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English Usage and Problems of Industrial Pharmacists at Two Large Multi-National Pharmaceutical Manufacturers in Thailand

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Abstract

In pharmaceutical industry, insufficient English proficiency of industrial pharmacists in international communication can cause adverse outcomes in the process of overseas product registration and regulatory audits. This study explores English use and problems of 51 industrial pharmacists within two large multinational pharmaceutical manufacturers by using a self-developed questionnaire based on the frameworks of needs analysis (Hutchinson & Waters, 1987) and communicative competence (Canale & Swain, 1980). The findings indicate that reading is the most frequently used skill, followed by writing, listening and speaking, respectively. Specific communicative tasks which Thai industrial pharmacists most commonly performed were: 1) reading emails, 2) writing emails, 3) reading validation protocols/reports, 4) reading pharmacopoeias and pharmaceutical textbooks, and 5) reading procedural documents. A major problem lies within oral communication skills. The implications of the findings show valuable sources of target language events which can benefit ESP educators and pharmaceutical trainers in the development of ESP courses.

Keywords: English communication skills, international communication, industrial pharmacists, English for Specific Purposes, needs analysis

1. Introduction

1.1 Background of the Study

In Thailand, the continuing globalization of the pharmaceutical industry, with growth in imports and exports, necessitates an increase in the use of English for communication. Since Thailand has a small number of local pharmaceutical manufacturers, and they have limited production capabilities, the country is unable to produce adequate pharmaceutical products, and therefore depends upon imported products to meet domestic demand. Imports of pharmaceutical products have increased considerably over the last 10 years, and in 2010 accounted for approximately 70% of total domestic drug consumption (Thai Bureau of Drug Control, 2012). Some local manufacturers have increased exports of their products to ASEAN countries, Europe, USA, and others (Department of Trade Negotiations, 2009; IMS Health Thailand, 2011). This growing interdependency within the pharmaceutical industry increases the need of industrial pharmacists to use English for international communication.

Inadequate English proficiency can lead to industrial pharmacists having many problems in their work life. For example, in a manufacturer's certification process by foreign health authorities, industrial pharmacists have to use listening and speaking to welcome, discuss, interact and negotiate with auditors during audit meetings and plant tours. Failures in English communication with foreign auditors may arise during audits, such as the inability to clearly answer questions, offer explanations showing a company's compliance to regulatory requirements, and to properly defend against something which is arguable. The consequences can be adverse audit outcomes, and thus delay the approval process for a manufacturing license (Language is Biggest, 2010). Therefore, English communication problems in the work context of industrial pharmacists should be resolved, in order that they can use English effectively and professionally.

A number of researchers have investigated English usage and problems amongst health professionals, based upon a needs analysis framework. Phutirat & Suwannapatama (2007) and Thongtang (2009) reported the use of four English skills in the daily tasks of hospital pharmacists. However, none of these studies focused upon

English communication problems concerning industrial pharmacists. This study aims to identify English use and associated problems concerning Thai industrial pharmacists. The four English communication skills to be investigated are reading, writing, listening and speaking.

1.2 Relevant Scholarship

This section presents a review of relevant literature regarding (a) English for Specific Purposes (ESP), (b) needs analysis, (c) English skills used in the pharmaceutical manufacturing industry in Thailand, (d) problems of English use in a work context, and (e) previous studies.

1.2.1 English for Specific Purposes (ESP)

A number of ESP researchers have proposed worthwhile ideas about ESP definitions. Robinson (1980) argued that an ESP course should focus on the learner's success at being able to perform well in the occupational or academic situation. In addition, the course should be tailor-made and based upon careful analysis of learner needs. Robinson's emphasis on learner needs is in accord with Hutchinson & Waters (1987), who described ESP as an approach to English teaching based upon learner needs. They added that ESP teaching contents and methods may vary, depending upon a learner's particular interests. Dudley-Evans & St. John (1998) proposed a comprehensive definition of ESP in terms of absolute and variable characteristics. Hyland (2002) described ESP as a research-based language education with focus specificity, which refers to a distinctive approach to language teaching based upon two main concerns: 1) specifically identifying language features, discourse practices and communicative skills for different target groups of learners, and 2) providing teaching practices specific to the level of expertise and particular needs of learners.

In summary, ESP is an approach to English teaching which focuses upon specific needs of learners from the academic to professional fields. An ESP course is specifically designed for each target group, so that the teaching content and methodology may differ, depending upon the particular interests of the learners.

1.2.2 Needs Analysis

1) Definitions of Needs Analysis

Needs analysis refers to the processes involved in the collection of information pertaining to the needs of a particular group of learners, in occupational or academic fields. A common purpose of needs analysis ~~es~~ is to identify the learning needs of students. The identified and interpreted data become the basis for further development, such as: teaching materials, learning activities, course evaluation etc. (Brown, 2011). With substantial contribution to ESP, needs analysis is viewed as a cornerstone and the first step before all other decisions are made in the development of an ESP curriculum (Brown, 2011; Dudley-Evans & St. John, 1998; West, 1997).

2) Definitions of Needs

ESP researchers defined needs in a number of ways, based upon different philosophies and perspectives. Hutchinson & Waters (1987) defined needs by dividing them into target needs, 'what the learner needs to do in the target situation', and learning needs 'what the learner needs to do in order to learn' (Hutchinson & Waters, 1987, p. 54). The target situation may not adequately reflect the real learning needs in the ESP learning situation, because it can reveal only the destination of language learning. To achieve the course objectives, ESP practitioners must also devote particular attention to the conditions of the learning situation, knowledge, skills, preferred learning strategies and the motivations of the learners.

In conclusion, ESP is an approach to language teaching based upon learner needs which can be identified by needs analysis. These identified needs can be used as a basis for ESP curriculum development.

1.2.3 English Skills Used in the Pharmaceutical Manufacturing Industry in Thailand

Thai industrial pharmacists use four English skills (reading, writing, listening, and speaking) in routine work. Based upon the researcher's experience as an industrial pharmacist, and interviews with some Thai industrial pharmacists, these four skills may be used at different frequencies, depending upon responsibilities and level of job position.

Specific work-related documents and work activities illustrate some differences and similarities in language discourse between industrial pharmacists and other similar professions. Hospital pharmacists use English skills to communicate with foreign patients and medical professionals (Phutirat & Suwannapatama, 2007; Thongtang, 2009). In contrast, industrial engineers working in the manufacturing industry communicate with similar groups of people, such as: foreign bosses, colleagues, customers and suppliers. Several previous studies have also shown some similar documents which industrial pharmacists and industrial engineers use, including: emails, letters,

equipment manuals, work instructions, minutes of meetings and certain reports (Chalardsit, 2007; Hart-Rawung, 2008; Kassim & Ali, 2010; Spence & Liu; 2013).

1.2.4 Problems of English Use in a Work Context

All four English skills are believed to be important for industrial pharmacists to function effectively in their daily work. Previous studies (Chaichanasiri, 2007; Chalardsith, 2007; Hart-Rawung, 2008; Phutirat & Suwannapatama, 2007; Rogerson-Revell, 2007) reviewed the problems of English usage in different international workplaces, as follows:

1) Reading Skills

Common problems with reading skills are a lack of knowledge of general vocabulary, technical terms, idioms and grammatical structure, difficulty in understanding the details or main ideas of a text and difficulty guessing the meanings of unknown words.

2) Writing Skills

The problems that often occur with writing skills are a lack of knowledge of vocabulary, grammatical and sentence structure, selecting appropriate words and expressing ideas clearly. A particular problem concerning writing skills is difficulty in formatting paragraphs and using correct spelling.

3) Listening Skills

The most common problems of listening skills are: a variety of foreign accents, a lack of knowledge of general vocabulary and technical terms, idioms, comprehending lengthy conversations and rapid speech.

4) Speaking Skills

A lack of vocabulary and grammatical knowledge is still an important problem with regard to speaking. Other common speaking skill problems are: pronouncing appropriate stress and intonation, selecting appropriate words and correct sentence patterns, expressing ideas appropriately, providing immediate reaction in a conversation, interrupting or entering into discussions in a polite manner and inhibition.

Problems with English language use in international workplaces are diverse, but they can be grouped into categories according to theoretical frameworks established in the ESL/EFL field for explaining problems with English language learning. Strevens (1980) divided language problems into linguistic and sociolinguistic types. These problems may result from a lack of English competence. According to Canale and Swain (1980), learners should be prepared to achieve a sufficient level of three communicative competence components: 1) grammatical competence, which involves knowledge of lexicons and rules of morphology, syntax, semantics, and phonology, 2) sociolinguistic competence, which involves the ability to know about sociocultural rules in ways whereby learners can produce and comprehend language appropriately and politely in certain social situations, 3) strategic competence, which refers to the ability to use verbal and non-verbal communication strategies, in order to compensate breakdowns in communication due to insufficient competence.

1.2.5 Previous Studies

Several studies have investigated English usage and associated problems within the healthcare professions. Alharby (2005) conducted a study to investigate the English communicative needs of health professions working for three different hospitals located in the Riyadh area of Saudi Arabia by using a questionnaire survey. In this study, the researcher investigated three aspects based on the framework of needs analysis: the extent to which English is used by health professionals in their careers, the level of four English skills required in their work-related activities and their views on English language preparations during their pervious college study.

Thongtang (2009) investigated English usage and associated problems, and strategies used to understand English, amongst the medical personnel of Uttaradit hospital, by focusing upon speaking and listening skills. The findings revealed that medical personnel in the emergency departments most frequently used reading skills, more so than others. Getting the main ideas of verbal messages was the most problematic listening task, whilst appropriate vocabulary and idiom usage were the greatest speaking problems.

Phutirat & Suwannapatama (2007) investigated the problems and needs of hospital pharmacist English skills, in two large private hospitals in Bangkok, focusing upon the four English skills. The results indicated that listening was the most problematic skill, followed by speaking, writing and reading, respectively. The most serious problems were writing pharmaceutical documents and job applications, and listening to foreign patients' general questions. Reading was the least problematic skill. However, the pharmacists expressed that their greatest need was for reading skills.

2. Method

This section outlines the research methodology employed in the present study, including (a) participant characteristics, (b) sampling procedures, (c) research instrument, (d) data collection and (e) data analysis.

2.1 Participant Characteristics

The participants of this study were 51 industrial pharmacists who had at least 1 year's work experience in pharmaceutical manufacturing at two pharmaceutical manufacturers: OLIC (Thailand) Limited (36 industrial pharmacists) and Interthai Pharmaceutical Manufacturing Limited (15 industrial pharmacists).

2.2 Sampling Procedures

The participants were selected using the method of purposive sampling based upon two reasons: First, the two companies are the top multinational pharmaceutical manufactures in Thailand. Second, these companies are contractual manufacturers of pharmaceutical products, and have a number of international clients from the USA, Europe and Asia. This provides their employees with plenty of opportunity to communicate in English with their clients.

2.3 Research Instrument

The research instrument in this study was a survey questionnaire. This self-administered questionnaire was developed using a needs analysis framework (Hutchinson & Waters, 1987) by focusing upon an analysis of the target situation. The design of the questionnaire was based upon background information obtained through previous research, and preliminary interviews with some industrial pharmacists during the development process of the questionnaire.

2.3.1 Construction of the Questionnaire

The questionnaire construction consisted of several steps. First, the researcher reviewed related literature. The next step was to conduct preliminary interviews with five industrial pharmacists, in order to recognize problems with English usage in their professional careers, and strategies which were useful for handling the problems. The information obtained from the literature reviews and interviews was used in the development of the initial draft of the questionnaire. The initial Thai version was piloted with 15 industrial pharmacists in other pharmaceutical manufacturers to check clarity and comprehensibility. Conbrach's alpha was calculated for the parts which have a rating scale, in order to measure the reliability of the questionnaire. Revisions by deleting some questions may be done to obtain Cronbach's alpha of ≥ 0.70, which Nunnally (1978) offered as an acceptable alpha. Finally, after revisions according to suggestions from the advisor and master project committee, the final version of the questionnaire was employed in the data collection. The reliability coefficients obtained from the pilot test were 0.843 for the part on English use and 0.848 for the part on English usage problems. Finally, the final version of the questionnaire was employed in the data collection.

2.3.2 Contents of Questionnaire

A Thai version of questionnaire was used for data collection, to reduce ambiguity and avoid misinterpretation. The questionnaire was divided into five parts.

Part I aimed to obtain demographic data, which included gender, age, years of work experience, educational background and positions held. Part II listed predefined routine tasks in order to allow the participants to rate how frequently they use English skills to perform routine tasks, and which were grouped under four main skills: reading, writing, speaking and listening. This part used a 5-point Likert frequency scale ranging from 1 = least frequent to 5 = most frequent. Part III focused upon determining how frequently the industrial pharmacists encountered problems with English usage. The same rating scale as Part II was used.

Table 1. Mean range and interpretation

Mean Range	Descriptive Interpretation
4.51-5.00	Very high
3.51-4.50	High
2.51-3.50	Moderate
1.51-2.50	Low
1.00-1.50	Very low

Table 2. Demographic characteristics of participants

Types of Demographic Data	Number	Percentage
Gender		
▪ Male	16	31.4
▪ Female	35	68.6
Age		
▪ 21-30 years	25	49.0
▪ 31-40 years	24	47.1
▪ 41-50 years	1	2.0
▪ 51-60 years	1	2.0
Educational Background		
Highest Degree		
▪ Bachelor's Degree	35	68.6
▪ Master's Degree	15	29.4
▪ Doctoral Degree	1	2.0
Types of English Courses Taken During University Study		
▪ General English	27	52.9
▪ English for Specific Purposes	2	3.9
▪ Both types	22	43.1
Work Experience		
Years of Work Experience in Pharmaceutical Manufacturing		
▪ 1-5 years	24	47.1
▪ 6-10 years	17	33.3
▪ 11-15 years	7	13.7
▪ 16-20 years	1	2.0
▪ 21-25 years	0	0.0
▪ 26-30 years	1	2.0
▪ 31-35 years	1	2.0
Job Level		
▪ Non-managerial level	40	78.4
▪ Managerial level	11	21.6
Job Responsibilities		
Quality Assurance	22	43.1
Production	15	29.4
Quality Control	8	15.7
Research and Development	6	11.8
Regulatory affairs	4	7.8
Other	2	3.9

2.3 Data Collection

The survey was conducted by directly distributing copies of the questionnaires to 51 pharmacists working at the selected multinational pharmaceutical manufacturers. The questionnaires were left with the participants for two weeks, in order to provide sufficient time for them to read and respond with care. After the target period of two weeks, the participants were asked to return the questionnaires. The data collected would then be analyzed.

2.4 Data Analysis

The quantitative data from the questionnaires were analyzed using Microsoft Excel. The statistics to be used were percentages, means ($x\square$), and standard deviation. Percentage was used to analyze the demographic data of the participants. Means ($x\square$) were computed to determine average levels of English skill use and associated problems, by referring to the interpretation of 5-point mean rating from Srisaard (2002), as shown in Table 1. Standard deviation (SD) was also used to determine the spread of the distribution of means.

3. Results

This section presents a summary of the data collected from the industrial pharmacists through the questionnaire survey. The results were divided into three parts: (a) demographic data, (b) the use of English skills, and (c) problems with English usage.

3.1 Demographic Data

The demographic information derived from 51 industrial pharmacists. The number of returned questionnaires was 51, representing a response rate of 100%. The demographic data were gathered from Part I of the questionnaire to elicit information regarding gender, age, and years of work experience, educational background, and positions, as presented in Table 2.

Table 2 shows the demographic characteristics of the participants. The number of female pharmacists was twice that of male pharmacists, showing a female predominance. About a half of the participants (49%) were aged between 21 and 30, 47% were aged between 31 and 40, and few of them (4%) were aged over 40.

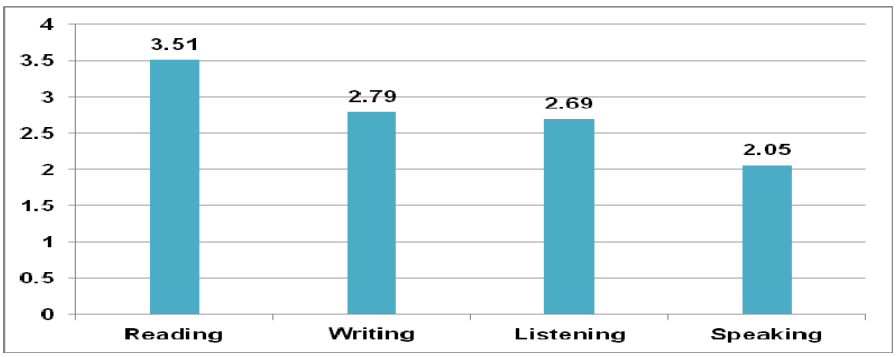

Figure 1. The overall levels of English skills usage

Table 3. Levels of reading and writing skills usage

Skill	Routine tasks	Mean	S.D	Level
Reading	1. Reading letters or emails	4.20	1.02	High
	2. Reading protocols and reports concerning quality assurance and validations	3.92	1.06	High
	3. Reading pharmacopoeias and text books regarding pharmaceutical sciences and technology	3.63	1.22	High
	4. Reading standard operating procedures or work instructions	3.63	1.04	High
	5. Reading guidelines and references on laws and regulations of pharmaceutical manufacturing and product registration	3.61	0.9	High
	6. Reading manuals of manufacturing machines or laboratory equipment	3.35	1.13	Moderate
	7. Reading training materials	3.24	0.97	Moderate
	8. Reading minutes of meetings	3.12	0.97	Moderate
	9. Reading manuals of software regarding production planning or QC laboratory equipment	2.86	1.13	Moderate
	Average	**3.51**	**1.05**	**High**
Writing	1. Composing letters or emails	4.02	1.12	High
	2. Writing standard operating procedures or work instructions	3.16	1.12	Moderate
	3. Establishing quality assurance/validation protocols and reports	3.04	1.3	Moderate
	4. Preparing presentations for project proposal or progress reports	2.82	1.16	Moderate
	5. Writing minutes of meetings	2.69	1.12	Moderate
	6. Writing manuals for manufacturing machines or laboratory equipment	2.43	1.08	Moderate
	7. Preparing training materials	2.41	0.92	Moderate
	8. Writing analytical methods and product specifications	2.41	1.36	Moderate
	9. Preparing product registration dossiers	2.16	1.16	Moderate
	Average	**2.79**	**1.15**	**Moderate**

Table 4. Levels of listening and writing skills usage

Skill	Routine tasks	Mean	S.D	Level
Listening	1. Listening to colleagues, customers, suppliers or auditors in face-to-face discussions	3.00	1.02	Moderate
	2. Listening in audit wrap-up meetings	2.73	1.1	Moderate
	3. Listening in internal meetings	2.69	1.01	Moderate
	4. Listening in seminars, conferences or training courses regarding pharmaceutical knowledge and technology	2.65	0.84	Moderate
	5. Listening to bosses while discussing work-related matters	2.63	1.02	Moderate
	6. Listening to colleagues, customers, suppliers or auditors while discussing work-related matters by phone or teleconference	2.41	1.13	Low
	Average	**2.69**	**1.02**	**Moderate**
Speaking	1. Face-to-face discussions with non-Thai speaking colleagues, customers, visitors, suppliers or auditors	2.59	1.13	Moderate
	2. Negotiating with non-Thai speaking colleagues, customers, visitors, suppliers or auditors	2.22	1.12	Low
	3. Discussing work-related matters with non-Thai speaking bosses	2.16	1.05	Low
	4. Discussing with non-Thai speaking colleagues, customers, visitors, suppliers or auditors by phone or teleconference	2.16	1.05	Low
	5. Discussing work-related matters in internal meetings	1.82	0.99	Low
	6. Presenting work progresses or reports in a weekly, monthly or yearly meetings	1.71	0.97	Low
	7. Instructing, explaining, or demonstrating in seminars or training courses	1.67	0.95	Low
	Average	**2.05**	**1.04**	**Low**

The educational background revealed that the majority of the participants (69%) held a Bachelor's Degree as their highest degree. Nearly two-thirds of the pharmacists held a Master's degree, but a very small percentage (2%) held a Doctoral Degree. More than half of them (53%) identified English courses at their university as General English, while a smaller percentage (43%) took courses in General English and English for Specific Purposes.

Almost half of the participants (47%) had 1 to 5 years' experience in pharmaceutical manufacturing. One-third of them (33%) had experience of between 6 to 10 years, whereas some had longer working experiences of between 11 and 15 years. Only a few (4%) had working experience of over 15 years. The majority of industrial pharmacists (78%) took a non-managerial position, nearly four times greater than that of a managerial position (22%). They had different job responsibilities, with the top three categories being Quality Assurance (43%), Production (29%) and Quality Control (16%).

3.2 The Use of English Skills

This section presents the findings of the English skill usage of Thai industrial pharmacists. They were asked to rate the frequency of their routine communicative tasks in four English skills. The mean rating for levels of English use was interpreted as follows: 1.00-1.50 = Very low, 1.51-2.50 = Low, 2.51-3.50 = Moderate, 3.51-4.50 = High and 4.51-5.00 = Very high.

The overall results of English skills usage was first presented in Figure 1. Next, the detailed results for each skill are presented in Tables 3-4. As can be seen in Figure 1, the skill which received the highest mean score was 'reading' (3.48), followed by 'writing skills' (2.79), 'listening skills' (2.69), and 'speaking skills' (2.05). This indicated that the industrial pharmacists used reading skills at work more frequently than writing, listening and speaking skills, respectively.

Table 3 shows the frequency of reading and writing tasks that the industrial pharmacists used. As can be seen, the average mean of reading skills use sits at the highest level (3.51). Five out of nine routine tasks obtained mean scores over than 3.51, indicating that Thai industrial pharmacists used reading tasks more so than other skills. The top three routine reading tasks are reading letters or emails (4.02), reading protocols or plans and reports concerning quality assurance and validations (3.92), and reading pharmacopoeias and text books regarding pharmaceutical sciences and technology (3.63). On average, writing skills were used at a moderate level, with a mean score of 2.79. Composing letters or emails for work-related matters was the only writing task that obtained

a mean score of 4.02, indicating that Thai industrial pharmacists performed writing tasks at a high level. The top three routine tasks are: composing letters or emails (4.02), writing standard operating procedures or work instructions (3.16), and establishing quality assurance/validation protocols and reports (3.04).

Table 4 presents the levels of listening skills usage in routine tasks of industrial pharmacists. On average, the industrial pharmacists used listening skills in their routine work at a moderate level. Five out of six listening tasks obtained mean scores which indicated a moderate level of English use. The top three routine tasks are: listening to colleagues, customers, and suppliers or auditors while discussing work-related matters face-to-face (3.00), listening in audit wrap-up meetings (2.73), and listening in internal meetings (2.69).

The overall findings show that performing routine speaking tasks was at a low level, with an average mean score of 2.05. The top three routine tasks are contact with non-Thai speaking colleagues, customers, visitors, suppliers or auditors in face-to-face discussions (2.59), negotiations (2.22), discussions by phone/teleconference, and discussing work-related matters with bosses (2.16).

The researcher observed a great difference in the levels of oral communication skill usage between managerial and non-managerial pharmacists. As shown in Figure 2, managerial pharmacists had much higher mean scores in oral communication skills. This indicated that managerial pharmacists used oral communication skills much more frequently than non-managerial pharmacists. This reflected that different job position levels might require different levels of English skills needed. Thus, more studies should be conducted to investigate the differences between English skills used, particularly between managerial and non-managerial pharmacists, in order to gain a better understanding of English skill use.

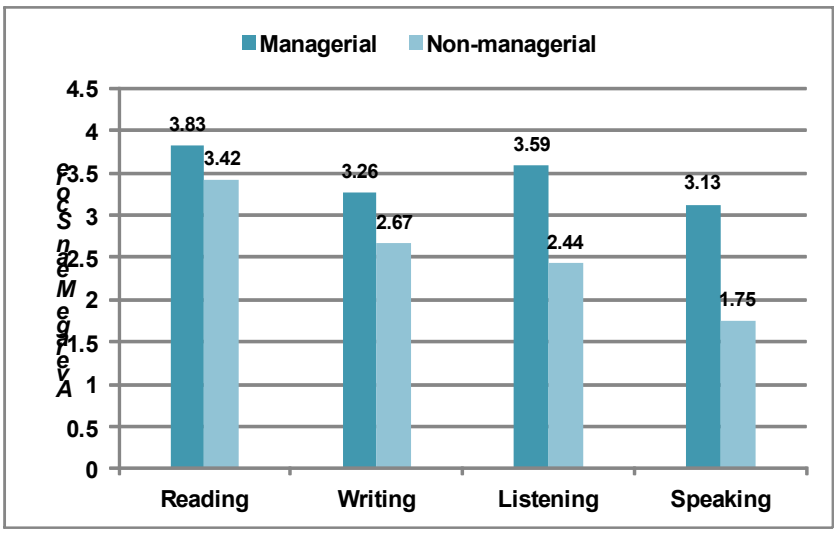

Figure 2. English skills used by managerial and non-managerial pharmacists

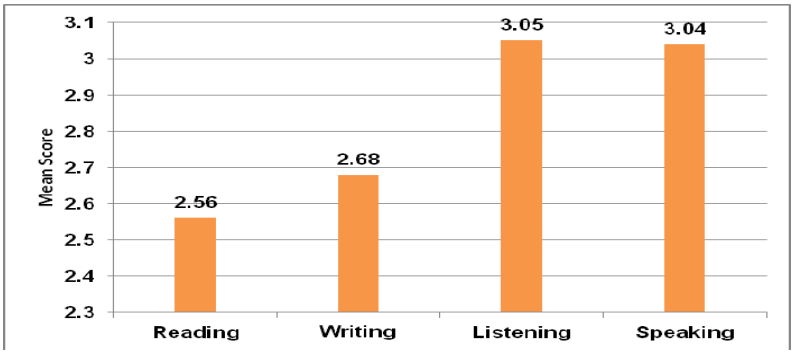

Figure 3. The overall levels of english problems

Table 5. Levels of listening and speaking problems

Skill	Problems	Mean	S.D.	Level
Listening	1. Understanding fast speech	3.55	1.03	High
	2. Understanding unfamiliar accents e.g., Japanese, German, Indian or Singaporean English speakers.	3.51	0.99	High
	3. Understanding lengthy speech.	3.16	0.95	Moderate
	4. Getting anxious when listening during having conversations with foreigners	3.04	1.06	Moderate
	5. Understanding details of spoken messages	2.94	0.86	Moderate
	6. Getting the main ideas of spoken messages	2.78	0.88	Moderate
	7. Lacking knowledge of general vocabulary	2.75	0.89	Moderate
	8. Lacking knowledge of technical terminology	2.67	0.84	Moderate
	Average	**3.05**	**0.94**	**Moderate**
Speaking	1. Making word choices	3.20	0.96	Moderate
	2. Pronouncing words properly	3.20	1.10	Moderate
	3. Getting anxious in conversations with foreigners	3.16	1.14	Moderate
	4. Entering discussion politely and properly	3.16	1.05	Moderate
	5. Producing complete and grammatically correct sentences	3.04	0.96	Moderate
	6. Responding at a proper time during conversations	2.90	1.04	Moderate
	7. Lacking knowledge of technical terminology	2.88	0.84	Moderate
	8. Lacking knowledge of general vocabulary	2.78	0.92	Moderate
	Average	**3.04**	**1.00**	**Moderate**

3.3 Problems with English Usage

The problems with English usage are divided into four skills: reading, writing, listening and speaking. The problem levels were interpreted through a mean rating from 1 to 5 (1.00-1.50 = Very low, 1.51-2.50 = Low, 2.51-3.50 = Moderate, 3.51-4.50 = High, and 4.51-5.00 = Very high).

Figure 3 shows that listening problems received the highest average mean score (3.05), followed by speaking (3.04), writing (2.68) and reading problems (2.56). This indicated that, overall, industrial pharmacists encountered listening and speaking problems within the workplace at a greater level than writing and reading problems.

Table 5 shows the levels of listening and speaking problems which industrial pharmacists encountered in their routine work. Overall, industrial pharmacists experienced listening problems at a moderate level, with a mean score of 3.05. It is also worth noting that understanding rapid speech and unfamiliar accents were the only two problems which denoted a high level. The top three listening problems understood rapid speech (3.55), unfamiliar accents (3.51) and lengthy speech (3.16).

Overall, industrial pharmacists faced speaking problems at a moderate level. The top three speaking problems were: making choices of words and pronouncing words properly (3.20), getting anxious when having conversations with foreigners and entering discussions politely and properly (3.16), and producing complete and grammatically correct sentences (3.04).

Table 6 presents the levels of writing and reading problems which industrial pharmacists encountered in their routine work. Overall, industrial pharmacists encountered writing problems at a moderate level. Making choices of words was the greatest writing problem. The top three writing problems were: making choices of words (3.06), having time constraints (2.84) and lacking knowledge of general vocabulary (2.75). It is worth noting that four out of five top writing problems were semantically-related.

Overall, industrial pharmacists faced reading problems at a moderate level, with an average mean score of 2.56, showing the lowest level of problems. Lacking knowledge of idioms and slang was the biggest reading problem. The top three reading problems were lacking knowledge of idioms and slang (3.35), general vocabulary (2.71) and lacking knowledge of technical terminology (2.69).

Table 6. Level of writing and reading problems

Skill	Problems	Mean	S.D.	Level
Writing	1. Making choices of words	3.06	0.81	Moderate
	2. Having time constraints	2.84	0.95	Moderate
	3. Lacking knowledge of general vocabulary	2.75	0.87	Moderate
	4. Lacking knowledge of technical terminology	2.73	1.00	Moderate
	5. Lacking knowledge of idioms and slang	2.71	1.04	Moderate
	6. Linking and organizing a paragraph	2.53	0.83	Moderate
	7. Difficult to appropriately structure ideas in writing	2.45	0.92	Low
	8. Lacking knowledge of subject matter	2.33	0.84	Low
	Average	**2.68**	**0.91**	**Moderate**
Reading	1. Lacking knowledge of idioms and slang	3.35	1.04	Moderate
	2. Lacking knowledge of general vocabulary	2.71	0.86	Moderate
	3. Lacking knowledge of technical terminology	2.69	0.91	Moderate
	4. Lacking knowledge of sentences and grammatical structures	2.61	0.96	Moderate
	5. Having time constraints	2.51	0.90	Moderate
	6. Inability to get the main idea	2.24	0.91	Low
	7. Inability to understand detail	2.18	0.77	Low
	8. Lacking knowledge of subject matter	2.18	0.79	Low
	Average	**2.56**	**0.89**	**Moderate**

4. Discussion

This section presents discussions based upon the findings.

4.1 English Skill Use for Thai Industrial Pharmacists

This survey study shows the four English skills used by Thai industrial pharmacists. The findings show that reading was the most frequently used skill. This can be explained by two plausible reasons. First, the complexity of reference documents which industrial pharmacists use demands industrial pharmacists to use reading skills on a regular basis. The technical documents (e.g., validation reports and procedural documents) which industrial pharmacists produce in their routine operations are scientific-based and technically complex. In order to ensure accurate and updated information, they need to crosscheck and review scientific and technical references, textbooks, guidance, and publications in the pharmaceutical fields which are available in English.

Second, email communication has become the most common channel of reading skill use in the pharmaceutical industry. Industrial pharmacists write emails to exchange technical information with international clients and health authorities for many reasons. First, technical documents are often too complicated to verbally explain face-to-face or on the phone, thus leaving documents in emails for retrospective review is needed. In addition, some technical documents must be exchanged as documentary evidence which is important to prove manufacturer compliance to certain regulatory or client requirements. Along a similar line, Evans (2010), found that emails were the most important communication channels that promoted English use of professionals in Hong Kong's service industries. The findings in this study showed that industrial pharmacists often read and wrote emails in English at work.

Reading skills were vital for professionals at hospitals and for industrial pharmacists. Previous studies on English skill usage of professionals in the hospital context revealed the predominance of reading skills over other English skills. According to Phutirat & Suwannapatama (2007), hospital pharmacists expressed the greatest need of reading skills for routine work. Likewise, Thongtang (2009) found that reading skills were the most frequently used skills in personal and professional life of hospital professionals. Along similar lines, industrial pharmacists in this study rated reading as the most frequently used skill to perform their routine tasks.

However, routine communicative tasks performed by industrial pharmacists were clearly distinct from those performed by hospital pharmacists in three aspects. First, key conversational counterparts of hospital and industrial pharmacists came from different communities and had different social status. While hospital pharmacists communicate with foreign patients, industrial pharmacists communicate with different key conversational counterparts (e.g. colleagues, suppliers, auditors, clients and bosses). Second, oral communicative

events in hospital and industrial contexts are different. While oral communicative events in hospitals are mainly concerned with patient counseling, those in pharmaceutical manufacturers are mainly concerned with face-to-face or phone conversations with various non-Thai speaking people at work. Finally, key written documents of industrial pharmacists (e.g. validation reports and procedural documents) were longer and more complicated, and required higher levels of writing skills.

The identified routine communicative tasks in this study have affirmed the existence of some gaps between ESP curriculums for pharmacy students and the real English needs within the pharmaceutical industry. Most ESP curriculums for pharmacy students at university ("TU English for Health Science Course Outline", 2012; "KKU Pharmacy Course Outlines", 2013) place an emphasis on academic reading and writing, and oral communication in patient counseling. These curricula have not incorporated various routine communicative events typically occurring in the workplace of industrial pharmacists (e.g., writing validations and instructional documents, oral communications with foreign colleagues, suppliers, bosses, and customers at workplaces). A mismatch between university English curricula for engineering students and the real workplace English communication needs have been revealed in previous studies, Mohamed, Radzuan, Kassim, and Ali (2014) suggested a mutual cooperation of engineering employers, universities, and ESP trainers in the revision of the existing English curriculum for engineers. Along the same line, course developers should incorporate specific communicative scenarios in the pharmaceutical industry into the ESP curriculums for pharmacy students, in order to meet the real needs of industrial pharmacists in multinational settings.

4.2 Problems with English Usage for Thai Industrial Pharmacists

Oral communication skills, including listening and speaking skills, were the major problems highlighted for industrial pharmacists. The findings showed that listening skills were the greatest problem, followed by speaking skills. Writing skills were ranked in third place, while reading skills were the least significant problem. In accordance with findings from previous studies, oral communication skills were more problematic for hospital pharmacists (Phutirat & Suwannapatama, 2007) and automotive engineers (Hart-Rawung, 2008) than written communication skills.

The higher occurrence of oral communication problems may result from three plausible reasons. First, oral communication skills have been less developed than written communication skills because industrial pharmacists have fewer opportunities to engage in oral communication in the workplace, leading to a greater level of oral communication problems. This explanation is well supported by an argument of Scarcella (1990) stating that adult learners are often unsuccessful in developing their conversational competence due to limited exposure to the language.

Second, industrial pharmacists can easily complete self-study and have greater success at self-improvement in written communication skills. Basically, language learners can easily practice written communication skills by themselves, anywhere and at any time. For example, learners may practice written communication skills at work by reviewing language use in emails sent by native English speakers and at home by reading English newspapers or articles. By contrast, learners encounter greater difficulties with oral communication skills because this requires listeners and speakers to interact in conversations (Rubin & Thompson, 1994). Therefore, self-practice in oral communication skills is less likely to be successful.

Third, language anxiety may discourage industrial pharmacists from mastering oral communication skills. Stephan & Stephan (1992) noted that people who become anxious when attempting to communicate with different people often avoid interacting in conversations to reduce anxiety. Along the same lines, Tanveer (2007) demonstrated that socio-cultural factors (e.g., social status, cultural differences) may create language anxiety, which is a huge obstacle for the development of oral communication skills in ESL/EFL learners. Thus, it is probable that language anxiety hinders industrial pharmacists in regard to mastering oral communication skills, and this leads to greater levels of oral communication problems.

Industrial pharmacists have both linguistic and sociolinguistic problems. In written communication skill use, the majority of problems result from linguistic issues, such as inadequate vocabulary and grammatical knowledge. By contrast, linguistic and sociolinguistic problems are important issues in oral communication. Apart from linguistic problems, such as trouble with word choice, accents, pronunciation, and rapid speech, industrial pharmacists rated some sociolinguistic problems, such as entering discussions politely and language anxiety, amongst the top three oral communication problems. Likewise, Kardkarnklai (2012) found Thai professionals in international workplace having various difficulties in oral communication e.g., 'resolving communication conflict in multi-cultural settings', 'accommodating different accents and a variety of English', and 'pragmatic competence'. This indicates that industrial pharmacists and Thai professionals need all three components in a

communicative competence framework (Canale & Swain, 1980) which are grammatical, sociolinguistic, and strategic competence.

Based on these findings, university ESP curricula for pharmacy students should be revised to focus more on the oral communication skills employed in the pharmaceutical industry context. Most current university ESP curricula for pharmacy students focused primarily on developing the four skills of language and English use in pharmacist-patient counseling. In multinational pharmaceutical manufacturers, industrial pharmacists needed to use English to communicate with overseas colleagues, suppliers, customers and auditors in a variety of situations, such as email communication, face-to-face and telephone conversations, internal meetings, audit events, and the routine use of technical documents including validation reports and procedural documents. These oral communicative scenarios should be incorporated into ESP curricula so that pharmacy students wishing to work in a multinational pharmaceutical setting can use English appropriately and professionally in their future careers.

In addition to oral communication skills, ESP curricula for pharmacy students should have an optimal balance among the three components of communicative competence. To engage in oral communications in a socially appropriate way, industrial pharmacists cannot only have grammatical competence. To be professional, they should also have adequate sociolinguistic competence and sociocultural knowledge in order to offer ideas in meetings, enter into discussions, and negotiate audit findings with auditors in an assertive yet polite way. Furthermore, industrial pharmacists should be able to use the appropriate English for professional people with higher social status, such as managers, auditors, and customers. Therefore, to overcome oral communication problems and use English appropriately in the industrial setting, industrial pharmacists should acquire all three components of communicative competence.

4.3 Limitations and Recommendations for Further Studies

This study has some limitations and recommendations. First, the present study was rather small. The results may not be generalized across to industrial pharmacists in other multinational manufacturers, and pharmacists in other pharmaceutical sectors (e.g., hospitals and community pharmacies). More research on industrial pharmacists in multinational pharmaceutical manufacturers should be conducted, to provide a better understanding of target English situations in the pharmaceutical industry.

Second, the reliability of the instrument may be limited, due to the use of a self-reporting method which may result in potential sources of bias, including selective memory, telescoping and exaggeration (Brutus et al., 2013). To obtain more reliable data, future research should use different types of instrument to provide other data sources; for example, on-the-job observations and interviews and onsite document reviews.

Third, the findings offer only some insights into necessities, and lacks definition of some parts of the target situation analysis (Hutchinson & Waters, 1987). Unfortunately, this study was still unable to determine learning needs and learner wants, which are remaining parts of the target needs analysis. More research on learning needs should be conducted, to identify teaching and learning methods, in order to obtain more helpful data for improving university ESP courses.

Finally, English usage and associated problems in the same profession may be different, depending upon other situational factors of each individual worker, such as job position, and work experience (Chalardsit, 2007). This study cannot make clear differences between individual pharmacists with different job levels. Thus, more research should be conducted to recognize the difference between English usage and problems of the non-managerial and managerial pharmacists, which may provide helpful data for the pharmacists about relevant English skills needed to advance their professional career and job promotions.

4.4 Conclusion

The findings in the present study reveal authentic use of English, and affirmed the actual existence of English communication problems in the pharmaceutical industry. It is hoped that the pharmaceutical profession benefits, since the study has identified routine tasks which require industrial pharmacists to use the four English skills, and the problems that they still needed to resolve. These findings reflect some gaps in the real pharmaceutical industry needs of English skills, and have provided some inputs for ESP course development. Therefore, it remains challenging for the pharmaceutical educators and the ESP course designers to develop ESP courses which meet the needs of English requirements within the pharmaceutical industry.

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