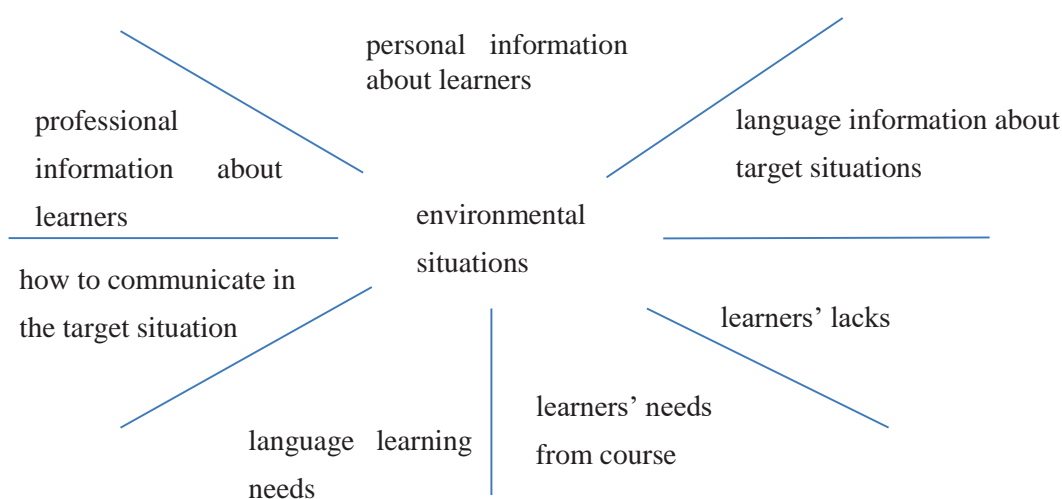


Figure 2.4 What needs analysis establishes (Dudley-Evans & St. John, 1998, p. 125)

- Professional information about learners - the tasks and activities that the learners will be using English for. This information links to the target situation analysis approach, which will reveal objective needs.
- Personal information about learners - are the factors that may affect the way the learners learn such as their previous learning experiences, cultural information, reasons for attending the course and the expectations regarding it, and attitude toward the English course. This personal information covers the present situation analysis approach, which will reveal wants, means, and subjective needs.
- Language information about the target situations - is what the learners' current skills and language use are. The language information covers the present situation analysis approaches, which will enable the assessment of the learners' difficulties in English.
- The learners' lacks - or the gap between the learners' current skills and the activities that the learners are using English skills. This information covers the deficiency analysis and present situation analysis approaches.
- Language learning needs - which are effective ways of learning the skills and language that the learners lack. This information covers learning needs approaches such as learning styles and learning strategies.
- How to communicate in the target situation - refers to communication information about the learners when they use the English language and skills in the target situation. This information covers register analysis, discourse analysis, and genre analysis approaches.
- Learners' needs from the course - this information covers learning needs approaches.

- Environmental situations - the information about how and where the course will be run. This information covers the means analysis approach.

Dudley-Evans and St. John's (1998) needs analysis model integrates all previously-described approaches to needs analysis: "target situation analysis, present situation analysis, pedagogic needs analysis, deficiency analysis, strategy analysis or learning needs analysis, means analysis, register analysis, discourse analysis, and genre analysis" (p.125). Their model is regarded as a comprehensive needs analysis model. They also added many aspects, such as the perspectives of outsiders and insiders, making a distinction between the needs that derived from a target situation analysis, those that are from a present situation analysis, and those that are from a learning situation analysis. The target situation analysis can be gathered from outsiders and covers objective, perceived, and product-oriented needs. The present situation analysis is the reflection from both outsiders and insiders about the strengths and weaknesses regarding the language, skills, and learning experience of the learners. Lastly, the learning situation analysis is obtained from insiders, which corresponds with the learners' cognitive and affective factors and encompasses subjective, felt, and process-oriented needs. These needs reflect how the learners feel about the ESP course.

Dudley-Evans and St. John's (1998) needs analysis model has been adopted in various disciplines. However, the literature shows that little research has been carried out on all of the factors and approaches of this complete needs analysis model and all of the relevant stakeholders. For example, Adzmi et al. (2009) employed the model to explore the perceptions of students, teachers, and ESP teachers about the students' language deficiencies and their needs in the industrial design area. Wu (2012) adapted the model to explore the needs for a business English course, which focused only on three large areas: professional information about the learners, how to communicate in the target situation, and language information about

the learners. Although Wu employed questionnaires and interviews, the interpretation of the results was only from the questionnaires. In addition, focused on quantitative research methods using a questionnaire to ascertain the teachers and students' needs in a chemistry department of two universities in Iran. They adapted two factors from the Dudley-Evans and St. John's (1998) needs analysis model, the environmental situations and professional information about the learners, in order to determine the stakeholders' views. It can be seen that these studies reflected only some aspects of needs analysis and excluded other factors in the Dudley-Evans and St. John's (1998) needs analysis model.

2.3.5 Needs analysis model for this study

From this discussion and the literature review of the needs analysis approaches and the models proposed by many scholars in the ESP area, this study, then, adopted most of the factors of the Dudley-Evans and St. John's (1998) needs analysis model. It appears that a well-designed needs analysis should include a wide range of factors. This needs analysis model should provide the most comprehensive concept of needs and encompass all of the approaches to needs analysis used in other models. Using Dudley-Evans and St. John's (1998) needs analysis model would enable many relevant data to be gathered. The students' personal and professional information would cover "present situation analysis," and language difficulties would cover "deficiency analysis" and "present situation analysis." Furthermore, the language learning needs from the course would include a "learning needs analysis." "The target situations analysis" of this study would focus on the language skills and language issues related to food science and technology in both the academic and occupational contexts. The information from the "target situation analysis" will be gathered from how students communicate in the academic and occupational contexts, "register analysis," "discourse analysis," and "genre analysis."

However, the “means analysis” or environmental factors in Dudley-Evans and St. John’s (1998) was not used as the description is too broad and makes it difficult to identify the definite factors that should be included in the analysis. They described the means analysis as an analysis of the environment in which an ESP course will be run with the two considerations: the classroom culture, and the management infrastructure and culture. Instead, the researcher of this study used Basturkmen’s (2010) interpretation of means analysis to strengthen the needs analysis model of this study through a focus on constraints and opportunities of the teaching and learning environment.

In a Thai context, studies have shown that student behaviours and learning styles reflect Thai culture and educational values. Eaves (2009) explained that Thai students are expected to listen quietly throughout the whole lecture since knowledge comes from the teacher, and it is considered inappropriate and impolite to question the teacher. Asking questions during class implies criticism of the teacher’s explanation and a lack of respect for their higher status. Similarly, Cubalit (2014) observed that questioning authority is very impolite in Thai culture. In the Thai classroom, if the students do not understand the lesson, they will not ask a question. Further, outside the classroom Thai people prefer giving suggestions rather than criticism in order to avoid losing face (Getkham, 2014).

As this present study was carried out in a university in Thailand, in the next section it is necessary to review needs analysis and ESP at the university level.

2.3.6 Needs analysis and English for specific purposes at university level in Thai contexts

There is very little research in the field of ESP and needs analysis that has been carried out in the Thai context, which is the focus of this research. For example, in the tertiary academic context, Kaewpet (2009a) examined the communication needs of a group of Thai civil engineering students at university, showing that the three language skills (speaking, reading

and writing) taught in the ESP course were not sufficient for communication. The needs analysis study of Bosuwon and Woodrow (2009) showed that when a problem-based course is designed with the learners' needs in mind, English reading communication can become sufficiently meaningful and then the students are motivated to read more in English by themselves.

In an occupational context, the demand for English language skills in Thailand is increasing and few studies have reported on the specific skills needed in different professions and thus how university education might address this need. For example, following a needs analysis, speaking and listening were found to be the most needed English skills in a number of occupations: tourism (Boonyawanthana, 1999), executives at a carpet company (Chitpupakdi, 2014), nurses (Gass, 2012), planning executives at a storage technology company (Phaisuwan, 2006), and sales staff in English bookstores (Piwong, 2011). In addition, reading and writing skills were identified as the most needed skills for managers at an electrical company (Chittavitti, 2005), and Thai construction officers (Phanphai, 1990). Furthermore, speaking and reading skills were considered the most needed by Thai hospital pharmacists (Phutirat & Suwannapatama, 2007), writing skills by hotel public relations officers (Srabua, 2007), and speaking and writing for Thai officers at an international company (Preechawat, 2010). These studies are limited to a few occupational areas other than food science and technology. Hence, there is a need to address this gap through examining the needs of stakeholders in this area to support effective ESP programmes.

2.4 Chapter Summary

According to the literature, there are a number of aspects involved in definitions of the term ESP. The definition used in this study is based on the variable and constant characteristics proposed by Basturkmen (2010), Dudley-Evans and St John (1998), and Robinson (1991). The

literature also reviewed the development of ESP and the four periods of ESP suggested by Johns (2013) which shows the present study falls into Johns' future period, when a needs analysis is carried out in a country where English is used as foreign or second language. There was also an examination of the literature regarding the separation and/or integration of language skills in both academic and occupational ESP contexts, which will be relevant to examining the teaching tasks and skills used in the research context. According to the literature, there has been no needs analysis investigation into the tasks, activities or language skills used in both academic and occupational ESP contexts in Thai universities, in the area of food science and technology. Filling in the gaps in the literature is one of the purposes of the study. The other is to provide recommendations for the current ESP programme to better meet the needs of the stakeholders.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This study explores the English language skills needed for an ESP programme for undergraduate students in a food science and technology programme at a university in Thailand. The study considers the perspectives of students and other relevant stakeholders from the academic and occupational contexts involved in this study. A mixed methods case study design was chosen for this research where quantitative data and qualitative data were triangulated to improve reliability and validity. More specifically, as there has been no research on the need for English for undergraduates in a food science and technology programme in Thailand, this study employed an exploratory case study research.

This chapter provides details of the methodological procedure adopted for this study. First, the research questions of the current study are presented. The research paradigm that underpins this study is then presented, and then the research framework is illustrated. The description of the research participants is followed by the data collection procedures and data analysis processes. Next, the ethical considerations involved in this study are presented. A summary is provided at the end of the chapter.

3.2 Research Questions

The questions which guided the study are:

- 1) What English language skills did the students have difficulties with in the ESP

programme?

- 2) What English language skills did the students and the teachers consider are needed to study in the food science and technology programme?
- 3) What English language skills did future employers consider the students need in the occupational context?
- 4) How did the students' needs vary according to their stages of study in the ESP programme?

3.3 Research Paradigm

The mode of inquiry adopted in this research was based on the pragmatism paradigm. According to Morgan (2014), pragmatists believe that “the knowledge comes from taking action and learning from the outcomes” (p.7). Pragmatists conduct research when they confront situations that fall outside their existing knowledge and then take action to extend their knowledge so they know how to proceed when they encounter similar situations (Morgan, 2007). Similarly, the researcher of this study has some knowledge of ESP at the university but action and information are needed to investigate the English language skills required for students in the food science and technology area.

The epistemological continuum of pragmatism sits between objectivity (the knowledge already exists) and subjectivity (everyone has a different understanding of what we know). Schuh and Barab (2008) viewed the central focus of pragmatism, stating that “the knowledge is derived from the interaction among groups of individuals and the artifacts in their environment, both of which create reality” (p. 72). Using this paradigm to frame the research design enables the researcher to gain data from multiple sources, which fits the approaches to ESP needs analysis, as suggested by many scholars (e.g. Adzmi et al., 2009; Dudley-Evans & St. John, 1998; Wu, 2012).

Powell (2001) argued that one of the roles of pragmatists is to facilitate human problem-solving. His argument supports the pragmatist focus of this study because the researcher of the present study will suggest guidelines for redesigning and developing an appropriate ESP programme. The epistemology of pragmatism falls into multiple ways of thinking or doing that lead to pragmatic solutions. Pragmatists also acknowledge that an individual's knowledge is unique because it is grounded in individual experience (Creswell, 2014; Morgan, 2014). Similarly, in this study, the data from the participants were based on their own personal, unique experiences in their contexts and interactions with others.

Pragmatists believe that the world is not an absolute, so several approaches can be applied to collecting and analyzing data. The best data collection approach is one that solves problems or offers the best opportunities for answering the research questions. According to Morgan (2014), the truth is what works at the time to provide the best understanding of a research problem. In other words, this type of paradigm frees the researchers in terms of selecting the procedures or methods that meet their needs (Creswell, 2014) and researchers can collect multiple forms of data to answer their research questions. The philosophy of pragmatism therefore framed the research approaches of this study.

3.4 Research Approaches

3.4.1 A mixed methods approach

The decision to adopt pragmatism led to the selection of a mixed methods research design. The concept of mixed methods research has been defined in a number of ways. Johnson, Onwuegbuzie, and Turner (2007) defined mixed methods research as “an approach to knowledge (theory and practice) that attempts to consider multiple viewpoints, perspectives, positions, and standpoints (always including the standpoints of qualitative and quantitative research)” (p. 113).

Mixed methods research bridges quantitative and qualitative approaches in educational research. Mixed methods research is seen to complement the strengths of quantitative and qualitative approaches to corroborate “of finding from both approaches may provide stronger evidence for a conclusion” (Johnson & Onwuegbuzie, 2004, p. 21). Therefore, mixed methods researchers reject any forced choice between quantitative and qualitative (Johnson et al., 2007; Sharp et al., 2012). They consider specific decisions regarding the use of mixed, qualitative and quantitative approaches and methods, should depend on the nature of the research question and the nature of each stage of the research cycle, and they avoid the use of metaphysical concepts such as truth and reality (Johnson et al, 2007; Keown, 2009). Mixed methods researchers acknowledge quantitative as well as qualitative approaches as having a valuable contribution to make to research, but they also actively seek to utilise and integrate both (Biesta, 2010; Morgan, 2014; Van Griensven, Moore, & Hall, 2014). In a mixed methods approach, quantitative and qualitative data can be combined to answer exploratory questions that could not necessarily be answered in any other way (Creswell, 2014; Singh, Milne, & Hull, 2015). A mixed method approach also fits with needs analysis research as a range of data collection methods are relevant when conducting a needs analysis (Basturkmen, 2006; Dudley-Evans & St. John, 1998).

There are several designs for a mixed methods research (e.g., sequential, and concurrent) (Creswell, 2014; Gray, 2014; Morgan, 2014) depending on the rationale as to why it is a useful design, the time available for collecting and analysing the data (Creswell, 2014), and what is most suitable for the research questions and problems. This study adopted a concurrent triangulation design (Creswell, 2014; Creswell, Klassen, Plano Clark, & Smith, 2011). In this design, the quantitative and qualitative data were collected concurrently in each phase of the study. Then, the researcher compared the two data sources for convergences, differences, or combinations (Creswell, 2014). Creswell (2013) mentioned the purpose of convergent design

is to obtain different but complementary data in one study or on the same topic to best understand the research problem.

The present study applied aspects of both quantitative and qualitative data collection approaches concurrently. Research Question 1 about the students' difficulties in English in the ESP programme was answered by collecting quantitative data from assessments, and qualitative data from questionnaires and interviews with the relevant participants. Research Questions 2 and 3 deal with the need for English language skills and were answered using the quantitative data from the questionnaires and qualitative data from the interviews. Finally, Research Question 4 focuses on any changes in the needs of the students and was examined by questionnaires and interviews from the two phases.

3.4.2 A case study approach

This study also adopted a case study approach to capture the complex real-life dimensions in one food science and technology context in a university context.

The case study approach provides an in-depth description and analysis of a bounded system (case) or multiple bounded systems (cases) (Hood, 2009; Merriam, 1998; Stake, 1995). This approach aims to “understand complex phenomena while allowing investigation to retain the holistic and meaningful characteristics of the real-life context” (Yin, 2003, p. 13). Berg (2009) elaborates case study as follows:

... an approach capable of examining simple or complex phenomena, with units of analysis varying from single individuals to large corporations and businesses; it entails using a variety of lines of actions in its data gathering segments, and can meaningfully make use of and contribute to the application of theory (pp. 317-318).

Within the educational and second language teaching research areas, Chapelle and Duff (2003) defined case studies by teachers-researchers as the study of a person, either a teacher or a learner, or an entity such as a program, a class, or a university; and in second or foreign language policy research, a case may refer to a country. In the present study, case study refers to the ESP programme at Agriculture University.

The trend towards using case studies in the second language teaching area is growing because it provides a framework for close and extended analysis of a particular case (Hood, 2009). The findings from a case study enable a rich description of a personal, social and pedagogical nature which cannot be captured by other methods (Miller, 1997). The major advantages of the case study approach are that it can present extensive data in an accessible form, so the subtlety and complexity of a case are explicated (Miller, 1997). It can also provide flexibility in the use of various data collection methods and it can be used in practically any kind of social setting (Singh et al., 2015). The case study approach of the present study, therefore, enables a “thick” description of the contexts to explore the needs of English language for students in the food science and technology area including various groups of participants in academic and occupational contexts.

The boundaries between types of case studies are not straightforward and, therefore, a case study may fit under more than one type of case study. Yin (2003) offered a categorization of case studies according to their purpose: exploratory, descriptive or explanatory. In brief, an exploratory case study is used when little is known about the case being examined. A descriptive case study presents a detailed, contextualized picture of a particular phenomenon, and an explanatory case study explains the cause-effect relationships related to a phenomenon (Duff, 2008). Based on the pragmatist paradigm and the classifications of a case study, an exploratory case study was used in this research to determine the English language needs of the different participants according to their perspectives.

The issues of external validity or generalisability are often discussed in relation to the use of a case study research design. Some researchers argue that the triangulation of data adds to the validity and helps to understand the individualizing characteristics and complexities of a particular case compared to other cases by generalizing the insights collected (Stake, 1995; Wolcott, 1998). Stake (1995) also argued that because the researcher can choose a representative case study, it is possible to make some generalizations. Further, Wolcott (1998) noted that a case may be particular while the implications can be broad.

Based on the pragmatist paradigm, a mixed methods and case study approach were used in this study to build texture, depth, and multiple insights and to increase the validity and credibility of the processes (Berg, 2009; Chapelle & Duff, 2003; Yin, 2003). The study also exhibited credibility and reliability because the research instruments were constructed from the widely-used needs analysis model of Dudley-Evan and St. John (1998) and environmental factors of Basturkmen (2010).

3.5 Needs Analysis Model

As mentioned previously, this study employed the needs analysis model of Dudley-Evans and St. John (1998). More specifically, this model provides an opportunity to gain an in-depth understanding of the students' and stakeholders' needs within the context of ESP teaching and learning at the university, and includes wide-ranging aspects that can help answer the research questions. Some minor adaptations were made to the original Dudley-Evans and St. John's (1998) model by changing the wording of some of their factors in order to avoid confusion and to add clarity, and the factors in their diagram were re-ordered in order to provide a clockwise description of each factor. Further, alphabetical letters were added to label each factor to ensure that were easier to follow. The wording of three factors was changed: "language information about the target situations" was changed to "language information about the learners,"

“language learning needs” was changed to “language learning information,” and “how to communicate in the target situation” was changed to “professional communication information.” The changes in the wording aimed for greater clarity concerning the meaning of the factors from the detailed explanations given by Dudley-Evans and St. John (1998). Other factors presented in the model derived from this study were worded exactly the same as those in the Dudley-Evans and St. John’s (1998) needs analysis model. However, the environmental situations (H) was amended following Basturkmen (2010), in order to clarify Dudley-Evans and St. John’s definition of means analysis. Basturkmen (2010) uses the term environmental situations which includes the classroom culture, learner factors, ESP teacher profiles and institutional factors such as policy and the learning environment. Below is the adapted needs analysis model used in the present study.

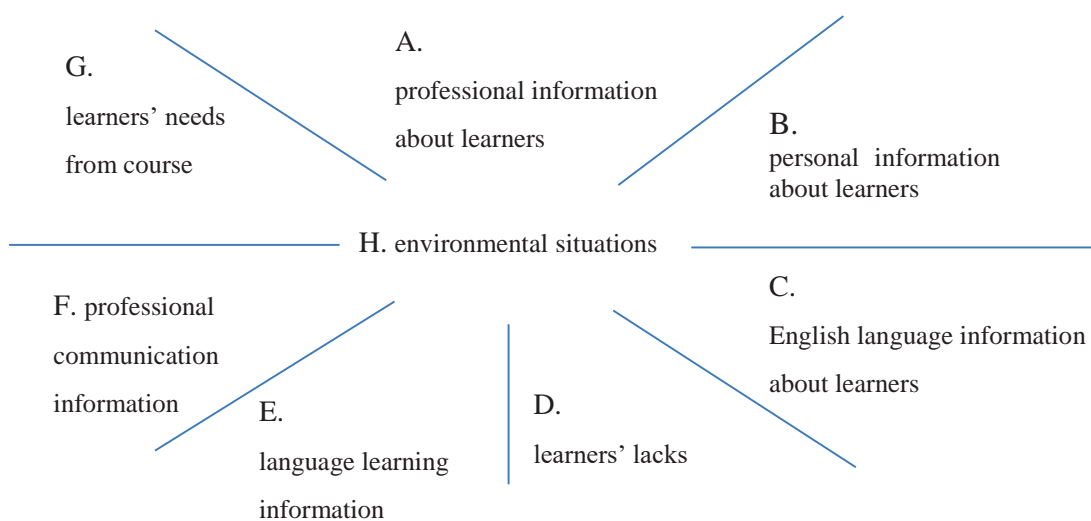


Figure 3.1 Needs analysis model of this study. Adapted from Dudley-Evans and St. John (1998, p. 125)

The needs analysis model of this study consists of eight factors: professional information about the learners (A), personal information about the learners (B), English language information about the learners (C), learners’ lacks (D), language learning information (E),

professional communication information (F), learners' needs from the course (G), and environmental situations (H). This needs analysis model was used to guide the researcher's questions and the design of the mixed methods data collection and data analysis.

3.6 Research Participants

This research aimed to explore the English language skill needs of the participants in the ESP programme at the Agriculture University, in relevant academic and occupational contexts. The participants in the academic context included students, former students, ESP teachers, and subject teachers. The participants in the occupational context included former students, subject teachers, and employers. The former students and the subject teachers must also be recognised as being in the academic context as they also have knowledge of the language expectations and needs in the occupational context because of their knowledge, experience, and correspondence with the employers. The links and intersections between the contexts and participants are shown in Figure 3.2.

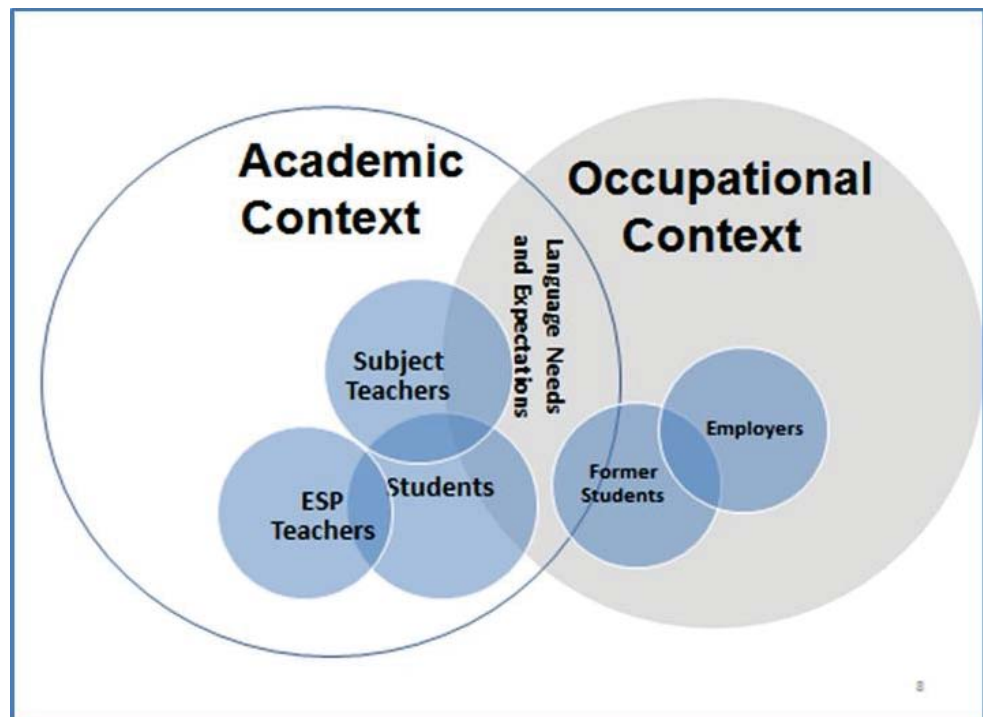


Figure 3.2 Participants in the academic and occupational contexts of this case study

Dudley-Evans and St. John (1998) and Long (2005) suggested that both outsiders and insiders should be involved in a needs analysis process because both provide different viewpoints. This concept is based on the notion of pragmatism in that individual knowledge is grounded in individual experience. This study is also in line with a part of Kaewpet's (2009a) framework, which holds that the portion of the insiders should be greater than the outsiders because they understand their situations. However, since the present study was based on the notion of pragmatism, as mentioned earlier, the views from the outsiders were also important because their experience could guide the ESP teachers to identify the objective needs in the real world context outside the university. The insiders of this study referred to those that were studying and teaching at Agriculture University during the study. They were mostly participants in the academic context: students, ESP teachers, subject teachers, and former students. The outsiders referred to those people that were not associated with the university. The employers were considered to be wholly outsiders of this study because they were not involved in the university administration or policy or the ESP programme. In addition, the students, the former students, and the subject teachers are also involved partly in the occupational context although they are also insiders. This is because the students in the food science and technology programme have to intern at a food factory in their internship programme, while the subject teachers contact employers that can share their experience and knowledge of the use of English language skills in the occupational context.

Purposive sampling techniques or qualitative sampling were employed to choose the participants. These techniques were chosen because they made it convenient for the researcher to enable participation in the study, but at the same time enabled the most appropriate fit and the gathering of the greatest possible amount of information and opportunity to obtain a greater understanding of the context in depth (Duff, 2008; Kumar, 2011; Neuman, 2000; Stake, 2006). This sampling technique corresponds with the data collection methods of pragmatism because

it is applied at the time of the study and provides the best approach to the research problem (Morgan, 2014). The next sections describe the research participants in the academic and occupational contexts of this case study: students, ESP teachers, subject teachers, former students, and employers.

3.6.1 Students

All forty-five students in the food science and technology programme in the academic year 2011-2012 were invited to participate in the research and all agreed. They are referred to as the 45 students. In phase one, they were in the second semester of their third year, and in phase two they were in the first semester of their fourth year. Before they studied in the ESP programme in phase one, all of them had studied two fundamental English courses during their first and second year of the programme.

The 45 students were asked to take two English proficiency tests and to complete two questionnaires in the two phases of the research. In order to obtain more in-depth information and to triangulate the data from the two questionnaires and the two English proficiency tests, six students of the 45 were purposively sampled for interviewing. In order to maximize the learning opportunities in the analysis of the cases (Krockover, 1997), this group of six sampled students was made up of two students from the three different levels of English proficiency as ascertained by the first set of tests (high, intermediate, and low) and those that were available for the research. Their availability was determined from the students' returned questionnaires and their indication of willingness to participate in the interview phase. These six students were interviewed at a convenient time in each phase after they returned the questionnaires. They were referred to as the sampled students.

In order to select the six sampled students for the interview process, the TOEIC raw score of each student was added to that of the Scientific English Grammatical Structures Test. Then,

the *t*-score analysis was conducted using SPSS Statistics 21 software to facilitate the interpretation of the test results and to group the students into three levels of English proficiency. The students that had a *t*-score below 54 were classified at a low level and the students that got *t*-scores ranging from 54 to 59 were at the intermediate level. Those that received got *t*-scores above 60 were grouped into the high-level students. In order to report information about the sampled students, pseudonyms were used: Supanya (low-level student), Apira (low-level student), Manee (intermediate-level student), Puttha (intermediate-level student), Kawin (high-level student), and Arpassa (high-level student).

3.6.2 ESP teachers

The ESP teachers were selected because they were the key people responsible for the ESP courses. There were two female ESP teachers teaching the food technology students in the academic year 2011-2012. Both of them held a master's degrees in teaching English as a foreign language from Thai universities and had one to three years of ESP teaching experience. The researcher contacted both ESP teachers initially by email, informing them of the objectives and benefits of the research and inviting them to participate. This was followed up with an information sheet and an informed consent letter which they were asked to return by putting them in a box in the administration office of the university within two weeks. The researcher asked for permission to access their ESP food science and technology students and to administer the two English proficiency tests to the student participants. They were also asked about their availability for an individual interview. Pseudonyms were used to report the information from the ESP teachers as ESP Teacher1 and ESP Teacher2.

3.6.3 Subject teachers

The teachers in the food science and technology programme (hereafter, called subject teachers) were asked to participate in the research because they have teaching experience in this area and

connections with employers. Besides teaching core courses in the food science and technology area, these teachers also supervise students for their study and the internship programme. Their interaction with the students might be interpreted that these subject teachers have deep insights into the English language required by their students to succeed academically and professionally.

There were three subject teachers, two females and one male, in the food science and technology programme at Agriculture University at the time of the research. According to the university database¹, one female teacher had graduated with a master's degree from a Thai university and had three years of teaching experience. The other female teacher and the only male teacher held doctoral degrees and had more than five years' teaching experience, with the female having graduated from a university overseas. These teachers have taught in the Thai language at the undergraduate level. All of them teach major subjects in the food science and technology programme, such as sensory evaluation, food engineering, and seminar subjects. The benefits of the research for their students were explained to these subject teachers. All three teachers were asked to participate in the interview phases in order to generate more in-depth information about their perspectives. Their interviews were conducted only during phase one of the study. Pseudonyms were used to represent them: Subject Teacher1, Subject Teacher2, and Subject Teacher3.

3.6.4 Former students

Former students were also invited to participate in the current study. Their perceptions were expected to reflect their experience of the ESP teaching and learning at the university because they had completed the ESP programme and were in the second semester of their fourth year. Importantly, they could share their perspectives about using their English language skills in

¹ The researcher had already asked permission to access the university prior to conducting this thesis.

occupational contexts because they were interning at the time of the interviews at various food factories. An invitation letter and an informed consent letter were distributed to all 15 former students interning at food factories around Thailand. Six former students that were willing to participate in an interview returned the informed consent letter. The researcher arranged to carry out an interview with them at the same time as the subject teachers when they visited the food factories where the students were interning. Pseudonyms were used to refer to the former students: Former Student1, Former Student2, Former Student3, Former Student4, Former Student5, and Former Student6.

3.6.5 Employers

According to the data from the Academic Affairs Department of Agriculture University, the students in the food science and technology programme have a practice placement, under the internship programme, in their fourth year at one of the food companies in Thailand. These are food manufacturers and distributors that agree to accept a student for the internship programme. The employers work in one of four areas: quality assurance, quality control, research and development, and production. These companies are located in the industrial areas of the central and northern regions of Thailand. Since they focus on exporting food products and improving their quality standards internationally, the use of English is essential for the employers and employees in these companies. The perspectives of the employers were also important for this needs analysis research because they could specify the language used and the need for English language skills in real situations. The findings could be used to compare what the students already knew with what the students needed to know before they took up work in similar positions.

The subject teacher that coordinated the internship programme provided the names of the fifteen food factories that were participating in the internship programme during the period of

this study. All fifteen employers were contacted to inform them of the objective of the research and were asked about their experience prior to sending out the informed consent letter. The employers that used the English language in their companies and that had more than five years of experience in the field were invited for an interview. The length of the experience of employers was considered because the more experience the employers have, the more insights into English language usage in the occupational context they are likely to have. With these criteria and the possible availability of the employers, six of them were willing to participate in an individual interview. The researcher carried out the interviews with these six employers at the same time that the subject teachers visited their factory to get their feedback about the students under their supervision because this was the most convenient time for them as well as the researcher. Pseudonyms were used to refer to them: Employer1, Employer2, Employer3, Employer4, Employer 5 and Employer6.

3.7 Data Collection

This exploratory case study employed a mixed methods approach to collect a wide range of perceptions from different participants through multiple methods of data collection. This approach enabled the researcher to understand the needs and expectations in both academic and occupational contexts.

Since the ESP programme of this study consisted of two ESP courses, data collection was carried out in two phases, in phase one, when the students were studying the ESP1 course, and in phase two when they were doing the ESP2 course (see Figure 3.3). The reason for the two phases was because the data in phase one was used to provide a needs analysis for the ESP1 course and to provide insight into the difficulties and previous experience regarding the English language courses. The data obtained in this phase provided personal information about the learners, a factor in the needs analysis model of this study. In the same vein, the data collected

in phase two was used to provide a needs analysis for the ESP2 course and also provided information about the students' experiences during the ESP1 course. In addition, any changes in needs and difficulties were revealed between the two ESP courses and the answers to Research Question 4.

The research process began in week 2 of the semester, as this allowed time for all of the students to return from their hometown after a long study break. In the first period of week 2, all of the students were informed of the objective of the study and were invited to participate in the study by the researcher. The students that were interested in participating completed an informed consent letter and returned it by putting it in a box in front of the common room of the Language Department within a week. Then, the data collection in phase one began in week 3 (November, 2011) after the students returned the informed consent letter in week 2. The data collection took place from November 2011 to September 2012.

As shown in Figure 3.3, this research employed various research instruments with the participants and data were collected in two phases. In phase one, in order to answer Research Question 1, which related to the students' difficulties in English language skills, data were collected from the two sets of English proficiency tests: the Test of English for International Communication (TOEIC) and the Scientific English Grammatical Structures Test (Chaiyai, 1982). The results of these two proficiency tests were used to help understand the students' background knowledge of English language. The correct responses to the questions were assumed to be the students' strengths and vice versa. This information was referred to the present situations of the students of the needs analysis. Also, it helped the researcher to gain data for establishing the factors for the needs analysis model of this study: English language information about the learners (C) and the learners' lacks (D).

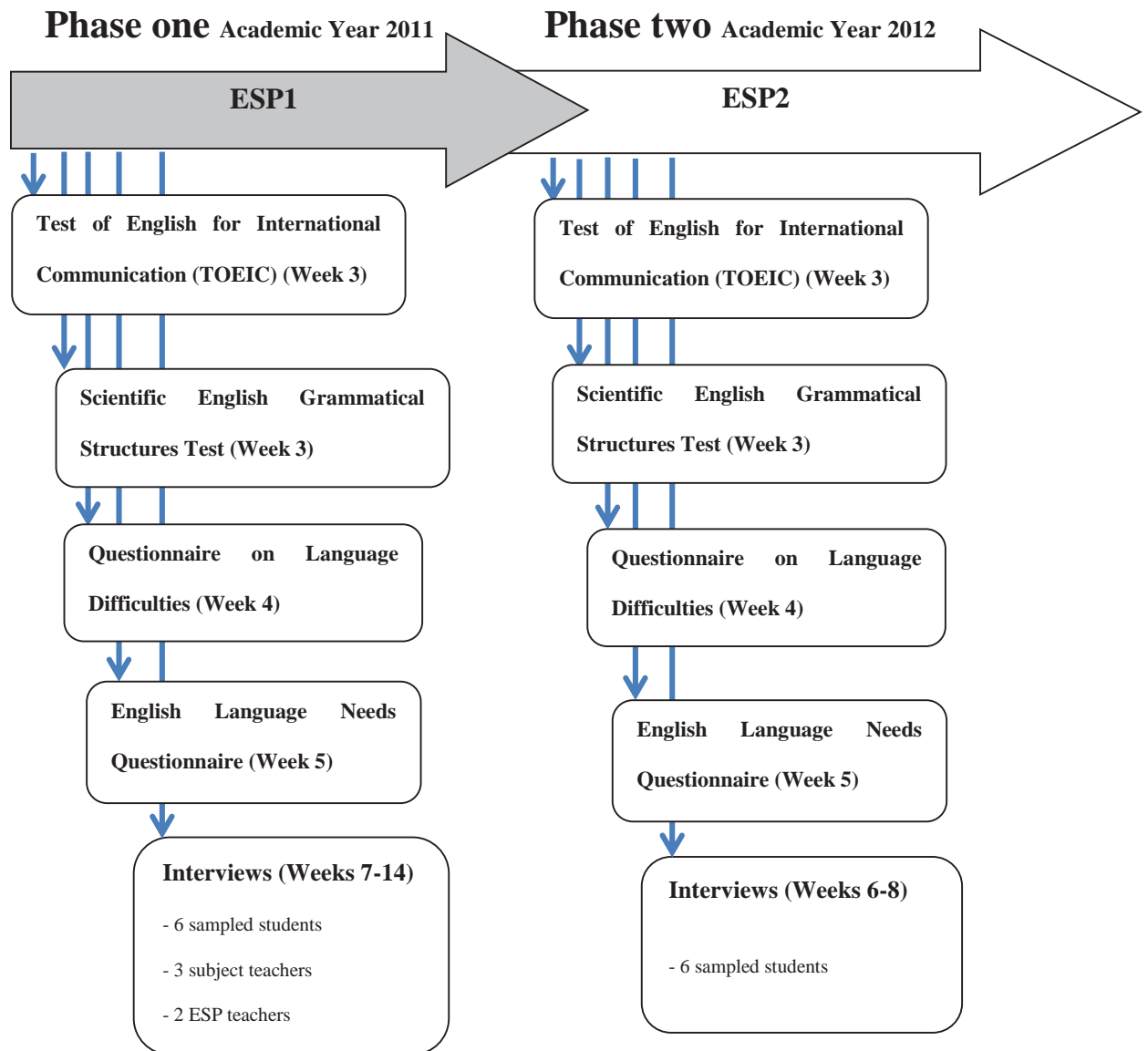


Figure 3.3 Data collection procedure and research instruments.

In week 4, the Questionnaire on Language Difficulties was given to the 45 students. After one week, the students were given the English Language Needs Questionnaire. The students were allowed one week to return the questionnaires and the results of these questionnaires were used to indicate the students' perceptions of their English language difficulties and needs in phase one, which related to Research Questions 2 and 3. The information from the questionnaires was linked the needs analysis approach to the present situations, the target

situations, the deficiency analysis, and the genre analysis. This information fit into the needs analysis factors of this study: professional information about the learners (A), personal information about the learners (B), English language information about the learners (C), the learners' lacks (D), and the learners' needs from the course (G).

In order to triangulate the results of the two English proficiency tests and the two questionnaires, which dealt with Research Questions 2 and 3, individual interviews with different participants in the academic and occupational context were arranged. The interview process was administered during weeks 7-14 in phase one. The information from the interviews was linked to the needs analysis framework and included data about the present situations, the target situations, the deficiency analysis, learning needs, means analysis, register analysis, and discourse and genre analysis. Further, the information fit all eight factors of the needs analysis model of this study: professional information about the learners (A), personal information about the learners (B), English language information about the learners (C), learners' lacks (D), language learning information (E), professional communication information (F), the learners' needs from the course (G), and environmental situations (H).

In phase two, the data collection was in week 3 of the semester (October 2012) in the ESP2 class. The data collection in this phase aimed to answer Research Questions 1 to 3 as in phase one, and also to answer Research Question 4, which dealt with changes in the students' perceptions regarding their difficulties and needs. In this phase, the same group of 45 students was also asked to retake the same two English proficiency tests they had taken in phase one. In week 4, they were given a Questionnaire on Language Difficulties and in week 5, the English Language Needs Questionnaire. Similar to phase one, all of them were asked to complete each of these questionnaires within one week. The same questionnaires were used to check the consistency of the students' responses and to compare any changes in their needs regarding the same language skills and sub-skills after the ESP1 course. Additionally, the same English

proficiency tests were also carried out in order to investigate any improvement of the students, in particular regarding their language skills, and to check for correlation and reliability. Further, because there were about seven months between the two tests in phase one and those in phase two, it was unlikely that the students would remember their answers from their tests in phase one.

The same group of sampled students in phase one was also asked for another individual interview in phase two. As they had to do their project for another course in their major programme during this semester, it was difficult to arrange times for an interview; however, the interviews in phase two were carried out from week 6 to week 8 at a convenient time for the students. The schedule for interviewing the participants in the two phases will be presented later in this chapter.

3.7.1 Research instruments

This section describes the research instruments used in this research. The first section describes the two English proficiency tests (TOEIC and the Scientific English Grammatical Structures Test) as they were used in the first process. Then, descriptions of the design of the two questionnaires (Questionnaire on Language Difficulties and the English Language Needs Questionnaire) follow. The third section describes the questions for interviewing.

3.7.1.1 English proficiency tests

There were two different English language proficiency tests used in this research, the Test of English for International Communication (TOEIC) and the Scientific English Grammatical Structures Test by Chaiyai (1982). Using these two English proficiency tests helped the researcher to get an understanding of the students' needs and to elucidate the gap between the students' needs and their present abilities or the present situations of the students, which related to English language information about the learners (C), the learners' lacks (D), and the factors

in the needs analysis model of this study. As mentioned in the literature review, a needs analysis for an ESP course is usually carried out to determine which individual language skills are needed and the ESP course will be developed afterwards to fit the learners' needs. The proficiency tests used in this study were skill-based tests that determined the particular English language skills that the students needed and had difficulty with, in keeping with the Dudley-Evans and St. John's (1998) needs analysis framework. Also, the results of these tests were used to triangulate the results of the questionnaires and interviews and to create a more accurate understanding of the needs of the students and their perceptions of their needs for the various English language skills during the different phases in the ESP programme at Agriculture University.

3.7.1.1.1 Test of English for International Communication (TOEIC)

As indicated in the Test of English for International Communication (TOEIC) test guideline, the total time for the test is two hours 45 minutes for the listening part and 75 minutes for the reading part. However, the study period of the ESP class was approximately 100 minutes, which is not a sufficient amount of time for the students to take the test. Accordingly, the researcher arranged a time for the students to take the TOEIC test in the evening in both phases of the study. The TOEIC test was administered to the 45 students in week 3 of each semester. In phase one, the test was administered on November 15, 2011, and in phase two on June 12, 2012.

The researcher met ESP Teacher1 about one half an hour before the administration of the test. The instructions for administering the test were explained (see Appendix 1). Before the students entered the exam rooms, a test booklet and an answer sheet were placed on their desks. The students were told to do the listening part and then the reading part. The test administration during phase two was similar to that in phase one but was administered by ESP

Teacher2 and the researcher. There were two reasons why the ESP teachers helped the researcher to administer the tests. First, they offered to do so, and it is polite in the Thai culture not to reject their offer. Secondly, it was difficult to administer the tests alone as there were 45 students in the class, so it was essential to have two administrators to make sure that the students were not cheating on the tests.

The TOEIC was conducted during the first period of the third week of the semester in phase one and phase two. The TOEIC is a 200-item multiple choice English proficiency test developed by the Educational Testing Service (ETS). It directly measures listening and reading skills, indirectly measures speaking and written English, and correlates well with other measures of language proficiency (J. Liu & Costanzo, 2013; Schmitt, 2005; Woodford, 1982). The 200 TOEIC multiple-choice items are equally divided between 100 listening items and 100 reading items. The 100 items of the listening part includes ten photographs, 30 question-responses, 30 conversations, and 30 talks. The 100 items in the reading part include 40 incomplete sentences, 20 error recognition, 40 reading comprehensions using a single text, and double texts. The speaking and writing skills can be indirectly assessed in the incomplete sentences and error recognition sections.

The TOEIC was adopted in this study because it is one of the international standardized tests designed to be a direct measure of the everyday workplace English language skills for people that work in an international environment. The test is focused on the four English language skills (listening, reading, speaking, and writing) used in the workplace, which matched one of the purposes of this study—to investigate the students' competence and difficulties in English skills in the occupational context.

The TOEIC test is widely used in Thailand to measure the abilities of Thai learners in various occupational contexts (Oranpattanachai, 2010) and has become an increasingly popular test for many international companies in Thailand as a criterion for recruiting personnel or

promoting them to higher positions (Khamkhien, 2010a; Prapphal, 2008; Puengpipattrakul, Chiramanee, & Sripetpun, 2007). Therefore, it is worth giving the students experience in taking the TOEIC test before they graduate, as the test is considered a gateway to work in the international food industry and they may have to take it in the future. The results of the TOEIC tests were expected to predict the students' English competency in the occupational context. From a discussion with the ESP teachers and the subject teachers prior to the data-collection process, it was evident that the students of this study had never taken the TOEIC test.

3.7.1.1.2 Scientific English Grammatical Structures Test

The Scientific English Grammatical Structures Test was administered to the 45 students in the two phases of the study. The test was administered during week 3 of each phase. In phase one, the test was administered in the second period of ESP1 class on November 19, 2011, and in phase two in the second period of ESP2 class on June 14, 2012. As before, the researcher met with the ESP teachers half an hour before the administration of the test. The instructions for the test were explained. Then, the students were told to complete the test within two hours. After they had finished the test, they were asked to hand their test booklet, answer sheet, and the vocabulary list to the ESP teacher. The instructions for administering the test can be seen in Appendix 2.

The Scientific English Grammatical Structures Test is a 45 item-multiple choice format designed to measure five complex sentence structures that EFL students have difficulty with. It was designed by a Thai academic, Chaiyai (1982). The test measures five comparatives and five relative structures that were selected from biology, physics, and organic chemistry textbooks. A closer examination of the 45 questions on the Scientific English Grammatical Structures Test indicated that the three main English grammatical structures encompass five sub-structures. Each sub-structure comprises three questions. The test aims to test fifteen sub-structures in English grammar (Table 3.1).

Table 3.1 Fifteen English grammatical structures

Grammatical Structures
<p>Complementation</p> <ol style="list-style-type: none"> 1. Finite object complement which is declarative in form 2. Finite subject complement which is declarative in form 3. To-infinitive complement functioning as an object (Type 2) 4. To-infinitive complement functioning as an object (Type 5) 5. Participial -ing object complement following the preposition 'by'
<p>Relativization</p> <ol style="list-style-type: none"> 6. Non-finite (restrictive) participial -ing relative construction 7. Non-finite (restrictive) participial ed/en relative construction 8. Finite (restrictive) relative construction with the relative element 'that' as a subject 9. Finite (restrictive) relative construction with the relative element 'which' as a subject 10. Finite (restrictive) relative construction 'which' functioning as a complement
<p>Comparison</p> <ol style="list-style-type: none"> 11. Comparison of difference with the comparative element 'other' used 12. Comparison of 'as' showing relative-like characteristics 13. Comparison of similarity with the comparative element 'same' used reciprocally 14. Comparison of inequality used anaphorically with the absence of 'than' 15. Comparison of inequality bound 'than'

This research adopted the Scientific English Grammatical Structures Test because it is the only test designed that investigates science students' abilities with English grammatical structures within a Thai tertiary context. These structures have been seen to be the most used in scientific disciplines, such as engineering (Adewusi, 2012), and so they were considered to be relevant to the food science and technology area. Using this test matched the purpose of this study literature, as previous literature has found that Thai students in science contexts have problems with many similar types of sentence structures, which can affect their reading and

writing competencies (Sattayatham & Honsa, 2007). As the students in the food science and technology programme in this study are assigned to read textbooks and research articles written in English, it is important to assess their competency with the English grammatical structures for science in order to understand their knowledge and needs when using these structures in academic and occupational contexts.

3.7.1.2 Questionnaires

Questionnaires are commonly used in needs analysis because they are easy to prepare, can be used with large numbers of subjects, and obtain information that is easy to tabulate and analyze (Morrison, 2007; Richards, 2003). In this research, the responses to the questionnaires from the students were used to obtain quick and accurate views of the perceived language needs of the students in an academic context. This information helped the researcher to determine the students' difficulties and their needs regarding their English language skills in particular situations. Similar to the proficiency tests, the questionnaires were separated into English language skills to determine the difficulty and the need for the different English language skills. Each skill included different activities and tasks in the academic and occupational contexts.

In order to answer the research questions and to avoid the students' becoming confused about their language difficulty and what they needed during their completion of the questionnaire, this study provided two sets of questionnaires: the Questionnaire on Language Difficulties and the English Language Needs Questionnaire. These questionnaires were developed to be the same format in both phases. The two sets of questionnaires were administered to investigate the changes in the students' perceptions of their difficulties and needs, which answered Research Question 4. In order to construct the two sets of questionnaires, the questions were developed according to the factors from the needs analysis model. These factors were professional information about the learners (A), personal

information about the learners (B), English language information about the learners (C), learners' lacks (D), and the learners' needs from the course (G).

Apart from validity and reliability, Rea and Parker (2005) suggested some essential elements that should be considered in designing questionnaires, such as the language and wording of the questions, recall bias, the order of the questions, and the length of the questionnaire; these points were considered in the questionnaire design. First, because of the specific Thai context and research aims and questions, bilingual questionnaires were developed for the research. The researcher developed parallel forms of the questions in both Thai and English. Using this bilingual process, issues unique to each language could be given consideration at every stage of the questionnaire development. Both languages had equivalent quality standards because the researcher asked her bilingual colleague to conduct a back translation. A bilingual questionnaire allows respondents a quick and ready reference against which to check their comprehension and is particularly useful for items which include terminology that may not be widely known in one of the languages (Potaka, 2008; Potaka & Cochrane, 2004).

For both types of questionnaires, four types of questions were used: factual, ranking, scaled, and open-ended. Factual questions were asked in order to collect information about the demographics and educational and academic background of respondents. Ranking questions were used to get the respondents to rank the importance of their language skills and language difficulties (Harzing, 2009). To specify the language needs and expectations of particular sub-skills and language structures and functions, scaling questions are considered the most appropriate. Scaling questions are usually easy to understand and so lead to consistent answers. They are also quicker to administer and easy and quick to record and code (Duff, 2008; Frances & Roland, 2003; Heigham & Croker, 2009).

This research used a 7-point scale for both questionnaires as recommended by Harzing

(2009). They observed that some people do not like making extreme choices, as this may make them appear as if they are very sure about their opinion when they realize that there are always valid opposing views to many questions. They may also prefer to be thought of as moderate rather than extremist. In order to ensure the reliability and validity of the questionnaires, they were reviewed and modified after drafting by the supervisors and piloted with a few students in a food science and technology programme at the main campus of Agriculture University, as they were studying exactly the same programme but were not at the campus chosen for the research. The piloted questions were then edited, re-arranged, and re-written. The details and administration of the two sets of questionnaires are described in the next sections.

3.7.1.2.1 Questionnaire on Language Difficulties

The Questionnaire on Language Difficulties was distributed to the students during the two phases of the study. In phase one, the questionnaire was administered in week 4 (November 22, 2011) during the first period of the ESP1 course. The researcher met with ESP Teacher1 half an hour before the class. After the students entered the class, the researcher informed them of the purpose of the study and gave them instructions on the questionnaire. The students were told that the questionnaire should take 30 minutes. They were asked to return the completed questionnaire within a week as the same process as they did for the information sheet and the informed consent letter. A similar process was followed in phase two with ESP Teacher2 in week 4 (June 19, 2012). This questionnaire was administered at the beginning of the ESP2 course.

The Questionnaire on Language Difficulties in phase one comprised 60 questions in three parts: background information, difficulty with general language skills, and difficulty with language sub-skills and language functions. The questionnaire in phase two contained two parts, difficulty with general language skills and difficulty with language sub-skills and

language functions because the students had already provided information about their background in phase one. The questionnaire in phase two comprised 68 questions can be seen in Appendix 3.

Questions in Part 1: the Background Information of the Questionnaire on Language Difficulties in phase one and phase two aimed to elicit general background information from the students: prior learning experience with other English language courses, and frequency of using the English language outside the classroom. These questions also probed the perceptions of their attitudes towards the English language and requested a self-evaluation of their competency in the various English language skills. This information referred to personal information about the learner (B), a factor of the needs analysis model of this research. The questions in parts 2 and 3 aimed to elicit information about the students' difficulties with their English language skills and sub-skills. This information related to the learner's lacks (D), another factor of the needs analysis of this research, and helped to answer research question 1 about the students' difficulties.

General information about the students

Items 1.1-1.2 explored general information about the students. Item 1.1 obtained information about the students' demographics, including gender and age. Items 1.2 asked the students about their university admission system and whether they participated in a quota system, which is for students that meet both academic and the respective regional criteria set by the university, or the national examination².

Prior grades from other English language courses

² This is for students that do not meet the criteria for the quota system and thus are allowed to sit in a national examination administered by the Ministry of Education. Once their marks from the examination meet the criteria set by the Ministry of Education and the university, they can study in the selected university.

Item 1.3 aimed to obtain information about the students' success in English language learning prior to the ESP programme. The findings were drawn from the responses in both phases, which asked the students to indicate their grades from the two fundamental English courses in the phase one questionnaire. They had already studied these courses before entering the ESP programme. In the phase two questionnaire, the students filled in their grade from the ESP1 course.

Frequency of using English language outside the English classroom

Two items in the phase one questionnaire asked the students about their frequency of using English. Item 1.4.1 tried to clarify and verify their use of the English language outside the English classroom. The students were asked to write the names of the courses in which they needed to use the English language in their study.

Attitude towards the English language and the ESP Programme

Item 1.5 investigated the students' interest and attitude towards the English language and the ESP programme. In the phase one questionnaire, the students were asked to rate the extent to which they liked the English language, rated from (1) dislike, (2) like slightly, (3) like moderately, (4) like very much, or (5) extremely like. In the phase two questionnaire, the students were asked to rate the importance of the ESP programme because they had already studied the ESP1 course in phase one. They could choose either (1) unimportant, (2) of little importance, (3) moderately important, (4) important or (5) the most important.

Self-evaluation of English language skills

Item 1.6 of the questionnaire from both phases aimed to identify the students' perception of their abilities in English. The students were asked to evaluate their English language competency regarding six language skills by selecting good, average, or weak. Item 1.7 of the phase two questionnaire asked the students to rank their competency in all English language

skills, from the best to the weakest, in order to cross-check their responses from item 1.6. This question was added to the questionnaire in phase two in order to provide more information about the importance of English language skills and language functions.

Difficulties with General English Language Skills

Part 2 of the Questionnaire on Language Difficulties in phase one and phase two intended to reveal the students' difficulties with general English language skills. In item 1, the students were asked to rate the extent to which they felt they had difficulty with their English language skills. They could rate each language skill from (1) the most serious difficulty to (2) serious difficulty, (3) moderate difficulty, (4) slight difficulty, (5) little difficulty, or (6) do not have any difficulty. If the students could not make a decision or did not know, they could select (7) do not know. Item 2 Part 2 of the phase two questionnaire asked the students to rank their general English language skills in order according to the extent of difficulty, from "the most serious difficulty" to "the least difficulty." This was done in order to cross-check any discrepancies with items in the earlier sections, and could be looked at further in the interviews with the sampled students.

The Difficulties in English Language Activities and Tasks

There were fifty-three questions in total. Items 1- 42 in Part 3 of the Questionnaire on Language Difficulties in phase one and phase two were intended to gain insights into the difficulties that the students had with each English language skill. The students were asked to rate the difficulties with seven English language activities and tasks: listening (Items 1-5), speaking (Items 7-15), reading (Items. 17-24), writing (Items 26-37), vocabulary (Items 39-40), and grammar (Items 41-42). They were asked to rate the extent to which they found each of the five listening activities and tasks difficult from (1) the most serious difficulty to (7) do not

know. Additionally, they could add more activities and tasks that they had difficulty with in the space provided at the end of the section of each language skill.

Items 43-52 aimed to identify the difficulties that the students had with their language function sub-skills. In phase one, the students were asked to rate each of 10 language function activities and tasks by writing (*A*) the most serious difficulty to (*F*) do not have any difficulty, with the option to select (?) if they do not know. In phase two, the students were asked to rank the ten language function activities and tasks in order according to the extent of the difficulty they had, from (1) the most serious difficulty to (10) the least difficulty. The students could add more language function activities and tasks in Item 53.

3.7.1.2.2 The English Language Needs Questionnaire

The English Language Needs Questionnaire was distributed to the students in the two phases of the study. In phase one, the questionnaire was administered in week 5 (November 29, 2011) during the first period of the ESP1 course. In phase two, the questionnaire was distributed to the 45 students during the first period in week 5 (June 26, 2012) in the ESP2 class. Further, the process of administration was similar to that of the English Language Needs Questionnaires. The students had 30 minutes to complete the questionnaire, and could return it within a week in the box in front of the common room of the English Language Department.

The English Language Needs Questionnaire comprised 60 questions in phase one and 61 questions in phase two. The content and organisation of the questionnaires were the same, but the English Language Needs Questionnaire was focused on asking the students about their needs. Additionally, ranking question about the students' needs for the English language skills was added in the phase two questionnaire. The information obtained from this questionnaire dealt with the learners' needs from the course (*G*), another factor of the needs analysis of this

research, and was a part of the information needed to answer Research Question 2 about the needs of the students regarding English language skills.

The English Language Needs Questionnaire consisted of two main parts. Part 1 asked the students to rate the extent to which they needed the English language skills for their study and work. They could choose from (1) the most needed, (2) extensive needed, (3) moderate needed, (4) slightly needed, (5) little needed, or (6) do not need to answer the question about each language skill. If the students could not make a decision or did not know what to rate, they could select (7) do not know. To further gauge the needs of the students regarding their English language skills, an item measuring how necessary the students felt these English language skills were was included to the questionnaire in phase two. The students were asked to rank the English language skills they needed from (1) the most needed to (5) the least needed in item no. 2.

Part 2 of the questionnaire in the two phases aimed to explore the need for the sub-skills for each English language skill. The students were asked to rate the extent to which they needed to use each of the English language sub-skills for the ESP programme. They could rate from (1) the most needed, (2) extensive needed, (3) moderate needed, (4) slight needed, (5) little needed, (6) do not need, and (7) do not know. They could add more language sub-skills that they thought they needed at the end of each section (Appendix 4).

3.7.1.3 Interviews

In order to obtain in-depth information about the needs of students and the language expectations of relevant participants, the interview questions were built on the questionnaire questions (Christensen, 2010; Merriam, 1998; K. Richards, 2009; Stake, 1995). The purpose of the interviews with the relevant participants of this research was to obtain insightful and detailed accounts of these participants' perceptions about the English language skills needed

in the ESP programme. Having a pattern of questions which allows for internal consistency checking is one way of assessing the validity of the data. In addition, since validity depends on the interviewer's ability to produce a good interview and the respondents' answers (Breakwell, 2006; Kvale, 1996), four basic steps in collecting the data through interviews were used: preparing for the interview, setting up the interview, getting the interaction right, and the final organization after the interview (K. Richards, 2009). Another way to establish the validity of the interview was by triangulating it with other types of data (Breakwell, 2006), such as the questionnaires and an English proficiency test. Further, validity was ensured by checking the interview questions from the supervisors and colleagues.

The reliability of the interview was improved by providing an interview schedule for each interview as a guideline to remind the researcher herself on how to conduct the interviews. The interview schedules were reviewed and modified in the same way as the questionnaires (see examples of interview questions in Appendix 5). The researcher interviewed all of the participants in Thai in order to reduce the stress for the interviewees, to obtain in-depth information, and to minimize ambiguity and misinterpretation. However, translating one language into another language can result in problems with syntax and semantics (Chang, Chau, & Holroyd, 1999); however, in order to overcome these problems, Bracken and Barona (1991) recommended using sufficiently-educated people in both languages to back-translate. As the researcher of this study is bilingual and has knowledge about the research, the questions were translated by the researcher for the interview into the Thai language. Another colleague, who got a doctoral degree in TESOL and has studied in both Thai and English, was asked to back-translate in order to ensure reliability.

The interview questions were constructed based on all of the factors in the needs analysis model. The questions covered professional information about the learners (A), personal information about the learners (B), English language information about the learners (C), the

learners' lacks (D), language learning information (E), professional communication information (F), the learners' needs from course (G), and environmental situations (H). The interview questions for the sampled students encompassed all of the factors of the needs analysis model of this research. For example, they were asked to describe their background education, and to identify, explain, and justify their selections on the English language skills questionnaire, and their difficulties with English language skills and what language skills they needed to improve.

In phase two, the same group of sampled students were interviewed with the same questions as in the first phase. The sampled students were asked to explain how and why they had changed any of their perceptions about the difficulties and needs during that time. The data obtained were used to compliment the quantitative data from the questionnaires and to answer Research Question 4 about the changes in their needs. Three students in this sampled group that had interned at food factories during a semester break before the interview in phase two were asked about the English language skills they used in the workplace, and about their difficulties and needs in the food factories. The responses from the sampled students answered all four research questions of this research.

The interview questions with the ESP teachers related to their teaching in the ESP programme, which helped to provide the professional information about the learners (A), the learners' lacks (D), and the environmental situations (H) from the needs analysis model of this study. For example, they were asked to justify the selection of the workbook, describe the classroom activities, the students' difficulties, and the policy of the university in supporting ESP teaching and learning.

Similar questions were asked to the subject teachers in relation to the academic and occupational contexts that covered professional information about the learners (A), the learners' lacks (D), and the environmental situations (H). The researcher asked them to describe

the situations in which their students used their English language skills in their major subjects, their difficulties in using English, and the English language skills they needed the students to improve upon. Their responses illustrated the use of English language skills in both the academic and occupational contexts.

In the same vein, the former students were interviewed about the English language skills they had learnt from the ESP programme, the language skills they used in their major subjects and at work, and their difficulties and needs regarding their English language skills. Similarly in their interviews, the employers were asked to indicate the English language skills they used at work, the students' difficulties in using their English language skills, and the English language skills that the students needed to be prepared for before they interned at the factory.

Each interview with each participant took approximately 30 minutes, a reasonable amount of time to talk to them and sufficient for transcription and analysis purposes (K. Richards, 2009). With permission from the participants, all of the interviews were recorded. These interview tapes were later transcribed. During the interviews, the researcher's understanding was checked with the participants and clarification was sought about any issues that were not completely clear, as suggested by K. Richards (2009). The settings of the interview were carefully selected to ensure minimal disturbance. The position of the researcher and the interviewing participant was chosen to ensure eye contact, and easy recording and note taking (Drever, 1997). The sampled students were interviewed in the researcher's office. The ESP teachers and the subject teachers were interviewed at their offices where they were seated separately from their colleagues. The former students and the employers were interviewed individually in a meeting room at each company.

Each interview was semi-structured and carried out with all available participants at a convenient time. Twenty-three interviews were conducted during phase one, but the six sampled students from the same group were interviewed during phase two in order to obtain

more in-depth information from their responses from the questionnaires in each phase and also to understand any changes in their perceptions about their needs and difficulty in English during the two phases. Interviews with other participants were done only in phase one to gather information about the factors of the needs analysis model of the study. The schedules for the interview varied according to the availability of the participants, as shown in Table 3.2.

Table 3.2 Time schedule for interviewing the participants in phase one and phase two

Weeks	Participants
Phase one	
7 (December 7, 2011)	2 subject teachers
8 (December 12-16, 2011)	6 sampled students 2 ESP teachers
10 (December 28, 2011)	1 subject teacher
13-14 (January 16-27, 2012)	6 former students 6 employers
Phase two	
6 (July 9-10, 2012)	2 sampled students (low-level students)
7 (July 19-20, 2012)	2 sampled students (intermediate-level students)
8 (July 24-25, 2012)	2 sampled students (high-level students)

3.8 Data Analysis

This section describes how the data from the two test instruments, the two sets of questionnaires, and the interviews were analysed.

3.8.1 The two English proficiency tests

The tests were hand scored by the researcher following the key prepared in advance. The answer sheets of the two proficiency tests for the two phases were re-checked by a colleague

for the accuracy of marking the tests. Each correct answer was given one mark.

The correct responses of the TOEIC test were checked using the ETS/Thomson's Official Guide to the TOEIC Test. Each correct and incorrect item was compared to the test explanation provided at the back of the book. This helped the researcher to ascertain the language difficulties of the students.

The responses of the students to the Scientific English Grammatical Structures Test were checked by the researcher using the answer key provided by Chaiyai (1982). For both tests, the SPSS Statistics 21 software for Windows was used to calculate the descriptive statistics. The paired sample *t*-test was used to compare the mean values of the two sets of English proficiency tests for the two phases. The test questions which the students got correct were inferred to be the students' strengths, and vice versa. These quantitative data helped to create baseline information and provided reliable explanations of the students' background knowledge, and the students' present situations.

3.8.2 Questionnaires

Descriptive statistics were used to summarise the pattern of the responses (Nitko & Brookhart, 2007). In this research, the data on the respondents' coded responses were analysed using descriptive statistics in order to determine the individual responses for each of the items in the two questionnaires and to summarise the findings in a clear and understandable way. The mean values and standard deviations represented information about the participants' average degree of perception concerning the extent of their difficulties and needs regarding their English language skills. In addition, the *t*-test was used to compare the means of the responses in the two phases to determine if there were any significant differences between the students' perceptions of the difficulties and needs regarding their English language skills during the two phases of the study. Similar to the analysis of the quantitative data from the tests, the researcher

also applied the SPSS Statistics 21 software for Windows, as it is a commonly-used software package to manage quantitative data. It was expected that patterns of the students' perceptions would be uncovered.

3.8.3 Interviews

Qualitative analysis was used to analyse the interviews. After the audio-taped data for the semi-structured interviews were transcribed, all of the transcripts had to be validated and signed by the participants to make sure that the researcher had received and recorded the information accurately. Then, these transcripts were entered into the researcher's computer files for the researcher's own reference. As guided by Marshall (2016), the data were logged into a table noting date, venue, tool, participant, and focus of the research instrument. All of the transcripts were translated and back-translated by a colleague who was a graduate and had studied in both Thai and English.

Coding data requires analytical skill (Marshall, 2016). In this research, the data were coded using words, phrases, and themes. This coding allowed for identification of emerging categories and themes (Craig, 2009) and minimised the data to a manageable form (Gay, 2009). In this study, the researcher coded the words, phrases, and themes that were relevant to the factors in the needs analysis model of the study.

3.8.4 Data assessment

This section describes how the data for this case study can be considered reasonable and reliable. Two categories are considered: trustworthiness, and dependability.

3.8.4.1 Trustworthiness

According to Lincoln and Guba (1985) the trustworthiness of research involves credibility, transferability, and confirmability. It is critical to clarify the researchers' roles in case study

research in order to make the research credible (Unluer, 2012). From the outset, the researcher of this study played a variety of roles, and the researcher applied a variety of methods in order to contact the participants. Initial contacts were made through phone or e-mail conversations prior to a visit before the formal data gathering took place. Background information about the researcher's credentials and experience was also provided. The researcher asked the ESP teachers, the 45 students, the subject teachers, the former students, and the employers prior to the research had started, so they could choose to participate or not.

The trustworthiness of this case study was supported by its use of multiple data sources (assessments, questionnaires, and interviews) and the thick description from the interviews with various groups of participants in both academic and occupational contexts. Additionally, credibility was achieved in this study through the following: the use of audio recording of the interviews; the provision of interview scripts for the participants to review; the researcher's qualifications and knowledge of the context; examination of previous research findings in the literature; and scrutinizing the research through triangulation of evidence.

Transferability or generalisability refers to the extent to which the research findings can be generalised or transferred to other settings and contexts (Merriam, 1998). A case study research cannot be generalised but can provide rich and thick descriptions and sufficient contextual information to permit readers to make judgments about the transferability of the findings to their contexts or settings (Bryman, 2012; Lincoln & Guba, 1985). According to Stake (1995), a case study can be generalised to some degree if it represents the same situation and the findings from the mixed methods approach for data collection. Therefore, this present study could be of interest to other groups of undergraduate students or stakeholders in the food science and technology area in Thailand.

Confirmability refers to the degree to which findings can be confirmed by others (Gay,

2009; Marshall, 2016). One of the primary aims of qualitative research is to gain an understanding of phenomena from the perspectives of the participants being studied. In order to promote confirmability, this research triangulated the quantitative and qualitative data to strengthen the trustworthiness of the findings. The pragmatist paradigm employs both subjective and objective epistemologies, so the perceptions of the students and other participants in the food science and technology areas provided a basis for description of the need for English language in these academic and occupational contexts, as well as reflected the ESP teaching at the Thai tertiary level. Furthermore, the description of the methodology and the roles of the researcher of this study were provided for the readers of this study to scrutinize and determine whether the findings and interpretations were trustworthy.

3.8.4.2 Dependability

Dependability is sometimes used instead of reliability (Cohen, 2011; Lincoln & Guba, 1985). This research provides an explicit account of the research process to establish dependability, such as the data collection methods and data analyses used. This process allows readers or other researchers to see and evaluate this study (Denscombe, 2010). The thorough methodological description also makes this study transparent and capable of being adapted in another context. Moreover, the excerpts from the interview data and extracts from the participants are available for scrutiny by the readers. Further, the interviews were recorded and transcribed so that the research procedure could be seen to be dependable.

3.9 Ethical Considerations

As the main data from this research were collected from Agriculture University, a number of ethical issues needed to be considered. Informed consent was obtained from all of the participants, and all of them were informed of all relevant information, such as the purposes

and procedures of this research, along with the potential risks, benefits, and uncertainties (McKay, 2006). All of the documents related to ethical practices (e.g. informed consent, information sheet) were presented for approval to the supervisors and received full ethical approval. Potential ethical dilemmas were also discussed with the supervisors. The researcher reported the findings honestly, accurately, and responsibly (Duff, 2008). The documents related to ethical considerations are presented in Appendix 6. These include a letter requesting access to the institution, a participant information sheet, a participant consent form, and authority for the release of transcripts.

3.9.1 Gaining access

This study was conducted after the approval of the ethics committee of Massey University for research ethics (HEC: Southern A Application, 11/70, 11th October, 2011). There was no Ethics Committee requirement at Agriculture University. However, this research needed to comply with Agriculture University's regulations. The researcher approached the president of Agriculture University to gain his permission before conducting the research. The procedures included: accessing the university database for general background information of the ESP teachers and the subject teachers; asking permission for the students and subject teachers in the food science and technology programme and the ESP teachers to participate in the study; and asking permission for information about the students in the internship programme.

Before gaining access to the food factory or the occupational context, it was necessary to contact the individual employer informally by email or telephone. If the employer agreed to participate in an interview, the information sheet and informed consent letters were sent to the head of the human resources department of that food factory to allow him or her to participate in an interview. After the former students had returned the informed consent letters, the letters asking for permission for the researcher to access the factory were sent to the head of the human

resources department of that factory. Once the president of the university and the head of the department had granted permission by returning an approval letter to conduct the research, an invitation was extended to the participants.

3.9.2 Informed consent

The information sheet gave all of the participants' information about the objectives, benefits and design of the research and assured them that confidentiality would be addressed by using pseudonyms in the research report. In addition, all of the participants were told about the use of audio recording and their right to withdraw at any stage of the study. This information would be sufficient to assist the participants in deciding to participate on a voluntary basis (Mackey & Gass, 2013).

3.9.3 Privacy, confidentiality, and anonymity

In order to protect the participants' identity, confidentiality and anonymity were considered (Babbie, 2014). It was the responsibility of the researcher to protect the participants' privacy. To make the given information unidentifiable, the identities of all participants, the name of the university, and the name of the food factory were protected by pseudonyms.

All of the data were stored securely throughout the research process. Audio tapes and all paper copies of the raw data were stored in a locked filing cabinet in the researcher's home office in New Zealand. However, while in Thailand, they were stored in a locked filing cabinet in the researcher's work office at the university. Any electronic data were stored on the researcher's personal computer, which is password protected. The backup of the data was also saved on a USB flash drive in which only coded names appeared. All of the data was to be stored for five years from the time of the study, after which it will be destroyed.

3.9.4 Researcher's roles

A positive relationship and rapport with the participants and a professional manner by the researcher were established and maintained throughout the study. A form of reciprocity with the participants was employed as it is appropriate in the Thai culture, such as having refreshments with the participants as well as providing them with a summary of the results when completed. All of the participants were treated with respect and their contributions acknowledged and their anonymity ensured. The researcher reported the findings honestly, accurately, and responsibly, a feature discussed by Duff (2008). Also, since the researcher used to work at the university and had been on leave to pursue her study, she had no power over the participants' decisions to participate in the research. The decisions to participate in the research depended on the availability and willingness of the participants.

3.10 Chapter Summary

In this chapter, the researcher has provided a rationale for and discussed the use of a case-based, mixed methods research approach for the study. The choice of this approach was justified on the basis of the research paradigm, the purpose of the study, and the notion of using the needs analysis model of Dudley-Evans and St. John (1998) to help answer the research questions. The selection of research approaches is a reflection of the pragmatist paradigm. The exploratory case study using mixed method approaches for the data collection was considered to provide a rich and thick description of the need for English language skills on the part of the students. The multiple sources of data collection and different groups of participants, in both the academic and occupational contexts in the food science and technology area, added to the depth of analysis.

This chapter also discusses the way in which this study was carried out. It describes the

participants and the data collection procedures. In order to answer the research questions and to ensure that this case study was trustworthy and dependable, a wide range of participants and research instruments were deliberately selected. The participants in the academic context included the third-year students, former students, and subject teachers in the food science and technology programme, and the ESP teachers. They were considered “the insiders” at the university. The participants in the occupational contexts included the employers from various food factories, or “the outsiders” from the university. In addition, as the subject teachers and the former students had shared their experience and knowledge of the use of their English language skills in the occupational context, their positions covered both academic and occupational contexts.

The research instruments included two English proficiency tests (TOEIC and the Scientific English Grammatical Structures Test), two sets of questionnaires (the Questionnaire on Language Difficulties and the English Language Needs Questionnaire), and interviews. Data collection was administered with different groups of participants. This was followed by a discussion of the data analysis to be used. Finally, the ethical considerations applied in this study were described. The following chapters present the findings.

CHAPTER 4

FINDINGS FROM THE ENGLISH PROFICIENCY TESTS

As indicated in the previous chapters, this mixed methods case study aims to explore the English language needs in the academic and occupational contexts related to the food science and technology programme of the research university. The findings of the multiple sources of collected data are organised into three chapters: the Chapter 4 findings from the two English proficiency tests, the Chapter 5 findings from the two questionnaires, and the Chapter 6 findings from the interviews.

This chapter aims to report the findings of the two English proficiency tests. These findings can be used to infer the current English language knowledge of the students or the present situations of the students. This chapter is presented in three sections. First, the introduction describes the relationship between the findings of the two English proficiency tests and the needs analysis model of this study. This is followed by the findings from the two English proficiency tests. The conclusions drawn from these findings are provided at the end of the chapter.

4.1 Introduction

The findings from the two English proficiency tests link to the factors in the needs analysis model of this study. The findings of the two English proficiency tests are reported, as they were the initial instruments that the students in the food science and technology programme experienced in this research. The results of these tests relate to the two factors of the needs analysis model: English language information about learners (C), and learners' lacks (D). The

English language information about the learners (C) is defined as the students' current knowledge of English language skills that allows the researcher to assess the students' difficulties or lacks. Learners' lacks (D) refer to the difficulties that these students had in using their English language skills in different situations during the research. The two English proficiency tests were used as a tool to evaluate the students' current knowledge of their English language skills or the present situations of the students, including their strengths and weaknesses.

4.2 Findings from the Two English Proficiency Tests

In order to find out the students' current knowledge of their English language skills, all 45 students in the food science and technology programme were invited to take two English proficiency tests in phase one and phase two of the study. The first English proficiency test was adopted from the Test of English for International Communication (TOEIC), which aims to assess the students' listening and reading skills. The second English proficiency test was the Scientific English Grammatical Structures Test, which assesses the students' English grammar structures used in the sciences. The details of the test administration of these two English language tests were fully described in Chapter 3. All 45 students agreed to take the two English tests, hereafter, the 45 students. The 45 students took the two English proficiency tests twice, at the beginning of the ESP1 course in phase one, and after seven months at the beginning of the ESP2 course in phase two (Figure 4.1).

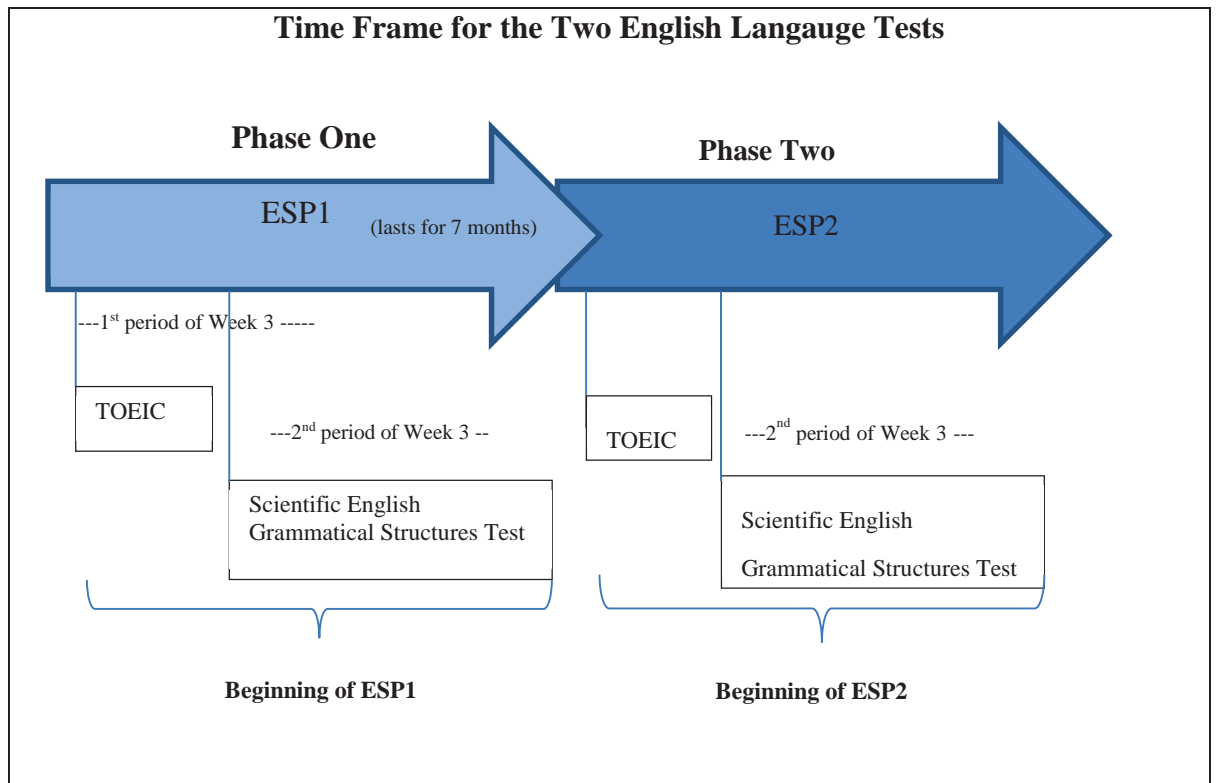


Figure 4.1 *The two sets of the English proficiency tests at the beginning of the both phases*

As described in Chapter 3, the scores of the students on the two tests in phase one were used to classify the initial 45 students into three levels of English proficiency: low, intermediate, and high. Two students from each level were purposively sampled to be interviewed for the further stage of the research process, which will be discussed in Chapter 6.

The next sections report the findings of the TOEIC and the Scientific English Grammatical Structures Test in the two phases of the study based on the scores of the 45 students.

4.2.1 Findings from the TOEIC

This section presents the findings from the TOEIC in phase one and phase two according to four sections: the total score, the scores in the listening part, the scores in the reading part, and a summary of the findings for the TOEIC.

4.2.1.1 The students’ total score in phase one and phase two

The total scores for the 45 students in phase one and phase two were analysed and compared. According to the descriptive statistics of the total scores in phase one and phase two of the 45 students, none of the students got a score higher than 100 or half of the maximum score of 200. The *t*-test showed a statistically-significant difference between the 45 students’ mean score in phase one and that in phase two ($t(44) = 3.18, p < .003$). The mean values suggests that the 45 students got a slightly higher mean score for the total score in phase two, as shown in Table 4.1. It can be inferred then that students slightly improved their English skills being tested.

Table 4.1 *The differences between the mean values of the total score for the 45 students in phase one and phase two*

<i>Tests</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t-test</i>	<i>d.f.</i>	<i>Sig.</i> <i>(2-tailed)</i>
Phase one	45	63.82	9.52	-3.18	44	.003*
Phase two	45	69.07	12.05			

(* $p < .05$)

The students’ strengths and weaknesses regarding their listening and reading skills were interpreted from their scores and the number of students that responded correctly to each test question in the listening and reading parts. The next section reports the findings from the listening part.

4.2.1.2 The findings on the listening part from phase one and phase two

The findings on the students’ listening in phase one and phase two are reported in five sections. First, the listening total score and the paired samples *t*-test are illustrated. This is followed by the levels of listening proficiency of the students, the scores of the students in the four sections of the listening part, and the strengths and weaknesses regarding the listening skills of the students. The section ends with a summary of the results for the listening part.

4.2.1.2.1 The total score and the *t*-test for the listening part

As shown in Table 4.2, the 45 students did not achieve the mean value of 50 percent of the maximum score of 100 items in both phases. In addition, the *t*-test showed no statistically-significant difference between the mean value in phase one and that in phase two in the listening part ($t(44) = -.82, p < .042$). It can be concluded that their listening skills did not significantly change in phase two. In other words, the difference between the mean value in phase one and that in phase two seemed to be due to chance and was not due to the ESP programme. The results did not agree with those of their total scores, in that the students improved their skills during the ESP programme.

Table 4.2 *The differences between the mean scores for the listening part of the 45 students in phase one and phase two*

<i>Students</i>	<i>Tests</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t-test</i>	<i>d.f.</i>	<i>Sig.</i> <i>(2-tailed)</i>
The 45 students	Phase one	45	33.80	7.07	-.82	44	.42
	Phase two	45	34.73	6.38			

(* $p < .05$)

The students' total scores in the listening part were converted to seven levels of listening proficiency based on the descriptors of the TOEIC. They are "No Useful Proficiency," "Memorized Proficiency," "Elementary Proficiency," "Advanced Elementary Proficiency," "Basic Working Proficiency," "Working Proficiency," and "Professional Proficiency." The full descriptors of each level are presented in Appendix 7. The descriptors serve as a guideline for understanding the listening competency reflected by the corresponding scores of the students. The next section presents the levels of listening proficiency of the 45 students.

4.2.1.2.2 The levels of listening proficiency of the 45 students

The students’ levels of listening proficiency in phase one and two (Figure 4.2) ranged from “No Proficiency” level to “Advanced Elementary Proficiency” level. The majority of the 45 students were at the “Memorized Proficiency” level in phase one, and at the “Elementary Proficiency” level in phase two. It seems that the majority of the 45 students did not achieve a higher level in the listening part in phase two, which is similar to the result for the students’ total scores.

Levels of Listening Proficiency of the 45 Students

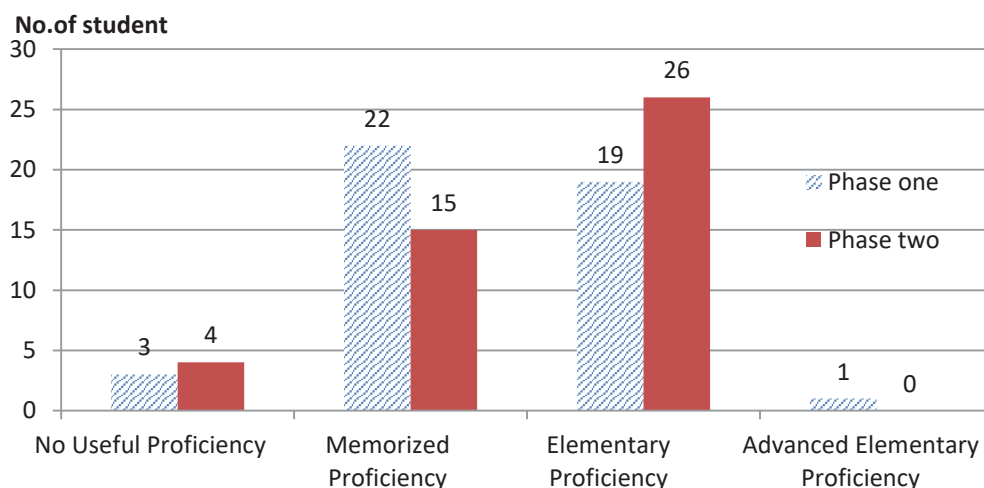


Figure 4.2 The distribution of the listening proficiency of the 45 students based on their scores in phase one and phase two

The students’ strengths and weaknesses were interpreted using the results of the students’ levels of proficiency compared with the TOEIC descriptors of listening proficiency. The students at “No Useful Proficiency” level scored too low to evaluate their real English language proficiency. The students at the “Memorized Proficiency” level might be able to understand some memorized words and phrases; however, they might not be able to participate in any simple face-to-face conversations. The students at the “Elementary Proficiency” level might

be able to understand short (single-sentence) descriptions of the central ideas and details of extended spoken texts with several repetitions or information that matches the words in the spoken text and easy vocabulary. The students at this level cannot understand details in short spoken texts with difficult vocabulary or when the language is syntactically complex. They also cannot understand details that include negative constructions, difficult grammar, difficult vocabulary, and paraphrased information. The students at the “Advanced Elementary Proficiency” level might be able to understand simple questions and statements of the central idea, purpose, and basic context in a face-to-face communication. Additionally, they might be able to understand only the topics that they are familiar with. The message that they listen to should be easy or contain medium-level vocabulary and repetitive information or paraphrasing. Generally speaking, the findings showed that the students had low competence in listening skills.

The scores of the students in each section of the listening part were analysed to find out the listening tasks that the students had the most and least difficulty with. These findings were expected to reveal the English language information of the learners in the needs analysis model of this study.

4.2.1.2.3 The scores of the students in each section of the listening part

The scores of the 45 students in each section of the listening part in phase one and phase two are reported in terms of mean percent. The listening part consists of four sections: Photographs, Question-Responses, Conversations, and Talks. The listening section with the highest mean percent was assumed to be the students’ least difficult section, whereas the section with the lowest mean percent was assumed to be the students’ most difficult one.

The results showed that although the mean percent in each section was not higher than 50 per cent, the 45 students scored the highest in the Photographs section (36.89%) and the

lowest in the Talks section (30.59%). Comparing the mean per cents in phase one and those in phase two, the mean percents of the 45 students increased in the Photographs and Conversations sections but dropped in the Question-Response and Talks sections (Table 4.3). It can be assumed that the 45 students had the least difficulty with the questions in the Photographs section in both phases. However, they had the most difficulty with the questions in the Talks section in both phases.

Most of the 45 students failed to achieve half of the maximum score for the listening part and the mean per cent in each listening section was relatively low in both phases. The next step of this study was to investigate the students' current knowledge of English listening skills, including strengths and weaknesses. The students' knowledge can be inferred from the number of correct responses in each section.

Table 4.3 Mean per cent of the correct responses in the four listening sections of the 45 students in phase one and phase two (%)

Listening Sections	Mean Per cent (%)	
	Phase one	Phase two
Photographs	36.89	47.33
Question-Response	33.93	30.59
Conversations	34.00	41.63
Talks	30.59	27.78

The next step of this study was to investigate the students' strengths and weaknesses regarding their listening skills. These strengths and weaknesses were interpreted from the numbers of correct responses to the questions in each section. These questions were examined using the corresponding explanations from the test booklet of the TOEIC as a guideline. The test questions where most of the students got correct responses were assumed to be the students'

strengths, whereas the questions where the least number of students got correct responses were assumed to be their weaknesses.

4.2.1.2.4 The strengths and weaknesses of the listening skills of the students

This part of the present paper reports the findings of the test question's analysis in the four sections of the Listening part: Photographs, Question-Responses, Conversations, and Talks.

The Photographs section

The in-depth analysis of the ten questions in the Photographs section showed that most of the 45 students responded correctly to question no.1 in both phases (32 students in phase one and 39 students in phase two). Based on the corresponding explanation of question no. 1, the question relates to the laboratory context and requires the students to make assumptions about the time sequence of the actions for their analytical skills. With most of the 45 students having a correct response to this test question, it can be implied that they might have been familiar with the context and aware of this particular analytical skill.

However, the least number of the 45 students had a correct response to question no. 6 (6 students in phase one, and 9 students in phase two). The question asked the students about fieldwork contexts and required them to analyse the relationship of things in a specific location as an analytical skill. The result suggests that the students might have had difficulty with the context and the analytical skills being tested.

In addition, all ten questions in Photographs section assessed the macro- and micro-listening skills of the students. The macro-skills included recognizing paralinguistic clues and listening for specific information. The micro-skills included enabling skills with interpretation, were used to formulate a sense of an utterance, such as deducing the meaning of unfamiliar words. The mean per cent of the correct response was less than 50 (36.89%) in phase one, and

47.33 in phase two) suggests that most of the 45 students had difficulty with the micro- and macro-skills mentioned.

The Question-Response section

Regarding the 30 test questions in the Question-Response section, most of the 45 students correctly answered question no. 11 (28 students in phase one, and 42 students in phase two). This question related to the health context and included three analytical skills: giving a local response to a question about health, distinguishing between related words, and distinguishing between words with similar sounds. It can be inferred that most of the 45 students had some knowledge about the context and analytical skills mentioned.

However, 7 of the 45 students had a correct response to question no. 22 in phase one, and 2 of the 45 students got a score on question no. 17 in phase two. The former question was associated with the vacation context and required the students to give a logical response to a question about location and to distinguish the duration of time. The later question related to the office context and required the students to give a logical response to a question using “how much,” and to distinguish words with similar sounds. The low number of students getting correct responses suggested that most of the 45 students had listening difficulties in these two contexts and the analytical skills mentioned.

The 30 questions in the Question-Response section also assessed some listening macro- and micro-skills that were more complex than those of the 10 questions in the Photographs section described earlier. The questions testing the macro-skills required the students to recognize paralinguistic clues and to listen for a more general understanding. The questions testing the micro-skills, both enabling and enacting skills, were elicited. The enabling skills were applied for recognizing the prominence within the utterances and to formulate a conceptual model linking the utterances, such as recognizing discourse markers. The enacting

skills were used to make an appropriate response, such as selecting key points for the current task and providing appropriate feedback to the speaker. The low scores of the students in the Question-Response section in both phases suggested that the students had difficulty with the macro- and micro-skills tested.

The Conversation section

The Conversation section comprised 30 test questions. Twenty-nine students of the 45 had a correct response for the two test questions, no. 50 and 55 in phase one, and 40 of the 45 students answered correctly question no. 55 in phase two. Questions no. 50 and no. 55 were related to the business and job interview context, respectively. Both questions included analytical skills about giving a response to a question about the duration of time, and distinguishing words with similar sounds. With a high number of students giving correct responses to the two questions, it can be assumed that most of the 45 students had some knowledge of the context and the analytical skills mentioned.

In phase one, only 3 of the 45 students had a correct response to question no. 53. The question asked the students about occupations. In phase two, 7 of the 45 students had a correct response to question no. 48, which was related to the job interview context. These two questions also assessed the students' analytical skills, including distinguishing words with similar sounds, and identifying related words. The analytical skill in question no. 53 included giving responses to a question about occupation, and no. 48 related to giving a response to a request.

In addition, the 30 questions in the Conversation section assessed the students' macro- and micro-skills. The macro-skills included listening for specific information. The micro-skills included both enabling and enacting skills. The enabling skills included making perception in recognizing prominence within utterances, interpreting the sense of an utterance formulating a

conceptual model linking utterances, and interpreting the speaker's intentions. The enacting skills covered making an appropriate response and selecting key points for the current task. The low number of students having a correct response to the questions in the Conversation section suggested that the students had difficulty when they used the macro- and micro-skills tested.

The Talk section

The last section of the test, the Talk section, consisted of 30 test questions. The findings showed that 28 students in phase one and 30 students in phase two had a correct response to question no. 92. The question assessed the students about the travel context, and analytical skills, including an analysing question about the duration of time, analysing language function related to service delay, and identifying facts and numbers. According to the number of the correct response, it might be inferred that most of the 45 students had some knowledge of the travel context and the analytical skills mentioned.

Only 7 students of the 45 got a correct response to question no. 96 in phase one. The question asked the students about the context of new items. In phase two, 4 students of the 45 students had a correct response to questions no. 74 and no. 86. Question no. 74 asked the students about services, whereas question no. 86 was related to a weather report.

The analytical skills tested in question no. 96 included an analysing question about main ideas, the language function of cause and effect, and identifying related words. The analytical skills tested in question no. 74 consisted of a question about time, language functions about offering information, and identifying related words. As for the analytical skills tested in question no. 86, the question required the students to analyse a question asking about measurement, the language function of presenting number, and identifying related words. The

low numbers of students that got a correct responses to these two questions suggested that most of the students encountered difficulty with these contexts and analytical skills.

In addition, all 30 questions in the Talks section also assessed the students' listening macro- and micro-skills, which were more complicated than those in the other three sections mentioned earlier. Regarding the macro-skills, all 30 questions required the students to listen for specific information. The questions testing the macro-skills required the students to use both enabling and enacting skills. The students applied enabling skills to recognize prominence within utterances as well as to interpret the content of an utterance, formulate a conceptual model linking utterances, and interpret the speaker's intentions. The students applied enacting skills to make an appropriate response, including selecting key points for the current task, identifying which points needed clarification, and providing appropriate feedback to the speaker. The low numbers of the students that had a correct response in the Talk section suggested that most of the students encountered difficulties in the macro- and micro-skills tested.

4.2.1.2.5 Summary of the findings for the listening part

The findings for the listening part showed that none of the 45 students achieved a total score higher than 50 percent of the maximum score of 100. The paired samples *t*-test showed no change between the students' total score in phase one and that in phase two, and it can be assumed that none of the students improved his or her listening skills during the time of the ESP programme, from the ESP1 to the ESP2 course. Furthermore, the levels of listening proficiency based on the total scores in both phases showed that most of the 45 students ranged from the "No Useful Proficiency" level to the "Advanced Elementary Proficiency" level in phase one. In phase two, although many of them shifted to the "Elementary Proficiency" level, none of the students was at the "Advanced Elementary Proficiency" level. This result is

interesting because it might reflect the ESP teaching and learning at the university and might link to the students' need for listening skills. However, further results from other data sources will be triangulated to confirm the results.

An analysis of the students' listening results showed that of the four listening tasks, the students attained their highest score in the Photographs section and their lowest score in the Talks section in both phases. The analysis of the 100 test questions from the four listening sections (Photograph, Question-Responses, Conversations, and Talks) based on the TOEIC descriptors revealed the areas of the English language listening skills where the 45 students had strengths and weaknesses. Although most of the 45 students gave a correct response to some questions, the low mean percent of the whole group of the 45 students suggests that the majority of the 45 students had problems in all listening skills tested, including situational contexts, analytical skills, and macro- and micro-skills. The findings regarding the students' current knowledge of their listening skills might be used as a guideline for the ESP teachers to select appropriate pedagogical approaches and learning materials for the students' level proficiency and to help improve the students' listening skills.

4.2.1.3 The findings on the reading part in phase one and phase two

This section presents the findings regarding the students' reading in phase one and phase two. The findings are presented into five parts: the total score and the paired sample *t*-test, the students' reading proficiency levels, the students' scores for each section of the reading part, and the strengths and weaknesses of the reading skills of the students. Lastly, a summary of the results of the reading part is presented.

4.2.1.3.1 The total score and the *t*-test of the reading part

The maximum score for the reading part was 100 items in both phases. As seen in Table 4.4, the mean values and the *t*-test of the 45 students showed some differences. Although the mean value was lower than half of the maximum score. The *t*-test showed a significant difference between the mean values in phase one and in phase two ($t(44) = -3.30, p < .002$). The results suggest that the students improved their reading skills significantly by phase two. The results showing that the students improved their reading skills agreed with those of the students' total score.

Table 4.4 *The differences between the mean scores for the reading part for the 45 students in phase one and phase two*

<i>Tests</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t-test</i>	<i>d.f.</i>	<i>Sig.</i> (2-tailed)
Phase one	45	29.93	4.97	-3.30	44	.002*
Phase two	45	33.93	7.70			

(* $p < .05$)

Similar to the levels of listening proficiency, the students' total scores in the reading part were converted to the seven levels of reading proficiency based on the descriptors of the TOEIC. They were "No Useful Proficiency," "Memorized Proficiency," "Elementary Proficiency," "Advanced Elementary Proficiency," "Basic Working Proficiency," "Working Proficiency," and "Professional Proficiency." The full descriptors for each level are presented in Appendix 7. The descriptors for the proficiency serve as a guideline for understanding the reading competency reflected in the corresponding scores of the students. The next section presents the levels of reading proficiency of the 45 students.

4.2.1.3.2 The levels of reading proficiency of the students

Like the listening part, the analysis showed that the majority of the 45 students varied their reading proficiency levels from “No Useful Proficiency” level to “Memorized Proficiency” level in both phases of the study (Figure 4.3). Some students shifted to a higher level in phase two. The results in phase two suggested that students improved their level of reading proficiency during the time of the ESP programme. This result agreed with the 45 students’ total scores and the paired samples *t*-test, where the students reading scores improved significantly in phase two.

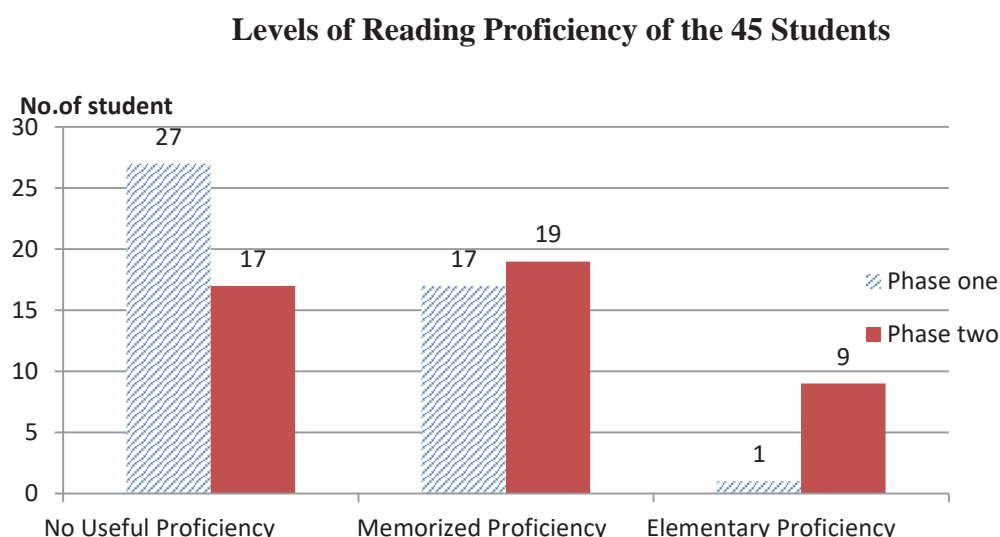


Figure 4.3 The distribution of the reading proficiency of the 45 students based on their reading scores in phase one and phase two

In addition, the students’ strengths and weaknesses could be inferred based on the TOEIC descriptors for reading proficiency level. The students at the “No Useful Proficiency” level in the reading part scored too low to evaluate their real reading proficiency. The students at the “Memorized Proficiency” level might be able to read individual words or phrases, e.g. numbers, names, or simple forms, but cannot usually read full sentences. The students at the “Elementary Proficiency” level might be able to read simple texts with simple and very

frequently-used grammar and vocabulary or familiar tasks; however, they need to read the reading materials several times to be sure that they understand.

Like the listening part, the scores of the students in each section of the reading part were also analysed to find out the reading tasks that the students had the most or least difficulty with. These findings were expected to reveal the present language information of the learners in the needs analysis model of this study.

4.2.1.3.3 The scores for the students in each section of the reading part

The scores for the 45 students were reported in terms of mean percent. The reading part of the TOEIC consisted of four sections: Incomplete Sentences, Text Completion, Reading Comprehension with a Single Text, and Reading Comprehension with Double Texts. The reading section with the highest mean percent was assumed to be the least difficult section, whereas the section with the lowest mean percent was assumed to be the most difficult one.

The results showed that the mean percent of the 45 students was less than 50 percent in all reading sections in phase one and phase two. They got a slightly higher mean percent in all reading sections in phase two. The lowest mean percent was for Reading Comprehension with Double Texts in both phases. The highest mean percent was Incomplete Sentences in phase one (33.61%) and Reading Comprehension with a Single Text in phase two (38.70%) (Table 4.5).

Table 4.5 Mean per cent of the correct responses in the four reading sections for the 45 students in phase one and phase two (%)

Reading sections	The 45 Students	
	Phase one	Phase two
Incomplete Sentences	33.61	35.72
Text Completion	32.41	33.89
Reading Comprehension with a single text	26.76	38.70
Reading Comprehension with double texts	25.28	26.90

It can be inferred that the Reading Comprehension with Double Texts was the most difficult reading section for the 45 students in both phases. The Incomplete Sentences and the Reading Comprehension with Single Text sections were the least difficult in phase one and phase two, respectively.

Since most of the 45 students did not achieve half of the maximum score for the reading part and the mean percent in each reading section was relatively low in both phases, the next step of this study was to investigate the students' strengths and weaknesses in reading skills according to the number of correct responses in each section. The test questions where most of the students had a correct response were assumed to be the students' strengths, whereas the questions where the least number of students had a correct response were assumed to be their weaknesses. An examination of each reading test question and the corresponding explanation from the test booklet of the TOEIC revealed some key reading skills that the students had difficulties with.

4.2.1.3.4 The strengths and weaknesses of the reading skills of the students

The findings from the analysis of the test questions are reported based on the four sections of the reading part: Incomplete Sentences, Text Completion, Reading Comprehension with a Single Text, and Reading Comprehension with Double Texts.

Incomplete Sentences section

The in-depth examination of the 40 reading test questions in the Incomplete Sentences section showed that 33 students responded correctly to question no. 110 in phase one and phase two. Based on the corresponding explanation, this question evaluated the students concerning preposition indicating a change in time. This implied that most of the students had some knowledge of using prepositions of time.

However, only 2 students of the 45 in phase one and 3 students in phase two had a correct response to question no. 102. The question asked the students about the noun as a direct object. According to the low number of the correct response, it might be inferred that the students had difficulty in the language feature being tested.

Text Completion section

According to the results of the 12 questions in the Text Completion section, 29 students in phase one and 28 students in phase two had a correct response to question no. 148. The question tested the students on the if-clause for a future real condition. From the high number of students getting a correct response it can be assumed that most of them had some knowledge of using this type of if clause.

On the other hand, 10 students in phase one had a correct response to question no. 151, testing them about subject-verb agreement. In phase two, 7 students had a correct response to question no. 146 testing the use of a noun after article “the.” According to the low number of the students that had a correct response, it might be interpreted that most of the students had difficulty with subject-verb agreement and noun for this particular purpose.

Reading Comprehension with Single Text section

Of the 24 test questions in the Reading Comprehension with Single Text section, 22 students in phase one and 38 students in phase two had a correct response to question no. 164, asking the students to read a press release and answer a context question. In addition, 38 of them also had a correct response to question no. 174 in phase two. This question asked the students to read a memo and answer a positive factual question. According to the high number of students that had correct answers to the two questions (no. 164, and no.174) it can be assumed that the majority of the 45 students had some knowledge of answering a context question and a positive factual question for a short message in press releases and memos.

In phase one, only 2 students of the 45 had a correct response to question no. 172, which was related to invoices and asked them to answer a context question. In phase two, 2 students of the 45 had a correct response to question no. 156 regarding reading news newspaper articles on a business issue and answering a viewpoint question. According to the low numbers the students that had correct response to these questions can be inferred that most of the 45 students had difficulty with the context and types of questions mentioned.

Reading Comprehension with Double Texts section

The results of the 24 questions in the Reading Comprehension with Double Texts section showed that 23 students in phase one and 23 students in phase two had a correct response to question no. 177. The question asked the students to read a contract and an addendum to the contract and then answer a factual question. From the high number of the students that had a correct response, it can be inferred that the majority of the 45 students have been familiar with the context of the reading.

However, only 4 students of the 45 in phase one had a correct response to questions no. 185 and 199, while 3 students had a correct response to test question no. 186 in phase two. Questions no. 185 and no. 186 asked the students to read a ticket and a letter and answer a context question for question no. 185, and then answer a negative factual question for question no. 186. Question no. 199 asked the students to read an excerpt from a magazine article and then answer a factual question. From the low number of the students getting a correct response to these three questions it can be implied that most of them had difficulty with the contexts and types of questions being tested.

4.2.1.3.5 Summary of the findings for the reading part of the test

The findings for the reading part for the 45 students showed that none of them scored higher than 50 percent of the minimum score of 100. The paired samples *t*-test showed a significant

difference between the total score of the 45 students in phase one and that in phase two, indicating that the students improved their reading skills during the ESP programme.

The reading results are also summarised under levels of reading proficiency. Based on their total scores in both phases, most of the 45 students were at the “No Useful Proficiency” level and “Memorized Proficiency” level and few of them moved up a level to the “Elementary Proficiency” level. The results suggest that the students’ reading proficiency levels were still at the low level. The results also suggest that only the *t*-test might not be sufficient for identifying the improvement of the proficiency of the students effectively. However, the *t*-test can be used to compare the means of the correct responses in phase one and phase two. This present study also applied a TOEIC descriptor to explain the reading proficiency of an individual student.

A comparison of the correct responses in the four reading tasks shows that a considerable number of the 45 students got the highest score in the Incomplete Sentences section in phase one, and in the Reading Comprehension with a Single Text section in phase two. The lowest number of students that had correct responses was in the Reading Comprehension with Double Texts section in both phases. The analysis of the 100 test questions from the four reading sections based on the descriptors of the TOEIC revealed the areas of English language skills in which the 45 students had strengths and weaknesses. Although most of the 45 students had correct responses to some questions, the overall mean score was lower than 50 per cent of the maximum score and showed that all of the students also had problems with all of the reading skills tested. The results suggest that the 45 students need more opportunities to practise all of the reading contexts and some language functions.

4.2.2 Findings from the Scientific English Grammatical Structures Test

As mentioned in section 4.2, the 45 students also took the Scientific English Grammatical Structures Test in phase one and in phase two after one week of the TOEIC in each phase. The scores of the Scientific English Grammatical Structures Test from both phases were analysed and compared to find out the students' proficiency in the grammar structures used in sciences. These scores can be used for interpreting the English language information about the learners (C) and learners' lacks (D) of the needs analysis model.

The results from the total score and the *t*-test analysis are reported, followed by the scores of the students in the three main scientific grammatical structures, and the strengths and weaknesses in the grammar structures of the students. The summary drawn from these findings is presented at the end of the section.

4.2.2.1 The total score and the *t*-test for the Scientific English Grammatical Structures Test

The descriptive statistics for the total scores of the 45 students in phase one and phase two illustrate that the majority of the 45 students had a score less than half of the maximum score of 45. In addition, although the mean values in phase two were higher than those in phase one, the *t*-test indicated no significant difference between the mean values in phase one and in phase two ($t(44) = -.935, p < .355$). The results suggest that the 45 students did not significantly improve their knowledge of the grammar structures used in sciences during the period of the ESP programme (Table 4.6).

Table 4.6 *The differences between the mean scores of the total score of the 45 students in phase one and phase two*

<i>Tests</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t-test</i>	<i>d.f.</i>	<i>Sig.</i> <i>(2-tailed)</i>
Phase one	45	11.69	3.26	-.935	44	.355
Phase two	45	12.24	3.61			

($p < .05$)

4.2.2.2 The scores of the students for the three main scientific grammatical structures

The Scientific English Grammatical Structures Test encompasses three grammatical structures: complementation, relativization, and comparison. The analysis showed that the mean percent of the 45 students for all the three grammatical structures increased in phase two. In addition, the highest mean percent was in the complementation in phase one and in the relativization in phase two, whereas the lowest mean percent was in the Comparison in both tests (Table 4.7).

Table 4.7 *Mean per cent correct for the three main scientific English grammatical structures of the 45 students in phase one and phase two*

Scientific English grammatical structures	Overall	
	Phase one	Phase two
Complementation	27.41	27.85
Relativization	26.74	28.45
Comparison	21.78	25.33

Since most of the students did not achieve half of the maximum score and the mean percent was relatively low, the next process of the research further investigated the strengths and weaknesses regarding these three scientific grammatical structures. The number of students that had a correct response to the test questions was assumed to be the students' strengths, whereas the low number of students having a correct response to the questions was assumed to be the students' weaknesses.

4.2.2.3 The strengths and weaknesses of scientific grammar structures of the students

This section reports the findings from the analysis of the questions that the 45 students got correct. The findings revealed the strengths and weaknesses of the students in scientific grammatical structures. The 45 questions on the Scientific English Grammatical Structures Test measure the three main scientific grammatical structures or the fifteen sub-structures regarding scientific English grammar issues.

Complementation

The 15 questions in the Complementation structure were composed from five sub-structures (Table 4.8). The finding showed that a majority of the 45 students (36.30%) in phase one had a correct responses to questions no. 13, 27, and 42. The questions asked the students about “To-infinitive complement functioning as an object (Type 5),” which was also the highest percentage of all the 15 sub-structures. However, only 18.52% of the students had a correct response to questions no. 1, 9, and 25. These questions asked the students about “Participial – “ing” object complement following the preposition *by*.”

In phase two, the percentages of correct responses for the five sub-structures slightly increased, except the questions about “To-infinitive complement functioning as an object (Type 5),” which decreased to 21.48%, which was also the lowest percentage of the Complementation. However, the highest percentage in phase two was for the questions related to the “Finite subject complement which is declarative in form” (32.59%), which can be found in questions no. 5, 21, and 31.

Table 4.8 Percentages of correct responses in the fifteen English grammatical structures of the 45 students

English grammatical structures	Percentage (%) of correct responses	
	Phase one	Phase two
Complementation		
1. Finite object complement which is declarative in form	21.48	27.41
2. Finite subject complement which is declarative in form	31.11	32.59
3. To- infinitive complement functioning as an object (Type 2)	27.41	28.15
4. To- infinitive complement functioning as an object (Type 5)	36.30	21.48
5. Participial <i>-ing</i> object complement following the preposition <i>by</i>	18.52	29.63
Relativization		
6. Non-finite (restrictive) participial <i>-ing</i> relative construction	30.37	32.59
7. Non-finite (restrictive) participial <i>-ed</i> relative construction	32.59	34.07
8. Finite (restrictive) relative construction with the relative element <i>that</i> as a subject	31.11	16.30
9. Finite (restrictive) relative construction with the relative element <i>which</i> as a subject	26.67	26.67
10. Finite (restrictive) relative construction with the relative element <i>which</i> functioning as a complement	12.59	32.59
Comparison		
11. Comparison of difference with the comparative element <i>other</i> used with anaphoric reference	14.82	23.70
12. Comparison of equality with <i>as</i> showing relative-like characteristics	25.19	16.30
13. Comparison of similarity with the comparative element <i>same</i> used reciprocally	18.52	22.22
14. Comparison of inequality used anaphorically with the absence of <i>than</i>	25.93	35.56
15. Comparison of inequality involving the implicit bound comparison with the presence of <i>than</i>	20.74	28.89

Although the findings showed the highest and the lowest percentage of the correct response in the five sub-structures, the relatively low percentages suggest that the students had difficulties with all five structures in the complementation.

Relativization

The 15 questions testing the relativization structure were composed from five structures (Table 4.8). The findings in phase one showed the highest percentage for questions no. 17, 32, and 38.

The questions tested the “Non-finite (restrictive) participial -ed relative construction” (32.59%), which also had the highest percentage in phase two (34.07%). The lowest percentage was the “Finite (restrictive) relative construction with the relative element which functioning as a complement” (12.59%), was also the lowest percentage in all 15 structures. The questions related to this type of structure were no. 14, 40, and 44.

In phase two, the percentages of correct response regarding the three structures slightly increased. For example, the percentage of the “Non-finite (restrictive) participial -ing relative construction” increased to 32.59%. However, the percentage of the questions about the “Finite (restrictive) relative construction with the relative element that as a subject” dropped to 16.30%. The percentage was also one of the lowest percentages among the 15 structures in phase two. The questions related to this structure included no. 2, 36, and 41.

Although the findings showed the highest and the lowest percentage of the correct response regarding the five structures, the relatively low percentages suggested that the students had difficulties with all five relativization structures.

Comparison

The 15 questions in the Comparison structure were composed of five structures (Table 4.8). The findings showed that the highest percentage in phase one and phase two was the “Comparison of inequality used anaphorically with the absence of *than*” (25.93%, and 35.56%, respectively). This particular sub-structure was found in questions no. 10, 15, and 23. The lowest percentage was the “Comparison of difference with the comparative element *other* used with anaphoric reference” (14.82%) in phase one, which appeared in questions no. 3, 28, and 35. In addition, the lowest percentage in phase two was the “Comparison of equality with *as* showing relative-like characteristics” (16.30%), which was one of the lowest percentages among the 15 structures and the only sub-structure among the five sub-structures of the

comparison. This particular sub-structure was found in questions no. 6, 16 and 26. From the results, it can be inferred that the 45 students had difficulties with all of the five sub-structures in the comparison.

4.2.3 Summary of the findings for the Scientific English Grammatical Structures Test

As stated earlier, the Scientific English Grammatical Structures Test included three main grammatical structures used in science: complementation, relativization, and comparison. Each main structure comprises five sub-structures, each of which has three questions. The test includes 45 questions as the maximum score.

The findings for the test in phase one and phase two showed that the 45 students had a mean percent less than 50 percent of the maximum score. Although the mean values increased in all structures, the *t*-test showed no significant change between the mean values in phase one and phase two. From the results, it can be inferred that generally the students did not improve their knowledge of the grammar structures during the ESP programme. In addition, the analysis of the highest and the lowest percentages on the 15 sub-structures showed relatively low scores in all structures. The results suggested that the students had difficulties in all three main grammatical structures of scientific English.

4.3 Summary of the Findings from the Two English Proficiency Tests

To sum up, the 45 students took two sets of English proficiency tests (TOEIC and the Scientific English Grammatical Structures Test) in phase one and phase two of the study. These tests were administered at the beginning of the ESP1 course in phase one, and at the beginning of the ESP2 course in phase two. At the beginning of each phase of the study, the students took the TOEIC, then after a week they took the Scientific English Grammatical Structures Test. The summary of the findings of the TOEIC is as follows:

The results of the total score in phase one and phase two can be concluded as follows:

- the students' total score was below 50 percent of the maximum score of 200;
- the *t*-test analysis of the 45 students' mean values indicated a significant difference between the mean value in phase one and that in phase two. This result suggests that the students total score increased during the time of the ESP programme.

However, these results did not agree with the results of the listening part, regarding which the following can be concluded:

- the mean score of the 45 students in the listening part was less than 50 per cent of the maximum score of 100;
- the mean score of the total score of the 45 students showed there was no significant difference between the mean value in phase one and that in phase two. This suggests that the students did not improve their listening proficiency during the ESP programme;
- the listening proficiency level of most students was at the Memorized Proficiency level in phase one, and the Elementary Proficiency level in phase two.
- based on the percentages of the correct response of the 45 students in the four sections in phase one and in phase two, the Talk and the Conversations sections were considered to be the most difficult, but the Photographs section was the least difficult in both phases;
- According to the low percentage and the low mean values of the students, it can be interpreted that the students had difficulty in understanding messages in various situational contexts, and could not apply the analytical skills, macro- and micro skills being tested.

The results of the reading part showed the following:

- the mean score of the 45 students in the reading part was less than 50 per cent of the maximum score of 100;
- the *t*-test analysis showed a significant difference between the mean score of the 45 students in phase one and in phase two. This suggests that the students improved their reading proficiency during the time of the ESP programme. This result agreed with that of the total score;
- the reading proficiency level of most students was at the “No Useful Proficiency” level in phase one, and at the “Memorized Proficiency” level in phase two. These levels mean that the students were at a very low level of proficiency;
- the percentage of the correct responses of the 45 students in the four sections in phase one and phase two showed that the Reading Comprehension with Double Texts was considered to be the most difficult section in both phases, but the Incomplete Sentences and the Reading Comprehension with a Single Text were the least difficult ones in phase one and phase two, respectively;
- the low percentage and the low mean per cent of the students suggests that the students were at low level of reading proficiency and had difficulty with their reading skills.

From the results of the Scientific English Grammatical Structures Test the following can be concluded:

- the mean value of the 45 students for the total score was less than 50 percent of the maximum score of 45;
- the *t*-test analysis of the 45 students showed there was no significant difference between the mean values for phase one and phase two. This suggests that the

students did not improve their knowledge of grammar structures used for science during the ESP programme;

- the percentage of the correct response of the 45 students in the four sections showed that the students had difficulty with grammar structures related to comparison in both phases, and had less difficulty with grammar structures related to complementation during phase one and in relativization in phase two;
- the low percentages and the low overall mean percent of the students suggest that the students had difficulties in all three main scientific English grammar areas tested.

The analysis of the scores on the two English proficiency tests in phase one and those in phase two suggests that the students did not improve their listening and grammar. All of them still were at a low level of reading proficiency during the ESP programme over the seven months. This could lead to problems or difficulties when they use these skills in the academic and occupational contexts. Additionally, the low level of English proficiency might link to the students' needs for these skills in the ESP programme. In short, the findings showed that at the time of the study or the students' present situations, the students had low level of English competency.

The next chapter reports the results of the two questionnaires, which reflect the perceptions of the students of their needs and difficulties regarding their English language skills during the two phases of the study.

CHAPTER 5

FINDINGS FROM THE QUESTIONNAIRES

This chapter presents the findings from the analysis of the Questionnaire on Language Difficulties, and the English Language Needs Questionnaire from the two phases of the study. The questions in the questionnaires were developed to seek information based on the needs analysis model used in this study, which covers personal information about the learners (B), English language information about the learners (C), the learners' lacks (D), and language learning information (E).

All 45 students were asked to complete both of the questionnaires twice: at the beginning of the ESP1 course as phase one, and after four months at the beginning of the ESP2 course as phase two. The interval between the two questionnaires was one week. The administration and description of the Questionnaire on Language Difficulties, and the English Language Needs Questionnaire, were fully described in Chapter 3. Of the 45 students in the food science and technology programme, 44 (97.78%) returned both questionnaires in both phases, hereafter the 44 students.

This chapter reports the findings based on the responses of the 44 students, which are presented in two sections. First the findings from the Questionnaire on Language Difficulties are presented. This is followed by the findings for the English Language Needs Questionnaire. The conclusions drawn from these findings are presented at the end of each section.

5.1 Findings from the Questionnaire on Language Difficulties

The Questionnaire on Language Difficulties in phase one comprised 60 question items in three parts. In order to assure the consistency of the students' responses, more ranking question items were added in the phase two questionnaire. The questionnaire in phase two comprised 68 questions items.

This section reports the findings for the responses to the questionnaire into four parts based on the responses of the 44 students. First the findings on the background information are presented, then the findings of the difficulties with general English language skills, and the findings regarding difficulties with English language tasks. The conclusions drawn from the findings of the Questionnaire on Language Difficulties in both phases are presented.

5.1.1 Findings on the background information

The questions in Part 1 relates to the background information of the students in the Questionnaire on Language Difficulties in phase one, and phase two consists of five sections. These sections contain general information about the students, their prior learning experiences with other English language courses, their frequency of using the English language outside the classroom, their attitudes towards the English language, and self-evaluation for English language skills competency. The findings helped the researcher understand the students' personal information and to determine the students' current English language information.

5.1.1.1 General information about the students

This section reports the students' demographic information and their university admission. Among the 44 students, 39 (88.64%) were female and five (11.36%) were male. The 44 students were in the 20-21 age group. Thirty-eight students (86.36%) were from the university quota system. The other six students (13.64%) were from the national examination system.

5.1.1.2 Prior learning experiences with other English language courses

This section reports the students' experiences with English language learning prior to the ESP programme. In phase one, the information was gathered from the students' grades from the two Fundamental English courses, and in phase two the information was collected from the students' grades from the ESP1 course.

The grades of the 44 students in the three English courses ranged from grade A (scores more than 80%) to grade D (scores between 45-54%). In Fundamental English 1, 37.78% got a grade of D+ (scores between 54-59%), whereas in Fundamental English 2, most of them or 20.00% got a grade of A; the students were evenly spread over the grade range. In phase two, 26.67% indicated that they got a grade of B (scores between 70-74%). However, most students got grades D to C+ in both phases, which suggests that most of the students were at a low level of English. Table 5.1 shows the distribution of grades of the three English language courses.

Table 5.1 Distribution of grades from the English language courses of the 44 students in the two phases (%)

Grade	Phase One		Phase Two
	Fundamental English 1 n (%)	Fundamental English 2 n (%)	ESP1 n (%)
A	2 (4.44%)	9 (20.00%)	5 (11.11%)
B+	1 (2.22%)	7 (15.56%)	8 (17.78%)
B	3 (6.67%)	6 (13.33%)	12 (26.67%)
C+	4 (8.89%)	6 (13.33%)	11 (24.44%)
C	7 (15.56%)	8 (17.78%)	2 (4.44%)
D+	17 (37.78%)	8 (17.88%)	5 (11.11%)
D	11 (24.44%)	1 (2.22%)	2 (4.44%)

5.1.1.3 Frequency of using English language outside the English classroom

This section reports the frequency of using English language outside the English classroom of the students and the course name in their major subject that they used the English language to study.

In phase one, among the 44 students, 43.2% thought that they rarely used English outside the ESP class, 40.2% sometimes used English, 9.1% often used English, and 6.8% never used English. However, interestingly, this is contrary to the findings for question item 1.4.1 asking the students to write in the names of the course name that the students used English language to study. The results showed that more than half of the students (86.7%) wrote the names of the seven courses: food engineering, sensory evaluation, meat processing, food microbiology, biology, nutrition, food processing, and industrial management. In phase two, all of them wrote only “seminar” as this was the major course they were studying in this phase.

The findings concerning the opportunities to use English outside the English classroom might suggest to the ESP teachers and the university to provide the students with more opportunities to use their English language skills. Furthermore, the findings suggest that the students used English mostly in their major study (academic context). These findings might provide some recommendations to the ESP teachers to find teaching materials that are relevant to the courses to help the students study in their major area successfully.

5.1.1.4 Attitude towards the English language and the ESP programme

Item 1.5 investigated the students’ interest in and attitude towards the English language and the ESP programme. In phase one, the study measured ‘liking English’, whereas in phase two the item 1.5 measured the importance of ESP. The findings showed that more than half of the 44 students liked the ESP programme moderately (65.9%). 13.6% liked it slightly, 11.4% liked it very much, 9.1% extremely liked it, and none of them disliked the ESP programme in phase

one. In phase two, 54.5% thought that the ESP programme was the most important, 36.4% thought that it was important, 6.8% thought that it was moderately important, and 2.3% thought that it was of little importance, but none of them thought that it was not important. To conclude, it appears that although the students indicated that they liked the English language at a moderate level in phase one, they felt that the ESP programme was important.

5.1.1.5 Self-evaluation of the English language skills

The self-evaluation of the six English language skills (Table 5.2-a) showed that the majority of the 44 students in both phases thought that their language skill competency was from a weak to average levels. Generally, most of the students thought that all of their English language skills were at a moderate level. Specifically, most of them thought that they were weak in grammar (72.7%) in both phases. Fifty percent in phase one and 59.1% in phase two thought that they were weak in speaking. The percentages across all language skills showed that the students thought their English language skills were weaker in phase two.

Table 5.2-a *The ratings on English language skill ability by the 44 students in the two phases (%)*

Skills/ Levels of Competency	Listening (%)		Speaking (%)		Reading (%)		Writing (%)		Vocabulary (%)		Grammar (%)	
	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two
	Good	13.6	9.1	6.8	6.8	18.2	15.9	20.4	11.4	15.9	9.1	6.8
Moderate	50.0	38.6	43.2	34.1	54.5	56.8	45.5	47.7	43.2	45.5	20.5	27.3
Weak	36.3	52.3	50.0	59.1	27.2	27.3	34.1	40.9	40.9	45.5	72.7	72.7

In addition, the students were asked to rank their ability in all language skills from the best (1) to the weakest (6) in Item 1.7 of the questionnaire in phase two. Table 5.2-b shows that most of the 44 students ranked reading as the best (47.7%) and grammar as the weakest skills

(54.5%). The rankings in speaking, writing, listening, and vocabulary did not show any distinct pattern.

Table 5.2-b: The ranking of the abilities in English language skills of the 44 students (%)

Ranking/ Skills (N=44)	Listening (%)	Speaking (%)	Reading (%)	Writing (%)	Vocabulary (%)	Grammar (%)
1 st	9.1	6.8	47.7	11.4	20.5	2.3
2 nd	22.7	13.6	25.0	22.7	6.8	6.8
3 rd	13.6	27.3	9.1	25.0	15.9	6.8
4 th	11.4	20.5	6.8	27.3	20.5	11.4
5 th	27.3	15.9	9.1	11.4	29.5	18.2
6 th	15.9	15.9	2.3	2.3	6.8	54.5

The findings from both phases suggest that the students thought that their competency in English language skills dropped by phase two. There might have been some factors affecting their English language competency, which will be further investigated and reported in the next chapter.

The findings showed that most students considered reading as their best skill and grammar as their weakest. These findings agree with the findings of the two English proficiency tests reported in Chapter 4—that most of the students got higher scores in the reading part than the listening and grammar parts. However, the results of the students’ self-evaluation confirmed that most of them were at a low level of English proficiency.

5.1.2 Findings on difficulties regarding general English language skills

Part 2 of the Questionnaire on Language Difficulties intended to reveal the students’ difficulties with general English language skills in phase one and phase two. In item 1, the students were

asked to rate the extent to which they felt that they had difficulty with their English language skills (Table 5.3-a).

Table 5.3-a Distribution of the ratings on difficulties with general English language skills of the 44 students in phase one and phase two (%)

Language skills/ Extent of difficulty	The most serious difficulty (1)		Serious difficulty (2)		Moderate difficulty (3)		Slight difficulty (4)		Little difficulty (5)		Do not have any difficulty (6)	
	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two	Phase One	Phase Two
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Listening	14.6	14.0	29.3	20.9	36.6	37.2	17.1	14.0	2.4	7.0	0.0	7.0
Speaking	17.1	9.3	26.8	30.2	34.1	25.6	22.0	16.3	0.0	7.0	0.0	11.6
Reading	9.8	4.7	17.1	18.6	43.9	30.2	22.0	23.3	4.9	14.0	2.4	9.3
Writing	12.2	9.5	24.4	16.7	36.6	38.1	22.0	16.7	4.9	11.9	0.0	7.1
Vocabulary	9.8	11.6	29.3	20.9	31.7	37.2	19.5	16.3	7.3	7.0	2.4	7.0
Grammar	17.1	26.2	39.0	23.8	22.0	23.8	19.5	11.9	0.0	11.9	2.4	2.4

The findings showed that the students varied their ratings of the difficulty for each of the general English language skills from “the most serious difficulty” to “do not have any difficulty.” The percentage for both phases revealed that most of the students thought that they had difficulty with all language skills at moderate level to the most difficult level. Similar to the findings from the self-evaluation, most of them thought that grammar was the most difficult skill, and reading was the least difficult.

In addition, the *t*-test results (Table 5.3-b) showed significant differences in the ratings on the extent of the students’ difficulty in speaking, reading, and writing ($p < .05$). That is, the students felt that speaking, reading, and writing were less difficult in phase two.

Table 5.3-b Descriptive analysis of the difficulties with English language skills of the 44 students in the two phases

Language Skills	Phase One		Phase Two		<i>t</i>	Sig. (2-tailed)
	Mean	Std.Dev.	Mean	Std.Dev.		
Listening	2.63	1.02	3.07	1.50	-1.60	.12
Speaking	2.61	1.02	3.29	1.49	-2.38	.02*
Reading	3.02	1.11	3.68	1.40	-2.15	.04*
Writing	2.83	1.07	3.51	1.52	-2.28	.03*
Vocabulary	2.93	1.20	3.20	1.49	-.90	.37
Grammar	2.54	1.14	2.90	1.72	-1.14	.26

*($p < .05$)

In item 2, the students ranked their general English language skills in order according to the extent of difficulty the perceived, from “the most serious difficulty” to “the least difficulty.” The finding was similar to those for the rating scales and the mean values. The highest percentage was grammar (36.4%), and then listening (27.3%). This was followed by speaking, writing, and vocabulary (9.1%), and the least difficulty was reading (6.8%). The findings concluded that the students thought that grammar was the most seriously difficult general English language skill and that reading was the least difficult.

5.1.3 Findings on the students’ difficulties with English tasks

Part 3 of the Questionnaire on Language Difficulties reported the students’ difficulties with seven English language skills—listening, speaking, reading, writing, vocabulary, grammar, and language functions, in phase one and phase two. The findings are presented based on the mean values, as they illustrate a distinct pattern of the extent of the students’ difficulties with their English language skills. In addition, the *t*-test results predicted changes in the students’ perceptions regarding the extent of their difficulty with the English language tasks in phase one and those in phase two.

5.1.3.1 Listening

The ratings of the 44 students varied from “the most serious difficulty” to “do not have any difficulty,” without mentioning any additional listening tasks. The mean values (Table 5.4)

showed that the students considered three listening tasks as the most difficult in both phases. These listening tasks were “listening to radio or television programs and other English media” (mean = 2.67 and 2.33, respectively), “listening to presentations and discussions in international meetings/seminars/conferences” (mean = 2.48 and 2.62, respectively), and “receiving spoken instructions/advice” (mean = 2.72, and 2.74, respectively).

Table 5.4 Descriptive analysis of the difficulties with listening tasks of the 44 students in both phases

Listening Tasks	Phase One		Phase Two		t	Sig. (2-tailed) (p<.01)
	Mean	Std.Dev.	Mean	Std.Dev.		
1. Receiving spoken instructions/advice	2.72	1.10	2.74	1.05	-.11	.91
2. Listening to presentation and discussions in international meetings/seminars/conferences	2.67	1.20	2.33	1.03	1.30	.20
3. Listening to teachers	2.95	.91	2.76	1.05	.88	.38
4. Listening to students	3.00	.91	3.17	1.15	-.75	.46
5. Listening to radio or television programmes and other English media	2.48	1.15	2.62	1.17	-.51	.61
6. Others						

The *t*-test results indicated no significant differences between the extent of difficulties for any of the listening tasks in both phases ($p > .05$). This suggested that the students thought that the extent of their difficulty with all five listening tasks remained the same in both phases.

From the results for both phases, it can be concluded that the 44 students varied their difficulty level from moderate to serious difficulty regarding listening tasks. They thought that “listening to radio or television programs and other English media,” “listening to presentations and discussions in international meetings/seminars/conferences,” and “receiving spoken instructions/advice” were the three most difficult tasks for both phases. In addition, they did

not change their perceptions towards the extent of the difficulty they experienced with the listening tasks over the period of the ESP programme.

5.1.3.2 Speaking

The ratings of the 44 students varied from “the most serious difficulty” to “do not have any difficulty,” with no speaking tasks added. Based on the mean values (Table 5.5), “speaking to foreigners” was considered the most difficult speaking task in both phases (mean = 2.16, and 2.40, respectively). Most of them also thought that “making requests,” “pronunciation” in phase one, and “talking to a variety of people”, together with “pronunciation” in phase two were the most difficult speaking tasks.

Table 5.5 Descriptive analysis of the difficulties with speaking tasks of the 44 students in both phases

Speaking Tasks	Phase One		Phase Two		t	Sig. (2-tailed) (p<.05)
	Mean	Std.Dev.	Mean	Std.Dev.		
7. Talking to a variety of people	2.63	1.02	2.51	1.12	.51	.61
8. Asking and answering questions during group or class work	2.77	1.13	3.05	.98	-1.36	.18
9. Introducing yourself and others in a variety of situations	2.98	1.17	3.07	1.28	-.46	.65
10. Giving a presentation	2.79	1.21	2.58	1.01	1.10	.28
11. Stating opinion or ideas about different topics during class activities	2.72	1.05	2.86	.97	-.66	.51
12. Speaking to foreigners	2.16	1.29	2.40	1.28	-.94	.36
13. Making requests (i.e. for further information or confirmation)	2.42	1.07	2.72	.98	-1.41	.17
14. Talking over the phone	2.55	1.17	2.52	.97	.10	.92
15. Pronunciation	2.44	1.10	2.61	1.09	-.65	.52
16. Others						

The *t*-test showed that there was no significant difference between the extent of difficulties in all speaking tasks of the two phases ($p > .05$). That is, the students considered that their levels of difficulty in the nine speaking tasks remained consistent. They did not change their ratings in phase two.

The *t*-test showed that there was no significant difference between the extent of the students' difficulties in any of speaking tasks for the two phases ($p > .05$). That is, the students considered that their levels of difficulty with the nine speaking tasks remained consistent—they did not change their ratings in phase two.

To sum up, the 44 students thought that their speaking tasks were moderately difficult to seriously difficult. They considered “speaking to foreigners” and “pronunciation” as the most difficult speaking tasks in both phases. Additionally, most of them considered “making requests” in phase one and “talking to a variety of people” in phase two as the most difficult speaking tasks. They did not change their perceptions of the extent of their difficulty with the speaking tasks over the period of the ESP programme. The results of their perceived difficulty with speaking tasks provide more details about the speaking tasks that the students had problems with.

5.1.3.3 Reading

The ratings of the 44 students varied from “the most serious difficulty” to “do not have any difficulty”, with no reading tasks added. According to the mean values (Table 5.6) in phase one, “reading academic journals/publication” (mean = 2.44) was the most difficult task. This was followed by “reading textbooks”, and “reading office documents.” In phase two, the mean values showed that most of the students considered “reading office documents” (mean = 2.58) as the most difficult task, followed by “reading academic journals/publication” and “reading textbooks.”

Table 5.6 Descriptive analysis of the difficulties with reading tasks of the 44 students in both phases

Reading Tasks	Phase One		Phase Two		t	Sig. (2-tailed) (p<.05)
	Mean	Std.Dev.	Mean	Std.Dev.		
17. Reading laboratory reports	2.77	1.07	2.83	1.02	-.33	.74
18. Reading exercise/test questions	2.65	1.02	3.09	1.19	-2.09	.04
19. Reading textbooks	2.56	1.01	2.70	1.08	-.70	.49
20. Reading academic journals/publications	2.44	.96	2.63	1.07	-.85	.40
21. Reading manuals, instructions, or product descriptions	2.81	1.16	2.77	1.09	.22	.83
22. Searching the Internet English resources	2.88	1.28	2.79	1.26	.37	.71
23. Reading office documents, e.g. business letters	2.63	1.11	2.58	1.12	.23	.82
24. Reading signs, rules, and notices in a laboratory	2.84	1.15	3.12	1.07	-1.27	.21

The *t*-test results indicated no significant differences between the extent of the students' difficulty with the seven reading tasks of the two phases, except the "reading exercise/test questions task," ($t(43) = -2.09$, $p < .04$). The results suggest that the extent of difficulty of the 44 students with the seven reading tasks remained the same, but they considered that they had less difficulty with the "reading exercise/test questions."

From the results for both phases, it can be concluded that the 44 students thought that the reading tasks were moderately difficult to seriously difficult. Most of them perceived that "reading academic journals/publications," "reading office documents," and "reading textbooks" were the most difficult. They did not change their perceptions towards the extent of their difficulty with most of the reading tasks over the period of the ESP programme. However,

they thought that they had less difficulty with “reading exercise/test questions” in phase two. The results for the students’ perceived difficulty with their reading tasks provide more details about the reading tasks that they had problems with.

5.1.3.4 Writing

The ratings of the 44 students’ writing task difficulty varied from “the most serious difficulty” to “do not have difficulty” and none of the students added more writing tasks. The mean values for the two phases (Table 5.7) showed that “writing research papers, articles, and reviews for scientific journals” (mean = 2.61, and 2.37, respectively) was rated as the most difficult task. The mean values in phase one showed that most of the students also rated “writing business letters” and “writing emails” as their most difficult tasks. Most of them continued to rate “writing business letters” as one of their most difficult tasks in phase two. They also felt that it was difficult to “writing grants or job applications.”

The *t*-test results indicated no significant differences between the mean values for either phase ($p > .05$). It can be assumed that the students felt they still had difficulties with all writing tasks to the same extent. From the results for both phases, it can be concluded that the 44 students felt that the writing tasks were moderately difficult to seriously difficult. Most of them perceived that “writing research papers, articles, and reviews for scientific journals” and “writing business letters” were the most difficult tasks. In addition, they also thought that they had a problem with “writing emails” in phase one and writing grants or job applications in phase two. The *t*-test analysis indicated that the 44 students did not change their perceptions of the extent of their difficulty with any of the writing tasks in phase two. The results regarding the students’ difficulty with their writing tasks provide more details about the writing tasks that they had problems with.

Table 5.7 Descriptive analysis of the difficulties with writing tasks of the 44 students in both phases

Writing tasks	Phase one		Phase Two		t	Sig. (2-tailed) (p<.05)
	Mean	Std.Dev.	Mean	Std.Dev.		
26. Writing laboratory reports or assignments	2.84	1.15	2.72	1.08	.53	.60
27. Writing research papers, articles, and reviews for scientific journals	2.61	1.18	2.37	1.13	.98	.33
28. Writing grants or job applications	2.76	1.03	2.69	1.14	.29	.78
29. Writing examination answers	2.91	1.13	2.74	1.14	.66	.51
30. Writing product descriptions	2.81	1.05	2.79	1.06	.11	.92
31. Writing emails	2.74	1.09	2.58	1.16	.71	.48
32. Writing business letters	2.64	1.17	2.55	1.04	.39	.70
33. Taking notes	2.88	1.05	2.84	.97	.22	.83
34. Writing a resume	3.26	1.20	3.30	1.28	-.16	.88
35. Filling out forms	3.12	1.31	3.16	1.33	-.16	.87
36. Describing diagrams, tables, and graphs	3.12	1.31	2.98	1.19	.49	.63
37. Writing instructions	2.91	1.04	2.91	1.29	.00.	1.00
38. Others	0.00					

5.1.3.5 Vocabulary

The results of the ratings of the 44 students varied from “the most serious difficulty” to “do not have any difficulty.” The mean values in both phases (Table 5.8) showed that “technical terms” (mean = 2.58, and 2.86, respectively) were more difficult than “general vocabulary.” The *t*-test results showed there were no significant differences between the ratings of the vocabulary tasks

for the two phases ($p > .05$). This result suggests that the students perceived that the extent of their difficulty with the vocabulary tasks remained consistent in both phases.

Table 5.8 Descriptive analysis of the difficulties with vocabulary tasks of the 44 students in both phases

Vocabulary Tasks	Phase One		Phase Two		t	Sig. (2-tailed) ($p < .05$)
	Mean	Std.Dev.	Mean	Std.Dev.		
39. General vocabulary	3.16	1.13	3.35	1.15	-.79	.44
40. Technical terms	2.58	1.18	2.86	1.42	-1.06	.29

From the results for both phases, it can be concluded that the 44 students felt that the vocabulary tasks were moderately difficult to seriously difficult. Most of them perceived that “technical terms” were far more difficult than “general vocabulary.” In addition, the students continued to perceive that the extent of their difficulty with both vocabulary tasks remained the same over the period of the ESP programme.

5.1.3.6 Grammar

The ratings of the 44 students varied from “the most serious difficulty” to “do not have difficulty.” The mean values (Table 5.9) showed that in both phases the students thought that they had more difficulty with the “grammar structures frequently used in scientific discourse” than “grammatical structures for general communication.”

Table 5.9 Descriptive analysis of the difficulties with grammar tasks of the 44 students in both phases

Grammar Tasks	Phase One		Phase Two		t	Sig. (2-tailed) ($p < .05$)
	Mean	Std.Dev.	Mean	Std.Dev.		
41. Grammatical structure for general communication, e.g. tenses, aspects, modality, etc.	2.53	1.22	2.56	1.08	-.10	.92
42. Grammar structures frequently used in scientific discourse, e.g. present	2.33	1.06	2.47	1.01	-.61	.54

participles, passives,
conditionals, etc.

The *t*-test results showed there were no significant differences between the extent of the students' perceived difficulties with the two grammar tasks in either phase ($p > .05$). This result suggests that the students considered that the extent of their difficulty with both grammar tasks remained the same over the period of time.

From the results for both phases, it can be concluded that the 44 students felt that the grammar tasks were moderately difficult to seriously difficult. Most of them perceived that the "grammar structures frequently used in scientific discourse" were far more difficult than the "grammatical structures for general communication." In addition, the students continued to perceive that the extent of their difficulty with both grammar tasks remained the same over the period of the ESP programme.

5.1.3.7 Language functions

The ratings of the 44 students varied from "the most serious difficulty" to "do not have any difficulty," and none of the other language function tasks were added. The mean values (Table 5.10) showed that the students considered "describing processes and procedures" (mean = 2.26) as the most difficult task. This was followed by "making an outline for a presentation, report or project," "summarising results of a group project, a report, or a scientific text," and "reporting information from other sources."

In phase two, 20.5% of the 44 students considered that "making an outline for a presentation, report or project" was the most difficult language function task. In addition, 18.2% of them perceived that "describing processes and procedures, reporting information from other sources," and "describing cause and effect" were also difficult (Table 5.10).

To sum up, the 44 students felt that the language function tasks were moderately difficult to seriously difficult. Similar to the results for their rating of the difficulty with language, the results for the ranking of the language function tasks showed that most students thought that they faced difficulty when “describing processes and procedures,” “making an outline for a presentation, report or project,” “summarising results of a group project, a report, or a scientific text,” “reporting information from other sources,” and “describing cause and effect.”

Table 5.10 Descriptive analysis of the difficulties with language functions of the 44 students in both phases

Language Functions Tasks	Phase One		Phase Two
	Mean	Std.Dev.	Ranking (%)
43. Describing processes and procedures	2.26	1.03	18.2
44. Reporting information from other sources	2.49	1.03	18.2
45. Describing an object	2.86	.99	4.5
46. Summarizing the results of a group project, a report, or a scientific text	2.49	1.03	11.4
47. Using tables, diagrams, and graphs to summarize data	2.65	1.04	6.8
48. Understanding and verbalizing numbers	3.17	1.34	6.8
49. Understanding and verbalizing common symbols (e.g. addition, division, etc.)	3.02	1.41	4.5
50. Describing cause and effect	2.58	1.28	18.2
51. Comparing and contrasting things or events	2.72	1.12	2.3
52. Making an outline for a presentation, report, or project	2.44	1.18	20.5

5.1.4 Summary of the findings from the Questionnaires on Language Difficulties

The results of the Questionnaire on Language Difficulties in phase one and phase two can be summarized as follows:

- The students' grades in the three English language courses implied that they had poor background knowledge of the English language.
- Most of them had few opportunities to practise English outside the English classroom but regularly used it in their major courses such as food engineering, sensory evaluation, and seminars.
- The students reported that they liked the English language and were aware of the importance of the ESP programme for their study and work.
- The majority of the students perceived that grammar was their weakest skill and reading was their strongest skill in both phases and that their English competency had dropped by phase two.
- The absence of significant differences between the responses to both phase questionnaires, except for the "reading exercises/test questions", suggested that the students did not change their perceptions about the extent of their difficulties with most of their English language tasks. It is possible that not only did their perceptions remain static but that the levels of competence did too.
- The students' difficulties during phase two were unexpected because they had already done one ESP course in phase one and also had some of the English skills since they all seemed relatively unskilled and had a low level of English competence in all of their English language skills.

5.2 Findings from the English Language Needs Questionnaire

The findings for the English Language Needs Questionnaire are presented based on the responses of the 44 students to the 60 question items in the two parts of the questionnaire in phase one and 61 questions items in phase two. The difference between the questionnaires

distributed in the two phases was that more ranking question items were added in the phase two questionnaire in order to assure the consistency of the students' responses. The findings are presented in terms of mean values, as they illustrate a distinct pattern in the perceptions of the students towards the need for the language skills. The *t*-test results predicted changes in the extent of the need for general English language skills and tasks in phase one and in phase two.

This section reports the results according to three parts. First, the need for general English language skills is presented. Second, the need for the English language tasks is presented. Finally, a conclusion drawn from these findings in both phases is presented.

5.2.1 Findings regarding the needs for general English language skills

In order to identify the need for the general English language skills of the students, the questions in Part 1 of the Needs Questionnaire in phase one and phase two asked the students to rate the extent to which they needed English language skills for their study and work from (1) "the most needed" to (6) "do not need." The students were asked to rank the English language skills they needed in item no. 2 in phase two.

The findings showed that the students varied their ratings from "the most needed" to "do not need" in both phases. The mean values (Table 5.11) showed that most of them reported that they needed general language skills extensively. In addition, the finding for phase one illustrated a slightly different pattern from that of phase two. Most of the 44 students reported that they needed speaking the most (mean = 1.88) in phase one. This was followed by vocabulary and listening. In phase two, they rated reading as the most needed skill (mean = 2.12), then speaking and writing. In both phases, they rated grammar as the skill they needed the least.

The *t*-test results showed that there were no significant differences between the mean values for phase one and those of phase two. This suggests that the students did not change the extent of their perceived need for general language skills over the period of time.

Table 5.11 Distributions of the needs for English language skills of the 44 students from both phases

Language Skills	Phase one		Phase Two		t	Sig. (2-tailed) (p<.05)
	Mean	Std.Dev.	Mean	Std.Dev.		
Listening	2.02	1.21	2.27	1.30	-.90	.37
Speaking	1.88	1.29	2.12	1.27	-.81	.42
Reading	2.05	1.30	2.08	1.07	-.10	.92
Writing	2.10	1.28	2.15	1.21	-.17	.86
Vocabulary	1.98	1.21	2.20	1.27	-.82	.42
Grammar	2.30	1.29	2.45	1.20	-.50	.62

The ranking results from item no. 2 of the phase two questionnaire showed a slight difference from the ratings for the phase one and phase two questionnaire. The highest percentage in rating as the most needed was listening (31.8%). This was followed by speaking (29.5%), vocabulary (15.9%), reading (13.6%), grammar (9.1%), and writing (9.1%).

The findings showed a considerable consensus amongst the 44 students—that they felt that it was important for them to learn to speak, listen, read, and to increase their vocabulary. This also demonstrated that the students felt that they needed grammar and writing the least.

5.2.2 Findings regarding the needs for English language tasks

Part 2 of the questionnaire in both phases aimed to further explore the needs of the students for each of the English language tasks. The findings are presented according to the responses of the 44 students to the questions in seven sections: listening, speaking, reading, writing, vocabulary, grammar, and language functions. They are presented based on the mean values because they show clear patterns of the extent of the students' need for English language tasks.

The *t*-test results predicted changes in the extent of the need for English language tasks in phase one and phase two.

5.2.2.1 Listening

The ratings of the students' listening tasks varied from "the most needed" to "do not need", with no more listening tasks added. The mean values showed that most of the students needed all listening tasks extensively. The ratings of the students in both phases (Table 5.12) showed slightly different patterns. In phase one, most of the students felt that they needed practising "receiving spoken instructions/advice" (mean = 2.09) the most, then "listening to teachers", and "listening to presentations and discussions/international meetings/seminars/conferences." In phase two, they rated the ability to "listen to teachers" as the most needed skill (mean = 2.11), followed by "receiving spoken instructions/advice", and "listening to presentations and discussions/international meetings/seminars/conferences."

Table 5.12 *Descriptive analysis of the need for listening tasks of the 44 students in both phases*

Listening Tasks	Phase One		Phase Two		t	Sig. (2-tailed) (p<.01)
	Mean	Std.Dev.	Mean	Std.Dev.		
1. Receiving spoken instructions/advice	1.98	1.17	2.16	.82	-.85	.40
2. Listening to presentation and discussions in international meetings/seminars/conferences	2.12	1.12	2.44	1.10	-1.43	.16
3. Listening to teachers	1.91	.96	2.14	1.05	-1.08	.29
4. Listening to students	2.49	1.18	2.56	.96	-.33	.75
5. Listening to radio or television programmes and other English media	2.26	1.24	2.70	1.25	-1.54	.13

The *t*-test results showed no significant differences between the mean values of the two phases. This suggests that the students did not change the extent of their need for listening tasks over the two phases.

From the results for both phases, it can be concluded the students believed that “receiving spoken instructions/advice,” “listening to teachers,” and “listening to presentations and discussions/international meetings/seminars/conferences” were the most necessary listening tasks. They did not change the extent of their need for any of the listening tasks over the period of the ESP programme.

5.2.2.2 Speaking

The results showed that the 44 students rated the speaking tasks from “the most needed” to “do not need” in both phases, and none of them indicated more speaking tasks. According to the mean values in both phases, most of the 44 students perceived that they needed all speaking tasks extensively. The ratings of the 44 students in both phases (Table 5.13) showed slightly different patterns. In phase one, most of the students needed “pronunciation” (mean = 1.88), followed by “giving a presentation” and “talking to a variety of people,” respectively. In phase two, most of them rated “giving a presentation” (mean = 2.13), and then “pronunciation” and “speaking to foreigners,” respectively.

The *t*-test results showed no significant differences between the mean values for the two phases, which suggests that the students did not change their ratings for the extent of their needs over the period of time.

From the results for both phases, it can be concluded that most of the students believed that they needed to “give presentations,” “pronunciation,” “talk to a variety of people,” and “speak to foreigners” extensively.

Table 5.13 *Descriptive analysis of the need for speaking tasks of the 44 students in both phases*

Speaking Tasks	Phase One		Phase Two		t	Sig. (2-tailed) (p<.05)
	Mean	Std.Dev.	Mean	Std.Dev.		
7. Talking to a variety of people	2.12	1.14	2.44	1.20	-1.21	.23
8. Asking and answering questions during the group or class work	2.40	.98	2.61	1.11	-.84	.41
9. Introducing yourself and others in a variety of situations	2.00	1.10	2.43	1.13	-1.80	.08
10. Giving a presentation	1.92	1.18	2.13	1.22	-.79	.44
11. Stating opinions or ideas about different topics during class activities	2.26	1.16	2.63	1.11	-1.5	.15
12. Speaking to foreigners	2.17	1.21	2.17	1.17	.00	1.00
13. Making requests (i.e. for further information or confirmation)	2.33	1.12	2.41	1.01	-.30	.76
14. Talking over the phone	2.54	1.28	2.80	1.36	-1.00	.32
15. Pronunciation	1.88	1.11	2.15	.95	-1.12	.27
16. Others	0.00					

5.2.2.3 Reading

The results showed the 44 students rated the reading tasks from “the most needed” to “do not need” in both phases, and none of them indicated more reading task. The mean values in both phases (Table 5.14) showed that most of the 44 students perceived that they needed all reading tasks extensively. Most of them reported that “reading textbooks” was their most needed task in both phases (mean = 1.88, and 2.05, respectively). In phase one, most of them also felt that they needed to be able to “read manuals, instructions, or product descriptions” (mean = 1.92)

and to be able to “read signs, rules, and notices in a laboratory and exercise/test questions” (mean = 2.12). In phase two, they also needed to be able to “read exercise/test questions” (mean = 2.19), and to “read laboratory reports” (mean = 2.26).

The *t*-test results showed there were no significant differences between the mean values of the six reading tasks in either phase ($p > .05$). This suggested that the students did not change the extent of their need for the six reading tasks over the period of time. However, there were significant differences between the mean values for “reading office documents” ($t(43) = -2.37$, $p = .02$) and “reading signs, rules, and notices in laboratory” ($t(43) = -2.20$, $p = .03$). That is, in phase two the students decreased their need for these two reading tasks.

Table 5.14 Descriptive analysis of the need for reading tasks of the 44 students in both phases

Reading Tasks	Phase One		Phase Two		t	Sig. (2-tailed) ($p < .05$)
	Mean	Std.Dev.	Mean	Std.Dev.		
17. Reading laboratory reports	2.14	1.21	2.26	1.15	-.47	.65
18. Reading exercise/test questions	2.07	1.12	2.19	1.08	-.48	.64
19. Reading textbooks	1.88	1.14	2.05	1.13	-.64	.52
20. Reading academic journals/publication	2.14	1.01	2.51	1.24	-1.46	.15
21. Reading manuals, instructions, or product descriptions	2.05	1.02	2.42	1.22	-1.54	.13
22. Searching the Internet English resources	2.16	1.07	2.40	1.14	-.94	.36
23. Reading office documents, e.g. business letters	2.12	1.03	2.70	1.25	-2.37	.02
24. Reading signs, rules, and notices in a laboratory	2.07	1.06	2.56	1.16	-2.20	.03
25. Others	0.0					

From the results for both phases, it can be concluded that the 44 students considered reading textbooks as the most necessary reading task. Most of them also thought that they needed to be able to read exercise/test questions, laboratory reports, and manuals, instructions, or product descriptions. In phase two, they did not change the extent of their need for most of the reading tasks. They also thought that “reading office documents” and “reading signs, rules, and notices in a laboratory” were less necessary.

5.2.2.4 Writing

The ratings of the 44 students varied from “the most needed” to “do not need”, with no other writing tasks added. The mean values in both phases (Table 5.15) showed that most of the 44 students perceived that they needed all writing tasks extensively. Although most of the 44 students reported that “writing examination answers” was the most needed task in both phases (mean = 1.93, and 2.26, respectively), the rating patterns in both phases presented differently. In phase one, most of the students also rated “writing product description,” “writing instructions” (mean = 2.02), and “describing diagrams, tables, graphs” (mean = 2.05). In phase two, most of them also rated “writing research papers, articles, or reviews for scientific journals,” “filling out forms” (mean = 2.30), and “writing laboratory reports or assignments” (mean = 2.32) as more necessary than other writing tasks.

The *t*-test results showed that the mean values of the ratings for the eleven writing tasks were not significantly different. This suggests that the students did not change their ratings on their need for the writing tasks. However, there were significant differences for “writing emails” ($t(43) = -2.30, p = .03$), and “writing business letters” ($t(43) = -2.06, p = .05$). That is, the students rated these two writing tasks as less needed. This will be explained in the interview chapter about the reasons for the decrease in their needs.

Table 5.15 Descriptive analysis of the need for writing tasks of the 44 students in both phases

Writing tasks	Phase One		Phase Two		t	Sig. (2-tailed) (p<.05)
	Mean	Std.Dev.	Mean	Std.Dev.		
26. Writing laboratory reports or assignments	2.07	1.13	2.32	1.04	-.95	.35
27. Writing research papers, articles, and reviews for scientific journals	2.19	1.20	2.30	1.21	-.41	.68
28. Writing grants or job applications	2.14	1.15	2.42	1.20	-1.15	.26
29. Writing examination answers	1.93	1.20	2.26	1.33	-1.13	.26
30. Writing product descriptions	2.02	.92	2.40	1.18	-1.63	.11
31. Writing emails	2.30	1.12	2.98	1.42	-2.30	.03
32. Writing business letters	2.37	1.25	2.98	1.39	-2.06	.05
33. Taking notes	2.42	1.23	2.79	1.15	-1.33	.19
34. Writing a resume	2.30	1.34	2.44	1.18	-.50	.62
35. Filling out forms	2.19	1.24	2.30	.97	-.50	.62
36. Describing diagrams, tables, and graphs	2.05	.96	2.43	1.23	-1.95	.06
37. Writing instructions	2.02	1.10	2.35	1.27	-1.39	.17
38. Others	0.0					

From the results for both phases, it can be concluded that the 44 students considered “writing examination answers” the most necessary task. Most of them also thought that “writing product descriptions,” “writing instructions,” “describing diagrams, tables and graphs,” “writing research papers, articles, and reviews for scientific journals,” “filling out forms,” and “writing laboratory reports or assignments” were more necessary in phase two. Although they did not change the extent of their need for most of the writing tasks, they felt that “writing emails” and “writing business letters” were less necessary in phase two.

5.2.2.5 Vocabulary

The ratings of the 44 students were broad, from “the most needed” to “do not need”. The mean values for both phases (Table 5.16) showed that most of the 44 students perceived that they

needed both vocabulary tasks the most. The patterns of responses from both phases were similar, as they reported they thought “technical terms” were more necessary and more intensive in phase two (mean = 1.83, and 1.74, respectively). The *t*-test results showed no significant differences ($p > .05$). That is, the students did not change their ratings of the extent of their need for vocabulary tasks.

Table 5.16 Descriptive analysis of the need for vocabulary tasks of the 44 students

Vocabulary Tasks	Phase One		Phase Two		t	Sig. (2-tailed) ($p < .05$)
	Mean	Std.Dev.	Mean	Std.Dev.		
39. General vocabulary	1.95	1.09	2.21	1.04	-1.19	.24
40. Technical terms	1.83	1.01	1.74	.99	.47	.64

From the results for both phases, it can be concluded that the students had a greater demand for the “technical terms” than “general vocabulary” in both phases and they did not change the extent of their need over the period of the period of the research.

5.2.2.6 Grammar

The ratings of the 44 students were broad, from “the most needed” to “do not need.” The mean values (Table 5.17) in both phases showed that most of the 44 students perceived that they extensively needed both grammar tasks. The patterns of responses from both phases were similar as they rated “grammar structures frequently used in scientific discourse” as more necessary in both phases (mean = 1.81, and 2.07, respectively). The *t*-test results showed no significant differences ($p > .05$). That is, the students did not change their ratings of the extent of their need for grammar tasks.

From the results for both phases, it can be concluded that although most of the students perceived that they needed both grammar tasks, they needed the “grammar structure frequently

used in scientific discourse” more than that for general communication in both phases. They did not change the extents of their need for grammar tasks over the period of the research.

Table 5.17 Descriptive analysis of the needs for grammar tasks of the 44 students in both phases

Grammar Tasks	Phase One		Phase Two		t	Sig. (2-tailed) (p<.05)
	Mean	Std.Dev.	Mean	Std.Dev.		
41. Grammatical structure for general communication, e.g. tenses, aspects, modality, etc.	2.05	1.10	2.29	1.02	-1.01	.32
42. Grammar structures frequently used in scientific discourse, e.g. present participles, passives, conditionals, etc.	1.81	1.11	2.07	1.16	-1.08	.29

5.2.2.7 Language functions

The ratings of the 44 students were broad, from “the most needed” to “do not need.” The mean values in both phases (Table 5.18) showed that most of the 44 students perceived that they needed most language function tasks extensively. The patterns of rating and ranking were similar in that most of the students rated and ranked the “describing processes and procedures” as the most necessary language function tasks. However, their ratings in phase one and their ranking in phase two showed a mixed pattern. In phase one they also rated “reporting information from other sources” (mean = 1.95) and “describing cause and effect” (mean = 1.98) as more necessary than other language function tasks. In phase two (Table 5.19), they also ranked “making an outline for a presentation, report, or project, ” and “summarizing the results of a group project, a report, or a scientific text” (22.7%, 20.5%, and 15.9% respectively) as more necessary than other language functions.

Table 5.18 Distribution of the needs for language function tasks of the 44 students in phase one (%)

Language Functions Tasks	The most needed (%)	Extensive need (%)	Moderate need (%)	Slight need (%)	Rarely needed (%)	Do not need (%)	Mean	Std. Dev.
43. Describing processes and procedures	42.9	40.5	9.5	7.1	0.0	0.0	1.81	.89
44. Reporting information from other sources	35.7	45.2	9.5	7.1	2.4	0.0	1.95	.99
45. Describing an object	31.0	38.1	14.3	14.3	2.4	0.0	2.19	1.11
46. Summarizing the results of a group project, a report, or a scientific text	40.5	35.7	7.1	14.3	2.4	0.0	2.02	1.14
47. Using tables, diagrams, and graphs to summarize data	33.3	40.5	11.9	11.9	0.0	2.4	2.12	1.15
48. Understanding and verbalizing numbers	42.9	23.8	16.7	14.3	0.0	2.4	2.12	1.25
49. Understanding and verbalizing common symbols (e.g. addition, division, etc.)	35.7	35.7	19.0	4.8	2.4	2.4	2.10	1.17
50. Describing cause and effect	42.9	31.0	14.3	9.5	2.4	0.0	1.98	1.09
51. Comparing and contrasting things or events	33.3	31.0	26.2	4.8	4.8	0.0	2.17	1.10
52. Making an outline for a presentation, report, or project	40.5	28.6	16.7	11.9	0.0	2.4	2.10	1.21
53. Others	0.0							

Table 5.19 Distribution of the ranking of the needs for the language function tasks of the 44 students in phase two (%)

Language Function Tasks	Ranking									
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th
43. Describing processes and procedures	22.7	22.7	20.5	2.3	15.9	4.5	0.0	2.3	6.8	2.3
44. Reporting information from other sources	6.8	9.1	25.0	11.4	4.5	20.5	13.6	4.5	4.5	0.0
45. Describing an object	2.3	9.1	2.3	18.2	20.5	6.8	9.1	11.4	11.4	9.1
46. Summarizing the results of a group project, a report, or a scientific text	15.9	9.1	11.4	15.9	11.4	13.6	4.5	6.8	6.8	4.5
47. Using tables, diagrams, and graphs to summarized data	13.6	13.6	18.2	6.8	15.9	9.1	6.8	9.1	2.3	4.5
48. Understanding and verbalizing numbers	6.8	4.5	0.0	4.5	11.4	9.1	15.9	9.1	18.2	20.5
49. Understanding and verbalizing common symbols (e.g. addition, division, etc.)	2.3	11.4	6.8	9.1	0.0	13.6	6.8	11.4	20.5	18.2
50. Describing cause and effect	11.4	15.9	6.8	6.8	6.8	11.4	15.9	13.6	9.1	2.3
51. Comparing and contrasting things or events	2.3	6.8	2.3	13.6	6.8	2.3	15.9	20.5	4.5	25.0
52. Making an outline for a presentation, report, or project	20.5	6.8	13.6	9.1	6.8	11.4	6.8	6.8	11.4	6.8
53. Others	0.00									

From the results for both phases, it can be concluded that most of the students considered that they needed language function tasks for describing processes and procedures the most. They also considered that they needed four other language tasks: “reporting information from other sources,” “describing cause and effect,” “making an outline for a presentation, report, or project,” and “summarizing the results of a group project, a report, or a scientific text.”

5.2.3 Summary of the findings from the English Language Needs Questionnaire

The English Language Needs Questionnaires were distributed to the same group of students that had completed the Questionnaire on Language Difficulties. The findings from this questionnaire for phase one and phase two can be summarized as follows:

- 44 students returned the questionnaires in both phases. Most of them considered that they needed better English language skills.
- According to the means in both phases, competence in speaking was considered as the most needed skill, followed by listening, reading, and vocabulary, whereas grammar and writing seemed to be the least needed skills. These findings contradicted those regarding the students' difficulties in that most students perceived grammar to be their weakest skill and reading their strongest one. These contradictions need further examination.
- The findings regarding the needs for English language showed that most of the students did not change this need over the period of the ESP programme; except “reading office documents,” “reading signs, rules, and notices in a laboratory,” “writing emails,” and “writing business letters,” which they felt were less necessary in phase two.
- The students' changes in their needs were likely related to many factors in the needs analysis model, which will be explained in the interview chapter.
- The findings from the two questionnaires showed that the students perceived that they were weak in all English language skills and needed to study these skills in the ESP programme.
- The findings regarding the students' difficulties and their needs might provide recommendations to ESP teachers to establish course objectives and to re-design the ESP programme, as well as how they might prioritise language skills taught in the ESP programme.
- In addition, an aggregated overview of the students' difficulties and needs was triangulated with other sources for the data collection—the interviews from the

sampled students and other relevant participants in the academic and occupational contexts. The next chapter reports the findings from the interviews with these participants.

CHAPTER 6

FINDINGS FROM THE INTERVIEWS

6.1 Introduction

The findings from the previous two findings chapters showed that the students in the food science and technology programme at Agriculture University had low levels of English competence across all English language skills. Also, they perceived that they had difficulties in all English language skills and needed some particular English language skills for their study and work in the food industry. This chapter reports on the responses of the 23 stakeholders to the interview questions based on the needs analysis model of the research. These participants were engaged in the academic and the occupational contexts of the research study. They were six sampled students, six former students, two ESP teachers, three subject teachers, and six employers from different food factories. As mentioned in Chapter 3, pseudonyms were used for the six sampled students in order to avoid using their real name. Supanya and Apira were the students at a low level of English competence. Manee and Puttha were at an intermediate level, and Kawin and Arpassa were at a high level. Other participants were presented in the list according to their group: Former Student1, Former Student2, Former Student3, Former Student4, Former Student5, Former Student6, ESP Teacher1, ESP Teacher2, Subject Teacher1, Subject Teacher2, Employer1, Employer2, Employer3, Employer4, Employer5, and Employer6.

The questions in the interviews were developed to seek information based on all of the factors of the needs analysis model used in this study. However, the analysis found that the responses from the different stakeholders to the interview questions overlapped for some of the

factors in the needs analysis model. The researcher grouped the information that shared the same factors of the needs analysis and presented the findings according to five main factors from the model. The responses of the stakeholders were coded into five themes of the needs analysis model.

This chapter is organised into five sections. First, the personal information of the 23 stakeholders is presented. This is followed by professional information about the academic and occupational contexts, language information about the students in food science and technology, and the need for the ESP programme. The last section deals with environmental situations. Each section ends with a summary of the main points.

6.2 Personal Information on the 23 Stakeholders

This section introduces the personal information about all 23 participants in this research. The personal information of the six sampled students is described in terms of personal information about the learners (B) in the needs analysis model. The information includes the students' interests and attitudes toward the ESP programme, and their experience with studying the English language before the ESP programme. Other participants' personal information included their educational background and work experience. The findings help in understanding the background of these participants.

6.2.1 The sampled students

The sampled students were interviewed during week 7 in phase one of the ESP1 course, and during week 6 to week 8 in phase two of the ESP2 course. The responses concerning personal information are described according to the interview questions about their interests and attitudes toward the ESP programme, and their experience in studying English language before the ESP programme. This aimed to help the researcher understand the students' background knowledge and attitudes towards the ESP programme.

6.2.1.1 Interests and attitudes towards the ESP programme

In phase one, all of the sampled students showed an interest to study the ESP programme. They thought that it would provide a potential to help them study their major courses. For example, Kawin stated the following:

I think the ESP programme is important. I use knowledge from the ESP programme to understand research papers that I have to read. As for studying in a higher level or working with instruments, the ESP programme is a must.

In phase two, Manee, and Kawin continued to have a positive attitude because they thought that ESP2 course was challenging and could be applied to their study and work. However, some negative changes were reported in this phase. The other four sampled students decreased their interest in to study the ESP2 course. The two main reasons for this change found in their interviews included the students' motivation for learning, and external distractions in the learning environment.

The former reason was mentioned by Supanya, and Puttha, who said they were lazy and did not like studying hard as it caused stress. For example, the excerpt from Supanya showed that her learning habit affected her low motivation in studying in the ESP programme, as she stated in the following:

I still like ESP2 but it is quite difficult. I like it because it is a new challenge but it makes me get a headache...I do not practise using it. It is not because I do not have enough time but because I am too lazy. Honestly, I like being comfortable and do not want any stress from study.

The external distractions included the overload of assignments from other courses during the period in which they studied in the ESP2 course, the unfamiliarity of the content and vocabulary of the ESP2 course, and the mismatch between the teaching pedagogy and personality of ESP Teacher2 in terms of their learning styles. For example, Manee said that she

decreased her study time for the ESP2 course because she was fatigued from doing many assignments for other courses.

In addition, Apira thought that some of the vocabulary and the content of the ESP programme were not relevant to her study area and did not meet her purposes for studying in her major programme and work in the food industry. Furthermore, the interview from Puttha represented the students' views, showing the mismatch of the students' preferred styles and the teaching methodology and personality of the ESP teachers. He stated the following:

The teacher should not be too serious.... The teacher should speak, laugh or talk about something else which may not be relevant in the academic context.... However, the teacher should be not too kind and not too strict. The ESP Teacher1 is good-tempered but the ESP Teacher2 is too calm and quiet³.

To sum up, although all the sampled students revealed that they were interested in and had positive attitudes towards studying in the ESP programme in phase one, the students' learning habits and external factors affected the changes in their interests and attitudes in phase two.

6.2.1.2 Experience in learning the English language

In order to get more details on their personal information, in phase one all of the sampled students were asked if they had any opportunities to use English before they studied in the ESP programme and if they had experience in taking extra tutorial English courses at any tutoring language schools. The findings did help the researcher understand the language background knowledge and opportunity of the sampled students to use English.

³ This description was used to describe a teacher that spoke very softly and evenly with little variation in tone. She did not include games or jokes.

In phase one, all of the students stated that they had opportunities to practice the English language outside the English classes in some way before they studied in the ESP programme, such as reading English news and articles, watching English movies with either Thai or English subtitles, or being a volunteer for an English language camp. All of them referred to experiences of learning the English language when they were at their secondary school although they had also taken Fundamental English courses in their first year of their degree. For example, Supanya recalled her experience with learning the English language in the following:

When I was a secondary school student, my teacher assigned me to read an English story book for an outside reading activity, translate news and articles written in English to Thai language and recite some vocabulary. To do these, I felt I practised English every day and became used to it....

In preparation for the ESP programme, Supanya, Manee, Kawin, and Arpassa had no opportunity to take extra tutorial English language courses in advance due to the distance between their houses and the language schools, or lack of financial support from their families. On the other hand, Apira and Puttha had attended some private tutorial English language courses. They explained that they wanted to be ready for their major study. In phase two, Supanya and Manee stated that they preferred to practise the English language a bit before they went to work or when they had more time.

The findings suggest that almost all the six sampled students had limited opportunities to practise English language before they studied in the ESP programme. This lack of opportunities to practise English might be one of the reasons for their low level of English competence.

6.2.2 The former students

The personal information of the former students is described in terms of the department and types of food factories they were working at. They were interning at six different factories in

four food industrial areas: bakery, fermented sauce, beverage, and frozen food. Four former students worked in each of the bakery, fermented sauce, beverage, and frozen chicken industries. The other two former students worked in two factories related to the frozen food industry. All of them interned at one of the four departments in the five food factories. They were: quality control, quality assurance, research and development, and production.

6.2.3 The two ESP teachers

Two different ESP teachers were teaching the ESP1 and ESP2 courses. They were asked for personal information, including their educational background and workload. The findings on their educational background showed that both of them gained their degrees related to teaching English. Both of them got master's degrees in Teaching English to speakers of other languages (TESOL) from Thai universities. In addition, besides teaching in the ESP programme to food science and technology students, both ESP teachers were also teaching other English language courses and were assigned other responsibilities at the university. The ESP Teacher1's workload included teaching four English language courses 20 hours per week. She stated that she was also studying for her second master's degree in teaching English at a Thai university. ESP Teacher2 taught five English courses. Her workload was 24 hours per week. She was also working on a classroom research project.

Regarding their experience of teaching in the ESP programme to the students in the food science and technology programme, both of them revealed that they had one-year experience in teaching ESP programme. With limited experience teaching in the programme and limited time to prepare their teaching materials, both of them decided to use the students' books given from the former ESP teacher, who was on an educational leave, for teaching their ESP courses. In addition, both of them stated that they would like to improve their knowledge of technical terms in the food science and technology area and would like to create their own teaching

materials for the ESP programme. Although both ESP teachers stated that they would ask their students about the content of the ESP programme to be taught, they said that they would do this later and did not identify exactly when they were going to revise their teaching materials.

6.2.4 The three subject teachers

All three subject teachers are responsible for teaching the major courses in the food science and technology programme. Apart from teaching, they were doing some research projects in their area. Two subject teachers had doctoral degrees in food science and technology, one from a university in Thailand, the other from a university overseas. The other subject teacher had gotten a master's degree in food engineering and bioprocess technology from an international university in Thailand. As for their experience in teaching in this programme, two of them had worked at Agriculture University for more than ten years and the other one had experience in teaching the food science and technology programme for five years. All of them were responsible for teaching five courses and had a workload of 15 hours per week. Also, they had to conduct research projects. One of them was also the co-ordinator of the programme.

6.2.5 The six employers

The personal information about the six employers indicated that all of them had background knowledge and experience working in the food science and technology areas. They worked in one of the five food industries, bakery, fermented sauce, beverage, frozen chicken, and frozen food. All of them had bachelor's degrees in food sciences or related fields. All of them had the position of manager or supervisor in one of the four departments: quality control, quality assurance, research and development, and production.

6.2.6 Conclusion of personal information of the 23 stakeholders

The personal information of the six sampled students can be summarised as follows:

- All of them had practised the English language outside their English classes informally before they studied in the ESP programme.
- Four of them had never taken extra tutorial English language courses before they studied in the ESP programme. However, they said that they would learn more English before they went to work or when they had enough time.
- All of them had an interest in and a positive attitude towards studying in the ESP programme in phase one, but some of them decreased their attitudes during phase two. The reasons for their changes included their learning habits, the content of the ESP programme, and the teaching pedagogy and personalities of the ESP teachers. These findings linked to the environmental situations of the needs analysis model.

Regarding the personal information about the other participants, the interviews showed the following:

- Both ESP teachers had an educational background in teaching the English language. However, they had limited experience in teaching in the ESP Programme, and had a heavy workload. A recommendation for teacher development will be discussed in the discussion chapter.
- The six former students, the three subject teachers, and the six employers had knowledge and experience in their particular area. Their needs were seen to be the target needs which might be the objectives for the ESP programme.

6.3 Language Information about the Activities and Tasks in the Academic and Occupational Contexts

In the academic context, they used their English language skills to complete the tasks and activities in the ESP programme and their food science and technology programme. In the occupational context, they applied their English language skills to work in a food company during their internship programme.

This section is organised into themes concerning the activities and tasks in three main contexts: in the ESP programme, in the food science and technology programme, and in the food industry. Each theme is supported by information given by the relevant stakeholders in that particular context. These findings relate to a factor in the needs analysis model, professional information about learners (A).

6.3.1 Activities and tasks in the ESP programme

The information concerning the activities and tasks related to the English language skills in the ESP programme was elicited from the interviews with the sampled students in the two phases of the study, the former students, and the ESP teachers. The participants' interviews were coded from the activities and tasks related to the use of the English language skills in the ESP programme. This information helped the researcher to understand the teaching and learning in the ESP programme at the university.

6.3.1.1 Vocabulary

The findings showed a mismatch between what is learned and what is taught in the ESP programme. Both groups of students (the sampled students and the former students) stated that the vocabulary in the ESP1 course related to word building and the vocabulary used for general

topics, but those in the ESP2 were much more advanced. Both groups of students thought that the vocabulary items they learnt in the ESP2 course were very difficult. All of them also claimed that the vocabulary items they had learnt from the ESP 1 and ESP2 courses related to basic scientific areas other than the food science and technology area.

The interviews with the two ESP teachers showed that they focused on teaching vocabulary more than other English language skills. They believed that vocabulary was the basis for the other skills. Consequently, they provided additional learning materials for their students to learn vocabulary in the ESP classes. For example, ESP Teacher1 stated that she gave her students a list of scientific vocabulary to support each lesson she taught. She also gave them vocabulary in their vocabulary workbook, which was considered one of the criteria for the course evaluation. However, ESP Teacher1 thought that she was not proficient in her knowledge of vocabulary for science, especially in the food science and technology area. She stated that she would practise her vocabulary more in this area if she had enough time. In addition, ESP Teacher2 revealed that she provided supplementary exercise sheets on vocabulary for the students. She also suggested some websites to her students to read articles or news through which they could learn more vocabulary in their science disciplines. However, the vocabulary words taught in the ESP programme were used in general science.

6.3.1.2 Listening

The findings revealed some limitations in terms of the students' listening practice in the ESP programme. Regarding the students' interviews, all of them pointed out in both phases that the listening activities in the ESP programme consisted of listening to their friends' presentations, the ESP teachers, and tape recordings from the courses. For example, Manee stated in phase two that the listening activity in the ESP2 course was limited to listening to tape recordings and

instructions from the ESP teachers. In addition, an excerpt from Former Student1 illustrated the inadequate listening activities in the ESP programme:

The language lab [laboratory] was not used often because we rarely did listening activities. We hardly practised listening from a tape recorder. What we did for listening activities was listening to the teacher. I think we didn't practise listening much in the ESP programme.

The interviews from both ESP teachers showed how the teacher taught listening in the ESP classes. ESP Teacher1 believed that the students could practise listening skills elsewhere, or with other students if they had enough knowledge of vocabulary and sufficient grammar skills. She stated that she got her students to practise listening in her class and did not provide many additional listening materials. In order to get the students to practise their listening skills in the ESP1 class, ESP Teacher1 indicated that she read a script or a reading passage from an exercise to them, or sometimes asked other students to read a passage to their friends. However, she explained that the limited practice with listening activities in her class was also due to the students' book and teaching materials, which did not provide many listening activities in the ESP1 course.

This evidence was similar to that in the ESP2 course, where ESP Teacher2 indicated that the listening activities were not a focus in her class. In order to practise listening, she stated that she suggested her students listen to some material on English websites through which they could learn more vocabulary from the science disciplines. However, she also stated that she did not check whether the students had practised listening or not and did not provide any audiotapes:

I suggested they listen to the BBC website but I don't check whether they access to the website or not. This website includes the VDO station where the students can listen to news about scientific areas. I want them to do self-study but I don't have much time to follow up.

To sum up, according to the interviews of both groups of students and both ESP teachers, the activities related to the students' listening skills in the ESP programme were limited. The students used their listening skills to listen to the ESP teachers and/or other students reading passages from the students' workbook. This implies that the students had few opportunities to listen to any authentic materials or native English speakers in the ESP classes.

6.3.1.3 Speaking

Similar to the findings regarding the listening skills, the findings on the use of speaking in the ESP programme showed that students had few opportunities to practice speaking English. The interviews with the six students, the former students, and the ESP teachers showed that they had different perspectives on the speaking activities in the ESP programme. In phase one, the six students stated that the speaking activity they did most often was answering questions in English. Other speaking activities included self-introductions and making presentations. In phase two, all of them mentioned the need to have more speaking activities in their interviews. They stated that they had opportunities to have an interview with ESP Teacher2, and had basic conversations with friends in class on a topic assigned by ESP Teacher2. Similarly, all of the former students reported that they only practised speaking in class with their friends, and giving short answers in class.

Both ESP teachers stated that the main speaking activities in their classes were answering questions in English and paired-work activities reading a passage aloud to other students. They noticed that the students used their first language in their class. ESP Teacher1 stated that "90 per cent of my students speak Thai in my class." In addition, ESP Teacher1 indicated the use of social network communication for the speaking activities. She asked her students to record a self-introduction, to describe a process related to the food science and technology area, and to upload this recorded file to the Internet. However, she stated that she did not provide any

feedback on the students' achievement. In addition, she also suggested that her students practise pronunciation via some websites for their self-study.

The findings suggest an insufficiency in the speaking activities in the ESP programme. This might affect the students' difficulties with their speaking skills and their need to practise more speaking activities in the ESP programme. In addition, the speaking activities seem to be a one-way communication, which is unreal in the real world situation.

6.3.1.4 Reading

The interviews with all of the participants revealed the inconsistency of the content of the reading passages in the interviews. However, the students and the ESP teachers had some different perspectives on this.

The findings showed similar opinions between the responses of the six students and the former students. All of them stated that in they were involved with reading research papers, and reading passages in relation to general science and passages in the students' workbook in the ESP programme. For example, Apira and Kawin noted that in phase two they had learnt some additional reading skills, reading for main ideas, and analytical skills. However, a major complaint from all of the students was the irrelevancy of the content of the research papers to their major area, as Kawin stated:

I haven't practised writing a research paper but I practised some analytical reading.... In ESP, the documents I want to read should be more related to food tech. [food science and technology] because what I am reading now is not related to my study. It is about nature or other areas of study.

In addition, the former students pointed out that because they were unfamiliar with the content and vocabulary in the reading passages, they found that these passages were difficult to understand.

Both ESP teachers indicated that the only reading activity in the ESP courses was reading from the students' workbook. Both of them were also aware of their students' concerns about the relevance of the content to their area of the study. ESP Teacher1 revealed her reasons for using the students' workbook—that the students' workbook was given from the former ESP teacher and ESP Teacher1 also used this student workbook to teach the students in her other courses and programme.

Similarly, ESP Teacher2 also considered that the content of the ESP2 students' book covered topics that were too general and was not relevant to the students' area. She stated that she would ask her students to suggest the reading topics that they wanted to study. However, she insisted that the students' difficulties with their English language skills were not from the unfamiliarity with the content in the students' workbook, but from their lack of effort.

In conclusion, lack of prior knowledge of content and limited vocabulary could be barriers to second language reading comprehension. The findings revealed that the reading tasks and activities in the ESP programme did not relate to the students' area of study and did not provide sufficient vocabulary. These barriers will be discussed in the discussion chapter.

6.3.1.5 Writing

The findings showed that not many activities related to the students' writing skills were found in the interviews with any of the students and or both ESP teachers. The writing activities and tasks described in the sampled students' interviews in both phases were comprised of answering questions with simple sentences. In addition, in phase two they revealed that they also practised writing letters of introduction for applying for jobs and further study. Writing for jobs included writing a resume and a cover letter. For example, Apira described her reading and writing activities in the ESP class in the following:

The teacher taught us about job applications. She tried to make us understand the lesson...I hardly practise writing. I filled in forms for applying for a job and study...I also read application letters for jobs and further study and resumes. I could write them by adapting the given example.

In addition, only Former Student2 described the writing activities in her interview. She stated that she wrote an essay and summarised a research article in the ESP2 course.

Similarly, the interviews with ESP Teacher1 demonstrated inadequate writing activities in the ESP programme. The writing tasks that she mentioned in her interview included describing dimensions, describing objects, describing shapes, size and use, describing colours and appearances, describing instructions, and describing a process. She stated that writing answers for exercises in the students' workbook was the only writing activity in her class. The teacher also stated that she assigned this to her students as homework so that they could practise writing by themselves. It can be seen that ESP Teacher1 needed some suggestions for appropriate ways to teach writing. These will be discussed later.

According to the interview with ESP Teacher2, the writing activities in the ESP2 course were found to be practised more often and were more practically useful than those in the ESP1 course. Apart from practising writing that corresponded to the language functions, such as describing sizes and shapes from the students' workbook, ESP Teacher2 gave more examples of writing activities in her class. These included writing summaries, emails, and filling in forms. However, ESP Teacher2 explained that she would teach writing skills after the midterm examination as she wanted her students to have some background knowledge on sentence structure and some grammatical issues first. However, she had not decided what to teach.

To sum up, the study found some limitations in the writing activities in the ESP Programme. The ESP teachers did not have an appropriate teaching pedagogy to teach writing and they did not provide sufficient writing activities for the students.

6.3.1.6 Grammar and language functions

The findings showed contradictory perceptions of the tasks and activities related to the grammar and language functions between the students and the ESP teachers. According to the interviews with the sampled students and the former students, activities involving grammar and language functions were not mentioned much. They saw grammar and language functions as not a focus of the ESP programme. The few grammar and language functions that all of them mentioned in their interviews included writing or speaking with simple sentences to answer questions, and describing things, processes, and giving instructions. For example, Puttha confirmed that he learnt language calculation functions from the ESP1 course. He thought that he could use these language functions to study food engineering, whilst according to the ESP teachers and course outlines, the language functions he learnt from the ESP2 course were mostly related to describing processes and giving instructions. In addition, Apira stated that she learnt grammar and language functions in the ESP programme but she hardly used them in a practical way, as she stated in the following:

In ESP2 course, I hardly study any grammar related to my major area but I read a lot. Maybe the teacher thinks that we have already studied this from the previous English courses.... The (ESP) teacher did not teach us language functions. She taught me about abstract organisation and asked me to analyse it. But she didn't assign me to write an abstract by myself.

Unlike the students' interviews, the ESP teachers shared different perspectives. They often stated in their interviews that they focused on teaching grammar and language functions.

However, the ways in which they taught grammar were also found to be unsatisfactory. ESP Teacher1 explained that she guided her students to study grammar by themselves at some useful websites that she recommended. Similarly, ESP Teacher2 acknowledged she taught grammar and language functions because she considered these grammar issues and sentence structures to be her students' major problems. She stated that she provided some supplementary exercise sheets on grammar and sentence structures for her students. For example, the following excerpt from her interview demonstrates her awareness of the importance of grammar issues for her students:

Now I am teaching about sentence structures because I want them to understand different patterns of sentence, so that they can select an appropriate sentence pattern when they communicate. Also, I am introducing to them some adjectives and adverbs in academic context and parts of speech. Other things, they should learn from their reading experience.

To sum up, the findings showed a contradiction between what was taught and what the students learned in the ESP programme. The study found many teaching strategies or activities clearly did not align with the needs of these students. The ESP teachers commented on the students' lack of effort which was taken at face value as reflecting the non-co-operative behaviour of students. The students' perceived lack of effort was a challenging task for the ESP teachers in terms of finding appropriate teaching strategies and teaching materials to motivate the students to learn and to help them improve their competence. These findings highlight the importance of identifying appropriate teaching pedagogies and strategies, teaching materials, and activities which are more likely to address the student's needs and help them with their specific difficulties.

6.3.2 Activities and tasks in the food science and technology programme

Information about the activities and tasks related to the English language skills in the food science and technology programme was elicited from the responses of the interviews from the sampled students, the former students, and the major subject teachers. Overall, the findings showed that although all of them stated that the English language was used in all of the courses of the programme, they specifically mentioned eleven courses. They were micro-organisms, food engineering, meat processes, meat technology, food packaging, food sanitation, product development, sensory evaluation, food processing, food laws and sanitation, co-operative education, and seminars. These courses made up more than a quarter of the total courses in the programme. Five English language skills except writing were used in the food science and technology programme. Information about the activities and tasks regarding the use of English language in the major courses are presented in the next section.

6.3.2.1 Vocabulary

The two groups of students verified that all of them had learnt and practised technical terms in the food science and technology area in their major courses. They also thought that they could extend their knowledge of technical vocabulary to work in the food industry. For example, Manee stated in phase two that many technical terms were included in the lectures from her major subject teachers.

Many of my major subjects are in English such as food processing, sensory [sensory evaluation]. There are a lot of English technical terms for instruments, and sensory measurement. Furthermore, all questions in the food en. [food engineering] subjects are in English that we have to translate and then work on them. I think English is very important... I understand the questions. The subject teacher guided us how to analyse a question. Sometimes I didn't understand all

the English words in the question but I applied the numbers or values in the question, so I find a solution.

Likewise, the three subject teachers distinctly showed that they had encouraged their students to develop their vocabulary knowledge. All of them asserted that they taught English technical terms in their area by putting these terms in parentheses in the reading passages and repeated these terms orally several times in their classes. In their views, they also showed an awareness of the use of English abbreviations or acronyms in the food industry community. For example, Subject Teacher2 stated that people that are working in a food factory normally understand and use English technical terms more often than Thai translated ones. With this consideration, he stated that he introduced and emphasised these terms to his students when he was teaching. However, he also stated that he usually reminds his students that the Thai translated words are usually used when students work in a Thai education institute or write manuals for local people.

In addition, Subject Teacher3 stated that she asked her students in her micro-organism course to write the new English vocabulary that they considered to be relevant to the course and to select three words to present to their friends every day. She also stated that she would ask her students to practise writing the terms for micro-organisms after their mid-term examination.

In conclusion, the vocabulary items in the major courses were connected to those used in food industry. The subject teachers had an awareness of the importance of vocabulary, especially technical terms. So, they encouraged their students to use these terms in their classes. In the same way, the former students acknowledged that they had learnt technical terms from the major subjects and used them to work.

6.3.2.2 Reading

All of the participants reported that the reading activities in their major courses were the most practised among the other activities in terms of their English skills and that translating was a significant skill. All of the sampled students stated that they had opportunities to read research papers, textbooks, and laboratory reports written in English regularly in their major courses. Manee described the tasks and activities in both phases, where she indicated that she needed to apply her English language skills to her study. In phase one, she described how she worked with her friends to translate an English paper in one of her major courses in order to obtain a deeper understanding of the new topic she had learnt in class.

For example, when we studied about OESG [an instrument], the teacher gave us an assignment to find out more information about it. My friends and I, in a group of 5-6, have to go to the library to search more information and we found about 70-80 pages. Then we divided up the work and translated it to the Thai language.

In phase two, she confirmed again that she applied her reading skills from the ESP programme to study in her major courses, especially reading English research papers:

I could apply my knowledge from the ESP2 course to understand the papers... I usually read research papers written in English for my major courses such as food analysis, quality assurance, microbiology, and food engineering... I usually read and translate English papers. I also read machine manuals and instructions used in a factory. I read and apply some vocabulary I found for studying major courses.

Likewise, all of the former students showed that they were assigned several research papers to read either for individual or group work activities in several courses of their major subjects. Former Students⁶ indicated that reading research papers and vocabulary in science were used often in the major courses.

I also used English in other major courses. In the seminar course, I read English research papers, although I would present it in Thai language...

Similarly, all of the subject teachers stated that reading was the main activity in their major courses. The subject teachers asked the students to read research papers, textbooks, manuals, and forms in English in the courses they taught. The manuals that the subject teachers mentioned in their interviews were from the AOAC (Association of Analytical Communities) such as BAM (Bacterial Analysis Manual), ISO (the International Organization for Standardization), HACCP (Hazard Analysis and Critical Control Points), GMP (Good Manufacturing Practice), and manuals from FGH Engineering & Test GmbH. In addition, these subject teachers stated that they gathered various kinds of forms, work instructions or work procedures related to the courses to teach to their class. The forms and work instructions they mentioned included forms used in HACCP, ISO, GMP, and work instructions for SOP (Standard Operating Procedure).

Besides reading for details in the above documents, translation was another reading activity in the major courses. The teachers explained that the purpose of translation was to practise summarising research papers and giving a presentation in front of the class using the students' own words. This translation activity would be assigned to an individual or as group work depending on the extent of the difficulty of the content. The interview with Subject Teacher1 showed the process of the translation activity in the major course where the students were asked to translate a selected text individually:

I would photocopy the selected part of the textbook which each of the student would have 3-4 pages to read and translate into Thai language. They would type their translation using a word processor and send an email to me. This is an example (The teacher handed a paper to the researcher) of a translated assignment about food additives which I selected from an encyclopaedia.

In conclusion, reading skills were practised more often than other language skills in the major courses. The reading activities and tasks aimed to apply reading skills to the translation of research articles related to the food science and technology discipline.

6.3.2.3 Listening

The study found listening to the subject teachers lecturing in English was the only listening task in the major courses. Subject Teachers³ explained the use of English in her class, where she focused on vocabulary in the food science area.

I prepare slides in English language and give a lecture in English. However, I also translate to the Thai language. This helps my students to become familiar with using technical terms in our major area.

6.3.2.4 Writing skills integrated with grammar and language functions

The study showed similar findings among all participants. Although the sampled students did not mention much about the use of grammar or language functions in their interviews, they thought that they had integrated grammar and language functions in writing when they prepared their presentation slides in the seminar course and wrote answers in English for the examination.

Similarly, the interviews with the ESP teachers showed that they encouraged their students to practise writing in English in their major courses by filling in forms and writing slides for presentation in English in the seminar course. For example, Subject Teacher² justified the English writing activity in the seminar course where the students prepared their slide presentation in English but presented it in the Thai language.

We found that our students usually read from slides when they presented their project in the seminar course. To solve this problem, all teachers agreed that

students should prepare their slide in the English language but still present in the Thai language. This is effective as many of our students improve their presentation styles and present their project from what they understand.

In conclusion, students acquired domain specific vocabulary taught by the subject teachers. The subject teachers had an awareness of the importance of vocabulary, particularly technical terms in their area, and encouraged their students to use these terms in their classes. All former students continued using the technical terms when they interned. Reading skills were practised more often than other language skills in the major courses. The reading activities aimed to apply reading skills to translating research articles related to the major courses. In this study, the subject teachers perceived that translation is equal to reading. The study basically found that the students needed to read in the second language and they were instructed to translate from the second language to the first language. The students listened to the subject teachers lecturing in English while they could read a slide presentation and gain some technical terms in their area. These findings might provide some guidelines for the ESP teachers to provide teaching materials and teaching approaches to help the students accomplish these tasks.

6.3.3 Activities and tasks in food industry

Information about activities related to the use of the English language in the occupational context was gathered from the subject teachers, the former students, and the employers. Three of the sampled students, Supanya, Kawin, and Arpassa, who had an opportunity to intern at a food factory during the semester break before they studied the ESP2 course, were also asked to describe the English language skills they used in the food factory in their phase two interview. The following sections present evidence on the activities related to each language skill in the food industry.

6.3.3.1 Vocabulary

The findings showed that most of the English technical terms were domain-specific terminology used in a food factory. For example, Arpassa described the use of English vocabulary in the food factory. She stated that she used technical terms in reading documents, speaking, and listening in the following passage:

...most documents in the factory I interned in are all in English. The staff there also speak English, especially technical terms which sometimes I didn't understand... I worked in a food production line where there were many technical terms that I still don't know.

All of them also explained that although they communicated with their staff in the Thai language, some particular technical terms were spoken in English. For example, Former Student6 described the use of an English term instead of saying it in Thai, such as a word like “wings” for chicken wings rather than ปีกไก่ /*peek-kai*/ in Thai.

The subject teachers had an awareness of the use of English abbreviations in the food factories. For example, Subject Teacher2 stated that the staff in food factories is more familiar with technical terms in English than with the Thai translated ones. With this awareness, she introduced and emphasised technical terms to her students in her class, as seen in the following:

If we teach our students in the Thai language, especially technical terms, I think they would face troubles when they work in a food factory. For example, we won't say เครื่องทำแห้งแบบระเหิด [*/kruang-tam-haeng-bap-ra-hud/*, a scientific instrument for evaporating water from raw material], but we call it as freeze dryer because they know this name in English and widely used this term in the food industry.

Similarly, all employers and both groups of students stated that vocabulary skills were the most important and were often used in the factories. A large vocabulary used in the production department included instruments, machines, manuals, parts of products, food processing, and food safety for their work. In addition, all employers stated that the machines in their factories have signage written in English, such as metal detectors, incubators, and automatic cutting machines.

Unlike the vocabulary used in the production department, the vocabulary used in the research and development department included product specifications, product descriptions, production costs, quality control and assurance, as well as vocabulary used in business documents such as letters and order forms. This excerpt from the interview with Employer4 from the research and development department describes the use of the English vocabulary used in relation to product descriptions:

I use English technical terms to describe products, give reasons, and explain information about product specification. I also negotiate with customers about the extent to which they are satisfied with our products. This might help both of us to reduce the production costs.

Furthermore, the vocabulary in the quality control /quality assurance departments covered product evaluation, product specifications, product details and profiles such as BAM, enzyme proteiest, and GM protein.

Similar to the employers' responses, the former students reported that the vocabulary they encountered depended on the department and types of factory they were working with. For example, Former Student5 explained the vocabulary she used in the production department in the following:

Usually, there is English signage for employees to notice the product they are going to do for that day, such as ‘fillet out tenderloin 40 up 40 down’. The checker would explain to us in Thai language again to make sure that we understood what to do. All reports and forms are also in the English language.

6.3.3.2 Integrated language skills

Both groups of the students also had opportunities to present their projects, describe processes in their work lines, and contact clients. The excerpt from Kawin illustrates his experience of using integrated language skills to communicate in the food industry. These integrated language skills (vocabulary, language functions, and speaking) were used for daily and professional purposes.

...I usually used English when I was an intern in the food factory because I sometimes had contact with foreign customers. For example, when the customers visited the R&D department [research and development] where I interned, I described the products’ characteristics such as adhesiveness, crispiness and firmness to them....Having a conversation on general topics is important and mostly used, but the most important thing is the in-depth explanations about the topics in my professional area in English.... I also had an opportunity to describe a dairy process I worked on to international visitors.

The findings showed that all of the stakeholders in the occupational context acknowledged the use of and need for English language skills at work, although Thai was the main language used for instructions in some departments. The interviews from the employers provided many details to illustrate the situations in which English language skills occurred. The findings also showed that employers in different departments used the English language for different purposes. The employers in the production department asserted that although they communicated with their staff in the Thai language, some particular technical terms for

example for instruments, machines, and processes were used in English. On the other hand, English communication would be used when they contacted customers or other senior managers that involved describing processes, products, the job scope, and instrument specifications. For example, Employer3 stated the following in this connection:

In my department, we call all spare part in English due to the English manuals from our suppliers. We communicate with customer using simple English about our products and processes.

The employers in the research and development departments seemed to be the ones that had more opportunities to use the English language to contact customers or visitors than those in other departments. These included greetings, describing products and processes, and negotiating with customers about products.

6.3.3.3 Reading

The findings showed that all of the participants had opportunities to read documents in English related to their work. Both groups of students stated that they had opportunities to read many types of English documents dealing with their work, such as forms and research papers. For example, Supanya described her experience in reading English language documents in a frozen food factory in the following:

I usually used English while I interned at this factory producing cooked chicken products. All documents are in English language. It is difficult for me to understand... These documents are about screening chicken meat such as bone detection.

In addition, Kawin shared his experience of reading research papers during his internship programme at a food factory:

Actually I usually read research papers while I was in the internship programme. I read research papers about the products before I worked in a laboratory. I could understand what I read and I also had some help from senior supervisors.

According to the subject teachers' interviews, reading documents such as forms and manuals related to quality control, work instructions, work procedures, and standard operating procedures was mentioned as being used in food factories. The following excerpt from Subject Teacher1 indicates that he expected the students to understand documents related to quality control:

Many factories have two versions of documents, Thai and English. Thai language documents are for general staff and the English translated ones are for buyers, or quality controllers from international agencies. They visit a factory to inspect the food products they want to order whether the products are in sanitised quality or at a satisfactory level or not. To inspect the food quality, they have to check them from documents provided by the factory... So, staff working in the quality control department should understand these documents too.

Similarly, the findings from the employers showed that they usually read some English documents related to their work. Documents related to the research and development department included business forms (e.g. order forms), quality control forms, research papers, academic journals, and project documents. The English documents in the production and quality control and quality assurance departments encompassed laboratory reports and forms, academic reports, news, manuals, and signage and labels.

6.3.3.4 Writing integrated with grammar and language functions

The findings showed that all of the participants used functional grammar to complete the writing activities in a food factory. The sampled students used their knowledge of functional grammar for filling in forms, and writing a resume. For example, Supanya shared her

experience of writing when she interned. She stated that she had opportunities to fill in forms and write laboratory reports related to the department in which she worked. She also stated that her supervisor asked her to write a resume and paragraphs on her impressions during her internship in the company.

The findings of the six employers suggested that the employers in the research and development departments had more opportunities to apply their writing skills than those in other departments because these employers contacted customers directly. They corresponded with their customers about products via e-mail. In addition, all of the employers stated that they also wrote short reports and filled in forms related to their work. For example, Employer2 described the use of her English language skills in her department in the following:

I usually email customers about evaluation, product specification, product details, and dealing. Sometimes, customers want to visit our factory, we should present the production line and answer them some technical information, such as raw materials or processes.

To sum up, the findings showed that a code switching technique for technical terms from Thai to English was often used to communicate in a food factory. English was used for communicating for a specific purpose with functional grammar.

6.3.4 Conclusion of language information about the activities and tasks in the academic and occupational contexts

This section identifies the language skills used in the occupational context in this study of the food science and technology area from the views of the relevant stakeholders. The academic situations included events in the ESP programme and in the food science and technology programme, whereas the occupational situations refer to working in a food factory.

The findings concerning the language skills used in the ESP programme can be summarised according to the perceptions of the students and the ESP teachers.

The students' views:

- Although all language skills were taught and practised in the ESP class, reading was considered as the most frequent activity the students practised. However, all of them felt that the content and vocabulary of the reading passages in class were not relevant to their major area.
- They also mentioned that they had insufficient opportunities to practise speaking and listening in the ESP programme. Similarly, all former students confirmed that the language skills that they had learnt in the ESP programme did not support them to study in their major subjects or work in a food factory.

The ESP teachers' views:

- Both of them considered knowledge of vocabulary and grammar to be the basis of the other language skills and also the main problems of their students. Therefore, they focused mainly on these two language skills by providing some extra tasks for their students. However, they did not mention how they teach these skills.
- They overlooked the irrelevant content of the reading passages for the students' study area and seemed to use the students' workbooks for their convenience. However, they were aware of the students' concerns about the irrelevance of the content and reported that they would adjust and create their own teaching materials for the students when they had more time.
- The writing activities in their classes included writing short answers, simple sentences, describing processes and graphs, and explaining notices and labels. The speaking skills covered describing processes, providing short answers,

describing graphs, and explaining notices and labels. However, the communication in the ESP classes seemed to be a one-way communication from the teachers or the students. Also, the ESP teachers did not provide many opportunities for the students to speak in class.

- Both ESP teachers neglected activities related to listening skills in their classes because they thought that the students could find opportunities to practise listening elsewhere. Although they stated that they introduced websites and network communication to the students, they did not follow up on these because they thought that these were for self-study purposes.

The study found that the activities and tasks in food science and technology programme were used for practical purposes:

- Activities related to vocabulary and reading skills were used the most. This included using technical terms in their area, and reading textbooks and research papers.
- Writing and listening skills were limited to correspondence or feedback from the teachers. However, no evidence of speaking activities was recorded.

The finding on the activities in the English language skills in the food industry can be summarised as follows:

- The English language skills used in the food industry were integrated because some real language was used, whereas this apparently did not happen in the ESP classes. Having knowledge of English vocabulary (especially technical terms), speaking/ listening, reading and writing skills was essential to the work in any food industry, and the frequency of using these skills depended on types of job within different departments.

- More evidence of using English language skills was found for those working in the research and development and quality control/quality assurance departments than those in the production department. In research and development and quality control/quality assurance, they used all English language skills, whereas those in production acknowledged that they used vocabulary most often, followed by speaking/listening and reading, but rarely used writing skills.

To sum up, the findings showed differences between the activities and tasks in the ESP programme and those in the academic and occupational contexts. This seemed to be the main reason for the students' difficulties. These findings on the language information concerning the activities and tasks might provide some recommendations to the ESP teachers to establish the target needs for the ESP programme and to establish a better link between ESP and occupational contexts.

6.4 Language Information about the Students in the Academic and Occupational Contexts

This section reports on the students' current language skills and how they used these skills. Data were gathered from the responses of the sampled students in phase one and phase two concerning the English language information regarding the learners (C), the learners' lacks (D), language learning information (E), and professional communication information (F), the four factors of the needs analysis model. However, the analysis found that the responses overlapped with the interview questions. Consequently, their responses were analysed, combined, and presented according to three themes: the students' language information, the students' language-learning information, and the students' deficiencies in their English language skills, which were listening, speaking, reading, writing, vocabulary, and grammar.

6.4.1 In the academic contexts

6.4.1.1 Perceptions of the sampled students and former students

6.4.1.1.1 Listening

In phase one, Supanya, Apira, Manee, and Kawin reported that they would get understanding when the ESP teacher spoke English slowly and with a Thai accent. Furthermore, Supanya, Manee, and Puttha stated that they understood their friends' presentations in English. Additionally, both Manee and Puttha thought that their best skill was listening, especially listening to the ESP teachers speaking English. Only Manee stated that she could understand the native speakers if they spoke slowly and she only got the main ideas from listening to messages. In addition, Manee and Puttha would look at some pictures and read the script to get more understanding while they were listening; otherwise, they could not fully understand.

In phase two, four of them talked about their abilities in using English. Apira, Manee, and Arpassa thought that they only understood Thai people speaking English. This included listening to their friends' presentations and ESP teachers lecturing in the ESP2 course. Puttha stated that he could understand listening if he could read the scripts.

Although all of the sampled students indicated that they were weak in listening skills in both phases of the study, one student from each phase, Supanya in phase one and Arpassa in phase two, considered it the most difficult skill. Other students also indicated the listening activities and tasks that they had difficulty with. In phase one, all sampled students stated that they had difficulty in listening to native speakers of English. Although Manee and Kawin said that their best skill was listening, they found it difficult when they listened to their friends' presentations in the ESP class. Furthermore, Arpassa also revealed that she hardly understood when she listened to the ESP teachers speaking English.

In phase two, all of the sampled students felt that they had difficulty with listening to native speakers of English. In addition, half of them (Supanya, Manee, and Arpassa) acknowledged that they also faced difficulties when they listened to the ESP teacher speaking English. Furthermore, they still encountered difficulty in listening to friends' presentations. For example, Arpassa stated that she did not have much opportunity to practise listening to native speakers of English, so she read the script while she listened to the tape recording in the ESP class. Otherwise, she did not understand it. The findings from both phases suggest that their difficulties in listening remained the same during the ESP programme.

6.4.1.1.2 Speaking

All of the sampled students stated that they had difficulties with the speaking skill in both phases. Puttha considered it the most difficult in phase one but none of them viewed it as their most difficult skill in phase two. In addition, all of the sampled students considered that they had problems in pronunciation in both phases. They thought that her pronunciation affected their listening performance.

The findings in phase one showed how the students gave a presentation in English in the ESP1 course and answered short questions. Apira, Manee, Puttha, Kawin, and Arpassa and all former students indicated that they had deficiencies when they give presentations in English. Manee and Kawin explained that they presented the information from their memory from the scripts, not from their understanding. As for answering questions in the class, they would answer in English or in Thai if they did not know how to answer in English. Apira, Manee, and Puttha indicated that they also could not give responses in English to questions correctly in the ESP class. Apira revealed that speaking was her strongest skill but only when she was given examples because she thought that she was weak in all language skills.

In phase two, all of the sampled students considered that giving a presentation was the most difficult task. Supanya thought that she could make a presentation if she had enough background knowledge on the topic, whereas Manee stated that she could give short responses to conversations about everyday life. Manee and Puttha continued to indicate that giving responses in English in the ESP activities was their problem. In addition, Manee and Arpassa also indicated that they could not communicate in any situations, including in the ESP class, due to their lack of confidence. The findings suggest that the students' difficulties in speaking remained the same during the ESP programme.

6.4.1.1.3 Reading

The findings showed that although many students thought that they were good at reading and none of them considered it as their most difficult skill, all of the sampled students and the former students reported that they had reading deficiencies. In phase one, although many of them indicated that reading was their best skill, Supanya, Puttha, Kawin, and Arpassa asserted that they could read for main ideas, and short passages with simple grammar structure and vocabulary. All of them also stated that it was difficult to read research papers because they could not get a full understanding. Supanya, Apira and Manee stated that they could not get any main ideas from the reading passages. For example, Apira described her reading problems, including reading for main ideas, research papers, and posters, in the following:

To me, reading for main ideas and summarising research papers are important skills. We can't do these. We find it more difficult to read research papers. It is also more complicated to look up for the meaning of each word in a dictionary and then arrange our ideas into Thai language again.... When I am reading a research paper I can't get full explanation. I use a dictionary for finding meaning of words and then combine them. However, I can't find main ideas.... reading a poster in English, a big problem.”

In phase two, all of the sampled students indicated that reading, particularly reading research papers, was the language skill they used the most. Other reading activities and tasks were reading textbooks in their major study, and slides when listening to presentations. However, all of them stated that they had difficulties with reading comprehension at the paragraph level and with long passages, including reading research papers and textbooks. All of them also indicated that they could read for main ideas. In addition, only Manee stated that she could read and understand questions in test papers. Further, translation appeared to be a problem in reading, as Arpassa indicated in the following:

I can read every single word but do not completely understand the overall translation of the text.

These findings suggest that the students did not change their perceptions toward their difficulties with reading skills during the ESP programme

6.4.1.1.4 Writing

The findings from the interviews showed similar results in both phases—that writing skills were identified as one of the students' greatest difficulties. However, there was no specific information about writing difficulty from the former students. In phase one, all of the sampled students considered writing to be their problem. Apira, Manee and Kawin indicated clearly that they had difficulties with writing skills the most. Five of them, all except Arpassa, found that it was difficult when they wrote answers in English for the ESP exercises. Apira, Manee, Puttha, and Kawin also referred to writing a summary. They also stated that they could not write a long paragraph with complicated grammar and advanced vocabulary items or organise ideas for writing by themselves. Kawin stated he could write only short sentences. Supanya indicated that she could not write a sentence completely and her writing was based upon her limited

vocabulary knowledge. She could write only if she was given an example, so that she could write a sentence at a time after it.

In phase two, all of the sampled students continued to indicate that they faced difficulties with their writing skills. Supanya, Puttha, Kawin and Arpassa viewed that they could not write anything, including research papers. They stated that they could write only short and simple sentences. This included writing laboratory reports, resumes, short answers, and filling out application forms. Furthermore, Arpassa indicated clearly that she could summarise what she read and wrote on slides for her presentation. Kawin added that he could not write a summary to present in slides for a presentation. In addition, Manee revealed that she could not write answers in English during the examination. These findings suggest that the sampled students did not change their perceptions about their writing difficulty in the ESP programme.

6.4.1.1.5 Vocabulary

The major evidence found in the students' interviews showed that the sampled students and the former students had difficulties with the domain-specific vocabulary or technical terms used in their major courses. Additionally, all of them agreed that their vocabulary skills had an impact on other language skills. They considered that the vocabulary teaching and learning in the ESP programme did not support them for study in their major. For example, Kawin stated the following in this connection:

For example, when I work in a laboratory such as in Microbiology course, I feel it is difficult because everything is in English language which is not included in the ESP programme. For example, it is very hard for me to pronounce and spell cultures' names.

The findings from phase one showed that the sampled students thought that they had difficulty with vocabulary. Apira, Manee and Aarpassa considered vocabulary their most

difficult skill. Manee, Puttha, Kawin, and Arpassa indicated clearly that the vocabulary knowledge they received from the ESP programme was for general sciences, not for their major study. They also reported that they learnt vocabulary for their major study from their major subjects and the subject teachers. However, whether their vocabulary knowledge was for general sciences or their major study, all of them claimed that their vocabulary knowledge was limited and needed to be improved. However, Apira indicated that she was better at vocabulary for general sciences, but not for her major study. She stated that her vocabulary knowledge was obtained from the ESP teacher.

Furthermore, all of the sampled students and the former students perceived that their vocabulary difficulties caused their difficulties in other language skills. For example, Supanya explained that due to her limited vocabulary knowledge and problems with word spelling, she could write only short sentences and had many spelling mistakes in her writing. In addition, Kawin reported that he was not confident in giving a presentation because he had limited vocabulary knowledge for selecting suitable words, although he was sure about the content of his presentation. Furthermore, Arpassa stated that she did not have full understanding of the text while she was reading due to her vocabulary deficiency.

In phase two, Supanya, Manee, Puttha and Kawin continued to indicate that vocabulary was their most difficult skill and affected their other language skill difficulties. Apira, Manee and Puttha stated that they could understand and apply the vocabulary items which they usually used for their major course, as Manee suggested in the following:

When I use English in my experiment or translate research papers, I have become used to some vocabulary items that I usually find in the text. So I sometimes do not need to find their meaning from a dictionary, only scan the text and get understanding.

All of the sampled students also stated that the ESP2 course was much more difficult than the ESP1 course because of their limited vocabulary knowledge. One example is shown in an excerpt from Arpassa's interview:

Also ESP2 is much more difficult than ESP1 because I don't have much vocabulary knowledge. So, when I studied ESP2, I don't understand.

The findings from both phases suggest that the students had difficulties in vocabulary, especially the technical terms in their area. Although some of them revealed that they also had difficulties with the vocabulary used in everyday life in phase one, all of them underlined their difficulties with scientific vocabulary, particularly the technical terms of their major study in phase two. They also believed that this difficulty affected their performance regarding other English language skills.

6.4.1.1.6 Grammar and language functions

As with their vocabulary skills, the findings from the students' interviews in both phases showed that all of them had deficiencies in grammar and language functions. More of them weighed grammar structures used in sciences as more difficult than the grammar used in everyday life in phase two. In phase one, Puttha and Kawin considered that grammar was their most difficult skill. Only Kawin confirmed that he had difficulties with the grammar structures used in the sciences.

The findings showed similar results in phase two. Five of the focal students (Apira, Manee, Puttha, Kawin, and Arpassa) revealed that they had difficulty with the grammar structures used in the sciences. Only Supanya considered grammar in everyday life as her most difficult skill. In addition, Apira and Arpassa stated that they also had difficulties with the grammar used in everyday life. For example, Puttha noted that the grammar structures used in the sciences were much more difficult to understand.

The analysis of their interviews also revealed that their difficulties with grammar were somewhat related to their deficiencies with other language skills. For example, Kawin considered that his deficiencies in grammar limited his ability to read. He stated that he could not read a longer passage because there were many technical words and complicated grammar structures. In addition, Puttha thought that his grammar difficulty affected his writing skills. He stated that he could not write a summary from what he had read. The findings from both phases suggest that knowledge of grammar, particularly scientific English grammar, contributes to other language skills in the ESP programme.

6.4.1.2 Perceptions of the two ESP teachers

The responses of the two ESP teachers were similar to those of the sampled students and former students. Both of them acknowledged that all of the students in their classes had difficulties with using all English language skills, particularly the vocabulary used in the scientific context and in everyday life, and grammar. Both ESP teachers also revealed that Kawin, and Arpassa also had problems when they used their English language skills, especially listening and grammar. However, these ESP teachers confirmed that high-level students had more confidence in speaking English in the class and were at a higher level of proficiency in the English language than the other students in their classes. For example, one of the ESP teachers pointed out that although Kawin usually participated in the class activities by answering questions and paying more attention by listening to the tape recordings than the other students, not all of the answers that he gave were correct and his test results were not at the top level.

Furthermore, ESP Teacher1 also mentioned her other concerns with plagiarism in the ESP1 class, as she usually found that the students copied their friends' work and cheated on the examination. She believed that these concerns might lead to the misinterpretation of the students' real performance in using English language skills. For example, she commented that

although the test scores of some students were at a high level, she suspected that these students copied the answers from their friends because she noticed that these students rarely gave the correct answers when they did exercises in front of the class or by themselves. In addition, ESP Teacher2 commented on the difficulties of all of the students caused by their lack of an effort to learn.

6.4.1.3 Perceptions of the three subject teachers

All of the subject teachers stated that their students had difficulties with vocabulary and translation. All of them also indicated that they found that their students could not translate their work from English to Thai language effectively. The teachers explained that their students translated the research papers verbatim without any concerns about the differences between the Thai and English language patterns, especially when translating sentences with the passive voice. These problems with translation meant that their assignments lacked a sense of naturalness, which made them difficult for readers to understand. For example, one of the Subject Teacher2 explained the purpose of the seminar course and stated that one assignment she used required the students to translate an English research paper related to their interests into the Thai language. She found that all of them had problems with translation and were frightened in using English when writing answers to set questions, as she stated in the following:

I can say that my students are very poor in English. They usually translate a research paper word-for-word and some use Google without editing.... I have found that my students had problems when they read English research papers. Some of them don't know how to organise and compile sentences into their own language. They then translate every single word. So when I read the translated work, I feel that it is not smooth...I also found that my students get more stressed when I ask them to read and understand the English questions in one of the course I am teaching.

In addition, all of the subject teachers noted some differences in English competence among the six sampled students. They stated that Kawin and Arpassa were at a reasonable level in using their English language skills. They explained that although these students usually answered the questions from the subject teachers in English and had some knowledge of English technical terms in their area, they still had problems with translation.

The subject teachers suspected that these deficiencies came from the students' educational background and their lack of learning motivation and study skills. For example, an excerpt from Subject Teacher1 considered that his students got a lower grade point average (GPA) than those on the main campus. He believed that this affected the students' study skills and the level of their English language performance.

Compared to students from the main campus, our students have much more poor proficiency in all areas. This is because our campus accepts students who have their GPA from their high school of less than 2.5 but the main campus accepts students who have more than 2.75....This lead to their lack of study skills. From what I can notice, as I used to teach at the main campus, for example, my students here cannot translate research papers effectively.Another thing is that when my students here do not know some words, they do not search by themselves but ask me. Their poor study skills link to all courses, I think.

These findings suggest that the vocabulary in the food areas was typical and played an important role in developing other language skills. On the other hand, lack of practice with vocabulary might cause difficulties with other language skills, such as reading or speaking. Furthermore, these difficulties would become their problems when they worked in a food factory.

6.4.1.4 Language learning information

Language learning information (E), a factor in the needs analysis model, refers to the students' language learning styles and strategies. Information about the students' language learning was elicited from the sampled students' descriptions about how they used the English language skills to complete the tasks and activities they engaged in. The findings showed that the sampled students had different language learning styles and employed varieties of language strategies.

6.4.1.4.1 Learning styles

Information about the students' learning styles was elicited from the six sampled students' interviews when they were asked about how they carried on the tasks and activities related to their English language skills in the ESP programme. The findings showed that they had a range of learning styles: sensory preferences, personality types, desired degree of generality, and biological differences. For example, Supanya and Arpassa were found to usually emphasise the kinaesthetic/tactile style because they indicated that they learnt best when they participated in games or activities requiring movement.

The findings also revealed that the sampled students had mixed personality types between "extraverted or introverted", "intuitive-random or sensing-sequential", "thinking or feeling", and "closure-oriented/judging or open/perceiving". For example, the analysis of the sampled students' interviews regarding their preferred activities revealed that half of them (Manee, Kawin, and Arpassa) were likely to be extraverts, as they stated that they enjoyed group work and relied on their friends. For example, Manee stated the following in phase one:

When I study English, I need to discuss and work with my friends. I usually ask my friends, not the teacher, if I don't understand.

6.4.1.4.2 Learning strategies

The analysis found that the sampled students employed a range of six categories of learning strategies—cognitive, social, compensatory, metacognitive, memory, and affective—in order to learn in the ESP programme. The sampled students used cognitive strategies to learn all of the language skills and many of them continued to use these strategies for learning vocabulary, and listening and writing, during the ESP programme. For example, the cognitive strategies that all of the sampled students applied to learning vocabulary included practising, such as reciting a word regularly or using it frequently, or recombining their ideas, receiving and sending messages, or analysing and reasoning by translating using a dictionary as a resource, or creating a structure for input and output by making notes on an unknown word in their vocabulary books. For example, Apira stated that she learnt vocabulary by looking up the new words in a dictionary and using the new words several times.

....It is also more complicated to look up for the meaning of each word in a dictionary and then arrange our ideas into Thai language again...I learn more technical vocabulary because I often use it....

Social strategies were the second most common learning strategies that the sampled students employed in learning vocabulary, listening, reading, and speaking in the ESP programme. The results showed that all of the sampled students had experience in using social strategies in learning English because they felt more confident and comfortable in sharing their ideas and practising with their friends than with the ESP teachers. For example, Manee and Arpassa talked about using social strategies in learning reading in phase one. The social strategies that they used included sharing ideas with friends in group work activities. For example, in phase one, Arpassa stated that she shared her reading assignments with her friends in a group:

There were 5-6 group members and each of us read different parts of the paper. Then all of us discussed what we had read and combined them together.”

The study found few compensatory strategies that the sampled students employed in the ESP programme. The strategies they used comprised linguistic or other clues, and using information from their first language, gestures, pictures, or prior knowledge of the topic or experience they were studying. For example, Manee talked in phase one about using her interpretation and clues to understand the message she heard. She stated that when she was listening to her friends’ presentations, she interpreted them and noticed other visual aids that might help her understand.

I try to listen to them and make an interpretation. I also try to watch the pictures presented during the presentation.

As for the metacognitive strategies, the findings showed that all of the sampled students employed metacognitive strategies in learning vocabulary, listening, reading, writing, and speaking. The findings highlighted that all of the sampled students used more learning strategies in phase two. In addition, the students at higher levels seemed to apply metacognitive strategies more than those at the lower ones. For example, Kawin and Arpassa in phase two used metacognitive strategies as they indicated that they knew that their English knowledge and their major study complemented each other and helped them to find out the meaning of unknown words. For example, Kawin stated that the ESP programme helped him to read and analyse research papers in his major study, as indicated in the following passage:

Now, I study about research papers which I can link to my major subjects because I am assigned to read research papers. So, when I study a chapter related to research papers, I get to understand very quickly because I can link between ESP and my major subjects... If we have good background in both English language skills and the content in major subjects which we studied in Thai

language, we can link the knowledge and get better understandings of what we are studying.

Regarding memory strategies, the findings showed that the sampled students used memory strategies in vocabulary and speaking learning. It can be interpreted that the students employed memory strategies in learning for short-term purposes, such as sitting for an examination or making a presentation. For example, Supanya, Manee, and Puttha were found to apply memory strategies in that they learnt vocabulary by re-writing new words several times and through songs. However, the interview with Supanya in phase one implied that she was aware that although the rote learning techniques were suitable for learning vocabulary, using words regularly was better for remembering in the long term, as she stated in the following:

I always have spelling mistakes. I recall vocabulary that I studied only before I have an exam, so after that I forget all of them because I don't use them very often.

As for the affective strategies, the findings showed that although all six sampled students referred to affective strategies in learning in the ESP programme, only two of them gave details on their use with specific skills, which were listening and speaking. It can be seen that the sampled students employed affective strategies to release their stress in learning in the ESP programme. These strategies included asking for rewards or additional marks for class participation and activities, preferring to have quizzes and taking risks wisely, using games, technical apparatus, or jokes to lower their anxiety in class, and discussing their troubles with the ESP teachers. For example, Manee talked in phase one about asking for additional marks for class participation: "I prefer having a test. It would be a good challenge for students if there are additional marks for classroom participation....." In phase two she also considered that using technical apparatus and encouraging herself with additional marks as rewards from the

ESP teacher when she participated in speaking activities could lower her anxiety in speaking activities, as she indicated in the following:

I have more confidence if I answer the question on an individual microphone...The teacher always encourages us to answer her questions by giving some extra marks. That we really like.

The information about the students' learning styles and learning strategies might guide the ESP teachers to select appropriate teaching pedagogies to help the students learn more successfully.

6.4.2 In the occupational contexts

Language information concerning the occupational context was elicited from the responses to the interview questions from the three groups of participants. They were the three students from the group of sampled students that participated in an internship programme before the phase two study, the six former students that were in their internship during phase one of the study, and the six employers. Overall, the findings showed that all of the participants revealed that the students in the food science and technology faced difficulties in speaking, listening, and reading skills which hindered their ability to participate fully in some of the opportunities available at the factories. They indicated that speaking and listening in English were considered as critical issues of students in the food science and technology programme of Agriculture University. Other language skills were vocabulary, and writing and reading skills. In addition, the employers noticed that the students also encountered difficulties with their socialising and study skills. The following sections describe in detail the difficulties with the English language activities and tasks in the food industry of the students.

6.4.2.1 Listening and speaking

The listening and speaking skills that the students in the programme had problems with when they worked in a food factory involved making conversations in their workplaces and in daily situations. All three sampled students (Supanya, Kawin, and Arpassa, who had participated in the internship programme) revealed that they had problems with their speaking skills while they interned at the food factories. They thought that they could not give any presentations or describe processes and products effectively. For example, Arpassa reflected on her speaking experience at the food factory in the following:

Sometimes, there were some Japanese delegations visited the factory, so I needed to speak English with them, such as greetings, describing processes. I worked in a food production line where there were many technical terms that I still didn't know.

Likewise, the interviews from the former students confirmed that they felt frightened speaking English with foreign customers or visitors as they thought that they had limited knowledge of vocabulary. All of the employers also confirmed that the students had difficulties in making presentations about their projects, describing products and processes, as well as having conversations about general topics. One of the employers (Employer2) noticed that an intern student tried to avoid speaking English to his customers. Other employers (Employer4 and Employer6) found that the interned students that worked with them could not use complete sentences in English to convey their conversations to visitors and did not fully understand questions from the visitors.

6.4.2.2 Reading

As mentioned in the previous section about the reading deficiency of the students, this problem continued to be their problems when they interned at food factories. However, some of them

stated that they would ask for some help from other staff members or employers that supervised them when they did not understand what they were reading. All of the employers also confirmed that the students they supervised had problems when they read forms, laboratory reports, and manual in their departments.

6.4.2.3 Writing

The three sampled students and the six former students revealed that they sometimes asked the employers or other staff members to help them fill out forms in the department in which they were working. All of the employers also stated that the former students had difficulty with their writing skills. This included writing laboratory reports and filling out forms (both business and laboratory). One of the employers suggested that the students should write technical terms in English even when they wrote their reports in the Thai language.

6.4.2.4 Vocabulary

Furthermore, their vocabulary deficiencies extended to problems when the three sampled students interned at food factories. For example, Arpassa revealed that she experienced many technical terms at the food factory which most of the time she did not understand.

As stated previously, the former students had difficulties with their vocabulary skills and this affected their speaking and listening skills. Also, all of them indicated that they encountered difficulties with the vocabulary used on a daily basis and some technical terms. The former students in the quality control/quality assurance departments that were considered to have more opportunities to communicate in English than other students in the other departments revealed that they could not communicate with other staff members or visitors in English effectively.

Similarly, all of the employers reported that the deficiency in vocabulary knowledge of the students included both the vocabulary used in daily life and some technical terms used in real situations. Most of these terms related to engineering and parts of their products. In addition, they believed that the students in this programme had sufficient knowledge of the content and technical terms in their area, but they could not apply these terms in the real situations in their workplace. Another concern was that the students had insufficient vocabulary knowledge for everyday life communication in the workplace.

6.4.3 Conclusion of language information about the students in the academic and occupational contexts

The findings revealed the students' current knowledge of their English language skills, how they learnt English, and their deficiencies in using English in different contexts. This can be summarised as follows.

The study found a mismatch between the language learning in the ESP classroom and the use of the English language in real situations (the academic and occupational contexts). In the ESP classes, the language was taught as a discrete skill, whereas the language skills in the real situations were integrated. In addition, the ESP programme did not provide sufficient activities or tasks to support the students in using their English language skills in real situations, especially listening, speaking, writing, and vocabulary. Accordingly, the students faced problems when they used English in the academic and occupational contexts. It might be recommended then that teachers redesign the ESP programme to solve the students' problems and to meet the needs of the stakeholders in both academic and occupational contexts.

The findings on language information can be summarised as follows:

- All of the interviews' findings indicated that students themselves perceived that they had difficulties with English and their competency did not seem to be improve.

- The sampled students believed that the reading skill was their best in both phases. However, according to their interviews, they were at low levels for all English language skills.
- All six sampled students used all of the learning strategies in the ESP programme though cognitive, social, and metacognitive strategies were the mostly-used strategies. Each sampled student used different strategies for particular language skills. It seemed that these suited their learning preferences rather than their levels of language proficiency.
- However, it was seen that the students with higher levels of English proficiency used more learning strategies in language than those with lower levels. The analysis also found that some sampled students applied learning strategies that were not always appropriate for developing their language skill performance.
- The ESP teachers considered vocabulary and grammar as the most difficult skills for all students, whereas the subject teachers viewed reading and translation as the most difficult. It can be seen that the ESP teachers looked at the skill levels, whereas the subject teachers focused on the practical application levels. However, the ESP teachers' views did not match real-world English usage.
- All of the language skills relating to the workplace were considered to be problematic for the students, which the ESP teachers needed to take into account.

6.5 Needs for the ESP Programme

In order to obtain information about the learners' needs from the course (G) from the needs analysis model, all six sampled students were asked about their needs regarding the English language in the ESP programme in the two phases of the study. All former students were also asked about their needs. The obtained information would lead to answering the research

question about the students' needs. In addition, the sampled students were also asked about the factors that led to their changes in the ratings of their needs in the Needs Questionnaire for phase two, which would answer Research Question 4. Other relevant participants in the academic and occupational contexts were also asked for their suggestions regarding the English language skills that should be taught and learnt in the ESP programme.

In this section, the needs for each of the English language skills found in the interviews are reported. The section begins by presenting the findings on the needs of the participants in the activities related to listening and speaking, reading, writing, vocabulary, and grammar and language functions. Then, the reasons for the changes of the students' responses to the questionnaire in phase two are presented. The section ends with a conclusion concerning the students' needs in relation to the ESP programme.

6.5.1 Speaking and listening

The analysis of the interviews showed that the sampled students viewed speaking as being very necessary. In phase one, five of them (except Apira) stated that they needed the speaking skill and Supanya, Manee, Puttha, and Kawin considered it their most needed skill. In phase two, all of them stated that they needed the speaking skill and Apira, Manee, Kawin, and Arpassa viewed it as their most needed skill.

The speaking activities and tasks they needed in phase one included pronunciation, making conversations with other people about general topics and topics related to their major study, talking to foreigners, and making presentations. In phase two, their speaking needs were similar to those in phase one but with a greater focus on the applications for their study and professional purposes. These extra speaking activities and tasks were making presentations for their study and their work, describing experimental processes, giving instructions, and during interviews for a job. In this phase, they also indicated that they needed more confidence to

speak English. For example, Manee stated in phase two that she needed to improve her confidence to speak English in her English class and in any situations, as stated in the following:

I want to improve my speaking or making a conversation. Because I think I can read and listen. My friends who are good grade students can't speak English in class when they present in front of the class, they keep quiet. Only a few students are confident to speak English, but most of us are shy.... I mean making a presentation and speaking for general purposes.

The need for listening and speaking of the three subject teachers focused on making a presentation in English. They believed that it would prepare their students to be able to present their projects in a seminar course effectively.

All of the employers and the former students wanted listening and speaking skills to be included in the ESP programme. These skills should encompass both English in the food industry and English for everyday use. They also suggested situations that might help the students practise these skills in the workplace, including introducing themselves to visitors, greetings visitors, describing products and processes, negotiating with customers, and presenting their projects. In addition, one of the employers (Employer5) also suggested that the university should use the university pilot plant to provide the students with opportunities to practise presenting their products in English. However, they did not mention any specific topics or situations about how to practice English for everyday use. The purpose of the communication was to be familiar with customers or other staff members in the workplace.

In conclusion, the speaking and listening activities and tasks were found to be of the greatest demand by the participants in occupational situations and should be included in the ESP programme. These should include making/having conversations about general topics in everyday life and conversations on a workplace basis.

6.5.2 Reading

The analysis of the interviews revealed that the sampled students also considered reading as being very necessary and viewed a wider scope of using it in phase two. In phase one, Supanya and Apira indicated that they needed reading the most. In phase two, the five sampled students indicated that they needed reading, and Supanya continued to state that she needed it the most.

The reading activities and tasks that the students needed in phase one were for their study purposes, such as reading research papers and any reading materials related to their study. In phase two, the reading activities and tasks they needed covered both academic and professional purposes. These were reading research papers, articles, manuals, news about general topics and their major study, as well as any reading materials related to their major study. Regarding reading for their future profession, they needed to read any reading materials that they would use in food factories. Puttha also pointed out the importance of reading skills to other language skills for his study purposes in the following passage:

As for the reading skills, it helps me when I can't understand what I listen; I can read...I think reading is important. But it would be more beneficial if I can read manuals, research papers, or any information that I will present. This can help me to read textbooks, magazines, research papers, and websites relating to my major study...I also need to learn how to organise the ideas from what I have read and techniques for translation.

The excerpt below from Former Student6 also represents their needs to have translation skills for their major subjects:

I think that the ESP programme should include techniques of translations, such as how to write our translated work consistency. I will apply these techniques to translate research papers for the Seminar course. I always get in to trouble when I translate a paper because it does not convey the same meanings from the paper I read and it is not smooth.

In the academic contexts, the subject teachers referred reading skills as translation and considered it one of the major problems for the students' study. Therefore, they expected the ESP Programme to include translation as part of the class activities.

In the occupational context, reading was required for various types of documents depending on the requirements and usage in each workplace. The employers in the production departments required the students to practise reading manuals, evaluation forms, and reports and signage, whereas those in the research and development and the quality control/quality assurance wanted reading manuals, laboratory reports and forms, business forms, and research articles to be included in the ESP programme.

6.5.3 Writing

The analysis found that the sampled students felt that they needed more opportunities to practise writing in the ESP Programme. In phase one, Supanya, Apira, Manee, and Puttha indicated that they needed the skill of writing and Manee considered it as her most needed skill. In phase two, all sampled students viewed that they needed the writing skill and Puttha stated that he needed it the most.

The activities and tasks they needed in phase one encompassed writing for their study and professional purposes, including writing long paragraphs about their major study and research reports, as well as for more general goals such as writing cover letters, resumés, and job applications. For example, Puttha stated that he needed to improve his writing skills for his study and professional purposes. He said that he wanted to know about doing research, writing research, and making a research presentation.

In phase two, all of the sampled students gave more explanations of their writing activities and task needs. For their major study purposes, they needed English language skills to write

laboratory reports, research papers, abstracts, summaries, slide presentation, and to describe products. For their professional purposes, all of them stated that they needed the English language to write resumés, and job application letters and covering letters. For example, Puttha stated that he needed writing skill, focusing on summarising, writing research reports, and laboratory reports, as can be seen in the following:

I expect that I can describe the processes of my experiments. I can communicate in English fluently and translate the assigned research papers from my major subjects....I hope I can present my knowledge to other readers effectively, summarise what I have read or presented. And I also want to write a laboratory report the most. Because if I do the experiment but I can't write a report, it seems like I have done nothing.... Writing organization has not been taught yet. But if it is included in the programme, it might help us to continue to write a summary.

Furthermore, Supanya, Kawin, and Arpassa, who interned at food factories and all former students considered that they also needed to practise writing for any professional situations, such as filling out forms, writing resumés, business letters and application letters, and laboratory reports.

The findings also showed that all three subject teachers wanted the ESP Programme to include writing slides for presentations because the students needed this when they present their projects in the seminar course. All of them expected the ESP programme to teach the students to write a summary of a research report and guide them to produce slides for presentations.

All six employers suggested that the ESP programme should provide students with many opportunities to practise writing related to the food industry. These included writing e-mails, reports, business letters, and filling out either laboratory or business forms. This would depend on the situation in each department. All of them considered that the writing activities in their department related to reading activities. For example, one of the employers (Employer5)

believed that if the students understood a form or a letter they were reading, they could fill out the form or write a corresponding letter appropriately.

6.5.4 Vocabulary

The vocabulary found to be needed in the interviews with all of the relevant stakeholders included technical terms in the food science and technology area and the vocabulary frequently used in everyday life. In both phases of the interviews, all of the sampled students and former students indicated that they needed to increase their vocabulary, but none of them considered it as their greatest need. Additionally, the former students also felt that they needed to learn more words that they might use in everyday life.

In phase one, all of the sampled students explained that the vocabulary they needed should be related to their major study. In phase two, they gave more details and examples regarding the vocabulary needs that they thought could encompass topics more relevant to their major study and professional areas, such as lab directions, food processing, names of machines in food factories, and job applications. For instance, the excerpt below from Supanya in phase two is typical of the points that the students raised about more technical terms:

I want to know about the vocabulary of scientific instruments and technical terminology, especially for my major study because they will help me to understand reading passages or papers...I want to know about vocabulary for reading lab directions.... I also want to know vocabulary for working in a food factory, such as food processing which is practical for my future...The teacher should focus on the vocabulary that we can use in a real situation, in a food factory. That is, in the ESP programme, I think I want to know more vocabulary for studying in my area and my future work.

Although the subject teachers stated that they taught their students some technical terms, they recommended that the ESP programme include these terms to support the students' study

in their major courses and to prepare them to work in the food industry. These subject teachers believed that this could help their students use these technical terms more often and become familiar with them. The subject teachers recommended that technical terms be related to quality control, food engineering, sensory evaluation, food additives, standard operation procedure (SOP), work instructions (WI), microbiology, and manuals.

In addition, the employers suggested that the ESP programme provide the vocabulary used in the workplace, including technical terms in the food science and technology area and vocabulary used in everyday life. They stated that the sources for learning vocabulary should be varied and include manuals, forms, parts of products that depended on different departments and types of the food industry.

6.5.5 Grammar and language functions

The analysis of the interviews from the two phases showed that although none of the sampled students considered grammar as their most needed skill, more of them showed that they needed it in phase two. Apira, Kawin, and Arpassa expressed their need in phase one for grammar skill. In phase two, they continued to state that they still needed it and Puttha also stated that he needed grammar structures as well. In addition, they stated that they needed grammar with a focus on science for their study purposes in both phases of the interviews. Some of them also needed the grammar used in everyday life. For example, Puttha stated in phase two that he needed grammar for science as it was difficult for him to learn. In addition, all former students stated that they needed both grammar for the sciences and the grammar used in everyday life.

The study also found the belief that metalinguistic knowledge will facilitate translation. Subject Teacher2 reported that knowledge of grammar and language functions might help her students with their translation, as she stated in the following:

In seminar course, students have to read and translate English research papers. If my students can differentiate between the sentence patterns of English and Thai, they will translate the papers smoother.

In the food industry, the employers focused on the language functions related to the speaking activities in their particular department. All of them required basic language functions for everyday purposes, such as greetings. For example, the language function related to the production department included product descriptions and specifications, as shown in the excerpt from Employer2's interview in the following:

I work in the kitchen [a section in the production department of the factory]. Our customers order their products with specifications, and then we produce some samples and send to them. If they ok with our samples, they will order products from us.

6.5.6 Reasons for the students' needs changing

In order to answer the research question concerning the changes in the six sampled students' needs during their stages of study in the ESP programme, the sampled students were asked to give the reasons for changing their rating in the Needs Questionnaire in phase two. The analysis of the interviews found that many factors affected their increasing or decreasing need for language skills. These were the awareness of the importance of learning language skills in real situations, opportunities to use language skills, and distractions from other factors.

6.5.6.1 Awareness of the importance of the use of English in real world contexts

It can be interpreted from the interviews of the sampled students that after the students had encountered situations where they needed to use their English language skills, either in their ESP class, major subjects or internship programme, they identified and prioritised language

skills according to their awareness of the importance of particular language skills. For example, Supanya justified the reason for changing her most needed skill from speaking in phase one to reading in phase two, as she prioritised it according to her belief in the language learning processes that she needed to read before she learns to speak, as she stated in the following:

When I studied I thought that speaking is very important because I cannot speak at all. But when I worked, I've realized that before I talk about something, I need to read and understand them first so that we can do other things. If I can't read, I can't talk about that topic successfully.

She increased her rating of writing business letters to be more necessary as she thought that she would use them as an immediate need after she finished her study.

I rated writing a business letter as a more necessary skill because I will graduate soon. I want to apply for a job and I need to write a business letter in English. If I wrote it incorrectly, employers will know that I am not good at English. I am afraid that they won't offer a job to me.

In addition, Manee increased her rating of the need for all language skills as she stated that she had more awareness of their importance to her study.

Because the more I study, the more I realize that it is important. I use English in every major course and listening is important....because I speak English in everyday life, especially in my study.

On the other hand, some students decreased their ratings according to their immediate needs. For example, Apira explained the change in her rating of speaking, vocabulary, and grammar skills as less necessary in phase two because she compared them to her need for the listening skill. In this phase, she prioritised improving her listening skill, which she thought she did not have many opportunities to practise in the ESP class but needed to use it in her real life situations.

As for the consistency of the ratings, Apira did not change her ratings for the listening skill, which she rated as an “extensive need” because she still needed it to the same extent.

6.5.6.2 Opportunities to use English language skills

The analysis of the interviews found that some sampled students had opportunities to practise their English language skills from other resources, so they viewed that these language skills were less necessary to learn in the ESP class in phase two. For example, Apira stated that she could practise reading in other courses, so that made her change her rating of the reading skill from an “extensive need” to a “moderate need.” In addition, Arpassa stated that she rated speaking as less necessary as she did not use it in the ESP2 course.

On the other hand, some students gave consistent ratings of their need for some particular language skills. For example, Arpassa did not change any ratings for her need for vocabulary and grammar, saying that she needed them slightly in both phases. Her justification was that the ESP2 course did not focus on these skills.

6.5.6.3 Distractions from other courses

All of the sampled students considered that studying many courses affected their ratings of their need for learning English language skills. For example, Supanya gave her reasons for having less need for vocabulary because she wanted to focus on her major study. In addition, Puttha explained that he spent more time on other courses than the ESP programme, although he needed some language skills. He viewed them as less necessary, as can be seen in the following:

....and because this semester I have so many assignments that I have to read and write in English. So I need reading, writing and vocabulary the most. However, these needs are less necessary than what I needed in last semester. As I told you I want to finish my project in the seminar course.... So I don't

need anything more. I don't want to have more work. I want to finish my project from seminar course.

6.5.6.4 The internship programme

The three sampled students (Supanya, Kawin, and Arpassa), who participated in the internship programme, revealed that their experience in working in the food factories led to their changes in their ratings of their need for English language skills. They stated that during their internship, they realised that some particular language skills were important and frequently used in their workplaces. As a result, they either increased or decreased their perceived need for certain language skills. For example, Supanya rated every language skill as most needed in phase one, but later decreased her ratings in phase two. She rated some language skills as a “moderate need” because she believed that she had enough experience from the internship programme and did not want to study any language skills anymore.

I changed my mind. Now I think that I have experience from my work during an internship programme. So I think that is enough. It is not necessary to study.

On the other hand, Kawin stated that he found that the experience in the internship programme drove him to view all language skills as more necessary.

I changed my need because when I am in the university, I don't use much English. But when I interned at a factory, I realised that English is very important ... So, I think that I should improve my English for my study and especially my future work in ESP2. I learnt from the internship Programme that there are lots of things that I don't know and I must practice them before I finish my study. To me, using English in a real situation is very important.... When I interned at a food factory, I realised that English was used all around me. It is very important and we have to use English correctly and appropriately, especially speaking. If we cannot communicate in English, other people will look down us and degrade our working performance. That is, if we can't use English, we are at the bottom.

6.5.7 Conclusions regarding the needs for the ESP programme

The findings suggest that the needs of the stakeholders for English in the academic and occupational contexts can be the target needs and used as the objectives for the ESP programme because these stakeholders viewed the English language needed more holistically than the ESP teachers did. Their perceptions can be summarised as follows:

Perceptions of the six sampled students:

- Most sampled students stated that they needed all language skills in the ESP programmes for their major study and professional purposes. In both phases of the interview, although all of the sampled students said that they needed vocabulary, especially those in their major study, more than half of them considered that speaking was their most needed skill. Other language skills they needed were writing, reading, listening, and grammar.
- The students learned English language skills in the ESP programme as discrete skills which were not the same as the integrated English skills used in either academic or occupational contexts. This seems to suggest that ESP teachers should re-design the ESP programme with integrated skills.
- The students needed speaking activities and tasks which included pronunciation, having conversations with other people about general topics and topics related to their major study and their workplace, talking to foreigners, and making presentations for their study and their workplace, describing experimental processes, giving instructions, and interviewing for a job.
- The students needed writing activities and tasks that encompassed writing for their study and professional purposes, including writing long paragraphs about their major study, laboratory reports, research papers and abstracts, writing a summary, writing for

slide presentations, describing products, as well as writing cover letters, résumés and job application letters.

- The reading activities and tasks they needed included reading research papers, articles, manuals, news about general topics and their major study, as well as any reading materials related to their major study and any reading materials that they would use in food factories.
- Their needs for listening extended from listening in situations related to their major area to those in workplace situations, such as listening to teachers, foreigners, and presentations.
- All of the sampled students also said that they needed grammatical structures for science to support their study while some of them also needed grammar used in everyday life.
- Other components that they thought influenced their ESP learning included the ESP teachers and their teaching methodology and personalities, ESP course materials, and the learning environment.
- In addition, the reasons they gave for changing their ratings of the various language skills reflected their awareness of the importance of language skills in real situations, and the opportunities to use the different language skills. This was especially true for those that were interns. They also faced some distractions from other factors.

Perceptions of other participants:

- The perceptions of the six former students, the subject teachers, and the employers showed that they needed the ESP programme to cover the English language skills used in both academic and occupational contexts.
- They believed that vocabulary and reading, particularly translation, should be included to support the learning in the academic context. Therefore, they recommended that the

ESP programme should increase vocabulary knowledge, both in the content area of food science and technology and for a daily life basis.

- The ESP programme should provide more opportunities to practise communication skills for everyday use and in the food industry.
- In the occupational contexts, all of the English language skills were required as integrated skills, especially speaking and listening in the food industry community and for everyday purposes. The need for the language skills depended on the departments at the food factory.

6.6 Environmental Situations

The environmental situations or means analysis identified the constraints and opportunities in teaching and learning that affected the needs and difficulties with the language skills of the students in the course. In this research, the environmental situation was interpreted based on the adaptation of Basturkmen's (2010) definition in that the environmental situation refers to the ESP classroom culture, learner factors, the ESP teachers' profiles, and the status of the ESP programme. Since the first three themes are described elsewhere in this chapter, this section reports only the last theme, the status of the teaching and learning in the ESP programme in the university during the two phases of the study. The information concerning the environmental situations was taken from the interviews of the sampled students, the former students, the two ESP teachers, and the three subject teachers.

6.6.1 Perceptions of the sampled students and the former students

The analysis found little motivation among the students for studying in the ESP programme. All of the sampled students and the former students considered that the university did not have any policy to support the teaching and learning in the ESP programme. The students'

suggestion involved external factors—the infrastructure. They all complained about the language laboratory, which they thought should be renovated. For example, Kawin’s statement below illustrates the problems with the language laboratory, which showed that the university was not facilitating the ESP teaching and learning as well as it could:

At my university, it should be comfortable to study in a sound lab. [laboratory-Researcher] where students can study in an air-conditioned room. There are no air conditioners in other rooms, so we are very hot. But if teaching about vocabulary, I would prefer to study at the university pilot plant... Right now in a sound lab, many headphones are broken. There is no slide projector, only a whiteboard that can be used.

In addition, all of the students thought that the university should offer an English course every semester so that the students could study English more regularly and became more familiar with it. This might provide them with a basic background in English before they studied in the ESP programme. For example, Puttha thought that a one-year period without studying any English subjects before he studied in the ESP programme in the third year caused him to disconnect from using English and he believed that this affected his proficiency in language skills.

In addition, all of them also requested that the university support the ESP programme by hiring more English teachers, especially teachers from English speaking countries. For example, Apira stated in phase two that the university did not provide an effective ESP Programme learning environment and also mentioned the language laboratory.

I only practice listening to conversations from tapes or messages from the (ESP) teacher. I can’t imagine what the speakers look like because I only hear the message. The teacher rarely lets us watch DVDs. The sound lab is not ready to be used. Sometimes, it is broken.

Apart from studying English in the ESP programme, the English language was used in many courses in their major study. This might have affected the students' needs and motivation in terms of studying language skills in the ESP programme because they could use English more often and their knowledge of English would help them understand their major courses. For example, Manee stated that she used the English language, such as reading English research papers and reading supplementary sheets handed out by the subject teachers.

Although English was used in the ESP programme and the students' major courses, all of the students stated that they did not have opportunities to practise English outside their classes. For example, Arpassa described the inadequate opportunity to use the English language in the following:

I think the learning environment in the ESP class is fine. But when we are out of ESP class, we rarely use English. As we are in Thailand where most people are Thais, so we don't have much opportunity to practice using English....

However, some of the sampled students stated that the study plan set by the university to study in the ESP programme before they interned at a food factory was effective. Also, all of the students stated that they were concerned about the period of time between fundamental English 2 and the ESP programme when no English courses were taught. This issue is intrinsic motivation among students. For example, Arpassa thought that this affected her English language skills when she studied in the ESP programme.

I think because there is an interval between the Fundamental English course and the ESP programme, this makes me forget how to use English. I don't continue studying English. I also think that it would be better if during the interval period, there is a course in grammar for science students.

6.6.2 Perceptions of the two ESP teachers

The ESP teachers considered that the university should support both the human resources and the infrastructure for the teaching and learning of the English language, including the ESP programme. ESP Teacher1 stated the university should have more English speaking teachers, which was a major point that she thought would help the students improve their English language skills. However, she thought that it also depended on the personality and motivation of the students, as she stated in the following:

I think the university provides us little support to teach English. This might because almost courses here are taught in Thai language although some courses are taught in English language. And our students' perceptions and abilities are diverse. I want the university to hire more English speaking teachers so that our students can practise communication with them. This would increase their motivation to learn English. However, it depends on individual preference as some students might hide from speaking with the English native speaking teachers...

However, ESP Teacher2 had different perspectives, which focused on the infrastructure, such as teaching resources, the Internet, or signposts written in English. She stated this could help the students become familiar with the English language. She stated that, for example, the university should provide more resources for the English language. She also wanted more dictionaries for specific areas because her students needed them. She also suggested that in the laboratory there should be signposts written in English so that the students can see English not only in the ESP class.

6.6.3 Perceptions of the three subject teachers

From the findings from the interviews with the three subject teachers it can be interpreted that although they believed that the university provided support according to its potential, more

English resources for students are essential. For example, Subject Teacher2 indicated this in the following:

The first priority is more English textbooks that I request from the university every year. I read some websites and they recommend many textbooks to read. If we have these textbooks, I can suggest my students to read further. I found not many English textbooks in the university library. The university should consider this too....Another considerations are databases which I think we should have more database resources...

The findings suggest insufficient support from the university in terms of teaching and learning the English language, including the ESP programme. This might be a factor in the students' difficulties and reflect their needs in the ESP programme.

6.6.4 Conclusion regarding the environmental situations

The information from the relevant stakeholders illustrated the environmental situation in which the ESP programme had been conducted at the university. All of the participants viewed that the university did not provide sufficient support for the teaching and learning in the ESP programme. This suggests that the university should raise promote the status of the ESP programme. Or, it may suggest that the ESP teachers and students need to change their focus. These findings will be discussed in the next chapter.

CHAPTER 7

DISCUSSION

7.1 Introduction

This exploratory case study used a mixed methods approach to examine the needs of undergraduates in an ESP programme in a food science and technology programme at Agriculture University in Thailand from the point of view of relevant stakeholders. Apart from using English in the ESP programme, the students in the food science and technology programme used English in their major subjects in academic contexts and in the internship programme at food factories in occupational contexts. Hence, four research questions were investigated in this study. Research Question 1 was concerned with the students' current difficulties with their English language skills in the academic and occupational contexts. Research Question 2 dealt with the students' needs for English language skills in academic contexts, whilst Research Question 3 was related to the needs for English language skills in occupational contexts. Research Question 4 focused on the changes in the students' needs for English language skills during the different stages of the ESP programme study.

Data were collected from a wide range of participants via multiple data collection methods in order to answer these research questions and to fully understand the students' needs and the expectations of relevant participants in the study. The participants included all forty-five third-year students in food science and technology studying in the ESP programme during the research period, and six of them were purposively sampled for interviewing. Other relevant participants were two ESP teachers, three subject teachers, six former students, and six

employers. Since the ESP programme included the ESP1 and ESP2 courses, the data were collected in two phases. In phase one, data were collected at the beginning of ESP1 course. Then, after eight months, data were collected again at the beginning of the ESP2 course, which was phase two.

Data concerning the students' difficulties and needs were collected from both the academic and occupational contexts. Data on the students' current English language skills in academic and occupational contexts in the two phases were collected from the students' two English language proficiency tests (TOEIC, and the Scientific English Grammatical Structures Test). Data regarding the students' difficulties in English skills in the academic context were collected from the students' Questionnaire on Language Difficulties in the two phases, the interviews with the sampled students in the two phases, and the interviews in phase one with the former students, the subject teachers, and the ESP teachers. Additionally, data regarding the students' difficulties with their English skills in occupational contexts were collected from the interviews with the sampled students in the two phases and the interviews in phase one with the former students, the subject teachers, and the employers.

In addition, data relating to English language skills that the students actually needed to learn or their "subjective needs" in the academic and the occupational contexts were gathered from the students' English Language Needs Questionnaire and the interviews with the sampled students in the two phases. Further, the data on the English language skills that the students had to know in order to function effectively in the academic and the occupational contexts or their objective needs were collected from the interviews in phase one with the ESP teachers, the former students, and the subject teachers in the academic context and the former students and employers in the occupational context.

The needs analysis model of Dudley-Evans and St. John (1998, p. 125) was selected in order to provide a theoretical needs analysis framework for this study due to its

comprehensiveness. As mentioned in Chapter 3, the model used for data collection in the study was slightly adapted by changing the wording of some factors, re-ordering the factors in the diagram, and labelling each factor with alphabetical letters to provide greater usability and clarity regarding the meaning of the factors taken from the detailed explanations given by Dudley-Evans and St. John (see Figure 7.1).

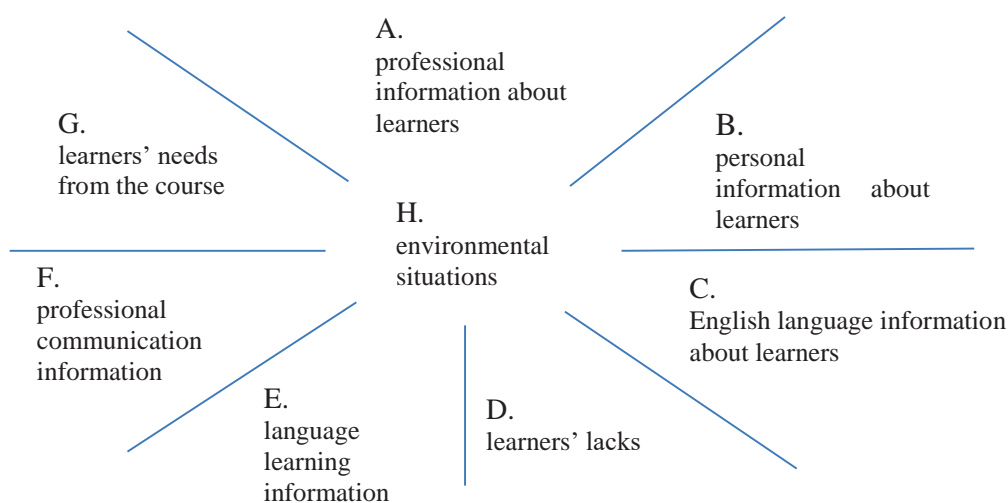


Figure 7.1 Needs analysis model used in this study. Adapted from Dudley-Evans and St. John (1998), p. 125.

7.1.1 Overview of the discussion chapter

During the data analysis phase of the research and due to the multiple sources of data collected in this study based on the eight factors from the Dudley-Evans and St. John's (1998) model, the researcher found that many factors overlapped. Applying the eight separate factors in the model became complicated for the data analysis process. These limitations, therefore, led to a simple framework to organise this discussion chapter, which combines the eight factors of the original theoretical model and the four research questions into two main sections (Figure 7.2).

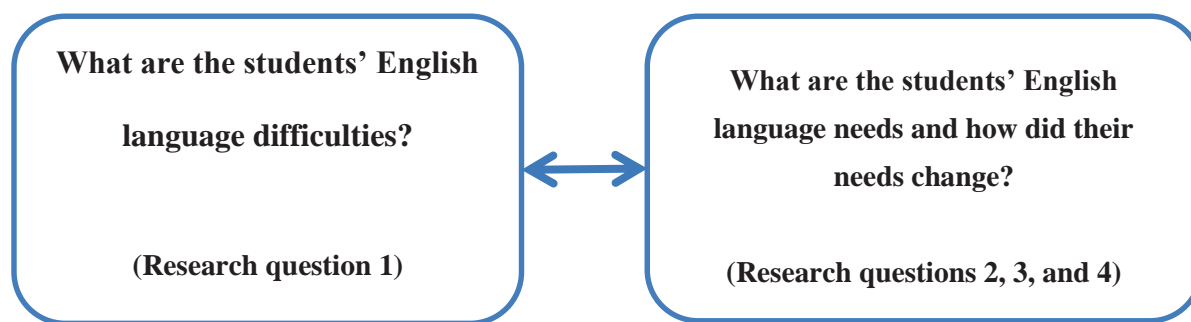


Figure 7.2 Framework for the discussion.

The first section, “What are the students’ English language difficulties?,” discusses Research Question 1. Using this framework, this first section includes the analysis of the data from the professional information about the learners (A), personal information about the learners (B), English language information about learners (C), the learners’ lack (D), language learning information (E), professional communication information (F), and environmental situations (H), from the needs analysis model (Dudley-Evans & St. John, 1998).

This first section focuses on the difficulties regarding the English language skills of the students from the perceptions of the students and the other participants in both academic and occupational contexts. The chapter also provides some possible explanations about the reasons for the students’ difficulties as well as reports on the English activities, skills, and tasks the students have difficulty with. As this study used both quantitative and qualitative approaches and collected data from a wide range of participants through tests, questionnaires and interviews, the perceptions about why the students had difficulties were triangulated in order to increase reliability and validity.

The second section in this discussion chapter, “What are the students’ English language needs and how did their needs change?,” covers Research Questions 2, 3, and 4. This discussion

includes all of the factors in the adapted needs analysis model (A, B, C, D, E, F, H) and the learning needs from the course (G), from the Dudley-Evans and St. John model (1998).

The English language needs of the students from the perceptions of the students and the other relevant participants in both the academic and the occupational contexts are discussed. This particularly highlights the differences in the participants' perceptions of the students' needs, and also the changes in the students' perceptions about their needs that became evident during the different phases in the ESP programme.

7.2 What Are the Students' English Language Difficulties?

This section answers the first research question. The language difficulties of the students were indicated by the triangulation of the data from the following:

- The students' TOEIC tests at the beginning of ESP1 and ESP2 courses which assessed the students' current English knowledge at that time;
- The students' Questionnaire on Language Difficulties at the beginning of ESP1 and ESP2 courses which revealed the students' English difficulties in the academic and the occupational contexts at that time;
- Interviews with the sampled students in the two research phases with questions related to the students' difficulties in English language skills in the academic and occupational contexts;
- Interviews with the former students in phase one, which related to the students' English language difficulties in the academic and occupational contexts;
- Interviews with the ESP teachers in phase one concerning the students' English language difficulties in the ESP programme;
- Interviews with the subject teachers and former students in phase one regarding the students' English language difficulties in the academic context; and

- Interviews with the employers and former students in phase one concerning the students' English language difficulties in the occupational context.

7.2.1 Overview of difficulties

In this study, the students perceived that they had difficulties in all English language skills and did not change their perceptions about their difficulties with most of the skills from the beginning of ESP1 to the beginning of ESP2. Further, the results of the TOEIC test supported this perception and revealed that most of the students had low levels of English competences in all areas. The findings showed that not only did the students' perceptions of the difficulties not change, but also that the levels of their English competence remained the same. These findings echo studies in the Thai contexts that show that Thai students' English proficiency is unsatisfactory and that their English problems are ongoing (Khamkhien, 2010b; Teng & Sinwongsuwat, 2015). The students' low English performance in both the academic and occupational contexts reflects some recent studies, which found Thai undergraduates have difficulty transferring their English language skills learned in one context to other contexts (e.g. Baker, 2012; Khamkhien, 2010b). Further, this lack of transferability of English of Thai undergraduates is consistent with other recent studies in international contexts with non-native speaker learners, such as undergraduates in a Canadian university (Berman, 2010) and in a Hong Kong university (Evans & Morrison, 2011).

However, unlike other studies, this research found some discrepancies between the students' responses concerning their perceptions of their English difficulties from some of the different data sources. The finding from the students' questionnaires in the two phases showed that most students perceived grammar as the most difficult skill, whereas in the interviews with the sampled students and the former students, they revealed that all skills were equally difficult. Further, the study elaborated the perceptions of the students' difficulties and those of some

other stakeholders, in particular the language skill areas in academic and occupational contexts. These elaborations will be discussed in the following skills sections.

7.2.2 Speaking and listening

The study found that the students had low competency in speaking and listening. The students' perceptions of their difficulties in speaking and listening did not change during the entire ESP programme. The analysis of the students' Questionnaire on Language Difficulties showed that most students perceived that they had difficulties with speaking to foreigners, pronunciation, making requests, and talking to a variety of audiences. In addition, they also perceived that they had problems in listening to the radio or television programmes and other English media, as well as listening to presentations and discussions in international contexts, and receiving spoken instructions.

The students' difficulties in speaking and listening reflected their TOEIC scores and the TOEIC descriptors of their levels. According to the TOEIC scores' descriptors (Lougheed, 2010), students with low levels of English proficiency have difficulty participating in simple face-to-face communications, although they might be able to understand short oral descriptions of central ideas and details of extended spoken texts conveyed with easy vocabulary.

The questionnaires and TOEIC test findings regarding the students' difficulties in speaking and listening were also supported by the interviews with the sampled students. They said they could understand Thai people speaking or a native speaking English at a slow speed, but otherwise, they would have to listen to the message several times.

Tensions

The employers in the occupational context noted that the students tried to avoid speaking English to customers or visitors and did not fully understand questions from them. They also said that the students had difficulties in making presentations about their projects, describing products and processes, and having and making conversations about general topics in English. Therefore, although these examples showed that the employers felt that the students were weak in speaking and listening, they did not directly mention these specific skill areas as weaknesses, even though this was asked. This may be because of politeness and respect in Thai culture (Getkham, 2014) or because they saw the researcher as the teacher representing the university, and they did not want to criticize the university.

The findings from the sampled students' interviews showed that the students considered pronunciation as one of the main causes of their speaking and listening problems. They felt that some pronunciation caused meaning confusions, which then caused them embarrassment and lack of confidence. Unlike some literature in this area, this study did not find any explicit evidence in the tests or interviews concerning pronunciation problems with language aspects such as consonants and vowels, intonation and stress, or language transfer, which have been found in other studies (Cubalit, 2014; Ellis, 2015; Wei & Zhou, 2002). However, the findings from this study showed that the students felt a lack of opportunities to practise listening to varieties of English accents from native speakers of English and that authentic materials had an impact on their difficulties in pronunciation, which then led to listening and speaking difficulties. In this study, the students said that they usually only listened to the ESP teachers and their Thai friends speaking English. This information might explain the students' difficulties in opportunities to practise pronunciation and speaking and listening in general. Further, Liang's (2015) explanation in the literature regarding the importance of listening to and practising varieties of connected speech might explain the finding that the sampled students

of the present study indicated that they could only understand a native speaker speaking English at a slow speed.

The findings regarding the high levels of the students' speaking and listening difficulties in this study are consistent with other studies in the ESP context in Thailand (Khamkhien, 2010b; Srabua, 2007; Srisitanon, 2009) in that speaking and listening are seen as one of the most difficult skills for Thai learners. This seems to be because of the limited interaction and exposure to native speakers English in classes and that the English courses are taught by non-native English teachers. Watson and Pojanapunya (2009) explained that for this reason many Thai students say they prefer native English speaking teachers to non-native speakers for these skills.

Another possible reason for the students' listening and speaking difficulties was a lack of confidence and not wanting to stand out. This finding supports the work of Wei and Zhou (2002), who explained that Thai learners hesitate to speak English because they are afraid that their classmates will consider them as a "show-off." Similar reasons are frequently reported in other studies on the classroom culture in the Thai context and other similar Asian contexts concerning the students fearing a loss of face, having little interaction with native speakers, and rarely using English in their daily life (Faiza, 2010; Khamkhien, 2010b; T.-Y. Liu & Chu, 2010; Prachanant, 2012). These reasons may all cause them to be reluctant to speak.

In addition to the above, it is possible that some other Thai cultural expectations and traditions caused a reluctance on the part of students to speak. The students in the study said that they were aware of being expected to ask questions about class work and to debate information with the ESP teachers; however, studies in Thai contexts have explained that asking questions during class could imply criticism of the teachers' explanation and a lack of respect for their higher status (Cubalit, 2014; Eaves, 2009). This reason might explain the students' belief that asking questions during the ESP class was inappropriate and impolite.

7.2.3 Reading

The study showed that reading was seen as a difficult task for the students, and most of them had low competency in reading. The findings from the students' TOEIC test in the two phases showed that the students' reading proficiency levels were low. This is shown in the TOEIC descriptors (Lougheed, 2010), which indicate that the students at low levels can only read individual words or phrases, and cannot usually read full sentences and cannot usually comprehend paragraphs or long passages.

The findings from the TOEIC test reflected the responses of the former students, in both phases in the academic and occupational contexts. The former students indicated that they could only read for main ideas, and short passages written with simple grammar structures and vocabulary. Similarly, the interview findings with the sampled students and former students showed that their reading difficulties included reading textbooks and research articles written in English in their major subject areas, as well as reading documents written in English while they were interning at a food factory. These findings explain why the sampled students and the former students said that they usually asked for help from their supervisors in the factories when they did not understand the documents they were reading. This revealed that the students had difficulty with reading in both academic and occupational contexts.

The reading difficulties found in this study support other ESP studies; that is, that second language students find reading a difficult skill. Studies showed that ESP students in many subject areas encounter reading difficulties; as seen for example with engineering students in Yemen (Al-Tamimi & Shuib, 2010), cellular and molecular biology students in Algeria (Faiza, 2010), engineering students in Thailand (Rajprasit, 2015), and chemistry students in Iran (Rostami & Zafarghandi, 2014).

Tensions

It is interesting to find there can be discrepancies and mismatches between students' perceptions of their reading from different data sources. In this study, the findings from the students' Questionnaire on Language Difficulties showed that most of them rated reading as their best English skill. However, in contrast, most of them also indicated that they had difficulty in reading. In addition, the interviews with the sampled students in the two phases revealed that they perceived that reading was their best skill, and they indicated that they could understand every word but did not thoroughly understand the overall meanings of the text in both the academic and occupational contexts. Their mixed perceptions concerning their reading competency and reading comprehension might be because reading was their most frequent activity and they perceived that it was their best skill compared to other skills and activities, yet it was still difficult for them.

This needs analysis study revealed barriers to the students' reading performance, which are similar to many of those mentioned in the literature. These barriers are a lack of prior knowledge or background knowledge, insufficient vocabulary, and inadequate knowledge of sentence structures (Dudley-Evans & St. John, 1998; Kendeou & van den Broek, 2007). In the literature, prior knowledge is seen to affect reading performance and the interest in learning (Lightbown, 2013; Murray, 2011). Likewise, the sampled students and the former students of this study indicated that their reading performance was affected by their lack of background knowledge of the topic or the content that they were studying in the major subjects, and this also seemed to reduce the students' interest in the ESP programme.

In addition, this study also found that the students' difficulties in reading might be related to the ESP teachers' background knowledge of the content area. The ESP teachers indicated that they had limited background knowledge in the content area of food science and technology because it was their first year teaching in the ESP programme. As mentioned earlier, this study

is not a course evaluation but aimed to highlight needs; however, the study showed the importance of the ESP teachers as one of the environmental factors in the needs analysis model and regarding the students' English difficulties. This finding showed the importance of the ESP teachers' content knowledge in terms of developing the students' English ability associated or integrated with their content area (Dudley-Evans & St. John, 1998; Kaewpet, 2009b; Nunan, 1988). This finding led to recommendations for the ESP teachers' professional development, which will be discussed in the final chapter.

7.2.4 Writing

The study showed that the students also had low proficiency in writing. The results of the students' Questionnaire on Language Difficulties in the two phases revealed that most students rated their writing skills at a moderate level of difficulty. The *t*-test analysis indicated that most students did not change their perceptions of the extent of their difficulty in writing skills from phase one to phase two. The study found that most students perceived that they had difficulties with their writing tasks in both the academic context and occupational contexts in the two phases of the study. Their low proficiency in writing was also confirmed by the employers in the occupational context, who said that the former students had difficulty with writing, especially filling in forms and writing both business and laboratory reports.

The findings showed that the students that had overall low levels of English proficiency could not complete advanced writing tasks or independently produce a piece of writing in either the academic or occupational context. The students' difficulties in writing were related to their low proficiencies in other English language skills (i.e. vocabulary, grammar, and reading). This study is consistent with studies in other ESP contexts that show that English courses being taught at the university level are often inadequate in terms of preparing students for using

English competently in the occupational context, especially in writing (Hyun Hyo, 2013; Mazdayasna & Tahririan, 2008; Srabua, 2007; Srisitanon, 2009).

Tensions

The present study highlights the need for students to transfer and integrate their knowledge of other language skills to complete particular writing tasks in both academic and occupational contexts. Additionally, it highlights the need for effective reading and writing skills. Unlike other ESP needs analysis studies that often only reported on the activities and tasks that the students had difficulties with (e.g. Al-Khasawneh, 2010; Al-Tamimi & Shuib, 2010; Liu & Costanzo, 2013), the present study asked the students about their needs and this also revealed that once the students felt that they comprehended what they had read, they could then complete the writing tasks. In this study, the sampled students said that they could fill in the forms or complete the writing activities if they had first understood what they had read. There was a clear link then between reading comprehension and writing skills, in that the knowledge that the students gain from their reading impacts what and how they write (Hirvela, 2004). As these two skills were mostly taught separately, this caused issues for the students.

A lack of relevance of the students' reading and writing tasks might also be a reason for the students' difficulties in writing. The interview in phase two at the beginning of the ESP2 course with the sampled students, asking them to recall their previous English learning experiences, showed that they perceived that the content of the reading activities were not related to their major courses. They therefore, could not link their prior knowledge of the food science and technology area to write in English in the academic and occupational contexts. The interviews with the former students in phase one also agreed with those of the sampled students, that the content of the reading and writing activities was not relevant to their major areas, which seemed to reduce their interest in doing the activity. Therefore, the study highlighted the

relationship between two factors in the needs analysis model: the teachers as one factor of the environmental situations (H) and the learners' lacks (D).

7.2.5 Vocabulary

The study found that the students had limited knowledge of vocabulary in both the academic and occupational contexts. Although the TOEIC test and the Scientific English Grammatical Structures Test did not directly assess the students' proficiency in the use of vocabulary, their low scores in general on these two tests, in both phases of the study, also supported the students' perception that their vocabulary knowledge was limited. Their low scores meant they often did not know the vocabulary related to the content of the questions being asked.

The findings from the Questionnaire on Language Difficulties in both phases illustrated that most students perceived that their levels of vocabulary knowledge were weak or moderate. Most of them indicated that the technical terms or vocabulary in their study area were far more complicated than the general vocabulary or vocabulary used in everyday life. The results of the *t*-test analysis showed no statistically significant difference between the extent of difficulties in vocabulary between the two phases, which means that the students perceived that they still had difficulties in vocabulary in both phases of their study in the ESP programme. Likewise, the responses of the six sampled students in the two phases and the six former students in phase one showed that they felt that they lacked vocabulary skills.

In this study, the sampled students confirmed that their vocabulary deficiency affected other language skills. This finding supports Akbarian's (2010) study in that the students' vocabulary knowledge impacts all of their language production and other studies in English as a foreign language and ESP areas, for example the links between vocabulary and difficulties in writing (Al-Khasawneh, 2012; Laufer & Nation, 1995), in grammar and writing (Zhou, 2009), and in speaking (Gan, 2012). This study confirmed that a lack of vocabulary links strongly to

the students' difficulties in reading, speaking, and writing. The students particularly had difficulties with English conversations, understanding the messages that they listened to, and reading and writing tasks, so this demonstrated the impact of vocabulary knowledge on their communication skills.

Tensions

The study showed that the vocabulary used in the occupational context was a combination between the domain-specific vocabulary used in the academic and occupational contexts and the common vocabulary words used in everyday life. This combination means that the students need to have knowledge of sufficient vocabulary and variation of words in both contexts (Akbarian, 2010; Laufer & Nation, 1995; Nunan, 2015; Zhou, 2009) and this was not present on the ESP programme.

Although there are a lot of learning strategies in the literature that would help students to learn vocabulary, this study revealed that the students had limited learning strategies for learning vocabulary. The interviews with the sampled students showed that they used some cognitive (reciting new words regularly), social (sharing the meaning of new words with friends), and memory strategies (having an awareness of the complementation of knowledge from the ESP programme and their major study to find out meaning of new words) to learn vocabulary. It seems that one of the reasons for the students' limited vocabulary was their limited vocabulary learning strategies because different types of vocabulary knowledge are learned through different strategies (Kocaman, 2014).

7.2.6 Grammar and language functions

This section discusses the students' difficulties with the grammatical structures and language functions that help them to understand the forms and purposes in which the English language

is used to communicate in the academic and occupational contexts of the study. It was revealed that the students had difficulties in both grammar and language functions. The findings of the students' two English proficiency tests (TOEIC, and the Scientific English Grammatical Structures Test) illustrated that they had limited knowledge of the grammar used in both contexts. In addition, these problems did not significantly change over the period of the study. However, the students' low scores on the two English proficiency tests in grammar may be because the two English proficiency tests cover a wider range of English language structures than the students had learnt in their previous English language courses and the existing ESP programme.

The students' difficulty with grammar was also found in the Questionnaire on Language Difficulties in the two phases. Most of the students believed that grammar was their most difficult English language skills and this difficulty affected their other English language skill in both the academic and occupational contexts. This findings regarding the students' difficulties in grammar is in line with other research with non-native English speaking students (Al-Khasawneh, 2010; Ming-chu & Hung-chun, 2009). In addition, the mean values from the students' Questionnaire on Language Difficulties illustrated that most students perceived that they had more difficulties with the grammatical structures used in science-related contexts than those used in everyday English.

Tensions

The findings revealed that the English language that the students used in the academic and occupational contexts focused more on communicative purposes than grammatical structures. The interviews with all of the participants in both contexts showed that the students faced numerous English communicative events where they had to apply their knowledge of grammar and language functions, but they felt that they had relatively weak competency in these areas, which affected their completion of the activities or tasks. This highlights the

importance of students having good understanding of grammatical structures and language functions for communication.

The importance of appropriate grammar structures and language functions was stressed in the research of Buppanhasamai (2012), Chanseawrassamee (2012) and Rajprasit (2015) in the Thai context. Their findings first pointed out the benefit for Thais having good English language skills to meet the expectations of local, regional, and international labour markets. Their investigations also showed that most international and regional organisations in Asian countries believed that good English language proficiency, particularly regarding grammar and language functions, was of primary importance when recruiting new staff members. This strongly suggested that food science and technology students must possess adequate English grammar and overall language competency to be academically and professionally successful.

The study found a number of explanations that appeared to influence the low levels of the students' grammar and language functions. One of these was that the grammar taught in the ESP programme differed from the grammar that the students' needed and used in the academic and occupational contexts. Students were taught grammatical competence, drill-based activities and rote memorization of isolated sentences in the ESP course, which is often the case in other Thai educational contexts (Khamkhien, 2010b). The teaching strategies used in ESP classes in terms of grammar and language functions have also been seen to be problematic. Data from the interviews with the students and the ESP teachers revealed that the students did not receive any corrective feedback on grammar and language aspects, which has been shown in many studies internationally to improve grammar instruction (Ellis, 2015; Saito & Lyster, 2012).

In conclusion, in answering Research Question 1, the main difficulties of the students regarding their English language skills is summarised below (Table 7.1).

Table 7.1 *The students' English language difficulties*

<ul style="list-style-type: none"> • Speaking and listening: - Speaking to a variety of audiences about general topics - Pronunciation - Making requests - Giving and listening to presentations - Describing products and processes - Listening to English media - Listening to discussions - Understanding spoken instructions 	<p>Tensions</p> <ul style="list-style-type: none"> - Pronunciation difficulties cause a lack of confidence and meaning confusion - Limited opportunities to practise speaking and listening, to interact with native speakers and to use authentic materials - Thai social and cultural traditions caused a state of dissonance for the students
<ul style="list-style-type: none"> • Reading: - Reading textbooks and research articles - Reading documents in a food factory 	<p>Tensions</p> <ul style="list-style-type: none"> - Some discrepancies and mismatch between the students' perceptions of their reading from different data sources - A lack of prior knowledge or background knowledge of the students and the ESP teachers of the content area
<ul style="list-style-type: none"> • Writing: - Filling in forms; and writing business and laboratory reports in academic context - Independent writing tasks 	<p>Tensions</p> <ul style="list-style-type: none"> - Students were unable to transfer and integrate knowledge of other language skills to complete writing tasks; - A lack of relevance and connection between reading and writing tasks
<ul style="list-style-type: none"> • Vocabulary - Limited ESP vocabulary knowledge used in both academic and occupational contexts 	<p>Tensions</p> <ul style="list-style-type: none"> - Limited learning strategies to learn vocabulary; - Lack of vocabulary knowledge affected all skill areas and productive use of language
<ul style="list-style-type: none"> • Grammar and Language Functions - Limited grammar knowledge for ESP academic and occupational contexts - Writing for presentations - Summarising results - Writing scientific reports - Reporting information 	<p>Tensions</p> <ul style="list-style-type: none"> - Lack of understanding of grammatical structures and language functions - The discrepancies between grammar taught in the ESP programme and grammar used in the ESP academic and occupational contexts - No corrective feedback - Students unable to transfer their knowledge of grammar

7.3 What Are the Students' English Language Needs and How Did Their Needs Change?

This section answers research questions 2, 3, and 4. The English language needs of the students in the ESP programme will be discussed from the students' and other participants' perspectives in the academic and occupational contexts. Additionally, how the students changed their perceived needs during the two phases of the ESP programme will be reported. The data were collected from the following:

- The students' English Language Needs Questionnaire at the beginning of the ESP1 and ESP2 courses which was related to both the academic and occupational contexts. This provided information about their subjective needs.
- Interviews with the sampled students in the two phases were related to the academic and occupational contexts. This provided information about the present situation and concerned their subjective needs.
- Interviews with the former students in phase one were related to the academic and occupational contexts. This provided information about subjective needs: what the learners want to learn, and objective needs: what the learners have to know.
- Interviews with the ESP teachers in phase one, which provided information about the present situation of the ESP programme at the time of the interview.
- Interviews with the subject teachers in phase one were related to the academic context. This provided information about objective needs.
- Interviews with the employers in phase one were related to the occupational context. This provided information about objective needs.

The discussion of needs was organised into themes arising from the findings of the three research questions. The section begins with the discussion of the specific English language skills needed in the academic context, and then in the occupational context. This is followed by the needs for the environmental situations of the ESP programme. The next section will discuss the differences between the participants' perceptions of the students' English language needs, then, how the students changed their perceptions of their needs. Finally, the discrepancies between the students' needs and their difficulties are discussed.

7.3.1 The most needed English language skills in the academic context

Although students reported that they needed most skills as discussed in section 7.3, all of the participants in the academic context expressed a particular need for reading skills. The interviews with all of the participants in this context and the results from the students' English Language Needs Questionnaire indicated that reading in English was the main activity in the many major subjects such as sensory evaluation and food processing. These findings concerning needing reading are in line with other Thai studies in similar ESP contexts, such as English reading for Thai engineering students (Kaewpet, 2009a).

Interestingly, this study found that translation and reading were needed as a necessary skill in the academic context by the subject teachers, sampled students, and former students. One explanation is that translation is one of the major activities in the major subjects at the Agriculture University. Similarly, the skills of reading and translation in academic contexts are also required by ESP students in countries with traditional education systems in other science areas, such as cellular and molecular biology in Algeria (Faiza, 2010), industrial design in Malaysia (Adzmi et al., 2009), and medical English in Iran (Mazdayasna & Tahririan, 2008). Translation is sometimes viewed as helping students gain a deeper understanding of the form

and content of a text, as well as helping them acquire cultural and linguistic knowledge in some educational contexts (Fernández Guerra, 2014).

The need for translation skills in this study is in contrast with much of the second language pedagogical literature, which points out many limitations of the use of translation in language classes even in the Thai context. For example, Kaewpet (2009a) in discussing Thai universities, advised ESP teachers not to teach students to translate the English textbooks they read into Thai as because in the Thai work context they are expected to be able to comprehend, rather than translate the books.

The demand for translation in the academic context in this study might be explained by other research in this area in similar traditional education systems. It has been recognised that translation can be useful in terms of verifying the students' comprehension of second language texts, including vocabulary, main ideas, specific details, and textual organisation (Atai & Fatahi-Majd, 2014; Lim & Christianson, 2013; Mahmoud, 2006). Avand's (2009) study showed that translation can promote reading comprehension of ESP Iranian learners by helping them to acquire the ability to use the various components of the target language system of the target language and activate the grammatical forms in their native language. In contrast to broader studies in more general second language teaching contexts, translation in ESP contexts has been recognised as an important activity and as a useful task for ESP students in more traditional teaching contexts (e.g. Avand, 2009; Faiza, 2010; Saz et al., 2015; Tudor, 1987). This explanation seems likely to be the reason for the need at Agriculture University because it was one of the main activities in the academic context mentioned by all of the sampled students, the former students, and the subject teachers.

7.3.2 The most needed English language skills in the occupational context

Unlike the academic context where reading and translation skills were perceived to be the most necessary language skills for the ESP students, the employers and former students in the occupational context highlighted the students' needs for wider vocabulary, both domain-specific vocabulary terms as well as words for daily use. Even though they felt that the students also needed other skills, they particularly stressed vocabulary for the different tasks and activities needed in particular departments of the food industry.

The study also showed that a wide range of skills was needed in the occupational context because of the different kinds of English used frequently in different workplaces. Employers and former students in the departments of research and development and quality control and assurance used English more often than those in production departments, so they required a wider range of all English language skills in their contact with international customers. For example, they had to write product description e-mails to their customers, or negotiate with customers about acceptable product specifications. However, in the production department, the students needed vocabulary the most because of the use of English technical terms on the various production lines. Therefore, the skills that the students needed in the occupational contexts are driven by the perception of the relevance of English language skills to their work contexts (Kavanagh & Drennan, 2008).

The prioritisation of English language skills due to their usefulness or need has also appeared in other Thai ESP research. These studies include the speaking skills needed for Thai industrial tourism employees (Prachanant, 2012), writing and speaking for Thai public relations officers in hotels (Srabua, 2007), speaking and writing for Thai officers at international companies (Preechawat, 2010), and speaking, reading, and writing for Thai engineers (Kaewpet, 2009a).

Speaking for communicative purposes in the occupational context of food science and technology workplaces was also regarded as a need for everyday work. For example, in the research and development department one of the sampled students interviews revealed that speaking skills were needed in order to contact international visitors to describe products and processes. Similarly, the findings from one interview with the employers in a production department revealed that English communication was needed for contacting customers and senior managers to describe processes, products, the scope of jobs, and instrument specifications.

The importance of the communicative speaking activities in the occupational contexts in this study are similar to the findings in other workplace contexts in Thailand, where face-to-face speaking tasks are seen as the most commonly-required successfully activities (Prachanant, 2012). These included basic language functions for everyday use (such as greetings and introductions), as well as ESP, such as “describing product specifications,” “describing processes,” “giving instructions, directions, giving reasons,” “negotiating with customers,” and “reading business forms (such as order forms and quality control forms).”

The wide range of speaking activities in the occupational context suggested that the students need content knowledge of a wide area of English, including English for science and technology (EST), focusing on the food science and technology content, academic English (EAP), general English (GE), and general business English (BE). The findings of the study concerning the integration of many areas of English is supported by some other recent ESP research. For example, engineering students need engineering content, as well as communication in daily conversational English and business English (Hyun Hyo, 2013). These findings question the classification and separation of English needs in ESP occupational contexts from the English needed in academic contexts (Basturkmen, 2010; Hutchinson &

Waters, 1987). It appears from this study that there is a great deal of overlap of ESP-related and general English.

In conclusion, the students needed integrated English language skills in both the academic and occupational contexts. They also needed the content knowledge of a wide area of English, including English for science and technology, focusing on food science and technology content, academic English, general English, and general business English.

7.3.3 Needs for the environmental situations of the ESP programme

The study found that some needs of the students and employers were related to environmental situations, which included classroom culture, learner factors, the ESP teachers, and the status of the ESP programme. The students felt that they needed more English resources to support their learning. The interviews with the sampled students showed that they perceived that the university did not support them with effective English learning tools, either in terms of software (such as the English computer programmes) or hardware (such as a well-equipped English laboratory) and native English speaking teachers. This apparent lack of available resources for supporting their English needs could be due to the fact that the Agriculture University is a small university whose rural campus is likely to have a limited budget, funded by the main campus and the government.

Other needs included the learning environments which should be available for ESP teaching and learning. In the occupational context of the study, one of the employers suggested that the university use the pilot plant available for learning English, for example, through the use of signposts and machine instructions in English. This suggestion indicated that the employers needed students to be well prepared to use English in real situations before they interned in the food industry. These findings highlighted the importance of environmental situations in supporting the language needs of the students and employers.

7.3.4 Discrepancies in the participants' perceptions of the students' needs

This study showed that the ESP teachers' perceptions of the students' needs did not necessarily match those of the other participants. The study found discrepancies in the perceptions of the needs for English language skills between the ESP teachers and the other participants in many areas. The ESP teachers perceived that grammar and vocabulary were the most needed skills for the students because they thought that these skills caused their students' major problems. They therefore focused on grammar and vocabulary and taught them as discrete skills.

The ESP teachers perceived that the main focus should be on teaching grammar, which is similar to many traditional approaches to teaching English as a foreign language programmes. For example, Zhang (2009) claimed that the knowledge of grammar and vocabulary is a fundamental aspect of English as a foreign language, as students that lack a knowledge of grammar seem to be unable to expand their linguistic competence. However, not all ESP teachers in other international studies share this strong focus on grammar and vocabulary. For example, a needs analysis study by Adzmi et al. (2009) in Malaysia showed that the ESP teachers perceived reading as the most important skill to be acquired by their students and that therefore, the focus for their ESP course was reading.

The discrepancy between the ESP teachers' perceptions and those of all other participants was also seen in the interviews in both the academic and occupational contexts. The data indicated that English skills should be taught in an integrated way, focusing on the specific communicative purposes of the ESP contexts. For example, the interviews with the subject teachers revealed that they felt students needed to have knowledge of the vocabulary in their area to read English articles and to translate them effectively. In addition, the interviews with the former students and employers in the occupational contexts revealed that they required domain-specific vocabulary integrated with speaking, as discussed earlier. However, in

contrast, the interviews with the ESP teachers stressed the students' need to learn grammar. A discrepancy between the students' perceptions of their needs and the ESP teachers' perceptions was also found in other international ESP contexts, such as in Taiwan (Liu et al., 2011; Ming-chu & Hung-chun, 2009).

There are a number of reasons why the ESP teachers may hold these perceptions about their students' language needs as revealed in this study. First, the ESP teachers had a master's degree in teaching English to speakers of other languages (TESOL) from Thai universities and had been teaching general English before teaching ESP, and they said that they felt unsure about the differences between general English and ESP teaching. In this study, the ESP teachers revealed that they taught English skills in a discrete way and they selected reading passages about general science for their students. Secondly, they were all novice ESP teachers with only one year's experience teaching in the ESP programme for food science and technology students. Accordingly, they did not have many relationships with the stakeholders in either the wider academic or occupational contexts, which could have helped them realise their ESP students' needs (Tatzl, 2013). The findings from the ESP teachers also indicated that their TESOL training did not prepare them in any way for ESP teaching.

The findings showed that the English language skills, which the students, the former students, the subject teachers, and the employers saw as needs, were based on their knowledge of the target situations in the occupational contexts. These objective needs did not seem to be part of the ESP teachers' background knowledge. These findings highlighted the importance of carrying out needs analysis in ESP contexts (e.g. Bojovic, 2006; Monika, 2012) so that content and teaching methods can be designed accordingly. In addition, this study highlighted the role of the ESP teachers as an important factor in the environmental situations (H) according to the Dudley-Evans and St. John's (1998) needs analysis model.

7.3.5 How the students changed their perceptions of their needs

The ESP programme comprises ESP1 and ESP2 courses that run continuously over an eight-month period. The perceptions of the needs and difficulties of the students may change as they learn more about their expectations of the programme and their immediate needs, as mentioned by many ESP scholars (Lowe, 2009; Robinson, 1991). Therefore, the possible changes in the perceptions over time led to the fourth research question focusing on how the students' needs and difficulties varied according to their stages of study in the ESP programme. It is important to know about these changes in order to plan for the ESP1 and ESP2 courses.

The data were collected through the students' questionnaires at the beginning of each phase (weeks 4 to 5) and the sampled students were interviewed during ESP1 (week 8) in phase one and ESP2 (weeks 6 to 8) in phase two (see Chapter 3). Therefore, the findings from each phase represented a snapshot of the needs and difficulties at the time of the data collection in order to obtain in-depth information about any changes that might have occurred. Changes in the students' perceptions of their needs regarding their English language skills in phase two could help a course developer design an appropriate ESP2 course that would be relevant to the students' on-going needs.

The study found three different patterns in the students' perceptions of their needs in the two phases: no change, an increase in needs, and a decrease in needs. First, the result of the *t*-test implied that most students did not change the extent of their needs for the majority of skills in phase two. This can be seen from the results from the students' responses to the English Language Needs Questionnaire showing no significant difference in needs during the two phases. Most of the students still needed listening, speaking, reading, vocabulary, and grammar to the same extent between the two phases. For example, the students said that they still needed reading for textbooks, writing examination answers, technical terms, English grammatical

structures for food science and technology, and language functions for describing processes and procedures at the same level. The students continued to need the identified skills for these types of functions and activities.

The consistency of the on-going needs for many language skills might be explained by the fact that these skills were used by the students all the time in the target situations in both phases, and they still felt that their proficiency was inadequate. Unlike other ESP studies such as those of Kaewpet (2009b), Faiza (2010) and (Hyun Hyo, 2013), which considered only one phase of needs analysis, the present study highlighted the on-going needs and consistency of the students' needs related to all of the factors of the needs analysis model, particularly professional information about the learners (A), language information about the target situations (C), the learners' lacks (D), and the environmental situations (H). This highlighted the importance of knowing the students' needs during different phases when designing an on-going programme.

The second pattern was an increase in language needs in phase two for some students. This can be seen from the results of the English Language Needs Questionnaire from both phases. For example, all of the sampled students explained in phase two that they increased their need for reading because they had to read research articles in their major subjects. The study also revealed that the students that already had interned at a food factory before phase two expressed an increase in particular needs. For instance, in the interview with one sampled student it was revealed that his need for speaking increased in a wide range of situations after his internship programme, as he realised what he would need in the future workplace. The interviews with some sampled students also revealed that they perceived that they had previously learnt vocabulary that was not useful to their professional areas and so they needed vocabulary in their ESP2 course that was relevant to their major study and professional areas, such as words and phrases for lab directions, food processing, and names of machines in food

factories. Another student said that she increased her rating for the need to write business letters in phase two because this was a more immediate need.

For many of the students their increase in needs was due to an increased awareness of their language skills and what they needed in order to succeed. This finding supported the work of Kassim and Ali (2010) and Faiza (2010), who argued that the needs for English language skills correspond to the tasks and activities that students use. The majority of the students in this study had a greater awareness of the importance of the ESP programme during phase two and understood that they needed more practice with specific aspects of English. For example, in an interview with a sampled student in phase two her reason for increasing her most needed skill from speaking in phase one to reading in phase two was because she said that as she understood more about language learning processes, she realised that she needed more reading and vocabulary. This also highlighted the importance of professional information about learners (A), a factor in the needs analysis model.

In addition, the results from the Questionnaire on Language Difficulties in phase two showed that more students stated that they realised that the ESP programme was important, and needed to improve their English. Although some of the students' more positive attitudes toward English did not seem to affect their levels of English proficiency, as shown in some studies (Khamkhien, 2010b; Rifai, 2010), the current study supports the work of Lightbown (2013) and Murray (2011), who indicated that positive attitudes were associated with a greater willingness to continue to learn. On the basis of triangulating of the questionnaire data with information from the students' interviews, the present study assumed that the students had more positive attitudes and increased awareness of their language learning influenced the increase in the students' needs.

In contrast, the last pattern was a decrease in the students' needs between phase one and phase two in some specific areas. The results of the students' English Language Needs Questionnaire showed significant decreases in their needs in some areas. The majority of the students felt that writing emails and business letters, receiving spoken instructions or advice, pronunciation practice, reading signs, and notices in a laboratory were less needed in phase two. Further, the interview of the sampled students in phase two showed that none of them mentioned any need for grammar, but they said that they needed translation and speaking for communicative purposes in the occupational contexts in an integrated way.

As expected, the study found that many factors that seemed to impact the increase in the students' needs also influenced the students' reported decrease in their needs. The opportunities to use the language in the target situation decreased the students' needs in some areas. For example, the interviews in both phases with the sampled students that had participated in the internship programme showed these changes. One sampled student had rated every language skill as the most needed in phase one, but later decreased her ratings in phase two for some language skills as a "moderate need" because she believed that she had enough experience from the internship programme and did not need to study these language skills anymore. It is also possible that these students decreased their needs in some areas because they did not use these skills in the target situations. Therefore, the environmental situations (H) in the needs analysis model were important.

For those sampled students that showed more negative attitudes towards English in phase two than in phase one, there was a decrease in needs too. For example, a number of sampled students seemed to be more interested in their major subjects than English during phase two, possibly due to its lack of relevance to their major subjects. This decreased their interest in learning English, which seemed to influence the decrease in their areas of need in phase two when they were asked to rate the English language skills they needed. This finding

supports the work of Harmer (2007), who found that students' more negative attitudes could decrease their interest in studying and likewise their perceived needs.

In conclusion, the study revealed three main patterns in the students' needs over the two phases of the study: no change, an increase, and a decrease. These patterns were influenced by all of the factors of the needs analysis model, but particularly professional information about the learners (A), language information about the target situations (C), the learners' lacks (D), and the environmental situations (H).

The following table summarises the main English language skills needed by different stakeholders in the academic and occupational contexts, and where relevant in the different phases of the study.

Table 7.2 Summary of the main English language skills needed by stakeholders in the academic and occupational contexts

Participants	Skills Needed	Activities/Tasks
Students	Reading	- textbooks, examination [*] - textbooks, research articles, news ^{**}
	Translation ^{***}	
	Vocabulary	- domain-specific terms in food science and technology ^{***} - vocabulary used in everyday life ^{***}
	Speaking and listening	- listening to teachers ^{***} - giving presentations ^{**} - speaking for communication for everyday work ^{**} - negotiating with customers about product specifications ^{**} - describing job scope, instruments specifications ^{**} - giving instructions ^{**}
	Writing	- writing examination answers ^{***}
	Grammar and language functions	- grammar structures used in science [*] - describing processes and procedures [*]
Former students	Reading and writing	- reading textbooks, research articles, news, business documents, signs, rules, notices in a laboratory - writing emails for product descriptions and business - job application letters
	Translation	

	Vocabulary	- domain-specific terms in food science and technology - vocabulary used in everyday life
	Speaking and listening	- listening to teachers - giving presentations - speaking for communicative purposes for everyday work - negotiating with customers about product specifications - describing job scope, instruments specifications - giving instructions
ESP teachers	Grammar	- sentence structures and language functions used in science
	Vocabulary	- words used in science
Subject teachers	Reading	- textbooks, research articles
	Translation	- domain-specific terms in food science and technology
	Vocabulary	
Employers	Reading and writing	(especially in the departments of research and development, and quality control and assurance) - reading textbooks, research articles, news, business documents, signs, rules, notices in a laboratory - writing emails for product descriptions and business
	Vocabulary	(especially in the production department) - domain-specific terms in food science and technology
	Speaking and listening	(especially in the departments of research and development, and quality control and assurance) - speaking for communication for everyday work - negotiating with customers about product specifications - describing job scope, instruments specifications - giving instructions

* Phase one

** Phase two

*** Phase one and phase two

7.3.6 The discrepancy between students' needs and their difficulties

As expected, the students' perceptions of their needs very often were related to their perceived difficulties. This finding supports other needs analysis findings (e.g. Al-Tamimi & Shuib, 2010; Mazdayasna & Tahririan, 2008). For example in this study, the findings from the students' English Language Needs Questionnaire, the Questionnaire on Language Difficulties,

and interviews revealed that most of the students had similar difficulties and needs in particular areas, such as listening to presentations and discussions, pronunciation, and reading textbooks (see 7.2.1).

However, an unexpected finding of this study was that the English language skills that the students needed were not always the same as what they perceived they had difficulty with. The finding from the students' Questionnaire on Language Difficulties and sampled students interviews in the two phases showed that most students perceived that grammar was their weakest skill. However, the finding from the students' English Language Needs Questionnaire revealed that most of them stated that they needed speaking, listening, reading, and vocabulary, and not grammar. The reason for this seemed to be because their goal for studying in the ESP programme, particularly in phase two, was to pass the tests and the ESP teachers reinforced this by focusing on teaching grammar. However, when asked about their needs during phase two, the sampled students revealed different needs in the academic and occupational contexts that were not the same as what they perceived to be difficult. They revealed a more urgent need for competency in speaking, listening, and reading skills for communicative purposes due to their immediate needs at that particular time. The students' perceptions of their needs in this case related to the factors of the needs analysis model: professional information about the learners (A) and environmental situations (H). The findings regarding the immediate needs of the students in this study support the views of Johns (2015), who highlighted the need for a balance between subjective needs and objective needs in ESP courses.

Another explanation is that such mismatches between the students' difficulties and their needs may be attributed to "the students' self-knowledge, awareness of target situations, life goals, and instructional expectations" (Belcher, 2006, p. 136). This means that the students' needs are affected by their understanding of themselves and their ability, their understanding of the target situations, and life expectations and learning purposes, which changed during their

two phases of the study. These seemed to be factors related to personal information about the learners (B) in the needs analysis model.

7.4 Chapter Summary

This chapter discusses the students' difficulties and needs regarding their English language skills in the ESP programme from all relevant participants in the academic and occupational contexts. The study showed that although the students were divided into three groups of proficiency levels based on their test scores on the TOEIC test and the Scientific English Grammatical Structures Test, all three groups had low levels of English on the two standardised tests.

The findings for Research Question 1 showed that students had difficulties in all English language skills and most of them had low levels of English proficiency in the two phases. The study found that the students' difficulties related to the English language skills that they frequently used in the academic and the occupational contexts. The study highlighted the importance of triangulation of data because some discrepancies between the students' responses about their perceptions of their English difficulties were found from some different data sources.

In addition, the study discussed some possible reasons for the students' difficulties. The study showed that the students' difficulties in speaking and listening might be caused by a lack of pronunciation practice, limited opportunities of practising speaking and listening and interacting with native speakers and authentic materials, and a state of dissonance from Thai educational culture. Although reading was the students' most frequent activity in the academic context, they felt that they still had difficulties in this skill, which might be caused by their lack of prior knowledge around the content area. Regarding writing, the students were unable to transfer and integrate their knowledge of other language skills to complete their writing tasks.

This might be from a lack of relevance and connection between reading and writing tasks. The study also showed that the students had limited learning strategies to learn vocabulary and their lack of vocabulary knowledge affected all skill areas and the productive use of English language. Additionally, the students' difficulties in grammar and language functions might be caused by their lack of understanding of grammatical structures and language functions, and they did not get any corrective feedback about these issues from the ESP programme. In addition, the study also found some discrepancies between grammar taught in the ESP programme and grammar used in the academic and occupational contexts. The students' difficulties in English skills were linked to the three factors of the needs analysis model used in this study. These factors are the English language information about the learners (C), the learners' lacks (D), and the environmental situations (H).

The findings for research questions 2 and 3 showed that all of the English language skills were needed in both the academic and occupational contexts. Reading and translation were considered as the most needed skills in the academic context, and speaking and listening for communication were needed in the occupational context. These findings showed that the students needed integrated skills, as they were frequently used in both contexts. The students' needs refer to the objective needs that fulfil their ability to complete the tasks and activities, as required in the academic or occupational context. The study also found a need for learning resources and environments which would support ESP teaching and learning, and increase the opportunities for learning in terms of the programme's environmental situation(s).

Interestingly, this study found discrepancies among the perceptions of the need for English language skills between the ESP teachers and all of the other participants. In this study, the ESP teaching focused on teaching English language skills as discrete skills, particularly vocabulary and grammar, whereas other participants said that they needed integrated skills. The ESP teachers' perceptions of their needs impacted their ESP teaching. This finding

highlighted the importance of the ESP teachers as a part of the environmental situations (H) in the needs analysis model of this study.

In addition, the study found some discrepancies between the students' responses concerning their perceptions of their needs and difficulties. Their perceptions fit into the professional information about the learners (A), the personal information about the learners (B), and the environmental situations (H), factors in the needs analysis model. Additionally, the study elaborated the perceptions of the students' difficulties and those of the former students, the subject teachers, and the employers. One explanation for the discrepancies found that the perceptions of the subject teachers and the employers related the students' difficulties to the activities and tasks in the situations that they usually engaged in. This finding is related to the professional information about the learners (A) in the needs analysis model. The discrepancies in the findings of this study highlighted the need to have the triangulation of a wide range of data collection when conducting a needs analysis in order to gain a deep and wide range of perspectives (Johns, 2013; Long, 2005).

The findings for Research Question 4 revealed three trends in the changes of the students' perceptions of their needs in the two phases: no change, an increase in needs, and a decrease in need. The consistency of needs for many language skills might be explained that the students used these skills all the time in the academic and occupational contexts in both phases. Additionally, the students perceived that their proficiency in these skills was inadequate. The increase in needs of some particular skills was found, which might be related to the students' awareness of their language skills and what they needed to succeed in the target situations. The decrease in the students' needs in some specific skills might be because the students might not use these skills in phase two and some of them had negative attitudes towards English, which might decrease their interests in studying and likewise their perceived needs.

The chapter discussed some possible reasons for the changes of the students' needs over the two phases, which were related to all of the factors in the needs analysis model of this study. These factors included professional information about the learners (A), personal information about the learners (B), English language information about the learners (C), learners' lacks (D), language learning information (E), professional communication information (F), learners' needs from course (G), and environmental situations (H). As this ESP study conducted an on-going needs analysis process (Basturkmen, 2010; Dudley-Evans & St. John, 1998), changes in the students' perceptions of their perceived needs could be seen over the two phases. The findings pointed to the importance of an on-going needs analysis as participants' perceptions changed over time, and the emergent needs and perceived needs can be identified at different times in the programme to help with the course design.

The findings of this study showed that the current ESP programme did not address many of the students' difficulties or needs regarding their English language skills in either the academic or occupational context. The recommendations for teaching the ESP programme will be presented in the next chapter.

CHAPTER 8

SUMMARY AND CONCLUSIONS

8.1 Introduction

There is a high demand for English language competency in the food science and technology industry and therefore for university programmes to provide these skills for students wanting to work in this area. English for specific purposes (ESP) courses for food science and technology need to be based on the real-world language used in this area to meet these demands. The content of ESP courses at the university level should be informed by an understanding of the language needed by the students and relevant stakeholders in various areas of the food industry.

This chapter contains a summary of the study, followed by research contributions. Recommendations from the study are also provided, and then the limitations are addressed.

8.2 Summary of the Study

The present study aimed to explore the English language needs of food science and technology undergraduates in the ESP programme at Agriculture University in Thailand. The study was conducted because a needs analysis had never been carried out for this programme and due to the need for relevant English language skills for the students in the programme. Additionally, as a teacher in the programme, the researcher of the study saw that the ESP programme at the university had not been updated in over ten years, and that the generic content of the textbook reflects little of the Thai context or the language needs of the food industry. Furthermore, the

researcher observed that many students still had major difficulties when they used English and many of them were still at beginner levels of English language proficiency based on their TOEIC scores. Consequently, the research design of the study was based on a pragmatist paradigm and entailed an exploratory case study and mixed-methods approach to understanding the context. To do so, the needs analysis model of Dudley-Evans and St. John (1998) was adopted to frame the data collection and analysis. Four research questions were answered using the triangulation of data from multiple sources, providing a range of participants' perceptions within the academic and occupational contexts.

The key findings of Research Question 1 related to the students' current difficulties with the English language in their academic and occupational contexts. The students' difficulties were seen to be linked with three factors in the needs analysis model, particularly language information about the learners (C), learners' lacks (D), and environmental situations (H). The key findings are summarised as follows:

- The majority of the students perceived that they had difficulty with all English skills. They perceived that vocabulary difficulty affected their difficulties with other English language skills. Their vocabulary difficulties seemed to be due to their limited vocabulary learning strategies.
- According to the perceptions of all stakeholders in the academic context, the students had difficulties in reading and translation.
- Based on the perceptions of all stakeholders in the occupational contexts, the students had difficulties in speaking, listening, vocabulary, reading, and writing.
- The students' listening and speaking difficulties were related to their pronunciation difficulties, their limited opportunities to use English, and Thai

social and cultural expectations.

- The students' reading difficulties were due to a lack of prior knowledge of food science and technology and because of the knowledge of ESP teachers in this content area.
- The students' difficulties in grammar and language functions were seen to be from a lack of knowledge in these areas, the discrepancies between the grammatical structures and language functions taught in the ESP programme and the occupational contexts, and a lack of corrective feedback from the ESP teachers.

The key findings of Research Question 2 were related to the students' need for English language skills in the academic context and of Research Question 3 with the students' needs in the occupational contexts. The students' needs were linked to three factors of the needs analysis model: professional information about the learners (A), personal information about the learners (B), and environmental situations (H). The key findings are summarised as follows:

- According to the perceptions of all stakeholders in the academic context, reading and translation were the most needed skills.
- Based on the perceptions of all stakeholders in the occupational contexts, speaking and use of vocabulary were considered to be the most needed skills.
- The perceptions of the needs by all stakeholders depended on the tasks and activities they were using in their contexts.
- The students' perceptions of their needs were related to their immediate needs and the tasks and activities in which they were using English in the target

situations, not their difficulties.

- Some discrepancies in the students' needs were found between the majority of the stakeholders in the academic and occupational contexts and the ESP teachers.

The key findings of Research Question 4 were concerned with changes in the students' needs regarding their English language skills during the different stages of the ESP programme. The study found that the students' changes in their needs were linked to the eight factors in the needs analysis model. The key findings are summarised as follows:

- Three patterns in the perceptions of the students' needs were found: no change, an increase in needs, and a decrease in needs. These changes depended on factors such as the demands in the target situations, the students' awareness of their learning targets, and the environmental situations.
- An on-going needs analysis enabled the changing perceptions of the students to be identified.

Based on these findings and the discussion in the previous chapter, this study contributes to knowledge in the ESP area related to food science and technology. The next section describes the research contributions of the study.

8.3 Research Contributions

In general, the present study adds to Johns' (2013) future period of ESP research development and Johns and Salmani's (2015) future focus in ESP studies and therefore contributes to the ESP research field. Johns (2013) pointed out that ESP research should include three directions: the researcher's roles, the perceptions of different stakeholders, and various methodologies and triangulation. The first direction relates to the need for multiple roles of ESP researchers and

in this study, the researcher could be seen to act as a conduit and collaborator between the research, students, and other participants in terms of understanding their contexts and needs. The researcher also provided recommendations for course design in order to guide Agriculture University in revising its current ESP programme in the food science and technology area in order to meet the needs of the stakeholders and the real world situations.

The second direction that Johns (2013) believes is needed for ESP research is related to the use of varied methodologies and triangulation. In this study, the researcher employed multiple data sources and methods to add to the trustworthiness and dependability of the study. The study contributes to the knowledge of ESP research in the area of needs analysis, as many previous needs analysis studies have employed only one data source and method. For example, the needs analysis conducted by Al-Tamimi and Shuib (2010) used only a questionnaire to survey the students' needs in engineering, and although the needs analysis study by Spence and Liu (2013) employed a questionnaire and semi-structured interviews, the participants were only engineers.

Johns (2013) and Johns and Salmani (2015) also have called for further focus of ESP research which is carried out in varied locales. This study can be seen to add to the "locale" of ESP research as it is the first study of needs analysis in the food science and technology area both in Thailand and internationally, that provides insights into the need for English in both the academic and occupational contexts. Furthermore, the study adds to knowledge from previous needs analyses that have been conducted in other applied science areas, such as engineering. For example, Al-Tamimi and Shuib (2010) showed that speaking and listening were necessary in the academic context of engineering, and Spence and Liu (2013) found that engineers frequently used writing, reading, and oral communication skills in the occupational context.

Thus, the present study can fill in some of the missing gaps from other needs analysis studies in integrating the perceptions of stakeholders in different contexts.

The following sections discuss in greater detail the research contributions in four areas:

1) knowledge of the ESP branches required for food science and technology at Agriculture University; 2) knowledge of needs analysis as an on-going process within course development; 3) knowledge of using and adapting a needs analysis model; and 4) knowledge of the importance of multiple stakeholders and data sources for a needs analysis.

8.3.1 Knowledge of the ESP branches required for food science and technology at Agriculture University

The study provides knowledge of the English language skills needed for food science and technology students at Agriculture University. The study showed that English language skills should be taught in an integrated way and encompass four ESP branches, as shown in Figure 8.1. The four branches are English for occupational purposes, focusing on food science and technology content (e.g. describing products and processes, negotiating with customers, and making presentations); English for academic purposes (e.g. reading research articles, writing examinations, and translation); business English (e.g. writing emails, business letters, and job application letters); and general English (e.g. speaking for communication for everyday life).

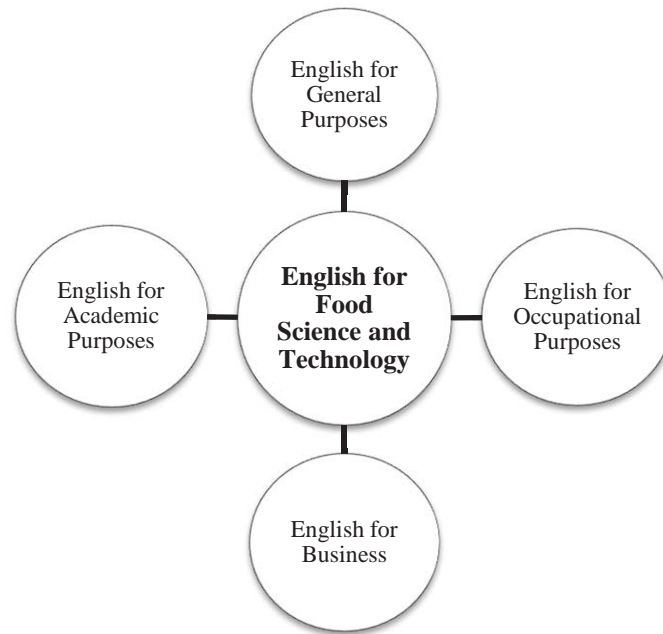


Figure 8.1 ESP branches of English for students in food science and technology

The incorporation of the four ESP branches for the food science and technology students added to the knowledge of ESP classifications and characteristics. Hutchinson and Waters (1987) classified English for science and technology into two main branches, English for academic purposes and English for occupational purposes, and presented them in a tree model. Although their classification initially seemed to match the contexts of the current study, the findings from the triangulation of the multiple sources of data revealed that the integration of four ESP branches of English were more suitable. In addition, the four branches of ESP reflect Basturkmen's (2003) view of ESP characteristics. She pointed out that ESP must relate to the needs of the language that learners will use in their work or study. In this study, the four branches of ESP related to the language used in the real world of the food science and technology context.

The needs to incorporate four branches of English into English for science and technology could be for three main reasons. Firstly, the content focusing on food science and technology and roles of the English language have expanded greatly since 1987 and Hutchison

and Waters' (1987) classification. Secondly, the world is becoming globalized as a result of massively-increased trade, networking, and economics and science and technology (Jiajing, 2007; Mauranen, 2009; Valle, Onate, & Lopez, 2007) and so a wider classification of ESP is needed. Thirdly, universities have increasingly focused on the specific area of food science and technology, which is an important sector in terms of the development of Thailand. For example, there are 85 food science and technology programmes offered for undergraduate students in Thailand (Office of the Higher Education Commission, 2009). Therefore, a wider classification of the areas needed for food science and technology is needed.

The study also expands Kaewpet's (2009a) needs analysis, which found that a wide range of ESP branches is needed in Thailand. Kaewpet's work focused on English for engineering students and found that they needed engineering English, business English, and academic English. A study of Taiwan also found that various ESP branches should be incorporated into an ESP course for science students (Spence & Liu, 2013). Spence and Liu's study revealed that the students also needed general English for communicative events, including writing, reading, oral skills, and relationship building skills as well as academic and content English. This integration of a variety of ESP skills was also found in other ESP needs analyses of non-native English speakers (e.g. Al-Tamimi & Shuib, 2010; Kassim & Ali, 2010; Vaghari & Shuib, 2013). However, these studies revealed only the skills required, but did not link these skills to branches of ESP in their models.

Although the study showed that an ESP programme for food science and technology should include the four ESP branches, these ESP branches are not currently taught in the ESP programme at Agriculture University. The current ESP programme focuses only on English for general science and the content is not related to the food science and technology discipline. Therefore, the need to incorporate the ESP branches revealed in this study is important

information for the ESP teachers and course design at Agriculture University and possibly other ESP course developers in similar contexts in Thailand and internationally. Recommendations for changes to the ESP programme at Agriculture University are provided later in this chapter.

8.3.2 Knowledge of needs analysis as an on-going process within course development

The study revealed insights into an on-going needs analysis in two areas: the aim, and practical methodology. Firstly, the present study provided greater insight into the aims of an on-going needs analysis. Unlike Dudley-Evans and St. John (1998), who believed that an on-going needs analysis is interchangeable with course evaluation if the process of analysis aims to revise or modify an existing course, this study defined an on-going needs analysis differently. An on-going needs analysis means the analysis of needs conducted at various stages of a course (Ahour & Mohseni, 2015; Lowe, 2009). Thus, the aims of an on-going needs analysis are seen to address the needs at a specific time, and to identify changes in perceptions about the needs over different periods of time. The context of the present study needed an on-going needs analysis in order to address the students' competencies, problems, as well as the needs of a wider academic and occupational community and environmental factors in a particular ESP area at two specific times.

Consequently, the study revealed three trends of changes in the students' perceptions of their need for English language skills over the two phases. This was supported by Lowe (2009) and Robinson (1991), who indicated that an on-going needs analysis can be conducted at any stage of a course because the perceptions of the stakeholders may change due to their perceptions of their goals of learning and their immediate needs in terms of functioning in the target situations. As a result, a course might need to change in order to adapt to new environments and needs (Alfehaid, 2011).

Secondly, the study provided insights into the practical use of an on-going needs analysis as a part of course development. Other studies have suggested that an on-going needs analysis might be conducted at various stages of an ESP course to adjust and redesign existing ESP courses and to address the needs of students and stakeholders at different times (Lowe, 2009; Mohammadi & Mousavi, 2013); however, they failed to describe the process and time frame for this in their research. Thus, this study provides an example framework within this particular ESP context.

The idea of a two-phase on-going needs analysis could be useful for other ESP programmes in Thai universities because the Ministry of Education has assigned the universities to run ESP programmes comprising two ESP courses (Office of the National Education Commission, 1999).

8.3.3 Knowledge of using and adapting a needs analysis model

This study adds to the knowledge from other studies that have used the Dudley-Evans and St. John's (1998) needs analysis model. They pointed out that at least two factors in a needs analysis model should be used to guide the decisions for the course. However, this study covers eight factors for the analysis and adds to this area of knowledge by proposing some adaptations to the model. During the data analysis phase, the researcher found some factors that overlapped, particularly the learners' factors. This overlapping made the data analysis time-consuming and difficult to interpret.

Consequently, the researcher redesigned the needs analysis model, but still covered all of the main factors of the Dudley-Evans and St. John's (1998) needs analysis. This redesigned model grouped all of the factors related to the learners together in order to show the vital relationship of the learners with all of the other factors in the needs analysis. The model adds new perspectives to other previous needs analysis studies (e.g. Basturkmen, 2006, 2010;

Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987). These studies emphasized the importance of investigating learners' needs but did not locate the learners centrally in their needs analysis process and model.

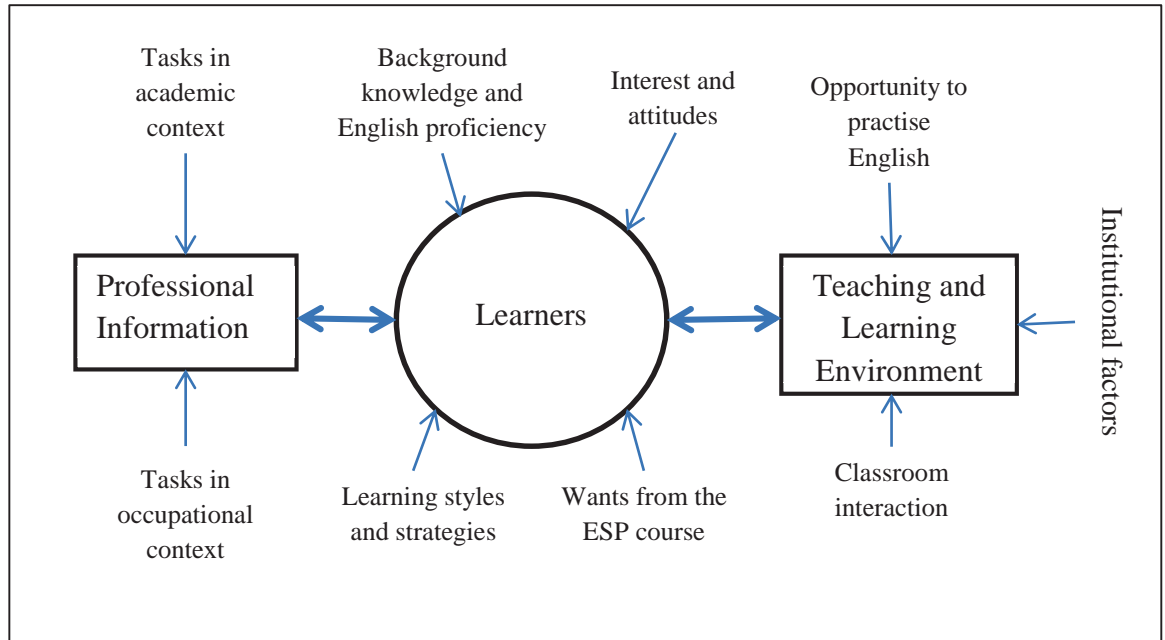


Figure 8.2 *The redesigned needs analysis model for an ESP programme*

As shown in Figure 8.2, the redesigned needs analysis model comprises three main factors: the learners, professional information, and environmental situations. Each of the three factors has a number of related areas. The learners' factors in the redesigned model still cover the main learners' factors of Dudley-Evans and St. John's (1998) needs analysis model: professional information about the learners, English language information about the learners, the learners' lacks, language learning information, professional communication information about the learners when they use English skills in the target situations, and what is wanted from the course. However, the study revealed that these five factors overlapped, and the redesigned model was less time-consuming, simpler for data analysis and the interpretive phase, and had three main factors that covered all of the factors of an ESP needs analysis.

The redesigned model places the learner factors in the centre, focusing on four areas: a) the learners' background knowledge and proficiency with English language skills, b) the learners' interests and attitudes, c) the learners' learning styles and strategies, and d) the learners' wants from the course. The students' interests and attitudes are also included in the redesigned model because the present study found that the students' interests and attitudes influenced the changes in their perceptions of their needs. Unlike the learners' factors of Basturkmen's (2010) needs analysis, these four areas of learners' factors provide a wider scope and are seen to cover three approaches of needs analysis: present situation analysis, pedagogic needs analysis, and learning needs analysis.

The analysis of the learners' background knowledge and English proficiency, and the learners' wants from the ESP course in the redesigned model, cover two needs analysis approaches: present situation analysis and pedagogic needs analysis, as used in other needs analysis models (Hutchinson & Waters, 1987; Lowe, 2009). These approaches help to identify the learners' present knowledge of English, their deficiencies or lacks in using English, and their needs (Lowe, 2009). In addition, the analysis of the learners' interests and attitudes, and the learners' learning styles and strategies in the redesigned model cover the learning needs analysis approach as defined in other needs analysis models (Bidabadi & Yamat, 2010; Cohen & Macaro, 2007). Identifying learners' interests, attitudes, and learning styles and strategies helps ESP researchers select suitable resources and strategies to help their learners improve their perception, storage, and retention of language information retrieval (Cohen & Macaro, 2007) and develop more positive learning strategies as better language learners (Horwitz, 2012).

The second major factor of the redesigned needs analysis model is professional information, because the study showed that this area influenced the students' perceptions of their needs and the changes of their needs in all target situations. The professional information

from the target situations involved the perceptions of the participants in both academic and occupational contexts in terms of addressing the learners' language use in authentic situations. The analysis of both of these contexts is similar to target situation analysis, register analysis, discourse analysis, and genre analysis as defined in other needs analysis models (Bhatia, 2002b; Dudley-Evans & St. John, 1998; West, 1994). Although previous studies focused on a wide range of specialised occupational contexts (Hyun Hyo, 2013; Mohammadi & Mousavi, 2013; Phaisuwan, 2006; Piwong, 2011) and some were conducted in academic contexts (Rostami & Zafarghandi, 2014; Shing & Sim, 2011; Wang & Bakken, 2004; Zohoorian, 2015), they failed to investigate the needs in both academic and occupational contexts. Consequently, the professional information about the learners in the redesigned model focuses on the tasks and activities in both target contexts and provides more comprehensive insights than the Dudley-Evans and St. John's (1998) needs analysis model.

The other major factor in the redesigned model is the teaching and learning environment, which included three areas: the opportunity to practise English, classroom interaction, and institutional factors. The teaching and learning and learning environment of the redesigned model expand the environmental situations in the Dudley-Evans and St. John's (1998) needs analysis model, which only related to the situations in which the course was delivered. The three aspects related to the teaching and learning environment in the redesigned model were similar to a means analysis approach (Basturkmen, 2010) and were found to influence the students' needs, difficulties, and changes in the perceptions of their needs in this study. The study argues that institutional factors, which include policy and learning spaces, might also impact the learners' interests in learning in the ESP programme. The limitation of the learners' interaction and opportunities in using English were also included in the environmental situations, which supports Ellis (2015), who sees the importance of the perceptions and interactions of the learners in relation to their language acquisition. Thus, it is important for

ESP researchers, course designers, and teachers to include the teaching and learning environment in their needs analysis in order to understand the context of their teaching or research sites.

In short, the redesigned model of the study enables insight into the needs in both academic and occupational contexts has the potential to reveal gaps between the perceptions of needs from a wide range of participants in the two contexts.

8.3.4 Knowledge of the importance of multiple stakeholders and data sources for needs analysis

The study provided insight into the triangulation of many data sources in conducting an on-going needs analysis. Based on the pragmatist belief that knowledge is created from the interactions among individual people and the artefacts in their environment (Schuh & Barab, 2008), it is important to include a wide range of relevant stakeholders in an on-going needs analysis. The multiple perspectives from different stakeholders means that the needs analysis not only focused on ESP classroom practices and the perceptions of the ESP students, but also offered insights into the use of English in the real world situations in both the academic and occupational contexts during the study.

The study argued that having data from multiple participants contributes to a systematic and rigorous needs analysis and helps with the in-depth understanding of the multiple factors that affect the students' needs in the research context. The triangulation of data from the same source via different mixed method sources validated the data obtained and led to greater trustworthiness (Unluer, 2012). In addition, some recent ESP researchers, such as Serafini, Lake, and Long (2015) and Vaghari and Shuib (2013), have indicated that a lack of triangulation is a gap in many needs analysis studies. In triangulating the perceptions from various data-collection methods and of various stakeholders, the students' actual language

difficulties in the academic and occupational contexts can be clarified and this can guide the design of ESP courses.

In this study, five main data sources and three data-collection methods were included. The main data sources were learners (food science and technology students), ex-students (former students), employers, ESP teachers, and people working or studying in the field (subject teachers). The data-collection methods were questionnaires, interviews, and standardised assessment. As a result, the needs analysis of this present study provided more complete insight into the real world situations than some other previous needs analysis studies. Additionally, the triangulations of sources supported other needs analysis researchers, such as Eslami (2010) and Hyun Hyo (2013), who believe that teachers may not always be the best people to determine their students' needs and difficulties.

The contributions of the study are valuable and useful for ESP programmes at Agriculture University and possibly other Thai and international universities. These contributions can be applied in any appropriate places which have similar contexts. Recommendations from the study are provided in the next section.

8.4 Recommendations from the Study

The recommendations of the present study concern two main areas. First, recommendations for supporting the ESP programme at Agriculture University, and secondly recommendations and implications for future research.

8.4.1 Recommendations for supporting the ESP programme at Agriculture University

The main purpose of this needs analysis was to improve the ESP programmes at Agriculture University and to make relevant recommendations for change. Accordingly, redesigned ESP courses should correspond with the English needed in both academic and occupational

situations. The following sections provide some recommendations about how to adapt the ESP programme to meet the needs of the stakeholders, and also how to support ESP teachers.

8.4.1.1 Recommendations for teaching the ESP programme

Based on the findings from the needs analysis, a number of recommendations are made. Table 8.1 compares the current ESP teaching with the recommended ESP teaching approaches for the two ESP courses. The main changes are in four areas: approaches to content, focus on teaching, approaches to language teaching, and environmental situations.

Table 8.1 *Current ESP teaching and recommended ESP teaching based on the needs analysis*

Aspects	Current ESP Teaching	Recommended ESP Teaching	
		ESP 1	ESP 2
Approaches to content	<ul style="list-style-type: none"> • General science 	<ul style="list-style-type: none"> • Content relates to tasks and activities in the academic context of food science and technology 	<ul style="list-style-type: none"> • Content relates to tasks and activities in the occupational contexts in the three main departments in food factories • Tasks and activities related to business English • Tasks and activities related to English for general purposes and communication in everyday life
Focus for teaching	<ul style="list-style-type: none"> • Focus on reading and grammar 	<p>Focus on integrated skills, including:</p> <ul style="list-style-type: none"> • Focus on reading research papers and translation • Include vocabulary related to food science and technology • Include writing summaries and making presentations • Teach grammatical structures used in the sciences focusing on the main complex sentences in the academic context of food science and technology • Control linguistic errors while writing 	<p>Focus on integrated skills including:</p> <ul style="list-style-type: none"> • Focus on speaking and listening for communication in authentic situations • Include vocabulary related to food science and technology • Teach and guide various strategies to practise pronunciation of vocabulary related to food science and technology • Write different genres and in different contexts • Teach grammatical structures used in sciences, language functions related to business English, and English for everyday life

Aspects	Current ESP Teaching	Recommended ESP Teaching	
		ESP 1	ESP 2
Approaches to teaching	<ul style="list-style-type: none"> • Teacher-centred instruction • No feedback for listening, speaking, or writing activities • Limited interaction and communication between students and ESP teachers 	<ul style="list-style-type: none"> • Student-centred instruction • Provide feedback to students in all learning areas • Provide opportunity for interaction and communication between students and ESP teachers 	
Environmental situations	<ul style="list-style-type: none"> • Limited opportunities to use authentic materials • Limited opportunities to practise English outside English classes 	<ul style="list-style-type: none"> • Provide a variety of authentic materials, for example from websites, Facebook, and YouTube • Provide environments for learning English, for example through authentic tasks 	

8.4.1.1.1 Approaches to content

The first recommendation relates to the approaches to content in the ESP programme. According to the findings of the study, because of the changing situations in food science and technology and for students to succeed in their future careers, the four ESP branches of English need to be incorporated into the ESP courses in this discipline.

The university should have a policy for programme planning and management to support the ESP teachers to adapt the ESP programme by integrating the language and content areas. This approach focuses on the language appropriate to the activities and content relevant and useful in the food science and technology area (Arnó-Macià & Mancho-Barés, 2015). Other ESP researchers, such as Baker (2012) and Khamkhien (2010a), also highlighted the importance of relevant content for Thai students in ESP contexts. They believed that relevant content might solve Thai students' difficulties with the transfer of their English language skills to ESP contexts.

Therefore, ESP teachers should adapt and simplify the food science and technology content to suit the students' English proficiency level (Liew & Khor, 2014) and also their interests (Murray, 2011), as the findings of the present study showed that the students had low levels of English proficiency and lacked interest in studying in the ESP programme. Thus, focusing on a wide range of relevant tasks and skills (Tarnopolsky, 2013) would be suitable for this programme. This might help the ESP teachers with their students' language difficulties by increasing their English proficiency through meeting their needs in authentic situations, as well as using students' prior knowledge in particular areas and increasing their interest in learning in the ESP programme.

Since the ESP programme includes two ESP courses, the integration of the four branches of ESP for food science and technology is necessary in the approaches to content.

First, the perceptions of the needs of former students, subject teachers, and current students should be used to redesign the ESP1 course. The study showed that for ESP1 course the students needed to mostly use and understand the English language in academic contexts. The ESP1 course content, then, should focus on English for academic purposes.

In the same vein, for redesigning the ESP2 course, the perceptions of the needs of former students, the sampled students that had interned in the internships, and employers in the occupational context should be included. Many ESP researchers (e.g. Basturkmen, 2010; Belcher, 2006; Jocaitė & Petruševičius, 2006) have noted that the occupational contexts in ESP courses are important, and this study also suggested that an analysis of the activities and tasks in the occupational context should drive the needs for the ESP2 course. For example, the ESP teachers should provide students with opportunities for language learning through the presentation of natural language in authentic-like contexts in the food industry which professionals really use. The ESP2 course content should focus on the English needs in the occupational contexts in food factories based on three main departments: production, quality control/quality assurance, and research and development.

Like the academic and occupational content in the ESP1 and ESP2 courses, the content of the ESP2 course should include some tasks and activities for students that are related to business English and that are relevant to each department in a food factory. These tasks need to involve describing specifications and processes, giving instructions, giving directions, giving reasons, negotiating with customers, and reading and filling business forms. Additionally, the language functions for general purpose English in everyday communication content should be included in the ESP2 course, for example, greetings, introducing people in a party, and socialising. In this way, all four branches of English, which were revealed in the study to be needed, can be covered by the content of the ESP programme.

8.4.1.1.2 Focus for teaching

The second recommendation deals with the focus on teaching language skills in the ESP programme for food science and technology students. The study showed that the traditional language teaching approaches of the current ESP programme at Agriculture University have focused mainly on teaching reading and grammar as separate skills. However, an integrated-skills approach, where reading, listening and speaking, and writing are integrated together (Oxford, 2001), is needed. Research has also shown that English teaching that focuses on integrated tasks and activities used in authentic situations can improve students' English proficiency and language acquisition (Su, 2007).

Specifically, the ESP1 course should focus on covering the important English language areas needed in academic contexts. The ESP teaching should integrate all English language skills but also prioritise improving the students' reading abilities, provide opportunities for them to practise translation, and increase their knowledge of technical vocabulary related to the food science and technology area. This may help them achieve greater comprehension while they are reading, a major requirement for their academic majors. The inclusion of the comprehension and translation in major subject readings by the students could also lead to the widening of the ESP teachers' occupational knowledge, and also enhance closer cooperation between the ESP teachers and the subject teachers and other parts of the food industry (Tatzl, 2013) through the use of technical texts. Additionally, the ESP teachers should teach the students to improve their pronunciation in order to improve their spoken language.

Furthermore, an introduction to the organisation of a research paper should be included in an integrated ESP1 course. This will help students learn to read research effectively, a skill that is recommended by the stakeholders in the academic context. The teaching might include an introduction to the organisation of research articles, including the abstract, introduction,

methodology, results, discussion, and conclusion. Further activities might integrate other skills and tasks. For example, in writing a summary, the ESP teachers might ask the students to read a research article, where the students can learn some domain-specific vocabulary related to the food science and technology area. Further, the ESP programme should cover listening tasks using a variety of academic lectures and international conferences related to a research article. In this way, the students could listen to an aural text (e.g. presentation, video, etc.) using similar vocabulary and structures.

In addition, the ESP1 course should include writing summaries and making presentations because they were found to be necessary in the academic context. The ESP1 course should provide a summary writing task after the reading and listening tasks. This might encourage the students to learn and strengthen the link between the students' prior knowledge and writing skills (Hirvela, 2004). Further, the ESP1 course should provide the students with the opportunity to practise making presentations in various situations. Importantly, the presentation tasks should be related to the previous reading, writing, and listening tasks. For example, the ESP1 course could include a presentation from a research paper, a summary of a lecture, or a summary of a discussion or an academic presentation.

Additionally, the study found that the students had insufficient knowledge of grammar and language functions and needed to use this knowledge in an integrated way in both the academic and occupational contexts. Consequently, this suggests that teaching grammatical structures to serve relevant communicative purposes (Ismail, 2010) is very important in ESP courses. According to the findings of this study, the teaching in the ESP1 course should encourage the practice of the three main complex sentence structures that are commonly used in scientific English texts (complementation, relativization, and comparison), as the students

had difficulties with these structures. This focus could make the students see the relevance of the grammar and language functions they are learning.

To support this language focus, many other ESP studies of the occupational context have pointed out that it benefits Thais to have good grammar and language ability, and these have also been found to be of primary importance when recruiting new staff members in most international and regional organisations in Asian countries (Bupphanhasamai, 2012; Chanseawrassamee, 2012; Rajprasit, 2015). However, the study revealed that the students at Agriculture University do not typically receive any corrective feedback on their grammar or language production, and so they had issues with transferring their knowledge of grammar to authentic occupational situations. In order to solve these problems and to meet the needs in the occupational context, the ESP2 course should teach the grammatical structures used in the sciences and language functions related to business English (e.g. writing e-mails, product descriptions, etc.), and English for everyday life (e.g. greeting, talking to colleagues, etc.).

Building on the ESP1 course, the ESP2 course should also teach integrated skills. Specifically, the course should focus on speaking and listening for communication in authentic situations in the three departments of the food industry. For example the students could practise listening to product descriptions and processes, and present these to the class. The students should learn vocabulary through reading various manuals, instructions, and product descriptions. Teaching the pronunciation and language functions used in the three departments should also be included in the ESP2 course.

As discussed previously, research in ESP contexts (e.g. Hyun Hyo, 2013; Mazdayasna & Tahririan, 2008) has suggested that the ESP courses being taught in many countries at the university level are often inadequate in terms of preparing students to use English competently in the occupational context, especially in writing. The study showed that the students' difficulty

in writing was often related to their different ways of learning and interacting with each other and with their previous experience, which is supported by Hyland (2013). ESP teachers should encourage their students to engage in a complex and diverse range of writing genres, contexts, and practices. At Agriculture University, the ESP teachers should also teach their students to monitor their linguistic errors and organisation when they are writing (Ming-chu & Hung-chun, 2009) as this was often an issue.

8.4.1.1.3 Approaches to language teaching

This study revealed that the current ESP teaching instruction at Agriculture University is teacher-centred where ESP teachers dominate the teaching. Teachers that believe in teacher-centred instruction mainly focus on the delivery of content (Baeten, Struyven, & Dochy, 2013), and believe that they are solely responsible for organising their class activities (Garrett, 2008). These approaches were also found in the current ESP teaching at Agriculture University. For example, the study found that speaking in the current ESP class was unidirectional from the teachers, without students' input and without any feedback from the teachers to the students.

However, although ESP teachers have powerful roles to play in deciding the students' needs and influencing teaching in the ESP programme (Edge, 2009), they should not be the only ones to determine these needs because the programme should be taught to meet the needs of all the stakeholders and take into account the literature that has included other ESP needs analyses (Adzmi et al., 2009; Akyel & Ozek, 2010; Eslami, 2010; Hyun Hyo, 2013). Importantly, ESP teachers should employ student-centred approaches to teaching in the classroom so that all students are encouraged to be part of the classroom activities and learning process (Garrett, 2008). The ESP teachers should ensure that all students have the opportunity to participate in learning activities equally. To do this, the ESP teachers should create a friendly and relaxed atmosphere inside the classroom where students feel comfortable and ready to

contribute their knowledge according to their ability. This type of atmosphere might diminish the students' hesitation in speaking English in class and help them to be more involved in their learning (Faiza, 2010; Khamkhien, 2010b; Prachanant, 2012). In a student-centred approach, ESP teachers should provide a variety of activities, such as, teaching speaking and listening through pair/group work tasks for information gaps, discussions, and role plays; whole class activities for drills, drama, debates, choral reading; and individual tasks for listening and viewing and responding (Goh & Burns, 2012).

Additionally, the study also found that the students in this study had limited learning strategies for learning vocabulary. In this case, the ESP teachers should teach or guide their students to apply more strategies to learning vocabulary in a student-centred way (Kocaman, 2014). For example, the ESP teachers could encourage the students to take notes on new words by themselves, share and discuss these with friends, and brainstorm ideas with the class about how to use the new words in a sentence. The teachers may also provide a cross-word vocabulary exercise where the students can do the exercises alone, in pairs, or in groups, and make the vocabulary relevant to their reading, writing, listening, and speaking tasks.

As for the grammar and language functions that are needed by the students, the ESP teachers need to teach grammar in a more student-centred way. In order to do this, the ESP teacher should consider the students' individual differences, such as cultural expectations regarding grammar instruction, their language background level of target language proficiency, and the students' readiness to learn (Larsen-Freeman, 2009). The ESP teachers should teach functional grammar based on the real needs of the perceived needs and objective needs in order to motivate the students to learn more on their own. For example, to teach grammar in a student-centred way, the ESP teachers could explain how to use grammar structures and brainstorm with the class about how to use these structures in sentences. The ESP teachers should correct

the mistakes that the students make and encourage them to correct on their own, or ask the class to help them, and integrate this with communication skills.

The major change in the language teaching approaches for the ESP programme at Agriculture University would therefore be from a teacher-centred approach to a student-centred approach. This would be challenging for the ESP teachers in this study because they are novice teachers and need to be flexible and able to change their teaching approaches. However, the study suggests ways in which ESP teachers should move toward more student-centred instruction in order to meet their students' needs and provide appropriate teaching and learning opportunities.

8.4.1.1.4 Environmental situations

The study recommends improving the environmental situations of the ESP teaching at Agriculture University in two areas: authenticity and opportunity. The authenticity in this study was defined by Gilmore (2007, p. 98), as “the real language produced by a real native speaker of English, and designed to convey a real message.” The study showed that Agriculture University has a limited budget supplied by the government and the main campus in providing authenticity for ESP teaching and learning. Consequently, the study provides some possible recommendations to the university because the idea of hiring native speakers of English as teachers and renovating the language laboratory are beyond the scope of the university.

One suggestion for increasing authenticity is through the use of online English resources. These resources offer an efficient way to enrich students' needs in their language learning processes. For example, the students will gain more language proficiency when they learn the language from multimedia resources (Deepika & Kalaiarasan, 2012).

The word “opportunity” in this study was used to mean the opportunity to encounter authentic materials. The study found that most students were weak at listening and speaking

skills and that they needed more opportunities to practise these skills. Fortunately, the Internet can be accessed from all areas of the university. One suggestion is for the ESP teachers to provide opportunities for students to practise listening and speaking about relevant topics from websites, such as <http://www.foodprocessing.com>, which gathers information from food and beverage manufacturers, and <http://www.ift.org/>, which collects information about food science and its application internationally. The ESP teachers can search any free and available websites that will help students practise speaking and pronunciation, such as the business English pod at <https://www.youtube.com/user/bizpod>.

Many different technologies can be used in the ESP courses—from CD players to mobile technologies, 3D virtual environments, and online tools such as Skype or Facebook (Donesch-Jezo & Misztal, 2012; Kern, 2013). The opportunities provided by technology in the ESP class might also greatly increase the interest of the students in learning and in being interested in the ESP programme. For example, the ESP teachers might ask the students to upload their speaking tasks via Facebook, and then the teachers and students can discuss and give feedback in the classroom. Another suggestion is having interviews with the students individually via Skype. This might help students that are shy to speak English in class and decrease their fear of the loss of face when speaking out in their English classes, which has been found to be a cause of students' speaking difficulties in many Thai contexts (Faiza, 2010; Khamkhien, 2010b).

In addition, the stakeholders, particularly employers, can also support the need for the university to prepare the students' English skills for their future work with more opportunities and authentic situations. The stakeholders suggested that Agriculture University should create more real-life communication contexts at the university. The study found that the employers needed the university to provide more work-like learning environments. An inexpensive and realistic way to create an English learning environment at the existing university pilot plant (a small food industrial system at the university) is to hang posting signs, instructions, and have

manuals written in English in order to imitate an actual food factory as at present they were all written in Thai only. The students could also have some of the ESP2 activities at this pilot plant so that they are more authentic.

8.4.1.2 Recommendations for supporting the ESP teachers

The study found that ESP teachers are an important and powerful factor in the ESP classroom because of their influence and roles in teaching and learning (Akkakoson, 2012; Eryilmaz, 2014; Peiser & Jones, 2014). The ESP teachers in this study were novice and teaching in the recommended ESP programme will be a challenging task for them. Consequently, a teacher development programme is highly recommended for these teachers. As Kirkpatrick (2007) stated, well-trained teachers can best teach today's learners of English, so the current study strongly recommends that Agriculture University support the ESP teachers in their ESP professional development.

The university should, first, help the ESP teachers attend workshops and conferences about ESP teaching for the 21st century classroom concerning how to integrate content into ESP teaching and using student-centred approaches. The ESP teachers need to match the content, the students' prior knowledge, and level of proficiency. With the knowledge gained from professional learning, the ESP teachers could more easily apply this knowledge to the recommended changes through integrating content and teaching ESP in a student-centered way.

Furthermore, the university should support the ESP teachers in terms of visiting and observing other student-centred, integrated ESP teaching of food science and technology students at other universities. In addition, the university should encourage the ESP teachers to work collaboratively with the subject teachers in the content areas. Such collaboration with subject teachers can lead to an increase in the ESP teachers' knowledge of domain-specific

vocabulary and the content area. The university should provide a budget for the ESP teachers so that they can accompany the subject teachers on visits to food factories where they can get more knowledge and find out the needs for the English language from the employers. The perceptions of the employers will help the ESP teachers explore the real occupational situations of using English in the food industry area.

The university should also support the ESP teachers in using technology to design their own ESP teaching resources and in implementing technology in their ESP classes. This is important for ESP teaching in this digital era. For example, Donesch-Jezo and Misztal, 2012; Kern, 2013, have acknowledged that ESP teachers should integrate technology into their courses because technology plays a vital role in learners' everyday professional lives. This means that the ESP teachers need digital and electronic literacy skills in using different media to teach integrated communication skills. The ESP teachers can apply their new knowledge to integrating the content areas in their ESP classes, and also help to increase the status of ESP at the university (Kaewpet, 2009a; Tatzl, 2013).

In conclusion, the study suggests many changes in the ESP teaching at Agriculture University. It can be seen that these changes might be difficult because it might take time for these two ESP teachers to become well-trained, qualified ESP teachers, and it might be expensive to support them. However, if the administrators at the university want to improve the ESP teaching and outcomes for students, these recommendations for changes are vital.

8.4.2 Recommendations and implications for future research

Two areas of future research can be derived from this case study, one for Agriculture University and the other one for a wider research context.

8.4.2.1 Future research at Agriculture University

A major outcome of this study is providing recommendations for redesigning and developing an appropriate ESP course for Agriculture University. However, there are also areas for future research related to the ESP programme once it has been redesigned, for example, assessing the students' English competency based on the new objectives of the redesigned courses, and evaluating the course. Also, it would be interesting to investigate the perceptions of all the relevant stakeholders after the students have studied in the newly-redesigned ESP programme.

Furthermore, it would be possible to trial the redesigned needs analysis model of this study in order to explore the needs of students in other disciplines at Agriculture University. For example, biotechnology, agro-forestry, plant production, and animal production, because they have never had a needs analysis for their ESP programmes. Future research might begin with a similar needs analysis survey of the English language tasks and activities in the academic contexts of these disciplines from former students, current students, and subject teachers and relevant other stakeholders. Another area of research might also be an analysis of the textbooks used by the different subject teachers in order to identify the discourse and corpora in that particular area, which could be included in the content of a new course. By using the needs analysis approach devised in this study, other disciplines at Agriculture University could also discover more relevant teaching and content approaches for their students.

8.4.2.2 Future research regarding other ESP contexts

Future research studies could be carried out in broader food science areas, and further studies in the wider ESP contexts outside Agriculture University within Thailand. It would be interesting to investigate the language needs in other sectors of the food science and technology industry, such as the beverage, fermented food, poultry processing, dairy products, and frozen food industries. These sectors are also considered to be very important for the Thai food

industry and economy (Chinda, 2012; Sriwichailamphan, 2007). A future study might be conducted using a survey of multinational food companies on the tasks and activities related to their use of English. The study could include higher numbers of employers in order to expand the knowledge of the language used in the real-life context in wider food science and technology areas. This could be used as a guideline for students and teachers regarding the vocabulary, language functions, grammar, writing genres, and spoken English needed in their study and work related to English language in a particular area.

Additionally, a corpus analysis of food science and technology might be examined as a basis for the development of teaching materials in this area. Future research might be done by defining exactly what determines whether a word is domain-specific and how many domain-specific words are found in textbooks. Research might also explore the discourse used in the three main departments of the food industry and the writing genres in the food industry.

Lastly, some specific language areas that were far beyond the scope of the study could be investigated. For example, future study might investigate the specific aspects of pronunciation that the students in the food science and technology have difficulty with. The researcher might compare the students' difficulties in pronunciation with those of the literature of similar ESP studies, such as Cubalit (2014), Liang (2015) and Wei and Zhou (2002).

8.5 Limitations of the Study

This section acknowledges some of the limitations of the present study regarding the collection of the data for the needs analysis and the time spent on the data collection and analysis.

The first limitation concerns the methods for the data collection. As was indicated in Chapter Three, the data were collected at the beginning of the ESP1 and ESP2 courses through questionnaires, tests, and interviews. However, it was not possible to also observe the teaching

and learning during the two ESP classes. If there had been class observation, the researcher could also have observed the students' actual English competencies and interactions in the learning environment. However, the wide range of methods, such as using data from the TOEIC test, having interviews with a range of participants asking about the students' English competencies in all language skills, and triangulating the data from various data collection methods, enabled the researcher to assess the students' English competency through these processes and to capture the teaching and learning environment of the ESP programme. Additionally, employing the triangulation of data revealed discrepancies between the perceptions of the needs for English of the ESP teachers and those of the other participants in the academic and occupational contexts.

Secondly, collecting data using the eight aspects of Dudley-Evans and St. Johns' (1998) model led to a large amount of data, from a wide range of participants, which was very time consuming to analyze. This suggests that it would be very time consuming to reproduce such an ongoing needs analysis in another context at Agriculture University or in different disciplines or contexts. However, the redesigned needs analysis model which emerged from this study and has the learners at the centre, is simpler than the Dudley-Evans and St. John's needs analysis model in terms of analyzing the data. Therefore, the redesigned model can potentially contribute to needs analysis research in other ESP contexts.

8.6 Chapter Summary

This study focused on a discipline area that had not previously been accorded much attention by ESP researchers, food science and technology. This is also an area that has been neglected in the Thai tertiary context, even though the food industry is increasingly important for the Thai economy, and consequently, the ESP programme did not address the students' needs or the expectations of stakeholders in the academic and occupational contexts in the food science and

technology area. The study conducted an on-going needs analysis, and demonstrated its importance as a potential basis for ESP course development and design, following the recommendations of this research.

As the findings have shown, light has been thrown on the key perceptions of all relevant participants in both the academic and occupational contexts concerning the difficulties and needs for English language skills for food science and technology students. This includes the reasons for the students' language difficulties and the factors affecting the changes in their perceived needs for the two ESP courses. The number and nature of the research findings demonstrated the value of the combination of data collection methods and the value of the triangulation of multiple sources of data, which led to a more rigorous needs analysis, and enabled a deeper understanding of the complex needs of ESP stakeholders.

The study contributes to knowledge of the incorporation of the four ESP branches required for studying English in the food science and technology area in this context. The study also contributes to the knowledge surrounding the challenges and opportunities presented by on-going needs analysis as the first step in course development. An outcome of the study was proposing a redesigned needs analysis model (Figure 8.2) by adapting the overlapping factors of Dudley-Evans and St. John's (1998) needs analysis model, which could be used for future needs analysis studies. The findings of this study should be of interest to anyone involved in ESP and course development, particularly in the science and technology areas in Thailand. Most importantly, this research provides recommendations for the redesign of the ESP programme for food science and technology at Agriculture University through the use of this needs analysis.

The following statement reflects the significance of conducting a needs analysis.

“According to the results of needs analysis, decisions can be made in developing or re-developing the course in terms for example of learning objectives, material selection or production, the teaching and learning approach, and evaluation.”

(Jin et al., 2014, p. 117)

REFERENCES

- Adewusi, C. O. (2012). *Designing an English for Specific Purpose syllabus framework for engineering and technology students in polytechnics in south-western Nigeria*. (Doctoral dissertation), University of Ilorin.
- Adzmi, N. A., Bidin, S., Ibrahim, S., & Jusoff, K. (2009). The academic English language needs of industrial design students in UiTM Kedah, Malaysia. *English Language Teaching, 2*(4), 171-178.
- Aguilar, M., & Muñoz, C. (2014). The effect of proficiency on CLIL benefits in engineering students in Spain. *International Journal of Applied Linguistics, 24*(1), 1-18.
- Ahour, T., & Mohseni, F. (2015). Investigating EFL learners' perception of needs: Necessities, wants, and lacks in different language skills taught in general English courses. *Modern Journal of Language Teaching Methods, 5*(1), 236-241.
- Akbarian, I. h. (2010). The relationship between vocabulary size and depth for ESP/EAP learners. *System, 38*(3), 391-401.
- Akkakoson, S. (2012). Raising strategic awareness of thai efl students of science and technology disciplines through metacognitive strategy training. *3L: Southeast Asian Journal of English Language Studies, 18*(4), 35-47.
- Akyel, A. S., & Ozek, Y. (2010). A language needs analysis research at an English medium university in Turkey. *Procedia - Social and Behavioral Sciences, 2*(2), 969-975.

- Al-Khasawneh, F., M.S. (2010). Writing for academic purposes: Problems faced by arab postgraduate students of the college of business, UUM. *ESP World*, 2(28), 1-23.
Retrieved from <http://www.esp-world.info>
- Al-Khasawneh, F., M.S. (2012). Vocabulary learning strategies: A case of jordan university of science and technology. *English for Specific Purposes World*, 12(34), 1-15.
- Al-Mekhlafi, A. M., & Nagaratnam, R. P. (2011). Difficulties in Teaching and Learning Grammar in an EFL Context. *Online Submission*, 4(2), 69-92.
- Al-Tamimi, A. S., & Shuib, M. (2010). Investigating the English language needs of petroelum engineering studetns at Hadhramout University of Science and Technology. *The Asian ESP Journal*, 6(1), 6-34.
- Alfehaid, A. F. T. (2011). *Developing an ESP curriculum for students of health sciences through needs analysis and course evaluation in Saudi Arabia*. (Doctoral dissertation), University of Leicester.
- Alhuqbani, M. N. (2014). Teaching English to Cadets in Police Colleges and Academies in the Cooperation Council for the Arab States of the Gulf: Theory and Practice. *Arab World English Journal*, 5(3), 343-353.
- Aliakbari, M., & Boghayeri, M. (2014). A needs analysis approach to ESP design in Iranian context. *Procedia-Social and Behavioral Sciences*, 98, 175-181.
- Alsamani, A.-A. S., & Daif-Allah, A. S. (2016). Introducing project-based instruction in the Saudi ESP Classroom: A study in Qassim University. *English Language Teaching*, 9(1), 51-64.

- Anderson, N. (2005). L2 learning strategies. In E. Hinkel (Ed.), *Handbook of Research in Second Language Teaching and Learning* (pp. 757-771). New Jersey: Lawrence Erlbaum Associates, Inc. .
- Andrade, M. S. (2006). International students in English-speaking universities: Adjustment factors. *Journal of Research in International Education*, 5(2), 131-154. doi:10.1177/1475240906065589
- Anusienė, L., & Kavaliauskienė, G. (2009). English for specific purposes: Podcasts for listening skills. *Santalka: Filologija, Edukologija*, 17(2), 28-37.
- Arnó-Macià, E., & Mancho-Barés, G. (2015). The role of content and language in content and language integrated learning (CLIL) at university: Challenges and implications for ESP. *English for Specific Purposes*, 37, 63-73.
- Arslan, A., & Coskun, A. (2014). A needs analysis study for the English curriculum of the teaching staff training program in a Turkish university. *Modern Journal of Language Teaching Methods*, 4(1), 283-300.
- Astika, G. (1999). The role of needs analysis in English for Specific Purposes. *TEFLIN Journal*, 10(2). <http://journal.teflin.org/index.php/teflin/article/view/27>
- Atai, M. R., & Fatahi-Majd, M. (2014). Exploring the practices and cognitions of Iranian ELT instructors and subject teachers in teaching EAP reading comprehension. *English for Specific Purposes*, 33, 27-38.
- Avand, A.-Q. (2009). Using translation and reading comprehension of ESP learners. *The Asian ESP Journal*, 5(1), 44-60.

- Babbie, E. R. (2014). *The basics of social research* (6th ed.). Belmont, CA: Wadsworth, Cengage Learning.
- Baeten, M., Struyven, K., & Dochy, F. (2013). Student-centred teaching methods: Can they optimise students' approaches to learning in professional higher education? *Studies in Educational Evaluation*, 39(1), 14-22.
- Bailey, A. L., & Carroll, P. E. (2015). Assessment of English language learners in the era of new academic content standards. *Review of Research in Education*, 39(1), 253-294.
- Baker, W. (2008). A critical examination of ELT in Thailand: The role of cultural awareness. *RELC Journal*, 39(1), 131-146.
- Baker, W. (2009). The cultures of English as a lingua franca. *TESOL Quarterly*, 43(4), 567-592.
- Baker, W. (2012). English as a lingua franca in Thailand: Characterisations and implications. *Englishes in Practice*(1), 18-27.
- Basturkmen, H. (2003). Specificity and ESP course design. *RELC Journal*, 34(1), 48-63.
- Basturkmen, H. (2006). *Ideas and Options in English for Specific Purposes*. New Jersey: Lawrence Erlbaum Associates, Inc.
- Basturkmen, H. (2010). *Developing Course in English for Specific Purposes*. Houndmills, Basingstoke, Hampshire: Palgrave Mcmillan.
- Bautista Barón, M. J. (2013). Building ESP Content-Based Materials to Promote Strategic Reading (Diseño de materiales basados en contenidos para fomentar estrategias de

- lectura en un curso de inglés con propósitos específicos). *PROFILE: Issues in Teachers' Professional Development*, 15(1), 139-169.
- Belcher, D. D. (2006). English for specific purposes: Teaching to perceived needs and imagined futures in worlds of work, study, and everyday Life. *TESOL Quarterly*, 40(1), 133-156.
- Berg, B. L. (2009). *Qualitative research methods for the social sciences* (7th ed.). Boston, MA.: Pearson.
- Berman, R. (2010). English academic language skills: Perceived difficulties by undergraduate and graduate students, and their academic achievement. *Canadian Journal of Applied Linguistics*, 4(1), 25.
- Bhatia, V. K. (2002a). Applied genre analysis: Analytical advances and pedagogical procedures. In A. M. Johns (Ed.), *Genre in the classroom: multiple perspectives* (pp. 279-284). NJ: Lawrence Erlbaum Associates.
- Bhatia, V. K. (2002b). Professional discourse: Towards a multi-dimensional approach and shared practice. In C. Candlin (Ed.), *Research and Practice in Profesional Discourse* (pp. 39-60). Hong Kong: City University of Hong Kong Press.
- Bidabadi, F. S., & Yamat, H. (2010). Learning style preferences by Iranian EFL freshman university students. *Procedia - Social and Behavioral Sciences*, 7, 219-226.
- Bidabadi, F. S., & Yamat, H. (2011). The relationship between listening strategies used by Iranian EFL freshman university students and their listening proficiency levels. *English Language Teaching*, 4(1), 26-32.

- Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Sage Handbook Of Mixed Methods In Social & Behavioral Research* (2nd ed ed., pp. 95-118). Los Angeles: SAGE Publications.
- Bojovic, M. (2006). *Teaching foreign languages for specific purposes: Teacher development*. Paper presented at the The proceedings of the 31st Annual Association of Teacher Education Conference.
- Boonyawanthana, P. (1999). *English for tourism*. Chiangmai, Thailand: Chiangmai University.
- Bosuwon, T., & Woodrow, L. (2009). Developing a problem-based course based on needs analysis to enhance English reading ability of Thai undergraduate students. *RELC Journal*, 40(1), 42-64.
- Bracken, B. A., & Barona, A. (1991). State of the art procedures for translating, validating and using psychoeducational tests in cross-cultural assessment. *School Psychology International*, 12(1-2), 119-132.
- Breakwell, G. (2006). Interview methods. In G. Breakwell, S. Hammond, C. Fife-Schaw, & J. Smith (Eds.), *Research methods in psychology* (3rd ed., pp. 232-253). London: SAGE Publication.
- Brindley, G. (1989). The role of needs analysis in adult ESL programme design. In R. K. Johnson (Ed.), *The second language curriculum* (pp. 63-77). Cambridge: Cambridge University Press.
- Brinton, D. M. (2013). Content-Based Instruction in English for Specific Purposes. *The Encyclopedia of Applied Linguistics*.

- Brown, J. D. (1995). *The elements of language curriculum: A systematic approach to program development*. Boston: Heinle and Heinle.
- Brown, J. D. (2009). Foreign and second language needs analysis. In M. H. Long & C. Doughty (Eds.), *The Handbook of Language Teaching* (pp. 269-293). Chichester, U.K. ; Malden, MA: Wiley-Blackwell.
- Bruce, I. (2009). Results sections in sociology and organic chemistry articles: A genre analysis. *English for Specific Purposes*, 28(2), 105-124.
- Bryman, A. (2012). *Social research methods* (4th ed.). Oxford: Oxford University Press.
- Bupphanhasamai, R. (2012). Demands for English in Thailand: Meeting international, regional, national, and institutional expectations. *E-Journal for Researching Teachers (EJRT)*, 5(1).
- Cenoz, J. (2015). Content-Based Instruction and Content and Language Integrated Learning: The Same or Different? *Language, Culture and Curriculum*, 28(1), 8-24.
- Chaiyai, S. (1982). *Scientific English and Thai students: A study of the comprehensibility of complex structure*. (Doctoral dissertation), Massey University, Palmerston North.
- Chalikandy, M. A. (2013). A Comprehensive Method for Teaching English for Specific Purpose. *Arab World English Journal*, 4(4).
- Chambers, F. (1980). A re-evaluation of needs analysis. *ESP Journal*, 1(1), 25-33.
- Chang, A. M., Chau, J. P. C., & Holroyd, E. (1999). Translation of questionnaires and issues of equivalence. *Journal of Advanced Nursing*, 29(2), 316-322.

- Chanseawrassamee, S. (2012). Teaching adult learners English through a variety of activities: Perception on games and rewards. *US-China Foreign Language*, 10(7), 1355-1374.
- Chapelle, C., & Duff, P. (2003). Some guidelines for conducting quantitative and qualitative research in TESOL. *TESOL Quarterly*, 37(1), 163-168.
- Chen, J., & Intaraprasert, C. (2014). Reading strategies employed by university business English majors with different levels of reading proficiency. *English Language Teaching*, 7(4), 25-37.
- Chiadamrong, N., & Sophonsaritsook, P. (2015). Relationships between supply chain capabilities, competitive advantage and business performance: an exploratory study of the food industry in Thailand. *International Journal of Logistics Systems and Management*, 20(4), 447-479.
- Chinda, T. (2012). A dynamic model of productivity enhancement in the Thai food industry. *Engineering Management Journal*, 24(2), 15-29.
- Chitpupakdi, S. (2014). *A needs analysis of Thai executives' English proficiency: A case study of Carptets International Thailand Limited*. (Unpublished mater's thesis), National Institute of Development Administration, Bangkok, Thailand.
- Chittavitti, C. (2005). *A survey of English language needs of section managers in the office of senior executive vice president-fuel at EGAT Public Company Limited*. (Unpublished master's thesis), King Mongkut's Institute of Technology North Bangkok, Bangkok, Thailand.
- Christensen, B. (2010). *Research, methods, design, and analysis* (10th ed.). Boston, MA: Allyn& Bacon/Pearson.

- Chung, T. M., & Nation, P. (2004). Identifying technical vocabulary. *System*, 32(2), 251-263.
- Cohen, A. D., & Macaro, E. (2007). *Language learning strategies*. Oxford: Oxford University Press.
- Cohen, L. (2011). *Research methods in education* (7th ed.). Abingdon, Oxon ; New York: Routledge.
- Cook, V. (2013). *Second language learning and language teaching*: Routledge.
- Coxhead, A. (2013). Vocabulary and ESP. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes*. West Sussex: John Wiley & Sons, Inc.
- Coyle, D. (2012). Content and language integrated learning: Language using, learning gains. In M. G. Davies (Ed.), *New trends in early foreign language learning* (pp. 26-33). Newcastle upon Tyne: Cambridge Scholars Pub.
- Craig, D. V. (2009). *Action research essentials*. San Francisco, CA: Jossey-Bass.
- Creswell, J. W. (2014). *Research design : qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks: SAGE Publications.
- Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2011). Best practices for mixed methods research in the health sciences. *Bethesda (Maryland): National Institutes of Health*, 2094-2103.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*: SAGE Publications, Inc. .

- Cubalit, A. (2014). *Listening comprehension problems of Thai English learners*. Paper presented at the Communicative English: Research, Pedagogy and Material Development, Bangkok, Thailand.
- Cummins, J. (2008). BICS and CALP: Empirical and theoretical status of the distinction. In B. Street & N. Hornberger (Eds.), *Encyclopedia of language and education: Vo. 2. Literacy* (2nd ed., pp. 71-83). New York: Springer.
- Cunningsworth, A. (1983). Needs analysis—A review of the state of the art. *System*, 11(2), 149-154.
- Darasawang, P. (2007). English language teaching and education in Thailand: A decade of change. In D. Prescott (Ed.), *English in Southeast Asia: Varieties, literacies and literatures* (pp. 187-204). Newcastle, England: Cambridge Scholars Publishing.
- Deepika, V., & Kalaiarasan, M. (2012). The role of language lab in learning English as a second language. *Journal of Technology for ELT*.
- Dehnad, A., Bagherzadeh, R., Bigdeli, S., Hatami, K., & Hosseini, F. (2010). Syllabus revision: a needs analysis study. *Procedia-Social and Behavioral Sciences*, 9, 1307-1312.
- Denscombe, M. (2010). *The good research guide: For small-scale social research projects* (4th ed.). Berkshire, England: Open University Press, McGraw-Hill Education.
- Díaz-Rico, L. T. (2004). *Teaching English Learners : Strategies and Methods*. Boston: Allyn and Bacon.
- Donesch-Jezo, E., & Misztal, I. (2012). Developing an ESP e-learning course: How an e-learning course was created for medical university students. *International Journal of Learning*, 18(8), 317-324.

- Drever, E. (1997). *Using semi-structured interviews in small-scale research:Teacher's guide*. Glasgow: Scottish Council for Research in Education.
- Dudley-Evans, T., & St. John, M. J. (1998). *Developments in English for Specific Purposes*. Cambridge: Cambridge University Press.
- Duff, P. (2008). *Case study reserach in applied linguistics*. New York: Lawrence Erlbaum Associates.
- Eaves, M. (2009). Learning styles technology and supporting overseas learners. *Multicultural Education & Technology Journal*, 3(1), 61-73.
- Edge, J. (2009). *From experience to knowledge in ELT*. Oxford ; New York: Oxford University Press.
- Edwards, N. (2000). Language for business: effective needs assessment, syllabus design and materials preparation in a practical ESP case study. *English for Specific Purposes*, 19(3), 291-296.
- Ellis, R. (2015). *Understanding Second Language Acquisition* (Second edition ed.). UK: Oxford University Press.
- Eryilmaz, A. E. (2014). Perceived personality traits and types of teachers and their relationship to the subjective well-being and academic achievements of adolescents. *Educational Sciences: Theory & Practice*, 14(6), 2049-2062.
- Eslami, Z. R. (2010). Teachers' voice vs. students'voice: A needs analysis approach of English for Academic Purposes (EAP) in Iran. *English Language Teaching*, 3(1), 3-11.

- Evans, S., & Morrison, B. (2011). Meeting the challenges of English-medium higher education: The first-year experience in Hong Kong. *English for Specific Purposes*, 30(3), 198-208.
- Faiza, H. (2010). Conducting a needs analysis for an ESP course design: The case of fourth year students of cellular and molecular biology. *International Journal of the Humanities*, 8(9), 78-97.
- Feak, C. B. (2013). ESP and speaking. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 35-53). West Sussex: John Wiley&Sons, Inc.
- Fernández Guerra, A. B. (2014). The Usefulness of Translation in Foreign Language Learning: Students' Attitudes by Ana B. Fernández-Guerra.
- Fiorito, L. (2005). Teaching English for Specific Purposes (ESP).
- Flowerdew, L. (2013). Needs analysis and curriculum development in ESP. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for specific purposes* (pp. 325-345). Malden, Mass.: Wiley-Blackwell.
- Foley, J. A. (2005). English In...Thailand. *RELC*, 36(2), 223-234.
- Frances, B., & Roland, B. (2003). *Learning needs analysis and evaluation* (2nd ed.). London: Chartered Institute of Personnel and Development.
- Fry, G. W., & Bi, H. (2013). The evolution of educational reform in Thailand: the Thai educational paradox. *Journal of Educational Administration*, 51(3), 290-319.
- Fujiwara, T. (2014). Language learning beliefs of Thai EFL university students: Variations related to achievement levels and subject majors. *Electronic Journal of Foreign Language Teaching*, 11(2), 300-311.

- Gan, Z. (2012). Understanding L2 speaking problems: Implications for ESL curriculum development in a teacher training institution in Hong Kong. *Australian Journal of Teacher Education*, 37(1), 43-59.
- García Mayo, M. d. P. (2000). *English for Specific Purposes. Discourse analysis and course design* Bilbao: Universidad del País Vasco.
- Garrett, T. (2008). Student-centered and teacher-centered classroom management: A case study of three elementary teachers. *Journal of Classroom Interaction*, 43(1), 34-47.
- Gass, J. (2012). Needs analysis and situational analysis: Designing an ESP curriculum for Thai nurses. *English for Specific Purposes World*, 36, 12.
- Gatehouse, K. (2001). Key issues in English for specific purposes (ESP) curriculum development. *The Internet TESL Journal*, 7(10), 1-10.
- Gay, L. R. (2009). *Educational research : competencies for analysis and applications* (9th ed.). Upper Saddle River, N.J.: Merrill/Pearson.
- Getkham, K. (2014). Politeness strategies in Thai graduate research paper discussions: Implications for second/foreign language academic writing. *English Language Teaching*, 7(11), 159-168.
- Gilmore, A. (2007). Authentic materials and authenticity in foreign language learning. *Language Teaching*, 40(02), 97-118.
- Goh, C. C. M. (2013). ESP and listening. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 55-76). West Sussex: John Wiley & Sons, Inc.

- Goh, C. C. M., & Burns, A. (2012). *Teaching Speaking : A Holistic Approach*. New York: Cambridge University Press.
- Graves, K. (1996). A framework of course development processes. In R. Jack (Ed.), *Teachers as course developers* (pp. 12-38). New York: Cambridge University Press.
- Gray, D. E. (2014). *Doing Research In The Real World* (3rd ed ed.). London: Sage.
- Hamada, Y. y. g. a.-u. a. j. (2016). Shadowing: Who benefits and how? Uncovering a booming EFL teaching technique for listening comprehension. *Language Teaching Research*, 20(1), 35-52.
- Harmer, J. (2007). *How to teach English*. Harlow, England: Pearson, Longman.
- Harzing, A.-W. (2009). Rating versus ranking: What is the best way to reduce response and language bias in cross-national research. *International Business Review*, 18(4), 1-31.
- Hashemnezhad, H., & Hashemnezhad, N. (2012). A comparative study of product, process, and post-process approaches in Iranian EFL students' writing skill. *Journal of Language Teaching & Research*, 3(4), 722-729.
- Hazrul Nik Hashim, N. M., Shah Alam, S., & Yusoff, N. M. (2014). Relationship between teacher's personality, monitoring, learning environment, and students' EFL performance. *GEMA Online Journal of Language Studies*, 14(1), 101.
- Heigham, J., & Croker, R. (2009). *Qualitative reserach in applied linguistics: a practical introduction*. Basingstoke: Palgrave Macmillam.
- Hengsadeekul, C., Hengsadeekul, T., Koul, R., & Kaewkuekool, S. (2010). *English as a medium of instruction in Thai universities: A review of literature*. Paper presented at

- the 9th WSEAS International Conference on Education and Educational Technology, Iwate Prefectural University, Japan.
- Hewings, M. (2002). A history of ESP through 'English for Specific Purposes' *ESP World*, 3(1). http://www.esp-world.info/Articles_3/Hewings_paper.htm
- Hinkel, E., Hinkel, E., & Fotos, S. (2002). *New perspectives on grammar teaching in second language classrooms*. Mahwah: Taylor & Francis Inc
- Hirvela, A. (2004). *Connecting reading and writing in second language writing instruction*. Ann Arbor, MI: University of Michigan Press.
- Hirvela, A. (2013). ESP and reading. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 77-94). West Sussex: John Wiley & Sons, Inc.
- Holliday, A. (1994). *Appropriate methodology and social context*. Cambridge ; New York: Cambridge University Press.
- Hood, M. (2009). Case study. In J. Heigham & R. A. Croker (Eds.), *Qualitative research in applied linguistics: A practical introduction* (pp. 66-90). New York: Palgrave Macmillan.
- Horwitz, E. K. (2012). *Becoming a language teacher : a practical guide to second language learning and teaching* (2nd ed ed.). Boston, Mass. ; London: Pearson Education.
- Huang, L.-S. (2010). Seeing Eye to Eye? The Academic Writing Needs of Graduate and Undergraduate Students from Students' and Instructors' Perspectives. *Language Teaching Research*, 14(4), 517-539.

- Huhta, M., Vogt, K., Johnson, E., & Tulkki, H. (2013). *Needs analysis for language course design: A holistic approach to ESP*. Cambridge: Cambridge University Press.
- Hur, J. W., & Suh, S. (2010). The Development, Implementation, and Evaluation of a Summer School for English Language Learners. *Professional Educator, 34*(2).
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes*. Cambridge: Cambridge University Press.
- Hyland, K. (2006). *English for Academic Purposes*. London: Routledge.
- Hyland, K. (2013). ESP and writing. In B. Paltridge & S. Starfield (Eds.), *The Handbook of English for Specific Purposes* (pp. 95-113). Malden, Mass.: Wiley-Blackwell.
- Hyland, K., & Tse, P. (2007). Is there an “academic vocabulary”? *TESOL Quarterly, 41*(2), 235-253.
- Hyun Hyo, K. (2013). Needs Analysis for English for Specific Purpose course Development for Engineering Students in Korea. *International Journal of Multimedia & Ubiquitous Engineering, 8*(6), 279-288.
- İnceçay, G., & İnceçay, V. (2010). A case study on needs assessment of English language teachers. *Procedia - Social and Behavioral Sciences, 2*(2), 317-321.
- ISI Analytics. (2010). *Report on Thailand's food industry*. Retrieved from Bangkok, Thailand:
- Ismail, S. A. A. (2010). ESP students' views of ESL grammar learning. *GEMA Online Journal of Language Studies, 10*(3), 143-156.

- Jasso-Aguilar, R. (2005). Sources, methods and triangulation in needs analysis: A critical perspective in a case study of Waikiki hotel maids. In M. Long (Ed.), *Second language needs analysis*. Cambridge: Cambridge University Press.
- Javid, C. Z., Farooq, M. U., & Umer, M. (2013). An Investigation of Saudi Efl Learners' Writing Problems: A Case Study along Gender-Lines. *Kashmir Journal of Language Research, 16*(1), 179.
- Jiajing, G. (2007). Designing an ESP course for Chinese university students of business. *The Asian ESP Journal, 3*(1), 97-106.
- Jianfeng, W., Qingdong, W., & Shibo, X. (2009, 19-20 Dec. 2009). *Analysis of linguistic features of English for Science and Technology*. Paper presented at the Knowledge Engineering and Software Engineering, 2009. KESE '09. Pacific-Asia Conference on.
- Jie, S., & Cross, J. D. (2014). *An investigation into problems in the writing of conference abstracts by Japanese graduate students*. Paper presented at the Advanced Mechatronic Systems (ICAMEchS), 2014 International Conference on.
- Jin, J., Ying Liu, H., & Zhang, Y. (2014). A Research on students' needs for follow-up curriculum of College English. *Journal of Education and Training Studies, 3*(1), 116-128.
- Jocaitė, R., & Petruševičius, J. (2006). ESP at the university: Analysis of the target situation. *Anglų kalba (dalykas) universitete: Padėties analizė, 81*, 37-41.
- Johns, A. M. (2013). The history of English for specific purposes research. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 5-30). West Sussex: John Wiley&Sons, Inc.

- Johns, A. M. (2015). Balancing “just in case” with “just in time” learning in the teaching of EAP writing, reflecting, and critical thinking. *Journal of Teaching English for Specific and Academic purposes*, 3(1), 1-8.
- Johns, A. M., & Dudley-Evans, T. (1991). English for Specific Purposes: International in scope, specific in purpose. *TESOL Quarterly*, 25(2), 297-314.
- Johns, A. M., & Makalela, L. (2011). Needs analysis, critical ethnography, and context: Perspectives from the client-and the consultant. In D. Belcher, A. M. Johns, & B. Paltridge (Eds.), *New Directions in English for Specific Purposes Research* (pp. 197-221). Ann Arbor: The University of Michigan Press.
- Johns, A. M., & Salmani, N., M.A. (2015). English for Specific Purposes: The state of the art. *International Journal of Language Studies*, 9(2).
- Johns, A. M., & Salmani Nodoushan, M. A. (2015). English for Specific Purposes: The state of the art (An online interview with Ann M. Johns). *International Journal of Language Studies*, 9(2), 113-120.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26.
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of mixed methods research*, 1(2), 112-133.
- Jordan, R. R. (1997). *English for academic purposes: a guide and resource book for teachers*. Cambridge, U.K.; New York, NY: Cambridge University Press.
- Kaewpet, C. (2009a). Communication needs of Thai civil engineering students. *English for Specific Purposes*, 28(4), 266-278.

- Kaewpet, C. (2009b). A Framework for Investigating Learner Needs: Needs Analysis Extended to Curriculum Development. *Electronic Journal of Foreign Language Teaching*, 6(2).
- Kassim, H., & Ali, F. (2010). English communicative events and skills needed at the workplace: Feedback from the industry. *English for Specific Purposes*, 29(3), 168-182.
- Kaufman, R. (1994). A needs assessment audit. *Performance+ Instruction*, 33(2), 14-16.
- Kavaliauskiene, G. (2002). Aspects of learning ESP at university. *ESP World*, 2(2), 1-12.
- Kavaliauskienė, G. (2011). Blended learning in ESP listening *English for Specific Purposes World*(31), 1-9.
- Kavaliauskienė, G., & Užpalienė, D. (2003). Ongoing needs analysis as a factor to successful language learning. *Journal of Language and Learning*, 1(1), 35-50.
- Kavanagh, M. H., & Drennan, L. (2008). What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations. *Accounting & Finance*, 48(2), 279-300.
- Kendeou, P., & van den Broek, P. (2007). The effects of prior knowledge and text structure on comprehension processes during reading of scientific texts. *Memory & cognition*, 35(7), 1567-1577.
- Keown, P. (2009). The tale of two virtual teacher professional development modules. *International research in geographical and environmental education*, 18(4), 295-303.
- Kern, N. (2013). Technology-integrated English for Specific Purposes lesson: Real-life language, tasks, and tools for professionals. In G. Motteram (Ed.), *Innovations in*

- learning technologies for english language teaching* (pp. 89-115). London, UK: British Council.
- Khamkhien, A. (2010a). Factors affecting language learning strategy reported usage by Thai and Vietnamese EFL learners. *Electronic Journal of Foreign Language Teaching*, 7(1), 66-85.
- Khamkhien, A. (2010b). Teaching English speaking and English speaking tests in the Thai context: A reflection from Thai perspective. *English Language Teaching*, 3(1), 184-190.
- Khan, T. M., Ghulamullah M., Mohsin N., Dogar A. H., & Awan, S. S. (2011). Needs analysis of English for Occupational and Specific Purposes. *International Journal of Social Sciences & Education*, 1(4), 632-643.
- Kirkpatrick, A. (2007). *World Englishes paperback with audio CD: Implications for international communication and english language teaching*: Cambridge University Press.
- Kocaman, O. (2014). Developing a scale for vocabulary learning strategies in foreign language. *Education As A Science*, 39(176), 293-303.
- Krockover, G. (1997). Diversity and equity in the classroom. In E. D. Siebert, M. W. Caprio, & C. M. Lyda (Eds.), *Methods of effective teaching and course management for university and college science teachers* (pp. 151-160). Dubuque: Kendall/Hunt Pub.
- Kumar, R. (2011). *Research methodology: A step-by-step guide for beginners* (3rd ed.). London: SAGE Publication Ltd.

- Kusumoto, Y. (2008). Needs analysis: developing a teacher training program for elementary school homeroom teachers in Japan. *Second Language Studies*, 26(2), 1-44.
- Kvale, S. (1996). *The social construction of validity in interview*. Thousand Oaks, CA: Sage.
- Larsen-Freeman, D. (2009). Teaching and testing grammar. In H. L. Michael & J. D. Catherine (Eds.), *The handbook of language teaching* (pp. 518-542). West Sussex, United Kingdom: Wiley-Blackwell.
- Laufer, B., & Nation, P. (1995). Vocabulary size and use: Lexical richness in L2 written production. *Applied Linguistics*, 16(3), 307-322.
- Lee, B. (2010). The pre-university English-educational background of college freshmen in a foreign language program: a tale of diverse private education and English proficiency. *Asia Pacific Education Review*, 11(1), 69-82. doi:10.1007/s12564-010-9079-z
- Liang, D. (2015). Chinese learners' pronunciation problems and listening difficulties in English connected speech. *Asian Social Science*, 11(16), 98.
- Liew, K. L., & Khor, C. P. (2014). ESP at tertiary level: traditional ESP or integrated ESP?
- Lightbown, P. (2013). *How languages are learned* (4th ed.). Oxford: Oxford University Press.
- Likaj, M. (2015). Teaching Listening as a Communicative Skill in Military English. *Journal of Education and Practice*, 6(24), 64-70.
- Likhitphongsathorn, T., & Sappapan, P. (2013). *Study of English code-mixing and code-switching in Thai pop songs*. Paper presented at the FLLT Conference Proceedings by LITU (Language Institute Thammasat University) Issue.

- Lim, J. H., & Christianson, K. (2013). Integrating meaning and structure in L1–L2 and L2–L1 translations. *Second Language Research*, 29(3), 233-256. doi:10.1177/0267658312462019
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, Calif.: Sage Publications.
- Liu, F. (2010). Reading abilities and Strategies: A short introduction. *International Education Studies*, 3(3), 153-157.
- Liu, J.-Y., Chang, Y.-J., Yang, F.-Y., & Sun, Y.-C. (2011). Is what I need what I want? Reconceptualising college students' needs in English courses for general and specific/academic purposes. *Journal of English for Academic Purposes*, 10(4), 271-280.
- Liu, J., & Costanzo, K. (2013). *The relationship among TOEIC listening, reading, speaking, and writing skills*.
- Liu, T.-Y., & Chu, Y.-L. (2010). Using ubiquitous games in an English listening and speaking course: Impact on learning outcomes and motivation. *Computers & Education*, 55(2), 630-643.
- Long, M. H. (Ed.) (2005). *Second language needs analysis*. Cambridge ; New York: Cambridge University Press.
- Lougheed, L. (2010). *Test of English for International Communication*. New Yourk: Library of Congress.
- Lowe, I. (2009). Needs Analysis. Retrieved from <http://www.scientificlanguage.com/esp/needsanalysis.pdf> website:

- Mackey, A., & Gass, S. M. (2013). *Second language research: Methodology and design*. New Jersey: Routledge.
- Mahmoud, A. (2006). *Translation and foreign language reading comprehension: A neglected didactic procedure*. Paper presented at the English Teaching Forum.
- Mahmoud, S. S. (2014). A framework for investigating foundation year students' needs in general English in KAU: needs analysis extended to curriculum development. *Journal of Language Teaching and Research*(2), 335.
- Marshall, C. (2016). *Designing qualitative research* (Sixth edition ed.). California: Thousand Oaks, SAGE Publication.
- Master, P. (2005). Research in English for Specific Purposes. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 99-115). Mahwah, N.J.: L. Erlbaum Associates.
- Mauranen, A. (2009). Introduction. In A. Mauranen & E. Ranta (Eds.), *English as a lingua franca: Studies and findings* (pp. 1-9). Newcastle upon Tyne: Cambridge Scholar Publishing.
- Mazdayasna, G., & Tahririan, M. H. (2008). Developing a profile of the ESP needs of Iranian students: The case of students of nursing and midwifery. *Journal of English for Academic Purposes*, 7(4), 277-289.
- McDonough, J. (2010). English for specific purposes: a survey review of current materials. *ELT Journal: English Language Teachers Journal*, 64(4), 462-477.
- McKay, S. L. (2006). *Researching second language classrooms*. New Jersey: Routledge.

- Mehrdad, A. G. (2012). A subjective needs assessment of EGP students. *Procedia - Social and Behavioral Sciences*, 31, 546-554.
- Merriam, S. B. (1998). *Case study research in education: A qualitative approach*. San Francisco: Jossey-Bass.
- Miller, J. (1997). Case study research in second language teaching. *Queensland journal of Educational Research*, 13, 33-53.
- Ming-chu, L., & Hung-chun, W. (2009). Perception differences of EFL teachers and students in grammar instruction and error correction. *English Teaching & Learning*, 33(1), 101-146.
- Mohamadi, Z. (2013). Program Evaluation on General English Course: A Case Study at Tabriz University. *Journal of Language Teaching & Research*, 4(6), 1285-1297.
- Mohammadi, V., & Mousavi, N. (2013). Analyzing Needs Analysis in ESP: A (re) modeling. *International Research Journal of Applied and Basic Sciences*, 4(5), 1014-1020.
- Monika, J. (2012). Trends in teaching and challenges on an example of specific English language (for gastronomy industry). *Journal of Educational and Instructional Studies in the World*, 2(2), 137-143.
- Morgan, D. L. (2007). Paradigms lost and pragmatism regained methodological implications of combining qualitative and quantitative methods. *Journal of mixed methods research*, 1(1), 48-76.
- Morgan, D. L. (2014). *Integrating qualitative and quantitative methods : a pragmatic approach*. London: SAGE Publications.

- Morrison, G. R. (2007). *Designing effective instruction* (5th ed.). Hoboken, NJ J. Wiley.
- Munby, J. (1978). *Communicative syllabus design*. Cambridge: Cambridge University Press.
- Murray, D. E. (2011). *What English language teachers need to know*. New York: Routledge.
- Myhill, D. A., Jones, S. M., Lines, H., & Watson, A. (2012). Re-thinking grammar: the impact of embedded grammar teaching on students' writing and students' metalinguistic understanding. *Research Papers in Education*, 27(2), 139-166.
- Myles, J. (2009). Oral competency of ESL technical students in workplace internships. *TESL-EJ*, 13(1).
- Nassaji, H., & Fotos, S. (2012). Teaching Grammar in Second Language Classrooms: Integrating Form-Focused Instruction in Communicative Context. *The Electronic Journal for English as a Second Language*, 16(1).
- Nation, P. (1990). *Teaching and Learning Vocabulary*. New York: Newbury House/Harper-Collins.
- Nation, P. (2001). *Learning vocabulary in another language* Cambridge: Cambridge University Press
- Nation, P., & Waring, R. (1997). Vocabulary size, text coverage, and word lists. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy*. Cambridge: Cambridge University Press.
- Neuman, W. L. (2000). *Social research methods: Qualitative and quantitative approach* (4th ed.). Boston: Allyn and Bacon.

- Ngarmsak, T., & H-Kittikun, A. (1995). Agro-Food industries curriculum in Thailand. In Food and Agriculture Organization of the United Nations (Ed.), *Food and agro industries curriculum development in the region* (Vol. 1995/15, pp. 180-191). Bangkok, Thailand: Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific (RAP)
- Nima, S. M., & Jooneghani, R. B. (2012). Needs analysis: ESP perspective on genre. *Journal of Education and Practice*, 3(6), 60-71.
- Nitko, A. J., & Brookhart, S. M. (2007). *Educational assessment of students*. Upper Saddle River, N.J: Pearson Merrill Prentice Hall
- Noom-Ura, S. (2013). English-teaching problems in Thailand and Thai teachers' professional development needs. *English Language Teaching*(11).
- Nowrouzi, S., Shu Sim, T., Zareian, G., & Nimehchisalem, V. (2015). Iranian EFL students' listening comprehension problems. *Theory & Practice in Language Studies*, 5(2), 263-269.
- Nunan, D. (1988). *Syllabus design*. Oxford: Oxford University Press.
- Nunan, D. (2001). Listening in language learning. In J. C. Richards & W. A. Renandya (Eds.), *Methodology in Language Teaching : An Anthology of Current Practice* (pp. 238-241). New York: Cambridge University Press.
- Nunan, S. L. (2005). *Important tasks of English education: Asia-wide and beyond*. *Asian EFL Journal*, 7(3).
- Nunan, D. (2015). *Teaching English to speakers of other languages an introduction*. New York: Routledge, Taylor & Francis Group.

- O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. New York: Cambridge University Press.
- O'Malley, J. M., Chamot, A. U., Stewner-Manzanares, G., Kupper, L., & Russo, R. P. (1985). Learning strategies used by beginning and intermediate ESL students. *Language Learning*, 35(1), 21-46.
- Office of the Higher Education Commission. (2009) Study in Thailand 2008-2009. In O. o. t. H. E. Commission (Series Ed.). Bangkok, Thailand: Office of the Higher Education Commission.
- Office of the National Education Commission. (1999). *National Education Act of B.E. 2542 (1999)*. Bangkok, Thailand.
- Oranpattanachai, P. (2010). Perceived reading strategies used by Thai pre-engineering students. *ABAC Journal*, 30(2).
- Oxford, R. L. (1990). *Language learning strategies : what every teacher should know*. New York: Newbury House Publisher.
- Oxford, R. L. (2001). *Integrated Skills in the ESL/EFL Classroom*. Washington, DC: Center for Applied Linguistics.
- Park, G.-P. (1997). Language learning strategies and english proficiency in Korean university students. *Foreign Language Annals*, 30(2), 211-221.
- Pasand, P. G., & Haghi, E. B. (2013). Process-Product Approach to Writing: the Effect of Model Essays on EFL Learners' Writing Accuracy. *International Journal of Applied Linguistics and English Literature*, 2(1), 75-79.

- Patchanok, K. (2011). Thai EFL students' ability to use the gerund and to-infinitive. *International Journal of the Humanities, 9*(2), 279-289.
- Pattanapichet, F., & Chinokul, S. (2011). Competencies needed in oral communication in English among Thai undergraduate public relations students: A substantial gap between expectations and reality. *RELC Journal, 42*(2), 187-202.
- Peiser, G., & Jones, M. (2014). The influence of teachers' interests, personalities and life experiences in intercultural languages teaching. *Teachers and Teaching: Theory and Practice, 20*(3), 375-390.
- Phaisuwan, C. (2006). *A study of the needs and problems of Segate planners in using English language to establish an ESP course*. (Unpublished master's thesis), Thammasat University, Bangkok, Thailand.
- Phanphai, A. (1990). *A study of technical English courses taught at universities to the needs for English in the Thai construction industry*. (Unpublished master's thesis), Mahidol University, Bangkok, Thailand.
- Phoocharoensil, S., & Simargool, N. (2010). English relativization and learners' problems. *Journal of Pan-Pacific Association of Applied Linguistics, 14*(1), 109-129
- Phutirat, J., & Suwannapatama, M. (2007). *An analysis of problems and needs of English skills for Thai pharmacists in hospitals around the Victory Monument, Bangkok*. (Unpublished master's independent study), Naresuan University, Phitsanulok, Thailand.

- Piribabadi, A., & Rahmany, R. (2014). The Effect of the Keyword Method and Word-list Method Instruction on ESP Vocabulary Learning. *Journal of Language Teaching & Research, 5*(5), 1110-1115.
- Piwong, C. (2011). *Needs analysis: English training course design for Thai sales staff in english bookstores in Bangkok*. (Unpublished master's thesis), Thammasat University, Bangkok, Thailand.
- Popescu, T. (2013). Developing English Linguistics Students' Translation Competence through the Language Learning Process. *Procedia - Social and Behavioral Sciences, 93*, 1075-1079.
- Potaka, L. (2008). Comparability and usability: Key issues in the design of internet forms for New Zealand's 2006 census of population nad dwellings. *Survey Research Methods, 2*(1), 1-10.
- Potaka, L., & Cochrane, S. (2004). Developing bilingual questionnaires: Experiences from New Zealand in the development of the 2001 Maori language survey. *Journal of Official Statistics, 20*(22), 289-300.
- Powell, W. (2001). The capitalist firm in the twenty-first century: Emergig patterns in western enterprise. In P. DiMaggio (Ed.), *The Twenty-First-Century Firm : Changing Economic Organization In International Perspective* (pp. 33-68). Princeton, N.J.: Princeton University Press.
- Prachanant, N. (2012). Needs analysis on English language use in tourism industry. *Procedia - Social and Behavioral Sciences, 66*(0), 117-125. doi:<http://dx.doi.org/10.1016/j.sbspro.2012.11.253>

- Pradhan, A. K. (2013). English for Specific Purposes: Research trends, issues and controversies. *Language in India, 13*(9).
- Prapphal, K. (2008). Issues and trends in language testing and assessment in Thailand. *Language Testing, 25*(1), 127-143.
- Preechawat, T. (2010). *Needs analysis of Thai officers' English language use at an international company*. (Unpublished master's thesis), National Institute of Development Administration, Bangkok, Thailand.
- Puengpipattrakul, W., Chiramanee, N., & Sripetpun, W. (2007). The challenge facing Thai graduates and their potential for English-required workforce. *The Kasetsart Journal: Social Sciences, 28*(2), 288-297.
- Qamar, M. B. (2016). The impact of learner's autonomy on teaching oral skills (speaking skills) in an EFL classroom. *Journal of Language Teaching & Research, 7*(2), 293-298.
- Rahimi, M., Riazi, A., & Saif, S. (2008). An investigation into the factors affecting the use of language learning strategies by Persian EFL learners. *Canadian Journal of Applied Linguistics, 11*(2), 31-60.
- Rahman, M. (2015). English for Specific Purposes (ESP): A Holistic Review. *Universal Journal of Educational Research, 3*(1), 24-31.
- Rahman, M., Ming, T. S., Aziz, M. S. A., & Razak, N. A. (2008). Developing an ESP Speaking Course Framework for the Foreign Postgraduates in Science and Technology at National University of Malaysia. *ESP World, 4*, 1-57.
- Räisänen, C., & Fortanet-Gómez, I. (2008). The state of ESP teaching and learning in Western European higher education after Bologna. *ESP in European higher education, 11-51*.

- Rajprasit, K. (2015). Perceptions and problems of English language and communication abilities: A final check on Thai engineering undergraduate. *English Language Teaching*, 8(3), 111-120.
- Rea, L. M., & Parker, R. A. (2005). *Designing and conducting survey research: A comprehensive guide*. San Francisco: Jossey-Bass.
- Reid, J. (2001). Writing. In R. Carter & D. Nunan (Eds.), *The Cambridge Guide to Teaching English to Speakers of Other Languages* (pp. 28-33). Cambridge: Cambridge University Press.
- Renandya, W. A., & Farrell, T. S. C. (2011). "Teacher, the tape is too fast!" Extensive listening in ELT. *ELT Journal*, 65(1), 52-59.
- Richards, K. (2003). *Qualitative inquiry in TESOL*. New York: Palgrave Macmillan.
- Richards, J. C., & Rodgers, T. S. (2014). *Approaches and methods in language teaching*: Cambridge university press.
- Richards, K. (2009). Interview. In J. Heigham & R. Croker (Eds.), *Qualitative research in applied linguistics* (pp. 182-199). Basingstoke: Palgrave Macmillan.
- Richterich, R., & Chancerel, L. (1980). *Identifying the needs of adults learning a foreign language*. New York: Manhattarn Publishing.
- Rifai, N. A. (2010). Attitude, motivation, and difficulties involved in learning the English language and factors that affect motivation in learning it. *Procedia - Social and Behavioral Sciences*, 2(2), 5216-5227.
- Robinson, P. C. (1991). *ESP today: A practitioner's guide*. New York: Prentice Hall.

- Rosa Maria Jimenez Catalan, & Fontecha, A. F. (2015). Lexical phrases in compositions by CLIL and non-CLIL EFL learners. In D. Marsh, M. L. Pérez Cañado, & J. Ráez Padilla (Eds.), *CLIL in Action : Voices from the Classroom* (pp. 82-97). New Castle upon Tyne, UK: Cambridge Scholars Publishing.
- Rost, M. (2001). *Teaching and researching listening*. New York: Longman.
- Rostami, F., & Zafarghandi, A. M. (2014). EAP needs analysis in Iran: The case of university students in chemistry department. *Journal of Language Teaching & Research*, 5(4), 924-934.
- Rotschild, T. (2015). Teaching speaking in a foreign language: Proficiency-oriented second language instruction. *Education Today (00131547)*, 65(4), 14-21.
- Saito, K., & Lyster, R. (2012). Effects of Form-Focused Instruction and Corrective Feedback on L2 Pronunciation Development of /ɪ/ by Japanese Learners of English. *Language Learning*, 62(2), 595-633.
- Saragih, E. (2014). Designing ESP Materials for Nursing Students Based On Needs Analysis. *International Journal of Linguistics*, 6(4), 59-70.
- Sattayatham, A., & Honsa, S. (2007). Medical students' most frequent errors at Mahidol University, Thailand. *Asian EFL Journal*, 9(2), 170-194.
- Saz, O., Lin, Y., & Eskenazi, M. (2015). Measuring the impact of translation on the accuracy and fluency of vocabulary acquisition of English. *Computer Speech & Language*, 31, 49-64.

- Schmitt, D. (2005). Test of English for International Communication (TOEIC). In S. Stoyhoff & C. Chapelle (Eds.), *ESOL Tests and Testing* (pp. 100-102). Virginia: Teachers of English to Speakers of Other Languages, Inc.
- Schuh, K. L., & Barab, S. A. (2008). Philosophical perspectives. *Handbook of research on educational communications and technology*, 67-82.
- Secretariat, A. (2009). *Roadmap for an ASEAN community 2009-2015*. Jakarta, Indonesia: The ASEAN Secretariat.
- Seedhouse, P. (1995). Needs analysis and the general English classroom. *ELT Journal*, 49(1), 59-65.
- Serafini, E. J., Lake, J. B., & Long, M. H. (2015). Needs analysis for specialized learner populations: Essential methodological improvements. *English for Specific Purposes*, 40, 11-26.
- Sharp, J. L., Mobley, C., Hammond, C., Withington, C., Drew, S., Stringfield, S., & Stipanovic, N. (2012). A mixed methods sampling methodology for a multisite case study. *Journal of mixed methods research*, 6(1), 34-54.
- Shing, S., & Sim, T. (2011). EAP needs analysis in higher education: Significance and future direction. *English for Specific Purposes World*, 33, 1-11.
- Singh, E., Milne, S., & Hull, J. (2015). Use of mixed-methods case study to research sustainable tourism development in south pacific sides *Field Guide to Case Study Research in Tourism, Hospitality and Leisure* (pp. 457-478).
- Siyanova-Chanturia, A., & Webb, S. (2016). Teaching Vocabulary in the EFL Context *English Language Teaching Today* (pp. 227-239): Springer.

- Songhori, M. (2008). Introduction to needs analysis. *English for Specific Purposes World*, 4, 1-25.
- Spence, P., & Liu, G.-Z. (2013). Engineering English and the high-tech industry: A case study of an English needs analysis of process integration engineers at a semiconductor manufacturing company in Taiwan. *English for Specific Purposes*, 32(2), 97-109.
- Srabua, B. (2007). *An analysis of needs and problems in the use of English for Occupational Purposes of hotels pr officers in Bangkok*. (Unpublished master's thesis), Kasetsart University, Bangkok, Thailand.
- Srisitanon, P. (2009). *Intercultural communication problems of Thai employees at Precious Shipping Public Company Limited (PSL)*. (Unpublished master's thesis), Thammasat University, Bangkok, Thailand.
- Sriwichailamphan, T. (2007). *Global food chains and environment: Agro-food production and processing in Thailand*. (Doctoral dissertation), Wageningen University, Wageningen.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks: Sage Publication.
- Stake, R. E. (2006). *Multiple case study analysis*. New York: The Guilford Press.
- Stevens, P. (1972). *Technical, Technological and Scientific English (TTSE)*.
- Stevens, P. (1988). ESP after twenty years: A re-appraisal. In M. Tickoo (Ed.), *ESP: State of the art*. Singapore: SEAMEO Regional Language Centre.
- Su, Y.-C. (2007). Students' changing views and the integrated-skills approach in Taiwan's EFL college classes. *Asia Pacific Education Review*, 8(1), 27-40.

- Sura, N. A. e. (2013). ESP listening comprehension for IT-students as a language skill. *Middle-East Journal of Scientific Research*, 13, 16-21.
- Swales, J. M. (1981). *Aspects of article introductions*. Birmingham, UK: University of Aston Language Studies Unit.
- Swales, J. M. (1989). Service English programme design and opportunity cost. *The Second Language Curriculum*. Cambridge University Press, Cambridge, 79-80.
- Swales, J. M. (1990). *Genre analysis: English in academic and research settings*. Cambridge, UK: Cambridge University Press.
- Swales, J. M. (2009). Worlds of genre. In C. Bazerman, A. Bonnini, & D. Figueredo (Eds.), *Genre in a changing world* (pp. 1-13). West Lafayette, IN: Parlor Press.
- Sysoyev, P. (2001). Developing and ESP course: A framework for a learner-centered classroom. *The ESP Newsletter*, 1, 4-7.
- Taillefer, G. (2013). CLIL in higher education: the (perfect?) crossroads of ESP and didactic reflection. *ASp. la revue du GERAS*(63), 31-53.
- Takahashi, A. (2009). Self-perception of English ability: Is it related to proficiency and/or class performance? *新潟大学言語文化研究*, 14(39), 39-48.
- Tarnopolsky, O. (2013). Content-based instruction, CLIL, and immersion in teaching ESP at tertiary schools in non-English-speaking countries. *Journal of ELT and Applied Linguistics (JELTAL)*, 1(1), 1-11.
- Tatzl, D. (2013). Translating and revising as opportunities for ESP teacher development. *TESOL Journal*, 4(2), 332-344.

- Tavil, Z. M. (2010). Integrating listening and speaking skills to facilitate English language learners' communicative competence. *Procedia - Social and Behavioral Sciences*, 9(0), 765-770.
- Teng, B., & Sinwongsuwat, K. (2015). Teaching and learning English in Thailand and the integration of Conversation Analysis (CA) into the classroom. *English Language Teaching*, 8(3), 13.
- Tipvanna, N., & Aran, H.-K. (1995). Agro-food industries curriculum in Thailand. In F. a. A. O. o. t. U. Nations (Ed.), *Food and agro industries curriculum development in Asia* (Vol. 15). Bangkok, Thailand: Food and Agriculture Organization of the United Nations: Regional Office for Asia and Pacific.
- Trimble, L. (1985). *English for science and technology: a discourse approach*. New York: Cambridge University Press.
- Tsou, W., & Chen, F. (2014). ESP program evaluation framework: Description and application to a Taiwanese university ESP program. *English for Specific Purposes*, 33, 39-53.
- Tudor, I. (1987). Using translation in ESP. *ELT Journal*, 41(4), 268-273. doi:10.1093/elt/41.4.268
- Unluer, S. (2012). Being an insider researcher while conducting case study research. *Qualitative Report*, 17, 58.
- Vaghari, S., & Shuib, M. (2013). A target needs analysis of the written communication skills for students of writing for professional purposes course. *Jurnal Teknologi (Social Science)*, 65(2), 115-123.

- Valle, A. B., Onate, M. d. C. L. d., & López, E. (2007). *English for specific purposes: Studies for classroom development and implementation*. Cadiz: Servicio de Publicaciones de la Universidad de Cádiz.
- Van Griensven, H., Moore, A. P., & Hall, V. (2014). Mixed methods research—The best of both worlds? *Manual therapy, 19*(5), 367-371.
- Vandergrift, L. (2007). Recent developments in second and foreign language listening comprehension research. *Language Teaching, 40*(3), 191-210.
- Vygotsky, L. (1978). Interaction between learning and development. *Readings on the development of children, 23*(3), 34-41.
- Wang, M., & Bakken, L. L. (2004). An academic writing needs assessment of English-as-a-second-language clinical investigators. *Journal of Continuing Education in the Health Professions, 24*(3), 181-189 189p.
- Ward, J. (2009). EAP reading and lexis for Thai engineering undergraduates. *Journal of English for Academic Purposes, 8*(4), 294-301.
- Watcharapunyawong, S., & Usaha, S. (2013). Thai EFL students' writing errors in different text types: The interference of the first language. *English Language Teaching, 6*(1), 67.
- Watson, T. R., & Pojanapunya, P. (2009). Implicit attitudes towards native and non-native speaker teachers. *System, 37*(1), 23-33.
- Wei, Y., & Zhou, Y. (2002). Insights into English pronunciation problems of Thai students.
- West, R. (1994). Needs analysis in language teaching. *Language Teaching, 27*(1), 1-19.

- Wilson, M. (2003). Discovery listening—improving perceptual processing. *ELT Journal*, 57(4), 335-343.
- Wiriyachitra, A. (2004). English teaching and learning in Thailand in this decade. <http://www.apecneted.org/knowledgebank>
- Wolcott, H. F. (1998). Adequate schools and inadequate education: The life history of a sneaky kid. In R. Jaeger (Ed.), *Complementary methods for research in education* (pp. 220-249). Washington DC: American Educational Research Association.
- Wong, L. L. C., & Nunan, D. (2011). The learning styles and strategies of effective language learners. *System*, 39(2), 144-163.
- Wongsothorn, A. (2000). Thailand. In H. W. Kam & R. L. Wong (Eds.), *Language policies and language education: The impact in East Asian countries in the next decade* (pp. 229-341). Singapore: Times Academic Press.
- Wongsothorn, A., Hiranburanan, K., & Chinnawongs, S. (2003). English language teaching in Thailand today. In H. W. K. a. R. L. Wong (Ed.), *English language teaching in East Asia today: Changes policies and practices* (pp. 441-453). Singapore: Eastern Universities Press.
- Wongsothorn, A., Sukamolsun, S., & Chintammit, P. (1996). National profiles of language education: Thailand. *PASAA*, 26(1), 89-103.
- Woodford, P. (1982). *An introduction to TOEIC: The initial validity study. (TOEIC Research Summaries)*. Princeton, NJ: Educational Testing Service.
- Wu, Y. (2012). An empirical study on needs analysis of college business English course. *International Education Studies*, 5(2), 216-220.

- Xhaferi, B. (2015). Teaching and learning ESP vocabulary. *Revista de Lenguas para Fines Específicos*, 16, 229-255.
- Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, California: Sage Publications.
- Zhang, J. (2009). Necessity of grammar teaching. *International Education Studies*, 2(2), 184-187.
- Zhou, A. A. (2009). What adult ESL learners say about improving grammar and vocabulary in their writing for academic purposes. *Language Awareness*, 18(1), 31-46.
- Zohoorian, Z. (2015). A Needs Analysis Approach: An Investigation of Needs in an EAP Context. *Theory & Practice in Language Studies*, 5(1), 58-65.

APPENDICES

Appendix 1 Administration of the TOEIC Test: English Translation

You have approximately 2 hours to complete the test. You must do the Listening section first which takes about 75 minutes. And you can listen to the CD only once. You choose the best answer by marking an X mark on your answer sheet.

The test includes four parts and the total test items are 100. The first part has 10 picture prompts each followed by four single-sentence statement requiring you to select the one which best describes the picture. Next, there are 30 single-sentence questions or statements in Part 2, you will listen to three equally short answers and choose the best answer to the question or statement. In Part 3, you will hear a conversation between two people followed by three questions and four possible answers. Then, you choose the best answer to the questions on your answer sheet. There are 30 items in this part. The 30 items in Part 4 consist of a series of 15- to 20-second monologues each followed by two or more factual or inference questions related to the talk. After you listen to each talk, you choose the best answer to the questions. You can take any notes in your test booklet. Good luck for your test.”

Appendix 2 Administration of the Scientific English Grammatical Structures Test: English Translation

1. Distribute a Test of English Grammatical Structures and a vocabulary list to any desk before the students enter the exam room. Make sure that the code number of the test and the vocabulary list are identical. Check to see that each student has both the test booklet and the vocabulary list.

2. Ask the students to take the answer sheet out of the back page of the test booklet and write their names and their student number.

3. Ask the students to check that their test booklet contained 12 pages of the test items and the test instruction page.

4. Ask them to write their names and student number in the space provided on the vocabulary list.

5. Explain how to use the vocabulary list in the following words:

Whenever you face any unfamiliar words in your test booklet, look them up in the vocabulary list. You will get the meaning of the word in Thai. Remember to circle the number which precedes the word you want to look up for its meaning.

For example, you want to know what "absorb" means. Look the word "absorb" up in the vocabulary list, you will find

1. "absorb" ดูดซึม

Read the meaning and remember to also circle the number which precedes that word:

1) absorb

Do not be afraid of using the vocabulary list. Putting an X on a number preceding the word when you want to know the meaning, does not mean that you will lose your mark.

6. Ask the students to turn to the instruction page in the test booklet.

Read out loud the test instructions from the test booklet and make sure that every student understands them.

Begin

You have 1 hour and 35 minutes to complete the test.

Appendix 3 Questionnaire on Language Difficulties in Phase Two

Phase 2

ปัญหา

QUESTIONNAIRE ON LANGUAGE DIFFICULTIES

แบบสอบถามเรื่อง

การวิเคราะห์ปัญหาการใช้ภาษาอังกฤษสำหรับนักศึกษาวิทยาศาสตร์และเทคโนโลยีการอาหาร

Objective: This questionnaire is designed to find out your **difficulties** with specific English skills and functions. The information you provide will give insights into the English language needs in the area of food science and technology.

This questionnaire is divided into 3 parts 8 pages:

Part 1: Background Information

Part 2: Difficulties in General English language skills

Part 3: Difficulties in English Language sub-skills

จุดประสงค์: แบบสอบถามนี้จัดทำเพื่อศึกษาปัญหาในการใช้ทักษะและลักษณะทางภาษาอังกฤษเฉพาะทางของท่าน ข้อมูลจากท่านจะช่วยให้การศึกษาเรื่องความต้องการทางภาษาอังกฤษในสาขาวิชาเทคโนโลยีการอาหารให้เป็นที่เข้าใจมากยิ่งขึ้น

แบบสอบถามนี้มีทั้งหมด 3 ตอน 8 หน้า

ตอนที่ 1 ข้อมูลเบื้องต้น

ตอนที่ 2 ปัญหาในการใช้ทักษะทางภาษาอังกฤษทั่วไป

ตอนที่ 3 ปัญหาในการใช้ทักษะย่อยทางภาษาอังกฤษ

PART 1: BACKGROUND INFORMATION (ข้อมูลเบื้องต้น)

General Information (ข้อมูลทั่วไป)

1.1 Gender (เพศ): Male (เพศชาย) Female (เพศหญิง)

1.2 Entrance system to the university (ระบบการเข้าเรียนในมหาวิทยาลัย)

University Quota System (ระบบโควตานักเรียน)

Central University Admissions System (ระบบการคัดเลือกบุคคลเข้าศึกษาในสถาบันอุดมศึกษา ระบบคัดเลือกกรม)

1.3 Grade of English for Specific Purposes 1 (เกรดในรายวิชาภาษาอังกฤษเชิงวิทยาศาสตร์และเทคโนโลยี)

1)

A B+ B C+ C D+ D

1.4 Number of course(s) you are taking in this semester relevant to the English language?

(จำนวนวิชาที่ท่านต้องใช้ภาษาอังกฤษในภาคเรียนนี้) วิชา

ชื่อวิชา

.....

Interest and Attitude towards the ESP Programme (ทัศนคติเกี่ยวกับภาษาอังกฤษและวิชา

ภาษาอังกฤษเฉพาะสาขา)

1.5 To what extent do you think English is important to your study and work? (ท่านคิดว่าภาษาอังกฤษมี

ความสำคัญต่อการเรียนและการทำงานของท่านในระดับใด)

Unimportant	Of little important	Moderately	Important	Most important
(ไม่สำคัญ)	(สำคัญน้อย)	important	(สำคัญมาก)	(สำคัญมากที่สุด)
		(สำคัญปานกลาง)		

Self-evaluation (การประเมินตนเอง)

1.6 Evaluate your **abilities** in the English language skills as follows (Mark **X** where appropriate).

(กรุณาประเมินความสามารถทางทักษะภาษาอังกฤษด้านต่างๆ ของท่าน โดยกาเครื่องหมาย **X**)

	<i>Very Good</i> (ดีมาก)	<i>Good</i> (ดี)	<i>Moderate</i> (ปานกลาง)	<i>Weak</i> (อ่อน)	<i>Very Weak</i> (อ่อนมาก)
Listening (การฟัง)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speaking (การพูด)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reading (การอ่าน)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing (การเขียน)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vocabulary (คำศัพท์)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grammar (ไวยากรณ์)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.7 Rank your English language abilities in order from **the best (1)** to **the least (6)**.

(เรียงลำดับความสามารถทางภาษาอังกฤษของท่าน โดยให้ (1) หมายถึง ดีที่สุด ถึง (6) หมายถึง ด้อยที่สุด)

..... Listening (การฟัง) Speaking (การพูด) Reading (การอ่าน)
 Writing (การเขียน) Vocabulary (คำศัพท์) Grammar (ไวยากรณ์)

PART 2: DIFFICULTIES IN GENERAL ENGLISH LANGUAGE SKILLS

(ปัญหาในการใช้ทักษะภาษาอังกฤษทั่วไป)

1. To what extent do you **have difficulty** to use these general English skills in the university? Then put **X** in the box of each item that you choose. (ระบุปัญหาในการใช้ทักษะหลักทางภาษาอังกฤษในมหาวิทยาลัยของท่าน จากนั้นจึงกาเครื่องหมายกากบาท **X** ลงในช่องว่าง โดยให้)

- 1 **The most serious difficulty** (มีปัญหามากที่สุด)
- 2 **Serious difficulty** (มีปัญหามาก)
- 3 **Moderate difficulty** (มีปัญหাপานกลาง)
- 4 **Slight difficulty** (มีปัญหบ้างเล็กน้อย)
- 5 **Rarely difficult** (ไม่ค่อยมีปัญหา)
- 6 **Do not have any difficulty** (ไม่มีปัญหา)
- 7 **Do not know** (ไม่ทราบ)

<i>Language Skills</i>	<i>You have difficulty</i> (ท่านมีปัญหา)						
	1	2	3	4	5	6	7
1. Listening (การฟัง)	1	2	3	4	5	6	7
2. Speaking (การพูด)	1	2	3	4	5	6	7
3. Reading (การอ่าน)	1	2	3	4	5	6	7
4. Writing (การเขียน)	1	2	3	4	5	6	7
5. Vocabulary (คำศัพท์)	1	2	3	4	5	6	7
6. Grammar (ไวยากรณ์)	1	2	3	4	5	6	7
7. Others (Please specify) (อื่นๆ โปรดระบุ)	1	2	3	4	5	6	7

2. Rank the following English skills you have difficulty with in studying in the university from (1) the most serious to the least serious (6) in the space provided. (เรียงลำดับทักษะการใช้ภาษาอังกฤษที่ท่านมีปัญหามาก (1) มากที่สุด ถึง (6) มีปัญหาน้อยที่สุด ลงในช่องว่าง)

-Listening (การฟัง) Speaking (การพูด) Reading (การอ่าน)
-Writing (การเขียน) Vocabulary (คำศัพท์) Grammar (ไวยากรณ์)

PART 3: DIFFICULTIES IN ENGLISH LANGUAGE SUB-SKILLS
(ปัญหาในการใช้ทักษะย่อยทางภาษาอังกฤษ)

To what extent do you **have difficulty** to use these English sub-skills in the university? Then put *X* in the box of each item that you choose.

(ระบุปัญหาในการใช้ทักษะย่อยทางภาษาอังกฤษในมหาวิทยาลัยของท่าน จากนั้นจึงกาเครื่องหมายกากบาท

X ลงในช่องว่างที่ท่านเลือก โดยให้)

- 1 **The most serious difficulty** (มีปัญหามากที่สุด)
- 2 **Serious difficulty** (มีปัญหามาก)
- 3 **Moderate difficulty** (มีปัญหปานกลาง)
- 4 **Slight difficulty** (มีปัญหบ้างเล็กน้อย)
- 5 **Rarely difficult** (มีปัญหา)
- 6 **Do not have any difficulty** (ไม่มีปัญหา)
- 7 **Do not know** (ไม่ทราบ)

Language Skills	You have difficulty (ท่านมีปัญหา)						
Listening (การฟังภาษาอังกฤษ) 1. Receiving spoken instructions/advice (การฟังคำแนะนำหรือข้อเสนอแนะต่างๆ)	1	2	3	4	5	6	7
2. Listening to presentations and discussions in international meetings/ seminars/conferences (การฟังการนำเสนอผลงาน/ประชุมในระดับนานาชาติ)	1	2	3	4	5	6	7
3. Listening to teachers (การฟังจากครูผู้สอน)	1	2	3	4	5	6	7
4. Listening to students (การฟังจากเพื่อนนักเรียน)	1	2	3	4	5	6	7
5. Listening to radio or television programmes and other English media (การฟังจากรายการวิทยุหรือโทรทัศน์หรือจากสื่อภาษาอังกฤษต่างๆ)	1	2	3	4	5	6	7
6. Other (please specify) อื่นๆ (โปรดระบุ)	1	2	3	4	5	6	7
Speaking (การพูดภาษาอังกฤษ) 7. Talking to a variety of audiences (การพูดให้ผู้ฟังหลากหลายประเภท)	1	2	3	4	5	6	7
8. Asking and answering questions during the group or class (การถามและตอบคำถามจากงานกลุ่มหรือในห้องเรียน)	1	2	3	4	5	6	7
9. Introducing yourself and others in a variety of situations (การแนะนำตัวเองและแนะนำผู้อื่นในสถานการณ์ต่างๆ)	1	2	3	4	5	6	7
10. Giving a presentation (การนำเสนอผลงาน)	1	2	3	4	5	6	7
11. Stating opinion or ideas about different topics during class activities (การเสนอความคิดเห็นในหัวข้อต่างๆในชั้นเรียน)	1	2	3	4	5	6	7
12. Speaking to foreigners (การพูดกับชาวต่างชาติ)	1	2	3	4	5	6	7
13. Making requests (i.e. for further information or confirmation) (การขอร้องในเรื่องต่างๆ เช่นการขอข้อมูลเพิ่มเติมหรือยืนยันข้อมูล)	1	2	3	4	5	6	7
14. Talking over the phone (การพูดโทรศัพท์)	1	2	3	4	5	6	7
15. Pronunciation (การออกเสียง)	1	2	3	4	5	6	7

Language Skills	You have difficulty (ท่านมีปัญหา)						
16. Other (please specify) (อื่นๆ โปรดระบุ)	1	2	3	4	5	6	7
Reading (การอ่านภาษาอังกฤษ)	1	2	3	4	5	6	7
17. Reading laboratory reports (การอ่านผลการทดลอง)							
18. Reading exercise/test questions (การอ่านแบบฝึกหัดหรือคำถามในข้อสอบ)	1	2	3	4	5	6	7
19. Reading textbooks (การอ่านหนังสือในสาขา)	1	2	3	4	5	6	7
20. Reading academic journals / publications (การอ่านวารสารหรือสิ่งพิมพ์ทางวิชาการ)	1	2	3	4	5	6	7
21. Reading manuals, instructions, or product descriptions (การอ่านคู่มือ หรือคำอธิบายผลิตภัณฑ์)	1	2	3	4	5	6	7
22. Searching the Internet English resources (การสืบค้นข้อมูลจากอินเทอร์เน็ตเป็นภาษาอังกฤษ)	1	2	3	4	5	6	7
23. Reading office documents e.g. business letters (การอ่านเอกสารสำนักงาน เช่น จดหมายธุรกิจ)	1	2	3	4	5	6	7
24. Reading signs, rules, and notices in a laboratory (การอ่านป้าย กฎหรือข้อบ่งใช้ในห้องปฏิบัติการ)	1	2	3	4	5	6	7
25. Other (please specify) (อื่นๆ โปรดระบุ)	1	2	3	4	5	6	7
Writing (การเขียนภาษาอังกฤษ)	1	2	3	4	5	6	7
26. Writing laboratory reports or assignments (การเขียนผลปฏิบัติการหรืองานที่ได้รับมอบหมาย)							
27. Writing research papers, articles, and reviews for scientific journals (การเขียนงานวิจัย และบทความในวารสารทางวิทยาศาสตร์)	1	2	3	4	5	6	7
28. Writing grant or job applications (การเขียนเพื่อสมัครทุนหรือสมัครงาน)	1	2	3	4	5	6	7
29. Writing examination answers (การเขียนเพื่อตอบในข้อสอบ)	1	2	3	4	5	6	7
30. Writing product descriptions (การเขียนบรรยายผลิตภัณฑ์)	1	2	3	4	5	6	7
31. Writing emails (การเขียนจดหมายอิเล็กทรอนิกส์)	1	2	3	4	5	6	7

Language Skills	You have difficulty (ท่านมีปัญหา)						
32. Writing business letters (การเขียนจดหมายธุรกิจ)	1	2	3	4	5	6	7
33. Taking notes (การจดบันทึกย่อ)	1	2	3	4	5	6	7
34. Writing a resume (การเขียนประวัติส่วนตัว)	1	2	3	4	5	6	7
35. Filling out forms (การกรอกแบบฟอร์มต่างๆ)	1	2	3	4	5	6	7
36. Describing diagrams, tables and graphs (การบรรยายรูปภาพ ตารางและกราฟ)	1	2	3	4	5	6	7
37. Writing instructions (การเขียนอธิบายขั้นตอน)	1	2	3	4	5	6	7
38. Other (please specify) (อื่นๆ โปรดระบุ)	1	2	3	4	5	6	7
Vocabulary (คำศัพท์ภาษาอังกฤษ)	1	2	3	4	5	6	7
39. General vocabulary (คำศัพท์ทั่วไป)	1	2	3	4	5	6	7
40. Technical terms (คำศัพท์เฉพาะสาขาวิชา)	1	2	3	4	5	6	7
Grammar (ไวยากรณ์ภาษาอังกฤษ)	1	2	3	4	5	6	7
41. Grammatical structure for general communications e.g. tenses, aspects modality, etc. (ไวยากรณ์เพื่อใช้ในการสื่อสารทั่วไป)	1	2	3	4	5	6	7
42. Grammar structures frequently used in scientific discourse e.g. present participles, passives, conditionals, etc. (ไวยากรณ์ที่ใช้บ่อยทางวิทยาศาสตร์)	1	2	3	4	5	6	7

LANGUAGE FUNCTIONS (ลักษณะทางภาษา)

Rank the following English language functions you have difficulty with in the university from **the most serious difficulty (1) to the least difficulty (10)**. Write a number **1,2,3,4...to 10** in the space provided.

(เรียงลำดับทักษะย่อยทางภาษาอังกฤษที่ท่านมีปัญหา ต่อการเรียนในมหาวิทยาลัยของท่านจาก มีปัญหามากที่สุด (1) ถึง ไม่มีปัญหา (10) โดยเติมหมายเลข 1,2,3,4...ถึง 10 ลงในช่องว่าง)



The most serious difficulty (มีปัญหามากที่สุด)

The least difficulty (มีปัญหาน้อยที่สุด)

Language Functions	You have difficulty (ท่านมีปัญหา)
43. Describing processes and procedures (การอธิบายกรรมวิธีและกระบวนการต่างๆ)
44. Reporting information from other sources (การรายงานข้อมูลจากแหล่งต่างๆ)
45. Describing an object (การอธิบายสิ่งของ)
46. Summarizing results of a group project, a report, or a scientific text (การสรุปผลงานต่างๆ)
47. Using tables, diagrams and graphs to summarized data (การใช้ตาราง รูปภาพ กราฟเพื่อสรุปข้อมูล)
48. Understanding and verbalizing numbers (การเข้าใจและการใช้ตัวเลข)
49. Understanding and verbalizing common symbols (e.g. addition, division, etc.) (การ เข้าใจและการใช้สัญลักษณ์พื้นฐาน)
50. Describing cause and effect (การอธิบายเหตุและผล)
51. Comparing and contrasting things or events (การเปรียบเทียบ)
52. Making an outline for a presentation, report, or project (การจัดทำโครงร่างเพื่อนำเสนอผลงานต่างๆ)
53. Others (Please specify) (อื่นๆ โปรดระบุ)

*****THANK YOU *****

😊😊😊ขอบคุณที่ให้ความร่วมมือค่ะ 😊😊😊

Appendix 4 The English Language Needs Questionnaire in Phase Two

Phase 2

QUESTIONNAIRE

ความจำเป็น

ENGLISH LANGUAGE NEEDS ANALYSIS FOR STUDENTS IN A FOOD SCIENCE AND TECHNOLOGY PROGRAMME

แบบสอบถามเรื่อง

การวิเคราะห์ความจำเป็นด้านภาษาอังกฤษสำหรับนักศึกษาวิทยาศาสตร์และ
เทคโนโลยีการอาหาร

จุดประสงค์: แบบสอบถามนี้จัดทำเพื่อศึกษาความจำเป็น ในการใช้ทักษะและลักษณะทางภาษาอังกฤษ เฉพาะทางของท่าน ข้อมูลจากท่านจะช่วยให้การศึกษาเรื่องความต้องการทางภาษาอังกฤษในสาขาวิชา เทคโนโลยีการอาหารให้เป็นที่เข้าใจมากยิ่งขึ้น

แบบสอบถามนี้มีทั้งหมด 2 ตอน 7 หน้า

ตอนที่ 1 ความจำเป็นในการใช้ทักษะทางภาษาอังกฤษทั่วไป

ตอนที่ 2 ความจำเป็นในการใช้ทักษะทางภาษาย่อยทางภาษาอังกฤษ

คำสั่ง: กรุณาตอบคำถามที่ตรงกับท่านมากที่สุด

Objective: This questionnaire is designed to find out your needs with specific English skills and functions. The information you provide will give insights into the English language needs in the area of food science and technology.

This questionnaire is divided into 2 parts 7 pages:

Part 1: The Needs for General English Language Skills

Part 2: The Needs for English Language Sub-Skills

Direction:

Please answer the following questions by checking the answer that best fits for you

PART 1: NEEDS FOR GENERAL ENGLISH LANGUAGE SKILLS

(ความจำเป็นในการใช้ทักษะภาษาอังกฤษทั่วไป)

1. To what extent do you **need** to use these general English skills in the university? Then put *X* in the box of each item that you choose. (ระบุความจำเป็น ในการใช้ทักษะหลักทางภาษาอังกฤษในมหาวิทยาลัยของท่าน โปรดพิจารณาในการเลือกคำตอบ จากนั้นจึงกาเครื่องหมายกากบาท *X* ลงในช่องว่างที่ท่านเลือก โดยให้)

- 1 **The most need** (จำเป็นอย่างมากที่สุด)
- 2 **Extensive need** (จำเป็นมาก)
- 3 **Moderate need** (จำเป็นปานกลาง)
- 4 **Slight need** (ค่อนข้างจำเป็น)
- 5 **Rarely need** (ไม่ค่อยจำเป็น)
- 6 **Do not need** (ไม่จำเป็น)
- 7 **Do not know** (ไม่ทราบ)

<i>Language Skills</i>	You need (ท่านจำเป็น)						
	1	2	3	4	5	6	7
1. Listening (การฟัง)							
2. Speaking (การพูด)							
3. Reading (การอ่าน)							
4. Writing (การเขียน)							
5. Vocabulary (คำศัพท์)							
6. Grammar (ไวยากรณ์)							
7. Others (Please specify) (อื่นๆ โปรดระบุ)							

Rank the following English skills you need in studying in the university from ‘The most need’ (1) to ‘Do not need’ (6) in the space provided.

(เรียงลำดับทักษะภาษาอังกฤษที่จำเป็นต่อการเรียนในมหาวิทยาลัยของท่าน โดยให้หมายเลข (1)

หมายถึงจำเป็นอย่างมากที่สุด ถึงหมายเลข (6) หมายถึง จำเป็นน้อยที่สุด ในช่องว่าง

- Listening (การฟัง)
- Speaking (การพูด)
- Reading (การอ่าน)
- Writing (การเขียน)
- Vocabulary (คำศัพท์)
- Grammar (ไวยากรณ์)

PART 2: NEEDS FOR THE ENGLISH LANGUAGE SUB-SKILLS

(ความจำเป็นในการใช้ทักษะย่อยทางภาษาอังกฤษ)

To what extent do you **need** to use these English sub-skills in the university? Then put *X* in the box of each item that you choose.

(ระบุการใช้ทักษะย่อยทางภาษาอังกฤษต่างๆ ที่จำเป็นต่อการเรียนท่านในมหาวิทยาลัย โดยกาเครื่องหมายกากบาท *X* ลงในช่องว่าง โดยให้)

- 1 **The most need** (จำเป็นอย่างมากที่สุด)
- 2 **Extensive need** (จำเป็นมาก)
- 3 **Moderate need** (จำเป็นปานกลาง)
- 4 **Slight need** (ค่อนข้างจำเป็น)
- 5 **Rarely need** (ไม่ค่อยจำเป็น)
- 6 **Do not need** (ไม่จำเป็น)
- 7 **Do not know** (ไม่ทราบ)

Listening sub-skills (การฟังภาษาอังกฤษ)	You need (ท่านจำเป็น)						
	1	2	3	4	5	6	7
1. Receiving spoken instructions/advice (การฟังคำสั่งหรือข้อแนะนำต่างๆ)							
2. Listening to presentations and discussions in international meetings/ seminars/conferences (การฟังการนำเสนอผลงาน/ประชุมในระดับนานาชาติ)							
3. Listening to teachers (การฟังจากครูผู้สอน)							
4. Listening to students (การฟังจากเพื่อนนักเรียน)							
5. Listening to radio or television programmes and other English media (การฟังจากรายการวิทยุหรือโทรทัศน์หรือจากสื่อภาษาอังกฤษต่างๆ)							
6. Other (please specify) อื่นๆ (โปรดระบุ)							

Speaking sub-skills (การพูดภาษาอังกฤษ)	You need (ท่านจำเป็น)						
	1	2	3	4	5	6	7
7. Talking to a variety of audiences (การพูดให้ผู้ฟังหลากหลายประเภท)							
8. Asking and answering questions during the group or class (การถามและตอบคำถามจากงานกลุ่มหรือในห้องเรียน)							
9. Introducing yourself and others in a variety of situations (การแนะนำตัวเองและแนะนำผู้อื่นในสถานการณ์ต่างๆ)							
10. Giving a presentation (การนำเสนอผลงาน)							
11. Stating opinion or ideas about different topics during class activities (การเสนอความคิดเห็นในหัวข้อต่างๆในชั้นเรียน)							
12. Speaking to foreigners (การพูดกับชาวต่างชาติ)							
13. Making requests (i.e. for further information or confirmation) (การขอร้องในเรื่องต่างๆ เช่นการขอข้อมูลเพิ่มเติมหรือการยืนยันข้อมูล)							
14. Talking over the phone (การพูดโทรศัพท์)							
15. Pronunciation (การออกเสียง)							
16. Other (please specify) (อื่นๆ โปรดระบุ)							
Reading sub-skills (การอ่านภาษาอังกฤษ)	You need (ท่านจำเป็น)						
	1	2	3	4	5	6	7
17. Reading laboratory reports (การอ่านรายงานผลการทดลอง)							
18. Reading exercise/test questions (การอ่านแบบฝึกหัดหรือคำถามในข้อสอบ)							
19. Reading textbooks (การอ่านหนังสือในสาขาวิชา)							
20. Reading academic journals / publications (การอ่านวารสารหรือสิ่งพิมพ์ทางวิชาการ)							
21. Reading manuals, instructions, or product descriptions (การอ่านคู่มือ หรือคำอธิบายผลิตภัณฑ์)							
22. Searching the Internet English resources (การสืบค้นข้อมูลจากอินเทอร์เน็ตที่เป็นภาษาอังกฤษ)							
23. Reading office documents e.g. business letters (การอ่านเอกสารสำนักงาน เช่นจดหมายธุรกิจ)							
24. Reading signs, rules, and notices in a laboratory (การอ่านป้าย กฎ หรือข้อบ่งชี้ในห้องปฏิบัติการ)							
25. Other (please specify) (อื่นๆ โปรดระบุ)							

Writing sub-skills (การเขียนภาษาอังกฤษ)	You need (ท่านจำเป็น)						
	1	2	3	4	5	6	7
26. Writing laboratory reports or assignments (การเขียนรายงานผลปฏิบัติการหรืองานที่ได้รับมอบหมาย)							
27. Writing research papers, articles, and reviews for scientific journals (การเขียนงานวิจัย และบทความต่างๆในวารสารทางวิทยาศาสตร์)							
28. Writing grant or job applications (การเขียนเพื่อสมัครทุนหรือสมัครงาน)							
29. Writing examination answers (การเขียนเพื่อตอบในข้อสอบ)							
30. Writing product descriptions (การเขียนบรรยายผลิตภัณฑ์)							
31. Writing emails (การเขียนจดหมายอิเล็กทรอนิกส์)							
32. Writing business letters (การเขียนจดหมายธุรกิจ)							
33. Taking notes (การจดบันทึกย่อ)							
34. Writing a resume (การเขียนประวัติส่วนตัว)							
35. Filling out forms (การกรอกแบบฟอร์มต่างๆ)							
36. Describing diagrams, tables and graphs (การบรรยายรูปภาพ ตารางและกราฟ)							
37. Writing instructions (การเขียนอธิบายขั้นตอน)							
38. Other (please specify) (อื่นๆ โปรดระบุ)							

Vocabulary sub-skills (คำศัพท์ภาษาอังกฤษ)	You need (ท่านจำเป็น)						
	1	2	3	4	5	6	7
39. General vocabulary (คำศัพท์ทั่วไป)							
40. Technical terms (คำศัพท์เฉพาะสาขาวิชา)							
Grammar sub-skills (ไวยากรณ์ภาษาอังกฤษ)	You need (ท่านจำเป็น)						
	1	2	3	4	5	6	7
41. Grammatical structure for general communications e.g. tenses, aspects, modality, etc. (ไวยากรณ์เพื่อใช้ในการสื่อสารทั่วไป เช่น tenses, aspects, modality, เป็นต้น)							
42. Grammar structures frequently used in scientific discourse e.g. present participles, passives, conditionals, etc.(ไวยากรณ์ที่ใช้บ่อยทางวิทยาศาสตร์ เช่น present participles, passives, conditionals เป็นต้น)							

LANGUAGE FUNCTION SUB-SKILLS (ลักษณะทางภาษา)

Rank the following English language function sub-skills **you need** in the university from the most need (1) to do not need (10). Write a number **1, 2, 3, 4, 5, 6 to 10** in the space provided. (เรียงลำดับการใช้ลักษณะทางภาษาอังกฤษมหาวิทยาลัยที่จำเป็นต่อท่าน จากต้องการมากที่สุด (1) ถึงต้องการน้อยที่สุด (10) โดยเติมหมายเลข **1, 2, 3, 4, 5, 6 ถึง 10** ลงในช่องว่าง)



Language Functions	You need (ท่านจำเป็น)
43. Describing processes and procedures (การอธิบายกรรมวิธีและกระบวนการต่างๆ)
44. Reporting information from other sources (การรายงานข้อมูลจากแหล่งต่างๆ)
45. Describing an object (การอธิบายสิ่งของ)
46. Summarizing results of a group project, a report, or a scientific text (การสรุปความต่างๆ เช่น ผลงานกลุ่ม รายงาน หรือเอกสารทางวิทยาศาสตร์ต่างๆ)
47. Using tables, diagrams and graphs to summarized data (การใช้ตาราง รูปภาพ กราฟเพื่อสรุปข้อมูล)
48. Understanding and verbalizing numbers (การเข้าใจและการใช้ตัวเลข)
49. Understanding and verbalizing common symbols (e.g. addition, division, etc.) (การเข้าใจและการใช้สัญลักษณ์พื้นฐาน เช่นการเพิ่ม การแบ่ง เป็นต้น)
50. Describing cause and effect (การอธิบายถึงความสัมพันธ์ที่แสดงเหตุและผล)
51. Comparing and contrasting things or events (การเปรียบเทียบสิ่งหรือสถานการณ์ที่เหมือนและต่างกัน)
52. Making an outline for a presentation, report, or project (การจัดทำโครงร่างเพื่อนำเสนอผลงานต่างๆ)
53. Others (Please specify) (อื่นๆ โปรดระบุ)

*****THANK YOU *****

😊😊😊ขอบคุณที่ให้ความร่วมมือค่ะ😊😊😊

Appendix 5 Examples of Interview Questions: English Translation

Stakeholder: Student

CONTEXTUAL INFORMATION

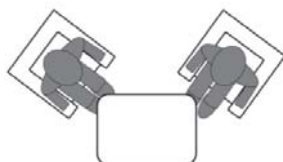
*Questions for the students in the food science and technology programme depend on the answer from the questionnaire. Other questions may arise depending on participants.

Date:

Location:

Interview starting time:

Interview setting:



WELCOME TO THE INTERVIEW

- Greeting
 - Informing the objectives of the research
 - Revise the Right of the Participant
-

Theme A: Personal information about learners

- Demographic Information
 - Age
 - Gender
 - Extra-curricular instruction in English
 - Attitudes: Important or not?, Like/ Dislike, Why or Why not?
Examples:
 - Do you want to improve your English language skills?
 - Is an English for specific purposes course important to you? Why or why not?
 - Do you think your knowledge of English is a decisive factor for your success at the university? Why?
 - Do you think your knowledge of English is a decisive for future work? Why?
-

Theme B: Language information about learners

Examples:

1. What language skills are you good at?
 - 1.1 Which sub-skills are you good at?

2. What language skills are you worst in?

2.1 Which sub-skills are you worst in?

2.2 Why?

Examples of questions regarding the problems and needs for the English language skills:

3. Do you think do you have any problem with listening? In what way? Why?

4. Could you please describe your performance when you listen to your teacher/friends speaking English? If you don't understand, what do you usually do?

Then, follow the lists from the questionnaire

5. Do you need to improve your listening? In what way? Why?

6. How do you improve your listening?

Ask similar questions for other language skills based on the questionnaire.

Examples of questions regarding the content of the ESP programme:

7. What content should be taught in the ESP courses to study/work effectively? Why?

8. What is the learning activity that helps you to study English successfully? (Group work/Pair work/Individual work/ Outside classroom activities/ Others?)

Examples of questions regarding tasks and activities in the ESP programme:

9. What kinds of task and activity should be involved in the course?

10. Why?

Theme C: Environmental situations

Teaching techniques and methodology

Examples:

- Which teaching methodologies should be used in the course?
(*grammar-translation/communicative, etc.*)
- How many hours of English for specific purposes course a week do you study? Is it suitable for you? If not, what should it be?
- How many course(s) are taking this semester? Do you think it affect to your study on the English for specific purposes course? Why?

Instructors

Examples:

- How many percent of English should be used in class by a teacher? And how many percent for the students?
- How do the ESP teachers teach English language skills to you?

Facilities and policy of the university

Examples:

- Do you think the university has a policy to encourage you to study English?
- What facilities does the university provide for you to study extra English language?
Are you satisfied with that?

Interview ending time:

Appendix 6 Documents Related to Ethical Requirements

6.1 A Letter Requesting Access to the Institutions



Date

Name of the University,
Address Line 1,
Address Line 2,

Dear President

My name is **Paweena Chatsungnoen**. I am currently a doctoral candidate at Massey University, New Zealand. I would like to have permission to conduct a research project on **Needs Analysis for an English for Specific Purposes (ESP) Course for Thai Undergraduates in a Food Science and Technology Programme**. The project would be carried out mainly in (Name of the studied university). The participants for this research would be teachers, third-year students in a food science and technology programme and English language teachers who teach English for Specific Purposes to the students.

I would like to collect data from the participants for two phases (November 2011-February 2012 and June – September 2012). The data will be collected by using interviews, questionnaires, English diagnostic tests, and documents including curriculum, course outlines and course plans. All data from participants in the research will remain confidential.

I expect that the information obtained from my research would be beneficial to the university to determine the factors that influence the proficiency of English of students and design effective English for specific purposes courses for the students. I am attaching an information sheet prepared for participants in this research. It explains how the research will be conducted. If you need more information or have any questions, please feel free to contact me or my supervisors at Massey University at the addresses below.

I would like to thank you for considering my request.

Yours Sincerely,

Paweena Chatsungnoen

Name and contact detail of researcher

Paweena Chatsungnoen

In Thailand

Name of the University

Address Line1

Address Line2

Zip code

Tel xxx xxx xxx

pawphan@yahoo.com

Paweena Chatsungnoen

In Thailand

Name of the University

Address Line1

Address Line2

Zip code

Tel xxx xxx xxx

pawphan@yahoo.com

In New Zealand

School of Educational Studies

College of Education

Massey University

Private Bag 11 222 Palmerston North

Tel 3569099 ext 8804

P.Chatsungnoen@massey.ac.nz

In New Zealand

School of Educational Studies

College of Education

Massey University

Private Bag 11 222 Palmerston North

P.Chatsungnoen@massey.ac.nz

Name and contact detail of Supervisors

Dr Alyson McGee

School of Educational Studies

Massey University College of Education

Private Bag 11 222

Palmerston North

Ph 3569099 ext 8830

Distinguished Professor William Tunmer

School of Educational Studies

Massey University College of Education

Private Bag 11 222

Palmerston North

Ph 3569099 ext 8962

6.2 Participant Information Sheet



NEEDS ANALYSIS FOR AN ENGLISH FOR SPECIFIC PURPOSES (ESP) COURSE FOR THAI UNDERGRADUATES IN A FOOD SCIENCE AND TECHNOLOGY PROGRAMME

INFORMATION SHEET- STUDENTS IN A FOOD SCIENCE AND TECHNOLOGY PROGRAMME

Researcher Introduction

Hello, my name is Paweena Chatsungnoen and I am currently a doctoral student of Philosophy in Education at School of Educational Studies, College of Education, Massey University, Palmerston North, New Zealand. I am conducting my doctoral research titled *Needs Analysis for an English for Specific Purposes (ESP) Course for Thai Undergraduates in a Food Science and Technology Programme*.

Project Description and Invitation

The purpose of this sheet is to give you information about my study, and invite you to participate.

This research takes the form of an exploratory case study using multiple sources of evidence in academic and occupational contexts to provide a close examination of what the students need to learn based on his/her personal language ability and the language and professional context from the views of a number of stakeholders. This will be achieved by investigating the language needs of students and expectations of English for specific purposes teachers, subject teachers, students in the internship programme and future employers.

Since you are a potential participant, I would like to invite you to participate in my research. The information you provide will give insight of the needs of language used to design an English for Science and Technology course for students in a food science and technology programme. If you agree to participate in my research, you can return a questionnaire and the consent form by putting them in the box in front of the English Language Department within one week.

Project Procedure

I will collect data from the two English for specific purposes courses (November to February 2011, and June to September 2012). If you agree to participate in this research, I would like to invite you to

- complete a questionnaire twice – once in the second week of the first English for Specific Purposes course in Semester 2, Academic Year 2011 and once in the second week of the second English for specific purposes course in Semester 1, Academic Year 2012.
- be available to participate in two interviews - at the first English for Specific Purposes course and at the second English for specific purposes course. The interview should be up to **30 minutes each time**. If you are available to be interviewed **twice**, you can give your name and contact details in the space provided at the end of the questionnaire form. However, I will

choose a small number of you to be interviewed only.

During the interview, I will take some notes about important issues and use a tape recording because I would like to capture all of your thoughts. To make sure that you are willing to audiotaped I will ask you first and you can tell me at any time to stop recording.

I am going to interview to another 5 students in this programme just like you, and ask them the same questions. When I have finished doing all that, I am going to listen to the tapes, put all the information together and write them down what I have found out from talking to you. This will be for my study I told you about earlier. When I type up all the things that you said to me, I will send this back to you to look at. If you want me to change anything or take it out, I can do that up to three months after the interview date.

Copies of the tapes will be stored in my locked office, together with a copy of the transcripts for a period of five years, after which they will be destroyed.

If you want to be part of my study, here is a summary of your rights. You are allowed to:

- Not answer any question you do not want to;
- Start answering the question than say that you do not want to do it any more;
- Answer all the questions, then say that you want all your answer taken out of my study (up to three months after the interview);
- Ask any question about the study at any time you like;
- Know that no none will know your name or know any of the answers belong to you;
- Be given a summary of what I have found out by interviewing all the people in my study.
- Ask to have the tape recorder turned off, or not used at all.

Thank you for reading this Information Sheet for Students in An Internship Programme.

Sincerely,

Mrs Paweena Chatsungnoen
PhD Student, Massey University

Project Contacts

If you have any questions or concerns regarding this study, please feel free to contact me, or my supervisors.

Name and contact detail of researcher

Paweena Chatsungnoen

In Thailand

Name of the University

Address Line1

Address Line2

Zip code

Tel xxx xxx xxx

pawphan@yahoo.com

In New Zealand

School of Educational Studies

College of Education

Massey University

Private Bag 11 222 Palmerston North

Tel 3569099 ext 8804

P.Chatsungnoen@massey.ac.nz

Name and contact detail of Supervisors

Dr Alyson McGee
School of Educational Studies
Massey University College of Education
Private Bag 11 222
Palmerston North
Ph 3569099 ext 8830

Distinguished Professor William Tunmer
School of Educational Studies
Massey University College of Education
Private Bag 11 222
Palmerston North
Ph 3569099 ext 8962

Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 11/70 (insert application number). If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Acting Chair, Massey University Human Ethics Committee: Southern B, telephone 06 350 5799 x 8729, email humanethicsouthb@massey.ac.nz.

6.3 Participant Consent Form



School of Educational Studies,
College of Education
Massey University
Private Bag 11 222
Palmerston North

NEEDS ANALYSIS FOR AN ENGLISH FOR SPECIFIC PURPOSES (ESP) COURSE FOR THAI UNDERGRADUATES IN A FOOD SCIENCE AND TECHNOLOGY PROGRAMME

PARTICIPANT CONSENT FORM – ENGLISH FOR SPECIFIC PURPOSE TEACHER

I have read the Information Sheet and have had the details of the study explained to me. I understand the information I share will be kept in the utmost confidentiality and will only be used for this specific study. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

Please tick / your choice below:

I agree to participate in this study under the conditions set out in the Information Sheet.

Yes No

I agree to the interview being sound recorded.

Yes No

I wish to have my recordings returned to me.

Yes No

Signature: **Date:**

Full Name - printed

6.4 Authority for the Release of Transcripts



NEEDS ANALYSIS FOR AN ENGLISH FOR SPECIFIC PURPOSES (ESP) COURSE FOR THAI UNDERGRADUATES IN A FOOD SCIENCE AND TECHNOLOGY PROGRAMME

AUTHORITY FOR THE RELEASE OF TRANSCRIPTS

I confirm that I have had the opportunity to read and amend the transcript of the interview(s) conducted with me.

I agree that the edited transcript and extracts from this may be used in reports and publications arising from the research.

Signature: **Date:**

Full Name - printed

Appendix 7 Descriptions of the TOEIC

TOEIC Descriptor on the Four Levels of Proficiency

According to the TOEIC scores descriptors, the overall score can be interpreted as shown in Table 1. Table 2 interprets scores in details including level of proficiency, strengths and weaknesses.

Table 1: Overall Score and Proficiency Level

(>960 Advanced) 905 - 990	General Professional Proficiency
785 - 900	Advanced Working Proficiency
605 – 780	Basic Working Proficiency
405 – 600	Intermediate
255 – 400	Elementary
0 – 250	Novice

Table 2: TOEIC Score Descriptors in Listening and Reading Sections

LISTENING				
Level	Level of Proficiency	Level	Strengths	Weaknesses
0-95	<p>No Proficiency</p> <p>No real English language skills.</p>			
100-145	<p>Memorized Proficiency</p> <p>In face-to-face communications, should be able to understand a number of memorized words and phrases:</p> <ul style="list-style-type: none"> <input type="checkbox"/> numbers (1-100) <input type="checkbox"/> person and place names <input type="checkbox"/> basic objects <input type="checkbox"/> today's date <input type="checkbox"/> weekdays <input type="checkbox"/> months <input type="checkbox"/> colours <p>Should not be expected to participate as a full partner in even simple face-to-face conversations.</p>			
150-245	<p>Elementary Proficiency</p> <p>In face-to-face communications, a person at this level should be able to understand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> simple questions and statements related to the responsibilities of the job; <input type="checkbox"/> minimum courtesy and travel requirements; <input type="checkbox"/> "who, what, when, where" type questions and answers 	200	<p>Test takers who score around 200 <i>typically</i> have the following strengths:</p>	<p>Test takers who score around 200 <i>typically</i> have the following weaknesses:</p>

	<p>Comprehension vocabulary will likely be limited to topics of immediate needs.</p>	<ul style="list-style-type: none"> ■ They can understand <i>short</i> (single-sentence) descriptions of the central idea of a photograph. ■ They can sometimes understand the central idea, purpose, and basic context of <i>extended</i> spoken texts when this information is supported by a lot of repetition and easy vocabulary. ■ They can understand details in <i>short</i> spoken exchanges and descriptions of photographs when the vocabulary is easy and when there is only a small amount of text that must be understood. ■ They can understand details in <i>extended</i> spoken texts when the requested information comes at the beginning or the end of the text and when it 	<ul style="list-style-type: none"> ■ They do not understand the central idea, purpose, or basic context of <i>short</i> spoken exchanges, even when the language is direct and no unexpected information is present. ■ They do not understand the central idea, purpose, and basic context of <i>extended</i> spoken texts when it is necessary to connect information across the text or when the vocabulary is somewhat difficult. ■ They do not understand details in <i>short</i> spoken exchanges when somewhat difficult vocabulary is used or when the language is syntactically complex. They do not understand details that include negative constructions. ■ They do not understand details in <i>extended</i> spoken
--	--	--	---

250-345	<p>Advanced Elementary Proficiency</p> <p>In face-to-face communications, a person at this level should be able to understand:</p> <ul style="list-style-type: none"> □ simple questions and statements related to the responsibility of the job; □ simple questions, answers, and statements; □ present tense form statements or questions; □ limited familiar topics within the scope of personal needs; □ minimum courtesy, travel and safety requirements; □ "what, who, when, where" type questions and statements. <p>Comprehension vocabulary will likely be limited to topics of immediate needs.</p>		<p>matches the words in the spoken text.</p>	<p>texts when the requested information is heard in the middle of the text. They do not understand paraphrased information or difficult grammatical constructions.</p>
		<p>300</p>	<p>Test takers who score around 300 <i>typically</i> have the following strengths:</p> <ul style="list-style-type: none"> ■ They can sometimes infer the central idea, purpose, and basic context of <i>short</i> spoken exchanges, especially when the vocabulary is not difficult. ■ They can understand the central idea, purpose, and basic context of <i>extended</i> spoken texts when this information is supported by repetition or paraphrase. ■ They can understand details in <i>short</i> spoken exchanges when easy or 	<p>Test takers who score around 300 <i>typically</i> have the following weaknesses:</p> <ul style="list-style-type: none"> ■ They have difficulty understanding the central idea, purpose, and basic context of <i>short</i> spoken exchanges when conversational responses are indirect or difficult to predict or when the vocabulary is difficult. ■ They do not understand the central idea, purpose, and basic context of <i>extended</i> spoken texts when it is necessary to connect information within the text or when difficult vocabulary is used.

		<p>medium-level vocabulary is used.</p> <ul style="list-style-type: none"> ■ They can understand details in <i>extended</i> spoken texts when the information is supported by repetition and when the requested information comes at the beginning or end of the spoken text. They can understand details when the information is slightly paraphrased. 	<ul style="list-style-type: none"> ■ They do not understand details in <i>short</i> spoken exchanges when language is syntactically complex or when difficult vocabulary is used. They do not usually understand details that include negative constructions. ■ They do not understand details in <i>extended</i> spoken texts when it is necessary to connect information across the text or when the information is not supported by repetition. They do not understand most paraphrased information or difficult grammatical constructions.
<p>350-395</p>	<p>Basic Working Proficiency</p> <p>In face-to-face communications, a person at this level should be able to understand:</p> <ul style="list-style-type: none"> □ most routine social demands and limited job requirements; □ everyday personal and job-related topics; □ well-known current events; 		

	<ul style="list-style-type: none"> <input type="checkbox"/> routine office matters; <input type="checkbox"/> other areas beyond immediate needs; and follow instructions and directions; <input type="checkbox"/> "what, who, when and where" type questions and answers. <p>In addition, a person at this level should be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> follow main points of a discussion or speech at a basic level in their respective professional field. 		
<p>400-445</p> <p>Working Proficiency</p> <p>In face-to-face communications, a person at this level should have the ability to understand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> most routine social demands; <input type="checkbox"/> conversations on work requirements; <input type="checkbox"/> some discussion on topics related to particular interests and special fields of competence; <input type="checkbox"/> everyday personal and job-related topics; <input type="checkbox"/> well-known current events; <input type="checkbox"/> routine office matters; <input type="checkbox"/> other areas beyond their immediate needs; <input type="checkbox"/> and follow instructions and directions; <input type="checkbox"/> "what, who, when and where" type questions and answers. <p>In addition, a person at this level should be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> follow main points of a discussion or speech in their respective professional field. 	<p style="text-align: center;">400</p>	<p>Test takers who score around 400 <i>typically</i> have the following strengths:</p> <ul style="list-style-type: none"> ■ They can infer the central idea, purpose, and basic context of <i>short</i> spoken exchanges across a broad range of vocabulary, even when conversational responses are indirect or not easy to predict. ■ They can infer the central idea, purpose, and basic context of <i>extended</i> spoken texts across a broad range of vocabulary. They can do this even 	<p>Test takers who receive a score at this level <i>typically</i> have weaknesses only when uncommon grammar or vocabulary is used.</p>
<p>450-495</p> <p>Professional Proficiency</p> <p>In face-to-face communications, a person at this level should be able to understand:</p>			

	<ul style="list-style-type: none"> □ the essentials of all speech; □ most professionally related topics; □ technical subjects; □ general topics and areas of special interest. <p>In addition, a person at this level should also be able to understand with facility:</p> <ul style="list-style-type: none"> □ the essentials of conversation between native speakers; □ messages communicated through broadcast media; □ public addresses. 	<p>when the information is not supported by repetition or paraphrase and when it is necessary to connect information across the text.</p> <ul style="list-style-type: none"> ■ They can understand details in <i>short</i> spoken exchanges, even when negative constructions are present, when the language is syntactically complex, or when difficult vocabulary is used. ■ They can understand details in <i>extended</i> spoken texts, even when it is necessary to connect information across the text and when this information is not supported by repetition. They can understand details when the information is paraphrased or when negative constructions are present. 	
--	---	--	--

READING				
Level	Level of Proficiency	Level	Strengths	Weaknesses
0-95	<p>No Proficiency No real English language skills.</p>			
100-145	<p>Memorized Proficiency A person at this level should usually be able to read:</p> <ul style="list-style-type: none"> <input type="checkbox"/> numbers (0-100); <input type="checkbox"/> individual words or phrases; <input type="checkbox"/> personal and place names; <input type="checkbox"/> street signs; <input type="checkbox"/> simple warning signs or posters; <input type="checkbox"/> office and shop designations; <input type="checkbox"/> simple standard office forms. <p>Cannot usually read full sentences.</p>			
150-245	<p>Elementary Proficiency A person at this level should be able to read:</p> <ul style="list-style-type: none"> <input type="checkbox"/> simple texts written using simple language; <input type="checkbox"/> very frequently used grammar and vocabulary; <input type="checkbox"/> familiar task specific vocabulary; <input type="checkbox"/> material written in the present tense; <input type="checkbox"/> simple narratives of routine behaviour; <input type="checkbox"/> highly predictable descriptions of people, places, or things; <input type="checkbox"/> simple explanations of geography, or directions. <p>In the workplace a person at this level should be able to read:</p> <ul style="list-style-type: none"> <input type="checkbox"/> simple email messages; <input type="checkbox"/> simple fax messages; <input type="checkbox"/> simple standard office memos. 	150	<p>Test takers who score around 150 <i>typically</i> have the following strengths:</p> <ul style="list-style-type: none"> ■ They can locate the correct answer to a factual question when not very much reading is necessary and when the language of the text matches the information that is required. 	<p>Test takers who score around 150 <i>typically</i> have the following weaknesses:</p> <ul style="list-style-type: none"> ■ They cannot make inferences about information in written texts. ■ They do not understand paraphrased factual information. They rely on matching words and phrases in the text to answer questions.

	<p>At this level material will likely have to be reread several times to ensure comprehension.</p>		<ul style="list-style-type: none"> ■ They are often unable to connect information even within a single sentence. ■ They understand only a limited range of vocabulary. ■ They do not understand even easy grammatical constructions when other language features, such as difficult vocabulary or the need to connect information, are also required.
<p>250-345</p>	<p>Advanced Elementary Proficiency A person at this level should be able to read:</p> <ul style="list-style-type: none"> □ routine announcements; □ simple biographical information; □ simple narrations of events; □ straightforward newspaper headlines. <p>In the workplace a person at this level should be able to:</p> <ul style="list-style-type: none"> □ read routine memo messages written in standard English; □ make distinctions in time reference. <p>When reading materials of particular field of interest a person at this level should be able to:</p>	<p>250</p>	<p>Test takers who score around 250 <i>typically</i> have the following strengths:</p> <ul style="list-style-type: none"> ■ They can understand easy vocabulary and common phrases. ■ They can understand the most-common, rule-based grammatical constructions when not very much reading is necessary. <p>Test takers who score around 250 <i>typically</i> have the following weaknesses:</p> <ul style="list-style-type: none"> ■ They do not understand inferences that require paraphrase or connecting information. ■ They have a very limited ability to understand factual information expressed as a

	<p>□ understand some of the main ideas.</p>		<p>factual question when the answer is a simple paraphrase of the information in the text.</p> <ul style="list-style-type: none"> ■ They can sometimes connect information within one or two sentences. ■ They can understand easy vocabulary, and they can sometimes understand medium-level vocabulary. ■ They can understand common, rule-based grammatical structures. They can make correct grammatical choices, even when other features of language, such as difficult vocabulary or the need to connect information, are present. 	<p>paraphrase using difficult vocabulary. They often depend on finding words and phrases in the text that match the same words and phrases in the question.</p> <ul style="list-style-type: none"> ■ They usually do not connect information beyond two sentences. ■ They do not understand difficult vocabulary, unusual meanings of common words, or idiomatic usage. They usually cannot make distinctions between the meanings of closely related words. ■ They do not understand more-difficult, complex, or uncommon grammatical constructions.
<p>350-395</p>	<p>Basic Working Proficiency A person at this level should be able to read:</p> <ul style="list-style-type: none"> □ straightforward, familiar, factual material; 	<p>350</p>		

	<ul style="list-style-type: none"> <input type="checkbox"/> locate and understand the main ideas and details of general reader material; <input type="checkbox"/> uncomplicated prose on familiar subjects presented in a predictable sequence; <input type="checkbox"/> descriptions of frequently occurring events; <input type="checkbox"/> standard business letters; <input type="checkbox"/> simple technical material, such as operating instructions. <p>When reading material of special interest a person at this level should be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> summarize the material; <input type="checkbox"/> perform sorting and locating tasks within written texts beyond their general level. <p>A reader at this level uses a standard vocabulary, but should also be able to use context and real-world cues to understand text.</p>		<p>Test takers who score around 350 <i>typically</i> have the following strengths:</p> <ul style="list-style-type: none"> ■ They can infer the central idea and purpose of a written text, and they can make inferences about details. ■ They can read for meaning. They can understand factual information, even when it is paraphrased. <p>Test takers who score around 350 <i>typically</i> have the following weaknesses:</p> <ul style="list-style-type: none"> ■ They do not connect information across a wide area within a text. ■ They do not consistently understand difficult vocabulary, unusual meanings of common words, or idiomatic usage. They usually cannot make distinctions between the meanings of closely related words.
<p>400-445</p> <p>Working Proficiency</p> <p>A person at this level should be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> read most factual materials of a non-technical nature; <input type="checkbox"/> understand reading materials on a familiar topic; <input type="checkbox"/> separate the main ideas and details, from the lesser ideas; <input type="checkbox"/> use that distinction to improve understanding; <input type="checkbox"/> get a general sense of both the main and subsidiary ideas of most material; <input type="checkbox"/> read and understand standard reports, training manuals and technical manuals. 		<p>Test takers who score around 350 <i>typically</i> have the following strengths:</p> <ul style="list-style-type: none"> ■ They can understand medium-level vocabulary. They can sometimes understand difficult vocabulary in context, unusual meanings of <p>Test takers who score around 350 <i>typically</i> have the following weaknesses:</p> <ul style="list-style-type: none"> ■ They can connect information across a small area within a text, even when the vocabulary and grammar of the text are difficult. ■ They can understand medium-level vocabulary. They can sometimes understand difficult vocabulary in context, unusual meanings of 	

	<p>When reading unfamiliar material, a person at this level:</p> <ul style="list-style-type: none"> □ is able to use context and real-word knowledge to make sensible assumptions related to its meaning; □ may read relatively slowly and will not be able to discern nuance, or intentionally disguised meanings. 		<p>common words, and idiomatic usage.</p> <ul style="list-style-type: none"> ■ They can understand rule-based grammatical structures. They can also understand difficult, complex, and uncommon grammatical constructions. 	
<p>450-495</p>	<p>Professional Proficiency</p> <p>At this level a person should be able to read:</p> <ul style="list-style-type: none"> □ any type of text; □ routine correspondence; □ technical material of special interest; □ items in periodicals; □ general reports; □ materials which include hypotheses, arguments and supported opinions. <p>A person at this level:</p> <ul style="list-style-type: none"> □ rarely misreads; □ is almost always able to relate ideas; □ almost always understands material correctly; □ can "read between the lines". <p>At this level reading is not usually dependent on subject matter knowledge. A complete comprehension of reading material outside of general experience depends heavily on cultural knowledge.</p>	<p>450</p>	<p>Test takers who score around 450 <i>typically</i> have the following strengths:</p> <ul style="list-style-type: none"> ■ They can infer the central idea and purpose of a written text, and they can make inferences about details. ■ They can read for meaning. They can understand factual information, even when it is paraphrased. ■ They can connect information across an entire text, and they can make connections 	<p>Test takers who score around 450 <i>typically</i> have weaknesses only when the information tested is particularly dense or involves difficult vocabulary.</p>

			<p>between two related texts.</p> <ul style="list-style-type: none">■ They can understand a broad range of vocabulary, unusual meanings of common words, and idiomatic usage. They can also make distinctions between the meanings of closely related words.■ They can understand rule-based grammatical structures. They can also understand difficult, complex, and uncommon grammatical constructions.	
--	--	--	--	--