THESIS

DEVELOPING A WRITING CURRICULUM FOR UNDERGRADUATE PETROLEUM ENGINEERS AT UNIVERSITY OF KUWAIT

Submitted by

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WE HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER OUR SUPERVISION BY EINAS ALREFAI ENTITLED DEVELOPING A WRITING CURRICULUM FOR UNDERGRADUATE PETROLEUM ENGINEER STUDENT AT KUWAIT UNIVERSITY BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF MASTERS OF ART.

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ABSTRACT OF THESIS

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This thesis is focused on developing an intensive, adjunct course to prepare Kuwait petroleum engineering graduates for the writing requirements of post-graduate study in the United States. In recent years, the awareness of the importance of genre-writing and problem based learning in science and technology curriculums has risen. This parallels the rise in the number of Kuwaiti students who wish to continue their education in the United States. Moreover, since the educational goals are different between Kuwait and the United States, there is a need to provide additional transformation to Kuwaiti graduates to prepare them for the approaches and expectations of post-graduate work at United States colleges and universities.

Through research into curriculums, surveys of students and professors at the Petroleum Engineering Department at Kuwait University, and interviews, I found that non-native English writers, international students, in general, and students from Kuwait, in particular, have difficulty writing technical reports in English. Petroleum engineers, at the University of Kuwait, have a very limited background in the specific genre of technical report writing; and, the lack of experience shows in the level of expertise when they write.

States engineering programs. Based on my research, I determined that a short, intensive, course in lab report writing would fill the gap. This course would incorporate an integrated approach that focuses not only on genre and content, but also problem-based learning and collaborative writing skills. The course is comprehensive and provides a short, but effective, curriculum to prepare Kuwaiti petroleum engineering students for study in the United States.

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Chapter 1

English Language Teaching (ELT) in the past has focused primarily on teaching generic English. However, over time ELT has evolved to meet the varied needs of learners in a wide variety of situations. Lleida (2004), Nickerson (2005), Anchimbe (2006), and Jenkins (2006) agree that the English language has evolved into a lingua franca; and that ELT is an industry that is "cross-cultural, trans-cultural, and worldwide" (Anchimbe, 2006, p.3). In fact, many countries publish their "business, technology, scholarly journals and publications, international relations" English (Anchimbe, 2006, p.3).

Because English is the international language of business, medicine, and technology, many English Language Learners (ELLs) must reach a level of fluency and proficiency dictated by their chosen profession and their communication needs at work. English is fast becoming a Lingua Franca through countries that have decided to make English a compulsory language. Over sixty countries use English as the language of publication (Lleida, 2004). One effect of English being the Lingua Franca is that English is no longer for native speakers alone. Also, most international countries are moving towards English in many fields; this is seen through countries who publish their technology, business, as well as their scholarly journals in English (Anchimbe, 2006). In addition, through a survey, it was found that in foreign countries over 60 percent of

secondary school students preferred to study English rather than any other language offered to them at school (Anchimbe, 2006).

The fact that the English language is now so popular, results in a massive number of learners, with learners requiring a different approaches to teaching to meet different demands (Taylor, 2006). This change in the landscape of the English language requires that ELT move away from generic English, also known as General English language teaching, which focused on all age groups for general situations (Sifakis, 2003). Knowing that there is a need for more than General English at higher educational levels, makes researchers realize that there is a need for a different forms of English, which would provide a more specific and in-depth level of knowledge (Swales, 1988).

This need leads us to a problem facing learners when they leave an intensive English writing course and head towards more academic English at the university level. There is a gap when learners move into academic English; this gap is between what the college teachers expect them to produce and what they can produce (Zhijian, 1988). Also, despite the knowledge that General English is not adequate on its own to meet the needs of academic learners, we must not underestimate the need to build a basic platform of General English (Hyland, 2002). Hyland (2002) emphasized that there is a need "to use the descriptions of target forms and tasks to best assist our students," but that and that" weak students need to be in control of core forms" (p. 388). However, there is no denying the need for specific writing because "different disciplines point out different parts of writing as features of academic literacy" (Hyland, 2002, p. 392). This requires a more specific focus on a particular kind of writing, depending on the students need.

As a result, English as a Second Language (ESL) teachers should enlist a variety of methods to facilitate understanding more specialized forms of English language learning, whether it is a reading-based approach or corpus-based approach. In this paper, we will try to understand which approaches maybe considered applicable in Engineering. However, our main focus on the approaches and curricular elements that would be considered the most suitable to help learners in the petroleum engineering program at Kuwait University be better equipped in writing.

As Flowerdew (2005) suggests, combining two or more approaches may be necessary. I will discuss how the various teaching approaches could be integrated to help students reach efficiency and raise the learner's awareness of how to improve their skills. For example, the genre-based approach is defined in ESP tradition as "structured communicative events engaged in by specific discourse communities whose members share broad communicative purposes" (Swales, 1990, p.45). ESP is defined by Bhatia (1993), in Hewings and Hewings, (2001), as:

> "recognizable and mutually understood by members of the professional or academic community in which it regularly occurs. Most often it is highly structured and conventionalized with constraints on allowable contributions in terms of their intent, positioning form and functional value" (p. 72).

The corpus-based approach, also discussed in this paper, is defined by Mydraya (2006) as:

> "the availability of language corpora to language, and allowing learners to set up and carry out their own language analyses with the help of computer concordance programs that are aimed at identifying collocations, or word partnerships, in which certain words co-occur in natural text with greater than random frequency" (p.236).

I believe these approaches, the genre-based approach and corpus approach, complement each other and support second language learners as they learn to write. Integrated approaches are commonly used; an integrated approach is any style of teaching that incorporates two or more approaches. These approaches will be discussed further in Chapter 2. In this paper, I have decided to focus on the genre-based approach and the corpus-based approach because they are the most relevant to the unique audience of this paper.

Today we realize through studies that ELT has gained importance due to the expansion of ESP. (Waters, 2006; Flowerdew, 2005; Al-Issa, 2005). ESP requires different approaches due to the specific demands of its learners; we can see the difference in the way ESP is introduced and in the materials selected for its learners Sifakis (2003). Practitioners in ESP have been investigating what learners need to develop better writing skills and relying on that to develop design materials (Dudley-Evans & St. John, 1999). There are certain components that differentiate ESP from other varieties of English, such as EOP, which is English for occupational purposes; EVP, which is English for vocational purposes; and EPP, which is English for professional purposes, as well as other varieties of English that are not mentioned here in this thesis (Dudley-Evans & St. John, 1991). These main components of ESP include the following:

Absolute characteristics

- ESP is designed to meet specified needs of the learner.
- ESP content is related to the theme and topics in a particular discipline occupations or activity.
- ESP is in contrast with General English.

Variable Characteristics:

- ESP is concerned with language skills to be learned
- ESP is successful in imparting learning
- It is considered to be more cost-effective than "General English"

These components distinguish ESP from General English and help ESP practitioners know what to include and what learner to target when introducing ESP.

In addition to using the above components to define ESP, there are several other ways to look at ESP (Sifakis, 2003; Aiguo, 2007; McEnery & Simon, 2001). Aiguo (2007) states that ESP methodology must be based on the context and the learner. Therefore, depending on the context or situation that is imposed on the learner, a writing method is developed to meet the learner's need. Perhaps, as McEnery and Wilson (2001) believe, ESP should be considered a domain in itself and distinguished from any other form of English such as General English or EOP, EVP and EPP. This will also be further discussed in Chapter 2.

ESP today is required in many academic disciplines. For example: aviation, business, medicine, and engineering. ESP helps prepare learners for both their educational as well as their professional careers (Ibrahim, 2001). Sometimes learners are expected to understand the content of English language textbooks when studying in foreign countries (Ibrahim, 2001). This is because many countries in the Middle East and Asia do not have academic English textbooks in the vernacular, and learners are not well prepared to be exposed to this level of academic English (Swales, 1988). Therefore, when these students are thrust into an academic English setting they are quickly frustrated and require continuous support from instructors (Swales, 1988). Through my experience as an

ESP teacher in Kuwait, I support that ESP teaching is very important. I realized through my teaching that most learners who have a strong background in English tend to excel academically; since, as was mentioned previously, all academic education in Kuwait is in English.

ESP curriculums must be based on a needs assessment, and include goals and applicable approaches and methods to obtain the desired outcomes from the learner, (Belcher, 2006). Each domain, when teaching ESP, has different goals and different expected outcomes expected. Therefore, ESP teachers must be well prepared in the specific teaching field as well as understanding what outcomes are expected of the learner in each domain (Belcher, 2006). Some teachers are not well prepared for ESP teaching and find it intimidating, especially in fields of engineering (Belcher, 2006).

ESP practitioners have realized the need for developing ESP writing skills, and have found that being a good writer not only depends on good grammar and a strong vocabulary, but also on a clear understanding of the content, (Zielinska, 2003). Zeilinska (2003), poses a question about how a student who is an inefficient writer in their own language, as well as the target language, could develop enough skill to be considered efficient. He believes that ESP writing can be taught and that the learners can be efficient because this type of writing is very systematic (Zielinska, 2003). Cooke (2002) also believes that there is a way to teach students to write when they are weak in their academic field. Chapter 2 will include the systematic steps presented to the learners.

Second language writing teachers in the field of ESP, through their experience in teaching, have reached the conclusion that it is essential to provide detailed attention to genre, because it gives the learner the ability to "acquire conceptual and cultural

framework to undertake writing tasks beyond the courses in which such teaching occurs" (Cheng, 2006, p.77). Through my research, I realized genre-based writing and ESP writing are essentially the same and that they may be used almost interchangeably. Both genre-based writing and ESP writing focus on a style specific to the content.

Roseberry & Henry (1998) recognize that the reason behind implementing a genre based approach is "identify the linguistic features chosen by expert users of the genre to realize their communicating purpose" (p. 147).Roseberry & Henry (1998) also explained how these linguistic features have been used socially to identify the generic structure. Hyland (2003) also stresses the importance of genre-based writing and mentions its importance in L2 writing in that in genre "complement process views by emphasizing the role of language in written communication" (p.17).

The shift from General English to ESP and genre-based writing has led to a change in the curriculum. Therefore, teaching genre-based writing requires a curriculum to be both learner-focused and content-based (Davies, 2006). There is a fear teachers have when looking into making changes in curriculum (Davies, 2006). There definitely needs to be a drastic change in the curriculum and attention must be paid to learner's needs. I believe developing a customized curriculum in ESP may be daunting, but it is essential to meet the students communicative needs.

Mateja (2004) believes that teachers in ESP should be facilitators who help by encouraging learners to use their subject knowledge while developing their language skills. Facilitators would help learners be responsible for their own language development and progress. Mateja (2004) as well as (Hyland 2002) seem to agree that student's needs should be known by the teacher and that they should provide time to develop a course

and provide materials that meet the students area of concentration. These courses and materials should be able to provide students with the language they need to become active participators in their professional are of interest. Moreover, Hyland (2002) seems to draw our attention to the fact that some teachers lack the professional expertise and confidence to teach subject-specific courses. Moreover, there is a difference between the regular teacher and the subject specialist, and many believe that specific English should be taught by the latter because they are more experienced (Hyland, 2002). We move from the teachers teaching knowledge to the teacher's cultural knowledge, Holliday (1994) discussed as knowing the cultural attitudes of a group, and that it should not be neglected since teacher seem to "inevitably fail to lesser or greater degrees to address the portion of the classroom culture that belongs to their students, preoccupied as they are with the technology of their perceptions pf their lessons" (p.147). Both topics will be further discussed upon in Chapter 2. The major investigation of this paper will be if the students at Kuwait University would be able to carry out Problem- based Learning (PBL) with minimal guidance by the teacher. This will be further discussed in Chapter 3. We move on to introduce the major focus of the paper which is PBL.

PBL is defined as providing activities which are "problem-oriented, group-based, student centered approach which builds on the interests of the students" (Wood & Head, 2004, p.7). It was introduced to "increase the student's critical thinking and life long thinking skills" (Legg, 2007, p.344). For example, educators in health sciences use PBL to develop their curriculum for their learners to ensure the students are capable of "integrating their skills with an existing framework of deep knowledge" (Mcpherson & Leung, 2004, p.86). Most PBL articles focus on business or medical fields; research into

using PBL in engineering fields was scarce. I will address this in greater detail in Chapter 2 as well as topics regarding ELT research, and the role of ESP, General English, and ESP writing, and teaching approaches, such as the reading-based approach, genre-based approach, corpus-based approach and the problem-based approach.

In Chapter 3, I will discuss my needs analysis and present a questionnaire that was adopted from Jackson, Meyer, & Parkinson (2005). I include my rationale for using a specific question or modifying it, and how the questionnaire was distributed. The questionnaire was used to determine what challenges the Petroleum undergraduate students at Kuwait University face. Furthermore, the questionnaire was developed to determine if these students would be able to continue their education in The United States with the English writing skills they currently have. Moreover, if they do not have the necessary skills, what options should be considered, which will be discussed in chapter 4. Chapter 3 will also discuss the questionnaire that was distributed to faculty members. It was designed to solicit what they felt to be their most important concerns in regards to writing, and what weaknesses they felt that these students were facing.

Moving to Chapter 4, I discusses the results of the questionnaire and my findings and based on these findings develop a curriculum that fits the needs of these learners, which will be presented in Chapter 5.

Chapter Two

Overview

As was mentioned in Chapter 1, this chapter is a review of relevant literature. In it I will discuss issues regarding ELT and how it has developed to meet the needs of the learners. I address General English and English for Specific Purposes (ESP) as well as approaches that will facilitate the learning process for learners and how these approaches are sometimes combined to provide a more comprehensive method of teaching. Chapter 2 will also define what ESP is and outline its characteristics, and components. In addition, I will address how ESP writing and how academic writing skills can be developed. Moving on, I discuss why we require genre-based writing and define what problem-based learning (PBL) is, and how it is applied, and why it is considered to be a requirement in today's academic settings.

ELT

Howatt and Widdowson (2004) stated we are able to witness an expansion in English language learning that is making the language evolve from a language practiced in certain countries, to the world's most used language in academic settings. Through a survey of publications in 13 countries, Jenkins (2006) found that the English language has become a lingua franca. Foreign speakers of English are using it in their daily lives as a social language, as well as the language of business. Their first language may not be

English, but they have made English the language that they use with day-to-day communications, Jenkins (2006).

Anchimbe (2006), through a survey, identified over 60 countries who publish articles and books in English. English is the first language chosen to be learned by students (Anchimbe, 2006). Anchimbe (2006) believes that that "the international arena seems to be constantly gravitating towards English" (p.4). This has been recognized through the publication of academic certificates and awards in the English language. We can clearly see that the business, technology and medicine are all gravitating towards English, according to Anchimbe (2006). English is considered to be the "lingua franca of science and, technology" (Thurmer, 2001).

ELT has changed significantly and has started to encompass more than it used to in the past. In the past ELT, was restricted to General English, and teaching learners how to function in regards to basic skills. Moreover, students at that time were not aware of what kind of English that would be most helpful to them. Now, both teachers as well as learners are well aware that there is much required in the (ELT) process to help the learner reach the level required to function well academically (Jenkins 2006). It has also been realized, as mentioned in the previous paragraph, that scientific and other articles are published in English. For example, some countries have shifted their medical journals, such as the Archicos de Investigacion Medica from Spanish to English, and have even hired an American editor. Anchimbe (2006) believes that this shift validates the importance of the English language internationally. It is surprising that even "countries that have no historical link with native English countries have adopted the language in a bid to benefit from international wealth and ever-increasing international

readership" (Anchimbe, 2006, p.5). Li & Flowerdew (2007) also discuss the issue of problems facing international scientists and their difficulty in publishing books and journal articles. In spite there being editors, these international scientist's writing may be ridiculed by editors, because their English is non-standard. Li and Flowerdew (2007) give an example of a German scientist with poor grammatical skills whose writing was described as "near unintelligibility" (Li & Flowerdew, 2007, p.101). Another example included Chinese scientists in the biochemical industry who were unable to publish in international articles due to their "poor English" (Li & Flowerdew, 2007, p.101). The same issue faced Chinese surgeons who had many materials for publication, but these articles were only for Chinese literature, and again it was due to their inability to express themselves clearly in English (Li & Flowerdew, 2007). These international scientists face additional difficulties, such as their limited grammar; the English language requires a great amount of editing when it is written by these scientists, as well as their language level is far below the acceptable level (Li & Flowerdew, 2007). Also, they need to use "shapers" who are the editors, colleagues or supervisors, journal reviewers, journal editors and copy editors who help these international scientists to shape their writing (Li & Flowerdew, 2007, p.111).Some international scientists suffer more than others; so, for example, the Chinese Mandarin scientists do not appear to suffer as much as the scientists from Sri-Lanka (Li & Flowerdew, 2007, p.102). With English as the lingua franca of science and technology, international scientists the skills necessary to write publishable articles.

In perspective of all that was mentioned about the English language, we are able to realize that in order to function well in an academic setting, a learner must be able to

function well in the English language (Braine, 1989). Through a questionnaire that was conducted in University of Texas at Austin, it was found that forty percent of international students who apply to schools in the United States are majoring in science or technology (Braine, 1989). This tells us that we are in need of a different method to teach English to help science and engineering learners function better in the academic setting. That is why there must be a greater focus on ESP. Especially in countries of the "expanding circle" according to Crystal (2003). These are countries that have limited exposure to English and less chances to use English resulting in a lack of proficiency (Crystal, 2003). However, English researchers have recently seen a change in these countries, such as China and the Middle East, and have realized that these people have started to use English more, and that it has become more than an international method of communication (Crystal, 2003). This has been realized in the usage of English through code-switching and mixing and through the usage of English in their literature (Crystal, 2003).

With these different kinds of varieties of English, it is not difficult to realize that students needs vary according to their backgrounds, according to Braine (1989). Braine (1989) emphasized that when teaching English teachers need to be aware that countries that are in the expanding circle have different times when the English curriculum is introduced to students. Therefore, their English competencies differ (Braine, 1989). Braine (1989) stated that countries such as Turkey and Saudi Arabia do not introduce English until the fourth grade; and therefore, as adults, these people, sometimes find it very difficult to function in the language. With this in perspective we can see that writing is considered the last skill to master due in a language to the complex integration of

grammatical, vocabulary, and rhetorical skills. I found, through my experience as an international student, that many students from the middle East suffer from lack of knowledge in the English language, because it is introduced later in the curriculum. This has led to many families to choose to put their children in private schools, where the teaching is conducted mainly in English. Due to the importance of the English language, let us investigate the many forms of Englishes and its uses.

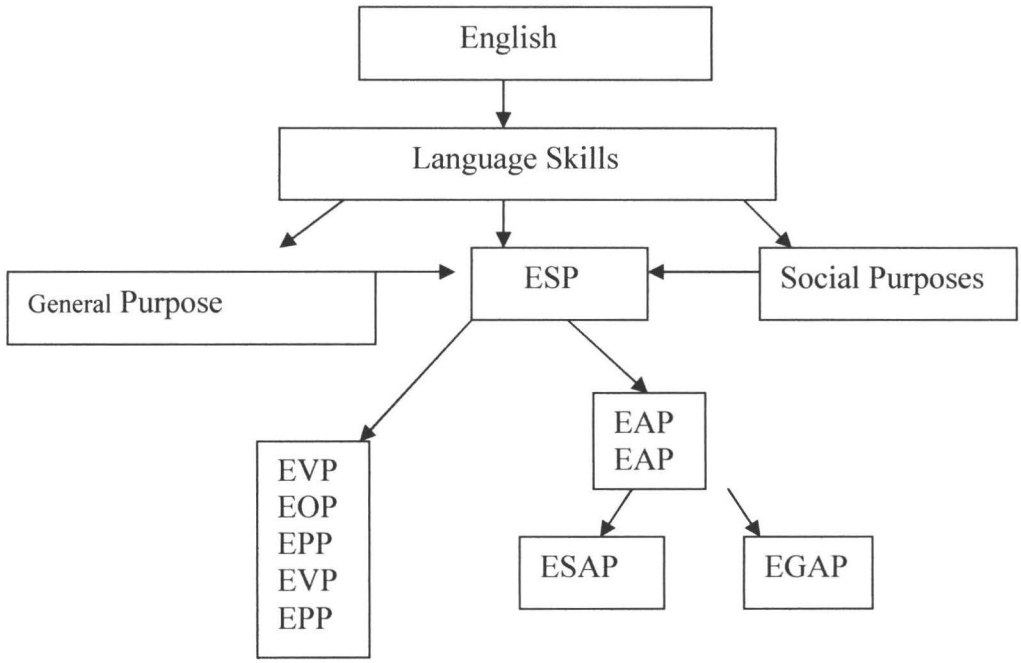
Overview of ESP

According to Thurmer (2001), Dudley-Evans & St. John (1998), and Jordan, (1997), there are several types of "Englishes" taught. English as a Second Language (ESL) and English as a Foreign Language (EFL) are taught to learners who need a general knowledge of the English language. English for Specific Purposes (ESP) is taught to students who will use English in a specific field. Under ESP, there are additional types of ESL, such as English for Science and Technology (EST) and English for Occupation Purposes (EOP).

General ESL has been around for a very long time. Swales (1988), sites Longman (1964), in a discussion how during the sixties English teachers relied largely on teaching structural English. (Nickerson, 2005) emphasized that General English focuses on teaching basic language skills, meaning how to write, speak, and read. Currently there is a demand to provide English with more emphasis on specific fields, such as technical English. Another major shift has been from an emphasis on conveying information to an emphasis on fluency.

Figure 1, Varieties of ESP, on the next page is adapted from Thurmer (2001), and shows the varieties of ESP and how they include general and social purposes and are dependant on both the purpose and situation.

Figure 1: Varieties of ESP



As shown above, the specific variety of ESP depends on the user and the situation. Stevens (1978), cited in Thurmer (2001) addressed ESP from the perspective of the user. For example, in a given situation, the user may be a medical doctor, an engineer, or any academic learner. Therefore, in spite of thinking ESP is a specific type of ESL, the definition of ESP could be further broken down into many highly specialized topical areas.

In light of the above, students need a basic foundation in General English before focusing on their specific field. However, these basic courses are not constructed to prepare advanced learners for future independent work that lies ahead in their academic studies. Upton (2007) believes that as soon as the students move to more advanced

courses, and one-on-one help is no longer available, and then the learner feels lost. Upton (2007) stresses that learners require the ability to function "in a discipline, profession or workplace.

ESP may be considered an advanced form of ESL. In ESP classes, students are taught with an approach that is focused on a sharper focus. According to Thurmer (2001), students in China search for any book they could find that has English for Science and Technology (EST) in the title. This could be interpreted to mean that they are looking for help designed to meet their specific needs in the field of science and technology. Hyland (2002) and Thurmer (2001) call for more opportunities to teach ESP because it can have a positive effect on ESL learners. Both Hyland (2002) and Thurmer (2001) stress what is called "specificity" in ESP and "generic" ESL skills and the need to incorporate both. This would be effective in most disciplines and help the learner comprehend most academic requirements.

Hyland (2002) calls the incorporation of both generic and specific skills a "marriage of theory" (p. 386). Hyland (2002) believes his theory will take the learner a step toward being more in command of the language. Both Hyland (2002) and Thurmer (2001) consider the language teacher to be more of a language facilitator. Hyland (2002) also provides a unique discussion of the schematic triangle as applied in ESP; this diagram shows the collaboration of the student, the subject teacher, and the language teacher. Since, as was mentioned, the language teacher may be unable to provide specific guidance in relation to the subject area of concentration; therefore, the language teacher and the subject teacher should work together to help bridge the gap and facilitate understanding for the student (Hyland,2002).

Taking a more focused look at ESP in the Middle East and Kuwait University, ESP has been part of the curriculum since the seventies. In general, the Middle East is considered a place where ESP practitioners thrive, particularly at the undergraduate level. ESP is considered a unique approach to language teaching, because it caters to a particular clientele. The ESP specialist job is to detect the needs or the problems facing these students and work toward designing and implementing a specific curriculum that meets their needs.

In ESP, specialists and researchers have been transformed into designers and implementers of new curriculums to meet specific needs (Belcher, 2006). Browne (1991) proposed that scientists and engineers, in an international setting, need to be accommodated with a task-based pedagogy, and this method should take into consideration that these individuals have high intellects and skills. Therefore, Kotecha (1991), in reference to Hutchinson & Waters (1987) emphasized that the selection of activities for engineers should be within a framework that is highly sophisticated. This approach is clear in the following quote:

> "The most fundamental problem of second language learning is the mismatch between the learners' conceptual/cognitive capacities and the learners' linguistic level. We believe that we have found a working method which enables us, as tutors, to 'respect both levels of the learners' state. In mother tongue learning they develop together. In second language they are grossly out of focus: the second language learner is someone who is conceptually and cognitively mature, but linguistically an infant. This is a particular problem in English for Specific Purposes (ESP), where the learners' knowledge of their subject specialty may be of a very high-level, while linguistic knowledge is virtually nil. Teaching must respect both levels of the learners' state." (Hutchinson & Waters, 1987 as cited by Kotecha, 1991, p.166).

According to Kotecha (1991), report writing has been a very important part of engineering curriculums. Although learners are expected to be aware of this importance, often they are not aware. Therefore, Davis (1978) believed teachers should make them aware that it would be beneficial to become good report writers. Davis (1978) found, through a survey, that a large percentage of engineers were required, at most levels of their work, to write reports, and that the ability to write these reports had a direct impact on advancements within their profession. Moreover, through the questionnaire, Davis (1978) found sixty-three percent of management agreed that in granting promotions they took into consideration the person's writing abilities. Finally, Davis (1978) asked students about curriculums and what they considered to be the most effective element of writing that should be incorporated in the curriculum when deciding to teach report writing. In spite of this article being relatively old, I believe that it is critical because the article focused on issues that are extremely important to my research, and that I did not find these issues addressed in more recent articles.

Davis' (1978) survey was restricted to the opinions of engineers, and they strongly emphasized at the end of the questionnaire that writing for engineers, when done efficiently, led to individual advancements. ESP has been defined as "the careful research and design of pedagogical materials and activities for an identifiable group of adult learners within a specific learning context" (Dudley-Evans and St John, 1991, p. 298). It is considered very difficult by Arabic-speaking students. A compounding factor in ESP education in Kuwait is that an English curriculum has been developed by the Arab league in Cairo, and distributed to most Arab countries (Khuwaileh, 1995). This curriculum, according to Khwaileh (1995) has limited the advancement of ESP curriculums.

In the Middle East, as with many countries, English is a compulsory subject taken by students as an introductory course when going to the university. According to Dr. Hassan AlKandari, my contact at the Kuwait University, many students coming into the engineering department fail the English requirement or consider moving to other departments which have lower expectations in English language skills. In Kuwait, especially, engineering students who deal foremost with English must be able to handle the terminology and texts in this scientific field.

In discussions with Dr.AlKandari, I discovered that the English studied is very general English. Even when report writing is involved with specific methods for teaching it, the focus is only on article summaries and lab report writing. However, Tarnopolsky & Degtiariova (1999) emphasized that university professors wanted more from their students. For example, Tarnoplosky & Degtiariova (1999) stated professors wanted an increase of vocabulary learning, as well as better communicative competence. These issues directly relate to students in Kuwait, since the ESP programs focus on general English, without specific engineering content or vocabulary, and the classes are completed with a minimal amount of class time. The limited time available for English writing courses cannot be changed; therefore there needs to be another solution. Tarnopolsky & Degtiariova (1999) believed the solution would be to develop an ESP course that enhances reading skills, which would affect student's writing as well as their speaking competencies, in the future. However, I believe that to effectively work within the time constraints, we need to focus on an ESP course designed and developed to meet the specific needs of Petroleum Engineering Students. In addition to solving this problem, selecting the most appropriate approach to teach according to the learners needs is

another aspect that requires the professor's attention. Below we will mention the variety of teaching approaches and their benefits as well as the researcher's views on these approaches.

Approaches to teaching ESP

There are several approaches that have been promoted in teaching ESP. For this thesis, I analyzed the communicative approach, the reading-based approach, the corpus-based approached and the problem-based learning approach. This is with respect to how it might fit in the petroleum engineering students needs.

The communicative approach began in the 1970's (Baakes, 1992). This approach focused on both function and structure in communicative situations. It relied on learners being able to select knowledge and language when forming a message during speech. What was interesting in this approach, according to Baakes (1992), was the level students had to reach to communicate in English. To reach this level, they had to be put in communicative situations that they may have faced in everyday life. Prior to the communicative approach, students memorized structures and rules to earn good grades, but could not apply their skills (Milind, 1989). Milind (1989) believed the communicative approach to be the new vision of language learning. Areas that reflected a learner's recognition of the language and having communicative competence included the following:

- A large range of linguistic ability.
- The ability to distinguish between forms and how to use these forms.
- The ability to use skills and strategies in different situations.
- An awareness that language forms may have several connotations.

In spite of this method being effective, according to several researchers, I believe it is not highly effective for engineers, since they do not use everyday communication or speech as often. Moreover, for learners to develop this level of proficiency would be very time consuming making it cost effective. Milind (1989) stressed that the "communicative approach may lay an adequate foundation of language competence for later academic and professional needs" (p. 42). In engineering, projects reports are the most important form of communication. Kotecha (1991) stated "the report is the principle tool of communication" (p.166). This means that the skill of writing is what is required and that oral communication is an important but not essential part of the engineers learning priorities.

The reading-based approach

The reading-based approach focuses on encouraging the student to read extensively. The reading-based approached is often applied in university classes when students read textbooks or articles and write about these readings. The reading-based approach focuses more on content and expects the reader to understand and then demonstrate their understanding through writing (Tarnopolsky and Degtiariova, 1999). Hyland (2003) stated that intensive reading enabled students to acquire different skills from reading in different genres. In this approach, reading was critical in developing good writing skills. Reading allowed students to accumulate skills that would not only be beneficial in writing but also when taking tests (Jackson, Meyer, & Parkinson, 2006). A reading based approach greatly enhances a student's vocabulary, as well as summary writing skills and, according to Jackson, Meyer, & Parkinson, (2006), it would eventually enhance report writing. Therefore, I consider the reading approach may be an essential

part of an ESP course for Petroleum Engineers at Kuwait University. I believe that reading is the most fundamental way to enhance vocabulary, and is one way to acquire skills of writing. Therefore, I agree that when a professor decides which approach he or she wants to incorporate in the class, it must include reading.

The corpus-based approach

The corpus-based approach is a bottom-up approach, meaning it starts with an analysis at word-level. This approach focuses on understanding how words fit together in a specific genre. Today this method is taken a step further with the introduction of online corpuses that help the learner have fast access to technical or scientific vocabulary (Mudraya, 2006). With the aid of a concordancer, which is the type of software used to detect patterns of vocabulary use or sometimes count the number of times a certain word is used in a specific set of texts, the researcher can determine vocabulary and co-locations used in a certain field Asao (2002).

The corpus-based approach addresses the EFL learner's need for specific lexical, grammatical, and linguistic issues. The corpus based-approach was introduced to solve problems, such as a lack of vocabulary, according to Asao (2002). A lack of vocabulary causes frustration in the learner, which may inhibits fluency, and may result in switching to a different subject to reach communicative coherence (Asao, 2002). This is related to what Cohen (1998) previously conveyed: students often choose the easiest utterance, which is usually the most basic level work and this often ends in being misunderstood. This was recognized in a study that demonstrated that learners tended to change or avoid a topic if they lacked the vocabulary; as a result, learners tended to provide information that was not relevant to the topic Asao (2002). In written work, an option that students

seemed to embrace when they lacked the necessary vocabulary was that they consciously switched to new topic, which led to a lack of coherence in their writing (Asao, 2002). The corpus-based approach provides a solution to these problems by providing learners with a vast amount of vocabulary, and how words work together, in a specific field or genre to enable them to be ready when required to write, as well as detect these difficult lexical items (Flowerdew, 2004).

Other Pedagogical Approaches

Concorancers, in addition to the uses mentioned above, are also used to help detect noun, verb, and adjective usage by non- native students (Yuli &Yi, 2007). These researchers used a concordancer called TANGO, which is a bilingual collocation concordancer (Yuli &Yi, 2007). The researchers looked into the usase of five adjectives by students from nineteen disciplines (Yuli &Yi, 2007). Yuli and Yi (2007) found that though there was an improvement, the students still had difficulty in word knowledge synonym usage. The students expressed that the use of TANGO software was helpful to them to learn collocates and synonyms (Yuli &Yi, 2007).

In engineering, the corpus-based approach is one of the current teaching approaches to vocabulary usage in an ESP setting. The corpus-based approach develops a learner's vocabulary skills and addresses the skills the learners need to understand and develop ideas for writing assignments. It is an essential part of writing, especially for engineers who need vocabulary for specific purposes (VSP). It is well known that vocabulary encountered by ESP learners is repeated in a variety of activities. The learner also needs the skills to understand their assignments to have the confidence to rely on themselves to organize and complete assignments. They need to have the ability to

generate ideas and organize them in logical order, as well as be able to paraphrase and edit information (Fukao & Fuji, 2001). A corpus-based approach should be incorporated in any approach to help enhance the learner's ability to communicate. However, a corpus-based approach should not be the sole focus, because providing an international student with a 2-million word technical corpus is a heavy load, if they do not have the ability to tie the words together in grammatically correct ways to communicate specific ideas.

A particularly beneficial usage for concordancers is to detect lexical bundles which are recurrent sequence of words (Biber& Barbieri, 2007). These multi word sequences maybe 'formulas," 'routines', and 'fixed expressions' (Biber& Barbieri, 2007, p.264). Lexical bundles are considered "not structurally complete, and not idiomatic in meaning, but they serve as an important discourse function" (Biber& Barbieri, 2007, p.264). Biber and Barbieri (2007) address many forms of lexical bundles such as spoken lexical bundles in a teachers class, spoken lexical bundles at a university, and my focus which is lexical bundles in writing; they explain that most bundles are referential bundles meaning that they define an object. Mudraya (2007) believes that the language has become "chunkier," and that offering learners with a language corpora facilitates learning. This is through the help of language concordancers that are helping learners be aware of collocations. Mudraya (2007) further expresses the corpus linguistic effectiveness in learning a language since it "addresses the specific needs of students in a particular domain more directly than those taken from more general language corporas" (Mudraya, 2007, p.237).

The benefits of corpus based studies mentioned here are not without criticism. When one analyzes a corpus, concordance software is used, that software requires

keyword searches which put a boundary on the analysis. Also, concordance software offers a bottom-up approach, meaning that it looks into words versus looking into phrases or paragraphs when analyzing the data (Flowerdew, 2005). Swales (2002) regards bottom-up analyses to be strange and that analysis should be top-down, starting with macrostructure of the text instead of sentence level. Another argument against the corpus -based approach is that it does not consider the contextual features of the text. Widowson (2002) cited in Flowerdew (2005) indicates that "corpus data is but a sample of language, as opposed to an example of authentic language" (p. 325).

Finally, vocabulary learning, an essential part of a corpus-based approach may be time-consuming where the time might be better used by consulting a dictionary. For example, the Student Engineering English Corpus (SEEC), which contains 2,000,000 words, including 1200 word families and 9000 word types, is required of all engineering students in any field of engineering (Mudraya 2006). Mudraya (2006) suggests that for technical applications, the combination of lexical approach as well as a corpus approach would help in the growth of language skills and in forming a better researcher Mudraya (2006). However, neither of these approaches explicitly provides fluency skills Mudraya (2006). The vocabulary skills this approach provides may or may not have a large impact on the style or flow of sentences when a second language learner writes Mudraya (2006).

I n my opinion this is an essential approach, especially with the availability of concordances that help each field compile the most required and most frequently used "chunks" in a particular field. It narrows the focus for the learner and makes it seem possible to combine the grammatical skills that the learner has learned with the vocabulary required to become a proficient writer. What maybe difficult is to bring these

students to memorize and familiarize themselves with a large quantity of technical or scientific vocabulary. However, I do not agree to this approach being introduced by itself, since it needs the support of other approaches to make it effective in the teaching process.

ESP Writing

When discussing undergraduate level writing, especially in a specific field, we must recognize the need for a particular approach. This approach depends on the specific major that the learners are studying. For this kind of writing course to be successful, teachers must have background knowledge of the subject matter (Braine, 1989). As stated in the beginning of this chapter, Braine (1989) found in the formation of the Institute of International Education (IIE) that at least forty percent of International students who have been admitted at American Universities major in disciplines of science and technology.

ESP is an English step in a different direction and directed towards, as we will see, a different kind of student. The task of writing has never been easy; ESL teachers consider it a challenge to motivate engineering students to write reports in the method that is required. In addition, these students may express the need to improve their writing in the shortest time possible. Therefore, teachers always look for new approaches that help their students become better writers in the shortest timeframe possible.

Zeilinska (2003) indicates that the challenge in teaching does not merely exist in helping the students achieve a level of writing in which they do not have grammar mistakes and have a large vocabulary, but also in having them incorporate these two elements into good content. Without good content, scientific writing is not considered acceptable at any level. Another important factor in writing, especially technical writing, is absolute precision where there is only one explanation for what is written, whereas in

literature there may be several interpretations (Zeilinska, 2003, p.127). Therefore, the learners must be well aware of what they are writing and any ambiguity or uncertainty is unacceptable (Zeilinska, 2003).

Gosden (1993), cited in McKenna (1997), looked into the common mistakes that Engineers made and devised methods to help them avoid those mistakes to improve their writing. One method was that engineering tended to focus on facts and steps when writing. The following is an example of writing in an engineering course, including how it was approached and what steps were taken, as well as outcomes of the project that took place in Kuwait.

Herbolich (1979), conducted a rare study. This study was rare, because it not only was applicable to the Middle East in general, but was applicable to Kuwait in particular. Herbolich (1979), focused on how to write an engineering manual. The topic was a 'Box Kite," and since most students did not have any knowledge to what a box kite was, they were told to take the first step, which was to go to the library and do the following:

- Define the box Kite
- Present who was the inventor of the box Kite.
- Provide other names for the box kite.
- Provide a labeled instruction of the box kite.

The students were asked to provide several bits of information regarding the kite, including how many definitions were included, its scientific uses, who first invented the box kite, and an illustration of a box kite with labels (Herbolich, 1979). Through this

information the learners were supposed to expand their information and write about the topic (Herbolich, 1979). The students were told to do the following in box kite project:

- Work in groups (especially because the library did not provide materials on box kites at that time).
- Take detailed notes and make drawings of the box kite.
- Meet after one week to discuss problems the students were facing.

The students discussed and presented the information and then combined and formed a final version of the manual (Herbolich, 1979). What is interesting is that the students were not only asked to write about the information, but they were also informed that they should construct a Kite (Herbolich, 1979). So they were provided with a manual to help guide them and it indicated what the box kite should be and what information the professor would like to see and they were as follows:

- The Kind of materials that were allowed to be used to build a box kite such as (bamboo, aluminum, balsa wood, plywood).
- The box kite that is inspected would correspond exactly with the instruction in the manual.
- The assembly instruction had to be written in the active voice, imperative mood.
- The testing and adjustment section had to discuss the attempt to fly the box kite and that if the attempt was unsuccessful, to state the adjustments that were made.
- The manual had to include illustrations that were labeled.

The students complete the steps above, and it appeared these methods worked well to help them learn how to write problem based on experience rather than only based on what was written (Herbolich, 1979). This exercised was based only on PBL learning not merely relying on the text book for information but on the student's experience.

Finally, at the end of the two and a half weeks, the learners were asked to submit a first draft of their manuals (Herbolich, 1979). The manuals were corrected for errors and format and returned to the students; and, the students revised their drafts and the final draft was finally submitted in and graded (Herbolich, 1979). Common mistakes were discussed and mentioned among students, such as similar grammar mistakes, spelling errors and sentence formation (Herbolich, 1979).

At Kuwait University, writing is not an easy task even for native speakers of English, and it is even considered to be difficult for native students. This has been evident through phone as well as email communications with Dr. Alkandari who has worked for eight years, and has obtained his undergraduate, Masters and PhD from the Colorado School of Mines. He believes that report writing is not a focus in the petroleum engineer classrooms, and that reports, though given in some classes are rare, no task-based method is introduced during the four to five years the students study.Therefore, learners are required to learn the task-based method once they are in the United States, to understand that in the United States that is the method applied and that is what they are required to learn. We must also be aware that there are several teaching approaches and that each is beneficial in certain situations and for certain students. Here I will attempt to present and define some of these teaching approaches and how they are applied.

Genre-based writing

Genre-based writing is an approach that can be defined as "structured communicative events engaged by specific discourse communities whose members share broad communicative purposes" (Cheng, 2006, p.77). Crossley (2007) regards genre as "the study of linguistic behavior in both academic and professional setting" (p. 6). ESP genre studies have had the greatest impact on L2 writing instruction worldwide, because it draws its strength from an "eclectic set of pedagogies and linguistic theories" (Hyland, 2003, p. 22). Genre-based approach has been around for twenty years and is considered to be part of the communicative approach Ellis & Johnson (1998). The communicative approach which is defined by (Keniko-Kay, 2004) as the ability to teach learners to manipulate effectively the social rules of the language, this approach though beneficial is not always praised by researchers in (Russell's 2005, p. 20) article he describes this approach as being unsystematic, unprincipled and uncritical pedagogically. I believe that the communicative approach is not an appropriate teaching approach here especially that my major focus is writing. I believe that the communicative approach is better applied for students that require communication in their practice, and who need fast and communicative phrases to learn to be able to function in a particular setting, in particular a setting that requires a learner to be in constant contact with other people.

Genre refers to "abstract socially recognized ways of making language. It is based on the assumptions that the features of texts depend on the social context of their creation and use" (Hyland, 2003, p.21). Genre based writing is considered to be vital for learners in different disciplines because it makes them better academic learners by being in command and equipped to understand the genre that they are in (Cheng, 2006). In spite of the importance of genre- based writing, there is a lack of research because of the

"theories of learning that are sensitive to the unique conceptual framework and pedagogical realities of ESP genre-based writing classroom" (Cheng, 2006, p.76). Cheng (2006) also describes that a typical genre-based writing class for international writing students often includes "guiding students from various disciplinary fields to explore the generic features and the disciplinary practices in research articles. It also includes the students getting involved in discipline specific writing tasks, such as learning to annotate published research articles from a genre analytic perspective.

As to the goal of a genre-based approach, Swales (1981) believed it is to understand the generic building and linguistic features of a certain genre and this leads us to English for Academic Purposes which is defined in (Dudley-Evans & St John,1999, p.34) as "any English teaching that relates to a study purpose whose first language is not English and need help with both the language of academic disciplines and the specific 'study skills' required of them during their academic course" . Also, due to the multiple times that learners hand in their papers for correction, genre-based writing aims to explain how the language functions in this particular setting (Hyland,2002, p.22). Other aims of genre theory include understanding the ways individuals use language to orient and to interpret particular communicative situations and employing this knowledge for literacy education.

We must understand that in spite the aim of genre approaches, which is having consensus among writers to reach mutual understanding and a shared sense of genre is required to accomplish this, genre is not "fixed, monolithic, discrete and unchanging" (Hyland, 2003, p.24). There are also dangers when introducing genre curriculums, which provide a "recipe theory of genre" that restricts students to a to-do-list. Restricting

students to follow specific steps specific steps and not have the ability to provide variation or choice to their writing text, Hyland (2003).Genre, according to Hyland (2003), should be a method to support the learners writing and at the same time provide room for the learner to express personal views when required of them. From the genre-based approach we move on to discuss the (PBL) approach and where it is mostly applied.

Problem-Based Learning Approach

The problem-based learning (PBL) approach is probably the most applied cased-based teaching approach in engineering and health sciences (So, McPherson, & Leung, 2004). "It is defined as an approach which makes use of realistic scenarios that act as stimulus and a context for learning in which students are responsible for their learning" (So, McPherson, & Leung, 2004,p.86). However, before I get in depth in discussing PBL, I would like to discuss a topic that I have discovered to be confusing for readers which is differentiating between PBL and Task Based Learning TBL. Through my readings, I have been able to become aware that they are different terms. I have realized that colleagues that I know as well as articles that I have read tend to use these terms interchangeably. Therefore, I have decided to discuss and distinguish them before discussing PBL.

Barron (2002) considers both approaches to have problems, and that each approach has a different kind of problem. In TBL the problems that are introduced are not 'real' problems, since the teacher knows the answers to these problems such as a grammatical exercise Barron (2002). The teacher already knows the rule but want to know that the students are able to deal with the problem and solve it, and the problem is. In TBL both the task and the content are not important what is important is "the language associated with the process" (Barron, 2002, p. 304). (Fournier, 2002) explains that because there are problem-solving elements in TBL suggests to some EAP teachers that they are involved in PBL.

In TBL the teacher is more concerned with the carrier content of the language than the content of the language Barron (2002). in regards to PBL there is a real problem

that needs to be discussed and solutions that need to be provided. In addition, PBL it is concerned with the process of learning and what the content is as well as what steps are taken in order to reach a certain solutions to the problem Barron (2002). Problem based learning makes learners face real life experiences and knowledge Barron (2002). In these problems students rely more on themselves and the teacher is more of a mediator as well as set their own questions and seek answers to them (So, McPherson, & Leung, 2004). In order to accomplish this 'task' according to (So, McPherson, & Leung, 2004, p.87) require that they be "constant self direct learning" (So, McPherson, & Leung, 2004, p.87). In Skehan's article (1997) the article examines planning a post task activity based on task-based performance. The task activity was conducted on 40 students, they were asked to perform decision personal and narrative tasks. It was found that previous knowledge on a certain task increased accuracy amongst part of the students. Also, that certain variables had a "trade off effect" between these variables which are fluency, accuracy and complexity, and due to the limited attention capacity of second language learners and that task characteristics interact with planning time and leads to improvement (Skehan, 1997, p.195). As to tasks that required complex outcomes when planned by learners made things even more complicated (Skehan, 1997, p.195).

In my opinion, I agree with the content of TBL and PBL, as well as the differentiation between the two, but what has certain people confused with these terms is not only people not knowing the difference in content but the use of the word "task" in both articles that discuss TBL and PBL, which causes confusion. If we go back to articles such as (So, McPherson, & Leung, 2004, p.87), the use of the word "task" can be seen in a PBL article when most researchers should in my opinion only use it to refer to TBL. I

believe that in PBL one must refer to tasks as "steps" in order to clarify the confusion when reading and encountering the word "task".

With the clarification of the two terms we move on to discuss the term which is the focus of this paper which is PBL approach. The PBL approach may be viewed as an outgrowth from communicative language teaching (Urwin & Du, 2003). The PBL approach has evolved rapidly and is now the focus of language learning and teaching, according to Ellis (2000). PBL has certain qualities that make it different from common traditional courses. PBL provides an opportunity to resolve an issue, and the learner is either supposed to generate a solution through discussion or through research. A learner is often required to go through several investigations before reaching a solution. If solving the problem is conducted through a group, a group discussion may take place before reaching a solution, Wood & Head (2003).

PBL has many definitions; but in language acquisition; it is defined by Bygate, Skehan, & Swain (2000) as a "work plan that is it takes the form of materials for researching or teaching language" (p. 201). According to Bygate, Skehan, and Swain (2000), a work plan usually consists of the following criteria: Input information, which is data that the learner needs to analyze and use; and outcome, which is the final result that the learner is supposed to reach.

There is, according to Skehan (1988), a difference between a "task' and problem-based and they are distinguished by the following:

- The main issue in task is meaning.
- In PBL learners work together to reach a certain goal.
- In PBL the outcome of the activity is evaluated.

- In PBL there is a connection with the real world.

What Ellis (2000) considers to be unique in task-based learning is how each individual carries out the task and how they interact with each other. When an individual carries out a task, the results vary according to the individual and their intentions and expectations. Moreover, the same person may have different results for the same task, or when provided with the same task in different time frames (Coughlan and Duff, 1994). According to Samuda (2000), "task" aims to help the learner expand their capacity to apply the target language and does not emphasize acquisition of additional linguistic skills. The rationale behind using a task-based in Guariento&Morley (2001) is that the approach is applied in language to achieve the following:

- Being able to use the language and applying it with confidence;
- Providing the learner with skills and the ability to use the language spontaneously;
- Enabling learners to apply the language usefully;
- Offering the learner a way to apply communication strategies.
- Task-based task outcomes are not concerned with the display of language;
- It is not conformity oriented;
- It should be carried out spontaneously and not practice oriented;
- Embedding language into material "should not take place so that certain structures can be focused on" (Skehan, 1998, p.212).

The PBL approach is different from the practice, present, and production approach. For example, a class on writing reports may use models extensively and explicitly address what grammar usage should be applied. These models and forms would

be repetitively practiced. Moreover, when exploring new vocabulary that would be used in writing a report, understanding meaning would be the essential goal. There is also a clear communicative aim; in that, the outcome of the activity mentioned before is highly important. Finally, there has to be a real-world relationship as scenario, by Skehan (1998).

In their book, Leaver & Willis (2004) report that task-based learning is essential because most foreign language learners are there to know the practical uses of the language. Although it is important to emphasize meaning and form, function is crucial when applying these forms (Leaver & Willis, 2004). Leaver & Willis (2004) reported that in an Arabic program at Ohio State University, researchers concluded that applying methods to use the language was more useful; form came secondary to function and application.

Sanchez (2004) clarified how the task-based approach provides learners with a more natural environment, which helps learners focus on application, or function, versus solely on content. Sanchez (2004) continues to say that pedagogical action should take place in the classroom through real world tasks and that teacher should ask themselves how to incorporate real-world tasks in the teaching process.

When we look at using problem-based assignments, we need to understand the sequencing and complexity of that problem. We must realize that a problem may involve sub- tasks. This requires that a learner be capable of a processing a certain number and level of words as well as structure and organization. For example, the task of "buying a ticket" would require a number of steps in a specific sequence. The same process would be applicable in scientific fields. For example, the task of oil clarification requires several

smaller tasks in a specific sequence. The outcome of a task may be different, depending on the time completed as well as depending on the skill and perspective of the person completing the task.

Therefore, a PBL approach is unique in terms of the results for each individual learner (Sanchez, 2004). Most articles that have addressed a problem-based approach are related to the medical field. Evenson &Donahue (1999); So, Mcpherson & Leung (2004); and Legg (2007), discuss the difficulties faced by medical learners in that for the first two years they deal with textbooks, which informs them about science and decision making. However, once in real world situations, they cannot apply their knowledge (So, Mcpherson, & Leung, 2004).

A PBL curriculum is essential to help learners combine the text knowledge with the situational knowledge in clinical cases. In (Wood & Head, 2004), they further discuss the issue of medical doctors and the application of PBL, they state that in the medical context it is in the form of a patient with a problem and the patient may be a patient in person, on video or a patient problem on paper (Wood & Head, 2004). So they are put in a context that they will face in the future in real life (Wood & Head, 2004). So PBL can be described to be "contextual, holistic in fashion, synthetic rather than analytic" (Wood & Head, 2004, p.5).

It is also suggested that in PBL, problems should be solved in groups as was done in the course in this article. The students were divided into two groups, The first group only presented were description of the disease, the other group were assigned to go to the library to get further information and try to identify the disease. The next step was the groups were to provide a power point presentation and not uncover the name of the

disease. The other group took notes and then both groups went ahead to discover what the disease was and provide a written report which included a scientific background as well as the identification and their view point based on the notes they retrieved from the students of the other group as well as their research.

When it comes to engineers, the report writing is the most essential genre, Kotecha (1991). A problem-based activity requires that students discuss, define, and understand the problem, then elicit its requirements and acknowledge the scope, filter the problem, and suggest distinctive solutions Barron (2002). The PBL approach helps prepare these students deal with real life situations and make them better equipped writers. In chapter three we will investigate through questionnaires how well prepared are Kuwaiti students in PBL, and use the questionnaire to identify student's needs.

Cultural Attitudes and Teaching Approaches

It is well documented that different cultures have different attitudes and beliefs. These attitudes and beliefs result in different approaches to teaching. As McDevitt (2004) states, these differences in approach, based on culture, need to find some common ground. McDevitt (2004) discusses how the culture in the Middle East uses a more content based approach, because of the minimalism of writing tasks as part of cultural expectations in the classroom. The task-based approach, is often used in the West, primarily in the United States. In addition, teachers in the United States expect students to be independent learners who are able to proceed and function in real life scenarios (McDevitt, 2004). In the west, the educational process is more flexible for both teachers as well as students. McDevitt (2004) goes further to point out that the method of giving

the student implicit permission to ask questions, makes it challenging even for the teacher.

In the classroom, it has recently been realized what is considered to "fit with the student and teachers cultural norms" is different from one student to another (Dogancay-Aktuna 2005, p. 99). In his article Intercultural communication in English language Teacher Education, it was apparent that the author was well aware of frustrations facing the learner in the classroom and suggests that teachers should choose methodology that is related to the learner's cultural atmosphere when teaching. Al-Issa (2005) agrees with this point and cites Brown (1994) that he considers language and culture to be "intricately interwoven" (p. 165). Jiang (2000), also cited in Al-Issa, states that "culture and language are inseparable" (p. 165).

A teacher should be aware of Intercultural Communication (ICC), which has not been the focus of much of the literature in spite of it being significant to teaching in international settings. Dognacay–Aktuna (2005) sees it as trying to incorporate what is the norm in teaching in the particular setting. For example, in South Africa practicing with the use of the text book and practicing for grammar is the first priority of the student. In Japan there is less focus on interaction and more focus on group work (Lo Castro, 1996). Moving towards the Middle East, we see an overlap between the educational interests of South Africa and the Middle East where the focus is more on the outcome of the tests.

However, Littlewood (2000) and Guest (2002) cited in Dogancay-Aktuna (2005), emphasize, in my opinion, a vital point that there should be a balance between respecting the cultural educational norms and embracing new approaches and methods. Under these

conditions, we would be able to broaden the educational opportunities for both teachers and students. McKay (2003) suggests as a solution that there be a focus on contrastive approaches and methods between western and eastern academic situations. In addition, McKay (2003) believes we should take into consideration individual variety, as well as the "dynamic nature of subcultures" (pg. 121). Dogancay-Aktuna (2005) suggests the following measures to accommodate cultural differences:

"Give teachers the goal of practicing critically and evaluating the sociocultural and educational notions of a several teaching methodologies in a given context."

"Give teachers an implicit goal which is to permit them to converse and notice issues that emerge from teaching socioculturaly diverse classes, that contain multiple background that require exploring."

From here a teacher would have a better understanding of the culture and be able to take a step towards applying methodologies that might help in the learners take a positive step towards being responsible for their learning and their educational as well as cultural views. (Holliday, 1994, p.147) expresses the need to be aware of how different cultures functions and not be strictly engrossed with the teaching process. Teacher smust be well aware of what topics to discuss and sometimes even be well aware of what to wear at class to gain the respect of students (Holliday, 1994, p.150)

In Summary

This chapter has discussed ELT and how English is a dominant language and a lingua franca. Moving on to discuss the English needs of academic learners, in ESP, and discussing differences between general English and ESP. Moreover, we discussed that ESP is a variety of Englishes, each is different, each has a specific purpose, and each is

designed for a particular clientele. This leads us to a discussion of how the different teaching approaches maybe applied, and how they are different and what benefits they bring to the class. These teaching approaches that have been presented from the earliest to the most current, starting with the reading-based approach, the corpus-based approach, the genre-based approach and finally the problem- based approach. ESP writing further discussed to address the struggles faced by learners as well as the most common mistakes by engineers. In addition, since we are focusing on an area in the Middle East we finish the chapter with discussing cultural attitudes and what is essential for the teacher to know in order to function better in a Middle Eastern setting.

In order to choose what is the most appropriate writing approach that would be implemented in the Kuwait University writing class. I have conducted a survey of professors as well as students that will help me define the most suitable approaches. In Chapter Three a discussion of how the questionnaire was put together is presented as well as a comparative overview of the engineer course work between Kuwait university and U.S. universities is presented and discussed.

Chapter 3

Overview

In this chapter I will present general information regarding the petroleum engineering courses at Kuwait University, as well my contacts at the university who helped me obtain information and distribute the questionnaire. Moving on, I will present my methods, which include developing a questionnaire to meet my research needs and distributing the questionnaire within the Petroleum Engineering Department at Kuwait University via email. I developed and sent two questionnaires: one to ascertain the perspectives of the professors and the expected quality of writing, the other to ascertain the perception of the students. In this chapter, I also present the questions, my rationale for each.

Kuwait University Petroleum Engineer Courses

In the Middle East, as with many countries, English is one of the compulsory subjects taken by students at the university level. According to Dr. Al-Kandari, many students admitted into the engineering department fail the Basic English skills requirement or consider moving to other departments. In Kuwait, especially, engineering students who deal foremost with English must be able to handle the terminology and texts in this scientific field. This can be seen in the example course outline from Kuwait University.

The writing curriculum for petroleum engineering majors currently includes three courses. The first course is a non-credit Basic English course, focused on an intensive reading and writing course. This course is a pass-fail course and is taken for two hours per week. It includes reading, writing, vocabulary, grammar, and multi-media practice. It also helps the student develop reading skills, utilizing a wide variety of texts. After the Basic English course, there is a technical writing course. This is a three-credit course taken for forty minutes five days each week. It includes technical vocabulary and technical writing skills, focusing on unified paragraphs, organizational concepts, flow charts, and diagrams. Finally, the students are required to take a three credit advanced course in technical writing. This course is completed after finishing fifty credit hours, and it encompasses the advanced writing required of students once they have entered the job market. The focus of this course is clarity and cohesion, coherence, and summaries and abstracts of articles.

The courses described above are provided to supply these students with the skills for writing in the engineering field. It is clear from the content of the courses that they fall under ESP. These students are provided with the basics of ESP for engineering in a very limited time frame, considering how important these skills are when students want to reach a certain level as a second language learner.

In my communications with Dr. Al-Kandari at Kuwait University, I discovered that the role of the English center at Kuwait University has been limited. The English center focuses more toward teaching foreigners whom have a weakness in the English language. He indicated that the majority of students who attend classes at the English center are there for their own personal development rather than to fulfill a requirement of

a certain department. They are taught basic skills ESP is not an area that is touched upon at the English Center.

Through questions via email with Dr Al-Kandari, it became clear that approaches to ESL or ESP at Kuwait University focus on the textbook and very rarely include outside readings or real-world scenarios (this will be further supported by the questionnaire that I distributed to the students). Dr. Al-Kandari emphasized that due to lack of time, there is greater focus on textbooks than any other form of material, since the professors do not have the time to discuss and explain.

Dr Al-Kandari also indicated there were several problems that students face when writing lab reports. Whether it be monitoring a lab experiment or summarizing an article, the majority of students exhibit a lack of ESP writing skills. It is apparent there is no coordination between these departments to meet massive need of the students in Engineering.

An additional issue that is related is the number of applicants wanting to study in the United States, according to Sameera Al-Mansour the Director of Student's Affairs at the Kuwaiti Cultural Affairs Office. Students who receive scholarships to study in the United States are given a period of only six months to be fully equipped with all the writing skills required of them for graduate study. This is too short a time frame for a student to be fully knowledgeable of all the skills of writing. Finally, English is the second most important language in Kuwait, and current political factors have added to its importance. There are a tremendous number of people eager to master the English language, and the current levels of English courses are inadequate.

Moreover, when comparing the petroleum engineer curriculum at the United States at the Colorado School of Mines and the curriculum, there is clearly a fundamental gap between what the students at Kuwait are learning, with regards to writing and what the students at the school in Colorado are learning. To be more specific, the teaching of writing has more of a problem-based learning approach, whereas the approach in Kuwait is more focused on summarizing and monitoring lab experiments.

In light of all the information above, I have decided to further look into the professor's views on writing as well as the student's writing problems, through a questionnaire, which is detailed below.

Developing the questionnaires

The questionnaire I developed was based on one developed by Jackson, Meyer, and Parkinson (2006) to study writing tasks of undergraduate science students at a South African University. Jackson, Meyer & Parkinson's (2006) study focused on both reading and writing tasks, and the authors surveyed students and faculty in 14 science disciplines. I based questions one through six on the Jackson, Meyer, & Parkinson (2006) questionnaire developed for the faculty, adding four questions to meet my specific research needs.

There are many similarities between the Jackson, Meyer, and Parkinson (2006) study and my research. Both focused on report writing as the primary written task for science majors. Jackson, Meyer, and Parkinson (2006) distinguished report writing as involving "analysis of measured data, either collected by the students themselves or supplied by their lecturers" (pg. 264). Their study claims to confirm previous findings about lab report writing being the most important writing genre for students in science

(Jackson, Meyer, & Parkinson, 2006). Through my research, I hoped to include engineering students in that category as well.

Table 1, below present each question and my rationale. These questions are a simpler version of the questions from the Jackson, Meyers, Parkinson (2006) study to ensure the questionnaire was user-friendly for the professors at Kuwait University. I realized through my communications via email that their English skills and fluency needed to be taken into account to ensure accurate understanding. Some questions asked the respondent to indicate on a Likert scale their perceptions, some questions asked for one-two word or numerical responses, and some were simple yes/no questions. At the end of the questionnaire, there was an open-ended question.

Table 1: Professor Questionnaire with Rationale

Question	Rationale
1. How much do you comment on the following? Grammar Content Structure, Coherence. Rank (always, sometimes, rarely, never)	This question helps define which writing skills are considered most important to professors, and could be used to compare their importance to the expectations of U.S professors.
2. Do you comment on the following? Organization Accuracy Referencing Plagiarism Tone & Style. Rank (always, sometimes, rarely, never)	This question was use to help determine if these functions were important, and to indicate which aspect the professors considered more of less important, as the students may have learned to emphasize or deemphasize accuracy in that aspect.
3. To what extent does poor performance in the following areas affects students' marks: organization grammatical accuracy referencing and plagiarism	This question was used to indicate if the reason behind the lack of skill in some of these functions may be due to less emphasis on part of the professor.

Question	Rationale
tone and style. Rank (To a great extent, To some extent, Marginally, Not at all)	
4.How many writing tasks have you set for each module that you have taught this semester? List (Name of Module, Number if pieces of writing in the module, Appropriate number of words per assignment)	The response to this question could be compared to the number of writing assignments identified on syllabi from Engineering Departments in the United States.
5. What is your perception of how well, on average, the students performed the required task? Rank (Excellent, Good, Average, Poor, Very poor)	This question is to clarify what level the professors perceive their students to be at.
6. What kinds of readings do you assign in your course? I expect that students read the textbook I assign chapters from the textbook to be read for homework I assign extra photocopied readings I expect students to read assigned journal articles.	This question was selected to indicate what expectations the professors had of their students and what material source the professors required their students read.
7. Do you give written assignments in all your classes? Rank (Yes, No)	This question was used to indicate how much emphasis the professors had on writing assignments.
8. How many research articles do you assign your students each semester?	This question was used to indicate how much emphasis the professors had on writing.
9. Do you believe that students at this undergraduate level would be able to handle task-based assignments? Rank (Definitely, Sometimes, Rarely, No)	This question was used to clarify their views on their students ability.
10. Do you believe that most engineering students would be capable	This question was used to clarify the students future

Question	Rationale
of completing writing tasks if they were studying in the United States.	ability when they decide to study abroad.

The student questionnaire was distributed by Dr. Al-Kandari. These students were petroleum engineering students at the University of Kuwait at the undergraduate level. The students were from two separate classes: one that was taught by Dr. Al-Kandari, and another class that was taught by another faculty member. The questionnaire was developed to elicit student perceptions of writing in English, including their strengths and weaknesses based on my knowledge of ESL, ESP, and Arabic. Table 2: Presents the student questionnaire with my rationale.

Table 2: Student Questionnaire with Rationale

Question	Rationale
How many journal articles do you read each semester?	This question was selected to indicate the numbers of articles read by Middle Eastern engineering students for comparison to U.S. engineering course reading requirements in the US.
Are you asked to summarize journal articles?	This question was to indicate how much summarizing they were required to do.
Do you feel the English language is a challenge for you?	The selection of this question is to indicate the student's perception of the level of difficulty they encounter when working in ESL in engineering courses. Moreover it was intended to help define how they function, overall, as engineering students especially when all the textbooks and articles are in English.
What do you feel is the most difficult aspect of the English language?	This question was selected to highlight what skills are considered most significant to focus on.
When writing do you feel that the professor gives you enough feedback and	This question is to discover how much emphasis professors put on these reports.

Question	Rationale
comments on your paper?	
Is lab report writing easy for you?	This question is to indicate the number of students that find it easy and if it over counts the number of students whom find it difficult.

Distributing the Questionnaire

For my research, I solicited responses from both teachers and students at Kuwait University. The questionnaires were emailed to Dr. Al-Kandari, a professor in the Petroleum Engineering Department. Dr. Al-Kandari completed his graduate studies at the Colorado School of Mines and was very enthusiastic in his support of my research. He ensured that the questionnaires were distributed. The questionnaire responses were then received via postal mail. It took over six weeks to receive the responses to the questionnaire. The questionnaire was the best method to be applied for my purposes, since I was in the United States during this time. The results are discussed in Chapter 4.

A comparative overview of engineer writing coursework

When I compared the required coursework in writing at the Colorado School of Mines and at Kuwait University, it was evident that the Colorado School of Mines required four intensive writing courses within their specific discipline. At Kuwait University, they were only required to take two writing courses and one intensive reading and writing course for no credit. This intensive reading and writing course is a 10-hour course per week course for 14 weeks. Dr. Hassan AlKandari still expressed a profound weakness in general writing skills and lack of proficiency in technical writing. The comparison of writing course requirements is discussed further in Chapter 4.

Chapter 4

Overview

This chapter will discuss the results of the questionnaire. I address each question and summarize the findings for both the responses from professors and response from students. Furthermore, I present an analysis of these results, and then present an overview of curriculum considerations, including a discussion of the different writing course requirements for undergraduates in Kuwait and the United States.

Questionnaire responses from professors

I received six responses from a total of nine professors solicited. Three professors did not reply to the questionnaire, according to Dr. AlKandari , because one was on maternity leave, one on sabbatical and one did not have time to respond. The questionnaire was received through mail. An analysis of the questionnaire revealed that there is a wide difference of opinion between faculty members regarding ESL writing. The questionnaire helped define the gap between the teaching approaches at Kuwait University and universities in the United States.

Question one asked what they found to be most important of the following four criteria: Grammar, content, structure and coherence. Five out of the six found that grammar was only sometimes important. This is not surprising, as the writing tends to be in the past tense, so they do not feel that it is very complicated. Content seemed to top their list and was always important to all faculty members. As to structure, again five out

of the six chose it to be sometimes important. For the final criteria, coherence, the faculty held differing opinions, one felt that it was always important, and two of the faculty felt that it was sometimes important, whereas the last two found that it was sometimes important.

Question two asked them to rate the importance of organization, accuracy, referencing, plagiarism, tone and style. The results indicate that organization and accuracy are considered very important. However, reference citations seemed to drop in importance for two of the faculty members; plagiarism did not seem important for one out of the six faculty members. As to the final criteria, tone and style, most of the faculty members did not stress that it was highly important and most chose that it was sometimes important.

Question three asked to what extent poor performance in specific areas regarding the affect on students' grades: organization, grammatical accuracy, referencing and plagiarism, and tone and style. The results in the questionnaire found that organization and grammatical accuracy were highly important to three out of the six faculty members. Whereas, two of the members found the next criteria which were referencing to be marginally important; two found that it was to some extent important; and, three found it to be to a great extent to be important.

Question four asked how many writing tasks the instructors set for each module in the past semester. Most of the faculty members, five out of six, gave between five and six assignments they ranged from report writing to article summaries, the least number of articles that were assigned per semester were three.

Question five asked what perceptions the faculty had, on average, of the student's performance, when it came to written tasks. The scale range was excellent, good, average, poor, or very poor. Three stated student performance on written tasks were "good" and the other three stated that they were "average."

Question 6 addressed materials by asking what kinds of materials were assigned in the instructor's course. The options were:

I expect that students read the textbook.

I assign chapters from the textbook to be read for homework.

I assign extra photocopied readings.

I expect students to read assigned journal articles.

All of the faculty members, with no exceptions, regarded textbooks and assigning textbook chapters as homework to be highly important. As to assigning extra photocopied readings, four said they did not assign any extra readings; two said they did assign extra readings. As to assigning journal articles, only one of the faculty members said they did; all the rest said that they did not assign journal articles to their students.

Question eight asked if writing assignments were given in all the instructor's classes. All of the faculty members answered yes.

Question nine asked how many research articles were assigned each semester. Each professor provided a different response. The number of articles ranged from "only sometimes" to six, with the average number assigned being just over three.

Question ten asked if the instructors believed that students at this undergraduate level would be able to handle task- based assignments. Three responded no; one responded "rarely;" two responded "sometimes."

Questions eleven asked if the instructor believed that most engineering students would be capable of completing writing tasks if they were studying in the United States. Two of the faculty members answered "no;" three of the faculty members answered "rarely;" one answered "sometimes."

In conclusion, I determined the current writing focus in the petroleum engineering program at Kuwait University is text-book based reading with minimal writing. The table below summarizes the results from the questionnaire completed by the faculty members.

Table 3: Summary Table of Faculty Responses

Question / Topic	Results
Most important of the following criteria: grammar, content, structure& coherence.	Grammar: 5/6 found it sometimes important. Content: 6/6 found it to be important Structure& coherence: 5/6 found it sometimes important (tied with grammar) Coherence: 1/6 always important 2/6 sometimes important 3/6 found it sometimes important
Most important of the following criteria: accuracy, referencing plagiarism tone and style.	Organization &Accuracy: 6/6 found it highly important Referencing: 2/6 found it sometimes important. Plagiarism: 5/6 found it to be important

Question / Topic	Results
	Tone and style: 5/6 found it sometimes important.
Criteria that had an effect on student's performance: organization, grammatical accuracy, referencing and plagiarism, and tone and style.	Organization & Grammatical accuracy: 3/6 found it highly important on student's performance. Referencing and plagiarism: 2/6 found it to be marginally important 2/6 found it sometimes important, 2/6 found it highly important. Tone and style: 1/6 highly important, 5/6 sometimes important
Number of writing tasks set by the professors per semester.	5/6 faculty members gave 5 to 6 writing assignments. (highest number of writing assignments). 1/6 assigned 3 writing assignment per semester. (lowest number of writing assignments)
Perceptions the faculty had, on average, of the student's performance, when it came to written tasks. The scale range was excellent, good, average, poor, or very poor	3/6 writing performance was "Good". 3/6 writing performance was "Average"
Question 6 addressed materials by asking what kinds of materials were assigned in the instructor's course. The options were: Textbooks Outside readings Journal articles	Textbooks: 6/6 used textbooks. Photo copied readings: 4/6 did not assign extra readings. 2/6 did assign extra readings. Journal articles: 1/6 assigned journal articles.
Question eight asked if writing assignments were given in all the instructor's classes	All said yes
Question nine asked how many research articles were assigned each semester.	The average was 3 articles per semester

Question / Topic	Results
Question ten asked if the instructors believed that students at this undergraduate level would be able to handle task- based assignments.	3/6 members no 1/6 members "rarely" 3/6 members "sometimes."
Questions eleven asked if the instructor believed that most engineering students would be capable of completing writing tasks if they were studying in the United States.	2/6 answered "no;" 3/6 members "rarely;" 1/6 answered "sometimes"

Results from the student questionnaire

From the students, I received 38 questionnaires from a total of 50 students. The students were strictly Dr. Alkandari's students, because it is difficult to distribute and collect questionnaires from the other professors. In this section, I discuss the relts from the student questionnaire.

Question one asked how many journal articles did the student read each semester? From the 38 responses, the average numbers of articles read were 3.42.

Question two asked if the student was expected to summarize journal articles? Out of 38 respondents: 21 percent said no, 26 percent replied rarely, 42 percent indicated sometimes, and 10 percent indicated they often were asked to summarize journal articles.

Question three asked if the student felt that the English language was a challenge. Out of the 38 responses 13 percent said no, and 21 percent said rarely, 55 percent said sometimes, and 13 percent said often.

Question four asked what the student felt was the most difficult aspect of the English Language? Of the four options, grammar, reading, writing, and speaking, 86

percent ranked writing as the most problematic. Grammar was ranked as the second most problematic skill, with 83 percent of the students indicating it as their first or second choice. For reading, 79 percent ranked it third or fourth; the great majority (86 percent) ranked speaking as the least problematic of the four skills. These raw data from this question made it easy to see clusters because of the high numbers that indicated reading and speaking as least problematic and writing and grammar as most problematic.

Question five asked when writing, if the student felt their professor provided enough feedback and comments on their papers. Of the 38 responses, 21 percent said no, 23 percent said rarely, 42 percent said sometimes, and 13 percent responded with often.

Question six asked the students if they felt lab report was writing easy. The result of this question was as follows, of the 38 responses, 29 percent said no, 26 percent said rarely, 29 percent said sometimes, and 15 percent responded with often.

Question seven: Do you believe that you would be capable of writing assignments that relied 95 percent on you finding a problem and providing solutions for with minimal guidance from your professor? In this question it was found that out of the 38 responses, 28 percent responded with no, 39 percent responded with rarely, and 18 percent said sometimes, and only 13 percent responded often.

Table 4: Summary Table of Student Responses

Question / Topic	Results
Reading journal articles	Average number of journal articles read: 3.42
Writing article summaries	21 % no 26 % rarely 42 % sometimes

Question / Topic	Results
	10 % often
General perception of difficulty in working with English	13 % no challenge 21 % rarely a challenge 55 % sometimes a challenge 13 % often a challenge
Perception of what is most problematic aspect of English	86 % writing 83 % grammar 20 % reading 3% speaking
Perceptions of adequate feedback	21 % never adequate 23 % rarely adequate 42 % sometimes adequate 13 % often adequate
Perception of ease of writing lab reports.	29% not easy 26 % rarely easy 29 % sometimes easy 6 % often easy
Perception of ability to complete problem-based learning projects	28 % not able 39 % rarely able 18 % sometimes able 13% often able

From the results of the questionnaire, it is apparent that the number of articles read by the majority of students is low, and that most of them (86 percent) felt that either writing or grammar were the most problematic factors in the English language. Moreover, most of the students indicated that lab report writing was difficult (68 percent), and problem-based learning PBL and task-based assignments were not easily manageable (83 percent). Regarding the general perceptions of the difficulty of English, it was interesting that only 68 percent felt that the English language to be sometimes or often problematic. I speculate that some students did not want to display there perception that English is difficult. I say this because when discussing the problems with Dr. Hassan in a telephone interview, he said that the English language is most problematic for public

school graduates. He also mentioned that it is not as problematic for private English school graduates since they have taken all the scientific concepts in English, and thus the have an idea about methods of writing lab and scientific reports in general.

Due to these factors elicited from the students, an my research into the expectations of American graduate work in engineering, I have concluded that several gaps need to be addressed in developing a curriculum to ensure writing proficiency in students at the University of Kuwait. I address specific considerations in this chapter, and conclude in Chapter 5 with a full discussion of the curriculum I developed to close the gaps. Based on the above results the following considerations form the basis for development of a specific curriculum to close the gaps:

- Incorporating reading and writing in a content class
- Expectations for engineering students
- Approaches to Instruction in Kuwait
- General parameters for the curriculum
- Incorporating reading and writing into a content class

Reading is well known to enhance vocabulary skills and thus improve the learners writing skills. Researchers found that there is an identifiable method to help learners to be better equipped in writing through developing their technical vocabulary. Chung& Nation titled Technical Vocabulary in Specialized Texts (2003) found through an investigation that looked into technical texts that in the anatomy text one in every three words were considered to be running words where as in the applied linguistic technical text one in every five words were found to be technical words Chung& Nation. In addition, there has not been must investigation on this topic due to the factor that there has not been much

agreement on what technical vocabulary is and how to find a reliable method to count it. Chung & Nation (2003) have found that there are two kinds of technical vocabularies: "those that occur in general non-specialized usage" and "those that are largely unique in particular specialized field." What is unique is that they also suggest that these two kinds of vocabulary are bring different kinds of obstacles to the learner in being able to identify if the word is technical as well as be able to "learn" the words.

In order to help the learner, an instructor must not only teach the learner these words but an instructor must take the time to clarify to the learner when a certain word that they are used to using is used in a completely different context Chung & Nation (2003). Having a good instructor to help navigate their way through writing is a helpful step for learners, being able to cope with the words will take the learner into reading which is also a helpful aid in writing which is what will be discussed below.

Reading is regarded by Tarnopolsky & Degtiariova (1999) as the most important skill that would lead learners to professional advancement in a given profession. Therefore, it is useful to integrate writing with reading. Tanopolsky & Degtiariova (1999) conducted a study that provided learners with either reading or listening tasks and then asked the students to write a 100-150 word paragraphs. Tanopolsky & Degtiariova (1999) found that reading, compared to listening, improved the students writing.

Reading and writing articles for professional journals is essential for advancement in scientific fields. Research articles have not been emphasized in Kuwait where the textbook is the focus. Let us look at differences in reading and writing skills for these two genres: Textbooks and journal articles.

Readers of Textbooks must be able to:

- See the arrangement of facts in the textbook.
- Consider most knowledge valid as presented.
- Infer knowledge by using cohesive links.

Readers of Articles must be able to:

- Distinguish new knowledge from old.
- Assign credit to researchers.
- Distinguish between facts from researcher opinions
- Evaluate the certainty of statements.
- Use cohesive links to combine knowledge.
- Locate other texts related to topics currently read.

In other words, reading articles may be more important in an engineering content class to ensure the students are able to critically assess professional articles in their field.

Expectations of writing proficiency for engineering students

Moving to a more narrow focus of engineering writing tasks, Braine (1989) identified specific types of writing tasks required in engineering at one American university. These tasks included various forms of informational report writing based on specific experiences, case study analysis, and synthesis of multiple sources. While this study appears very dated, there have been few research projects completed at this level of specificity, for ELL engineers.

The American Accreditation Board for Engineering and Technology (ABET) identifies student proficiencies at accredited universities. These expectations included not only lab report writing, but also problem-based learning activities and collaborative,

guided design work to ensure the students were prepared for the writing required in post-graduate programs. Northwood, et al. (2003) discusses how problem-based learning is currently in-vogue in both the American education system and the American workplace.

Recent changes to the ABET's recommendations included a move to an outcome assessment approach rather than a prescriptive approach (Northwood, et al, 2003). The prescriptive approach is currently the standard approach at Kuwait University. The new recommendations from the ABET require that graduates demonstrate specific skills, including the following related to PBL and communication: analyze and interpret data, function on multidisciplinary teams, identify and solve engineering problems, and communicate effectively.

These expectations may be incorporated into a content-based writing curriculum that addresses the current focus on problem-based learning, collaborative work and outcome focused assessments. This curriculum must also work with the current approaches to ESL at the University of Kuwait.

Approaches and curricular options for Kuwait University

I concluded from the data collected and my research that part of the gap lies in the traditional approaches to teaching in Kuwait which does not provide opportunity for collaborative problem-based learning activities. To close that gap, I decided to introduce PBL and guided-design explicitly in the first section of the course, before focusing on specific writing tasks. Northwood, et al. (2003) addressed the current shift from traditional based learning and curriculum design to PBL. Northwood, et al. (2003) provided strong arguments for using problem-based learning in the engineering fields.

Moreover, Northwood, et al (2003) highlights the added benefit of PBL in that it helps students learn how to rely on themselves when solving problems.

Additional curriculum options were based on the following elements derived from Jones (1991), Hyland (1998), and Swales and Feak (1994). These elements included verb tense use and tense shifts, hedges and probability, audience analysis, cohesive elements, and citation format. The curriculum design, syllabus, and materials recommended in this thesis dovetail nicely with PBL approaches, often used at American universities.

A comparison of writing course requirements

In the Middle East, as with many countries, English is one of the compulsory subjects taken by students at the university level. According to Dr. Al-Kandari, many students admitted into the engineering department fail the Basic English skills requirement or consider moving to other departments. In Kuwait, especially, engineering students who deal foremost with English must be able to handle the terminology and texts in this scientific field. This can be seen in the example course outline from Kuwait University.

Through e-mails with Dr. Alkandari, regarding the courses in petroleum engineers, I found that the writing curriculum for petroleum engineering majors includes three courses. The first course is a non-credit Basic English course, focused on an intensive reading and writing course. This course is a pass-fail course and requires two hours per week. It includes reading, writing, vocabulary, grammar, and multi-media practice. It also helps the student develop reading skills, utilizing a wide variety of texts. After the Basic English course, there is a technical writing course. This is a three-credit course taken for forty minutes five days each week. It includes technical vocabulary and

technical writing skills, focusing on unified paragraphs, organizational concepts, flow charts, and diagrams. Finally, the students are required to take a three credit advanced course in technical writing. This course is taken after finishing fifty credit hours, and it encompasses the advanced writing required of students once they have entered the job market. The focus of this course is clarity and cohesion, coherence, and summaries and abstracts of articles.

The courses described above are provided to supply these students with the skills for writing in the engineering field. It is clear from the content of the courses that they fall under ESP. These students are provided with the basics of ESP for engineering in a very limited time frame, considering how important these skills are when students want to reach a certain level as a second language learner.

In my communications with Dr. Al-Kandari at Kuwait University, I discovered that the role of the English center at Kuwait University is very limited. It focuses more toward teaching foreigners who have a weakness in the English language. He indicated that the majority of students who attend classes at the English center are there for their own personal development rather than to fulfill a requirement of a certain department. They learn Basic English skills, but in-depth, academic English has never been introduced to undergraduate petroleum engineer students at Kuwait University.

Through questions via email with Dr Al-Kandari, it became clear that approaches to ESL or ESP at Kuwait University focus on the textbook and very rarely include outside readings or real-world scenarios (this will be further supported with the questionnaire that I distributed to the students). Dr. Al-Kandari emphasized that due to

lack of time, there is greater focus on textbooks than any other form of material, since the professors do not have the time to discuss and explain.

Dr Al-Kandari also indicated there were several problems that students face when writing lab reports. The student's lab report writing as well as summarizing articles, the majority of students showed a lack of ESP writing skills. It is apparent there is no coordination between these departments to meet massive need of the students in Engineering. An additional issue that is related is the number of applicants wanting to study in the United States, according to Sameera Al-Mansour the Director of Student's Affairs at the Kuwaiti Cultural Affairs Office. Students who receive scholarships to study in the United States are given a period of only six months to be fully equipped with all the writing skills required of them for graduate study. This is too short a time frame for a student to be fully knowledgeable of all the skills of writing. Finally, English is the second most important language in Kuwait, and current political factors have added to its importance. There are a tremendous number of people eager to master the English language, and the current levels of English courses are inadequate.

Moreover, when comparing the petroleum engineer curriculum at the United States at the Colorado School of Mines and the curriculum, there is clearly a fundamental gap between what the students at Kuwait are learning, with regards to writing and what the students at the school in Colorado are learning. To be more specific, in America the teaching of writing has more of a problem-based learning approach, whereas the approach in Kuwait focuses more on summarizing and monitoring lab experiments. Dr. Alkandari has even stated that in some of his courses he only relies on the textbook and does not request his students to conduct any kind of report writing. While in the United

States as well as countries such as Japan the "report" is an essential means of evaluating a student, when related to career promotions the number of reports submitted yearly determines how well an employee is doing (Moy Yin, 1988). Therefore, report writing is an important part in the engineering field and is an essential requirement in the field of engineering Moy Yin (1988).

Dr. Alkandari stated in our conversation that in spite Kuwait being a country that produces oil and that there are many areas that the students can be sent to conduct projects it seldom happens. This is because the students do not know how to write out a report and so it would be a waste of time to send them out. So they prefer to rely on the text book and the regular exams and quizzes.

It is also clear through course plan that was sent by Dr. Alkandari, that there was only three writing courses that the number of writing courses assigned to students in the petroleum engineer departments are more than the ones assigned at Kuwait University. At Kuwait the 090 course being an Intensive reading and writing course that was 10 hours a week 2 hours a day, and which was a pass or fail course. The other two writing courses which were course123 and course 221, they are both technical writing courses. They are 3 hours per week each and each course was 3 credits. University through the In light of all the information above, I have decided to further look into the professor's views on writing as well as the student's writing problems, through a questionnaire, which is detailed below. Whereas when looking at Universities in the U.S such as the University of Michigan it was seen that the courses offered provide students with a more job experience course 100 offers the following:

- technical problem solving and engineering design

- preparation of written technical reports and oral presentations including mixed audience analysis
- team management
- ethical decision-making

As we can see the above courses are comprehensive about its content. The engineering website provides students with other writing courses according to the major the students decide to take. It is a 4 credit course, but is a highly focused course since it offers the students everything from basic writing skills to very specific writing skills in report and memo writing. The strength of this course is that it integrates the above skills together.

The University of Oklahoma is regarded as one of the most outstanding engineering schools and is ranked by the U.S. World Report as one of the top five ranking schools in the U.S. It has a different view on writing since their course plan shows that they have a writing course in the first two semesters of their freshmen year. They are a basic composition course and a basic technical writing course.

Table 4, on the next page, presents a writing course work comparison between Kuwait University, the University of Oklahoma, and University of Michigan. It is clear from the table that the University of Kuwait does not have as much emphasis on technical and scientific writing.

Table 4: Writing Coursework Comparison

University	**Kuwait**	**Okalahoma**	**Michigan**
Courses in General English	Non-credit reading/writing course	3 credits composition	
Credit courses in Technical Writing	6 credits, technical writing	3 credits, technical writing	
Credit courses in Genre-based technical/scientific writing		3 credits, genre-based engineering writing	4 credits, genre-based engineering writing
Other			Above course focuses on problem solving, design, team management.

What I found to be strange was that Kuwait University was providing its students with higher numbers of hours, but there is still a weakness in their writing. So the question arises if the course or the teacher is the weakness of the writing of the Kuwaiti students.

In conclusion, I defined the gaps based on the needs of the Arabic EST learners, the current cultural perspectives and instructional approaches at Kuwait University, and the expectations as outlined by the ABET, curriculum research into coursework at the Colorado School of Mines and Texas A&M. I used this information to develop a short course in Engineering Report writing for Petroleum Engineering students at the University of Kuwait. Chapter 5 presents this short course in detail.

Chapter 5

Overview

In this chapter, I will introduce and define the course parameters, course objectives, specific approaches, provide a general syllabus, example unit and assignments, and issue assessment.

Course Parameters

Based on the parameters outlined by Dudley-Evans and St. Johns (1998) I determined the following parameters would be most suitable for this course. The course would take place over a six-week period, and would consist of 60-hours of classroom work and homework. The materials used in this course would include, specific to courses specific to courses in petroleum engineering, such as textbooks, research articles and lab scenarios. The group would be homogenous group: All graduates from Kuwait University in Petroleum Engineering. As to the group size expected it would range between 12-15 students.

Course Objectives

With the parameters set, I defined the course objectives based on the needs analysis and my experience. The ultimate goal of the course would be for the student to be able to produce engineering reports successfully. To reach that goal, the following objectives need to be addressed:

- The student would be able to apply guided design principles to multivariate problems through problem-based learning tasks;
- Write collaboratively; and
- Use the formal structures of technical lab reports and use the syntactic and rhetorical features of the genre to aid in understanding.

Defining multivariate problems is the first step in the guided design process. Guided design consists of specific steps: defining the problem; stating the goals and objectives; identifying the facts, assumptions, and constraints; generating and evaluating possible solutions and devising a final solution with recommendations for implementation.

Writing collaboratively is an essential element of many assignments in engineering disciplines. As this type of writing is not generally practiced in the traditional methods of learning found in Arabic cultures, I feel it is essential to give the students adequate opportunities to practice writing collaboratively.

Formal structures and syntactic and rhetorical features would be addressed explicitly. The formal structures of engineering reports have been standardized across all engineering disciplines and include the following components: abstract, introduction, methods and materials, results, discussion, conclusion and recommendations, and appendices. Syntactic and rhetorical features also would be addressed explicitly. These features include verb tense shifts to indicate relative importance and metadiscorsal features, for example. An additional objective for the course would be to help the learner develop self-assessment strategies.

Specific Approaches

This course is a genre-based intensive writing course. It has a PBL task-oriented, scaffolding approach as the foundation for the genre-based approach (Hyland, 2004). The approach includes using tasks with multiple objectives to shift the student's prescriptive from teacher-oriented learning to PBL. Shifting the perspective requires that the tasks "should be in context, use tasks within the same domain as the target content, and promote a high degree of learner activity and metacognitive awareness" (Hattie, Biggs, & Purdie, 1996, abstract). To meet the expectations of with engineering students, an explicit approach to the instruction included expectations for the class, problem-based learning skills, linguistic patterns, and formal report structure. Specific attention would be paid to the writer - audience relationship (Swales, 2004) and purpose of the text (Hyland, 2004), to help raise the student's awareness of cultural and rhetorical differences in writing styles. Implicit learning would take place through modeling of a variety of different, authentic reports.

Using a variety of models, this approach would raise the student's awareness of specific metadiscoursal features of lab reports. Hyland (2004) introduces two concepts that would be very useful in this class: "manifest intertextuality," and "interdiscursivity" (p.80). The first, intertextuality, brings in the idea of merging other texts into the report, this topic would bring into focus what Chris Tardy (2005) called textual borrowing. Learning the difference between good borrowing and plagiarism might be addressed with the Swales & Feak (1994) exercise on where to draw the line, and could be supplemented on an explicit lesson on citation format from the Petroleum Engineers Style manual. The second term Hyland uses, interdiscursivity, focuses on the formal structures, grammatical

patterns, and lexis used in engineering lab reports. Finally, with authentic lab reports as the model, the approach would be to use mock-up lab scenarios, developed in conjunction with engineering professors, could be used as lab report content information, which the students would turn into lab reports.

Syllabus

The syllabus combines the narrow focus of structured lab reports with macro style, elements of academic English, practice in collaborative writing, and practice in the guided design process. Wallace (2003) developed a rubric for engineering lab reports; I used that rubric extensively in the development of the syllabus. At the end of the course, the student would have developed their own reference manual that would include:

- Specific expectations for each section of a lab report,
- A list of verbs used in technical and scientific writing,
- Examples of tense shifts in each section of a formal lab report,
- Examples of cohesive elements used in each section,
- Checklist for successful collaborative writing,
- Checklist for successful lab report writing.

Unit 1 would focus on cultural expectations; unit 2, 3, 4, and 5 focus on individual sections of lab reports. For example unit 2 addresses the abstract and the introduction sections; unit three focuses on the methods and material section; unit 4 focuses on the results and the discussion section. It concludes with ch.5 that focuses on the conclusions and recommendations and appendices. The complete syllabus can be found in Appendix A: Syllabus for Short Course in Lab Report Writing.

Materials and example topics and assignments

The course is divided into units based on the specific objectives. For example, unit two focuses on general lab report structure and writing the abstract and introduction sections of lab reports. Unit two takes place over eight classroom hours. At the beginning of the unit, the instructor would introduce a general checklist for lab report structure and discuss each segment of the report and identify specific components in those segments. The instructor would use the students knowledge of scientific method to drive the discussions, outline on the board the segments and components and have students summarize each segment in their notebooks. The instructor would then introduce the assignment and address the expectations and methods to accomplish it.

Example Topics covered:

Explicit grammar and metadiscorsal elements would focus on how to shift focus through verb tense. Using authentic sample reports, the students would list verbs and verb tenses in the abstract and introduction. The instructor would guide them in figuring out the move structures of verb tense in these sections, and create a list of verbs on the white board, organizing verbs by general semantics (present/show/address, analyze, define, determine). The instructor would explicitly discuss tense shifts in these two segments.

Using texts such as Lerche, I., and Noeth, S. (2004), the instructor would introduce the report template to students. The students would identify the following: the Abstract and Introduction: focus of study, objectives of study, background information, relevant theory, and previous studies identified. The instructor would then end the unit with a review of the main points, an explicit explanation of PBL and guided design and how it applies to Engineers. Finally, the instructor would handout of the Accreditation

Board for Engineering and Technology system in the USA requirements for graduates, review with the students and answer questions.

Example assignment: Writing a lab report

Overall goal: Be able to define a multivariate problem, by using a guided design, as well as be able to identify basic components in the problem and have the ability to suggest alternative views.

Specific outcome objectives: be able to have collaborative skills through peer learning and groups work. In addition, the student would be able to develop self-assessment strategies. Be able to write lab reports with the usage of standard English format.

Materials: Mock-up lab scenarios based on undergraduate lab course work in petroleum engineering.

Methods: Task-based, step-by-step, formulaic writing method that works from simple to complex problems. Tasks: Assessment : performance based.

Assessment: The papers will be assessed on a rubric that would evaluate the length of the assignment, spelling and grammar, proposal format, references, organization, readability and style, rhetorical purposes and content.

Additional course materials can be found in Appendix B.

Assessment

Assessment is an integral part of this course. As Hyland (2003) indicates, "needs analysis, course design, materials selection, and evaluation are not separate, linearly related activities, but represent phases that overlap and influence each other" (p. 212).

Written and verbal feedback should be explicit and constant throughout the course as part of the scaffolding approach. Teachers should avoid ambiguity and provide students with how and when things should be conducted in writing. Sommers (1982) provides an excellent way of responding to students in her article "Responding to Student Writing. In that article, she emphasized the importance of providing consistent, not contradictory advice, such as edit and expand. Contradictory feedback makes the writing process even more frustrating to students. Some other ideas mentioned were:

- Offer strategies and suggestions, not rules.
- Offer comments specific to the text and the rhetorical purpose.
- Establish what kind of problems each student faces through written responses and short conversations.
- Indicate to students where in their textbook or in other sources they will be able to obtain guidance for correcting their writing problems.
- Point out in the text on the margin side where their problems are by the usage of symbols.

Using a clear, well-defined rubric as part of the process of writing and the process of feedback ensures students receive a clear, concise evaluation of their strong points and weaknesses in their written work (see Appendix C).

By providing consistent and constant feedback, the learner may be evaluated at every juncture. In this way, the feedback process will be what Hyland (2003) calls formative assessment, which intends to effect remedial action. In addition, at the end of each unit, an assessment would be done on the students produced report sections. These assessments would be based on written rubrics, and sufficient content details for the

report section to be considered complete. For example, in assessing the abstract section of lab report writing, students would be provided with a complete lab report minus the abstract.

In addition to assessing the broader rhetorical elements in lab report writing, assessments of the grammatical and syntactic forms should be undertaken at the end of each unit. As the course progresses, these assessments should be comprehensive to ensure the students are continuing to focus on the important rhetorical and grammatical features of lab reports.

Example Assignments

The course is divided into Units based on the specific objectives. For example, unit two focuses on general lab report structure and writing the abstract and introduction sections of lab reports. Unit two takes place over eight classroom hours. At the beginning of the unit, the instructor would introduce a general checklist for lab report structure and discuss each segment of the report and identify specific components in those segments. The instructor would use the students knowledge of scientific method to drive the discussions, outline on the board the segments and components and have students summarize each segment in their notebooks. The instructor would then introduce the assignment and address the expectations and methods to accomplish it.

Peer and Self Assessment

Dudley-Evans and St. Johns (1998) include peer and self-assessment as important factors in student learning. This course lends itself to peer and self-assessment because of the amount of collaborative writing and reviewing undertaken as part of the

coursework. Peer feedback will help the learners develop reviewing skills that they can perhaps later apply to their own work.

Changes in the Purposes of Assessment

In the past, assessments were conducted for purposes of sorting students, grading, selection into special programs, and identification of the highest and lowest ranking students. In today's information age, standards have changed and students need to meet higher standards to succeed. Assessment does not merely play a role for sorting students. it is used to help identify the skills of students in order to be able to build effective educational programs. Assessment today should also aim to help point out problems that students are having so that colleges and universities will be able to detect and eliminate these problems.

Today assessments lean more towards helping students of different abilities reach a certain level of knowledge and skills. Finally, modern theories have suggested that students learn more when faced with contexts of real life situations than merely testing them. This is because teachers want to know if their students are able to use their knowledge in real life situations. We realize that the assessment environment has come to encompass not just the classroom ability and skills but rather the job and real world needs. In light of my project, I tried to incorporate assessments to help students reach a level that is beneficial for them to reach the graduate level of lab report writing, and to help them further down the road with their work environment. Assessments to meet the objectives of each unit are outlined in the syllabus can be found in the Appendices.

In conclusion, this suggested course can be easily modified to meet the needs of students in other engineering disciplines and other courses in science and technology.

This course may also be a good suggestion to be taken by Arabic graduates as a refresher course before entering the workforce or when changing jobs.

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Appendix A - ESP Syllabus in Lab Report Writing

This syllabus is prepared for a 40-hour intensive writing course with four hours of class five days each week.

Unit 1: Cultural Expectations, Collaborative Learning Concepts and Guided Design Structure (4 hours)

Objectives

Determine starting point in writing skill levels

Develop an awareness of different learning styles.

Develop a framework for collaborative writing

Understand how guided design works.

Tasks

Writing Diagnostic

Discuss differences in learning styles

Discuss advantages and disadvantages of team work, strategies for success

Define Guided Design: Using problems with limited factors, walk through an example.

Assessment

Writing Diagnostic

Define a problem based on a scenario.

Unit 2: General Lab Report Structure, Abstract and Introduction Sections of Lab Reports (8 hours)

Objectives

- Be able to describe what information goes into each section of a lab report.
- Identify the sentence-by-sentence structure of an abstract.
- Identify the specific information required in an introduction.
- Identify writing styles in abstracts and introductions including: tense-shifts and their meaning, cohesive elements and hedging.
- Work in a collaborative situation

Tasks

Any of the tasks can be modified to be individual tasks or collaborative tasks)

- Read simplified lab reports and mark sections. Outline key points in each section.
- Develop a general outline for the abstract and introduction sections.
- Read lab reports from Petroleum Engineering (PE) journals and identify sections and key points.
- Pick out verbs in abstracts and introductions and discuss purpose of tenses used.
- Given a problem follow the guided design process to determine possible solutions - use pairs or groups. Present ideas to class for discussion.

Develop outline to follow for lab reports.

Assessment

- Write an abstract after reading a PE journal article (article with abstract removed)
- Write an introduction after reading the methods, discussion, and recommendations section of a PE journal article.

Unit 2: General Lab Report Structure, Abstract and Introduction Sections of Lab Reports (8 hours)

Objectives

- Be able to describe what information goes into each section of a lab report.
- Identify the sentence-by-sentence structure of an abstract.
- Identify the specific information required in an introduction.
- Identify writing styles in abstracts and introductions including: tense-shifts and their meaning, cohesive elements and hedging.
- Work in a collaborative situation

Tasks

Any of the tasks can be modified to be individual tasks or collaborative tasks

Read simplified lab reports and mark sections. Outline key points in each section.

- Develop a general outline for the abstract and introduction sections.
- Read lab reports from Petroleum Engineering (PE) journals and identify sections and key points.
- Pick out verbs in abstracts and introductions and discuss purpose of tenses used.
- Given a problem follow the guided design process to determine possible solutions - use pairs or groups. Present ideas to class for discussion.
- Develop outline to follow for lab reports.

Assessment

- Write an abstract after reading a PE journal article (article with abstract removed)
- Write an introduction after reading the methods, discussion, and recommendations section of a PE journal article.

Unit 3: Methods and Materials Section of Lab Reports (8 hours).

Objectives

- Identify the specific information required in an methods and material sections of lab reports.
- Be able to write definitions and descriptions to various audiences.
- Collaboratively write a methods and materials section of a lab report.

Tasks

- Read simplified lab methods and materials section of lab report.
- Develop a general outline for the methods and materials section.
- Practice writing definitions and descriptions of lab equipment to different audiences.
- Read lab reports from Petroleum Engineering (PE) journals and identify coherence and cohesive elements used
- Identify verb tenses in methods and materials sections and discuss purposes of tenses used.
- Given a problem have them follow the guided design process to determine possible solutions.

Assessment

- Given a picture and name of some general apparatus used in Petroleum Engineering, write a clear description.
- Given terms specific to PE, write short definitions to different audiences.
- Given a list of materials and actions develop this section of the lab report. This would be a good collaborative assignment.

Unit 4: Results and Discussion Sections of Lab Reports (12 hours).

Objectives

- Read lab reports from PE journals and identify key components of the Results and Discussion sections of lab reports.
- Develop a general outline for presenting all experimental and analytical results.
- Identify information as belonging in the Results section or the Discussion section.
- Know what graphic / table to use to present various types of data.
- Write a lab report through the discussion section

Tasks

- In pairs or small groups decide how best to present results of experimental data to various audiences.
- Outline 2 or 3 results sections from journal articles and identify coherence and cohesive elements, verb tense use, and use of hedges.

Assessment

- Given a problem have them follow the guided design process to determine possible solutions.
- Given the data in outline format, write a lab report through the discussion section. Have them work in pairs or groups to thoroughly discuss the interpretations of the data needed to complete the discussion section.

Unit 5: Conclusion and Recommendations and Appendices (8 hours).

Objectives

- Identify all key elements of the Conclusion and Recommendations section of a lab report.
- Identify the macro elements of coherence and cohesive elements, verb tense, hedging used in this section.
- Identify what types of documentation is included in an appendix

Tasks

- Read lab reports from PE journals and identify conclusions, limitations, assumptions not met or other qualifiers in the Recommendations and Conclusion sections of lab reports.
- Given the Methods and Materials, Results and Discussion sections of a lab report, complete the Conclusion and Recommendations report.
- Put extra details in an appendix.
- Assessment
- Given a problem use guided design to develop a Methods and Materials section of a report.

- Given data, complete a Results and Discussion section of a report.
- Given the body of a lab report, complete the abstract, introduction and conclusion sections of a lab report
- Complete a final writing diagnostics on Academic English macro elements.

Appendix B: Example Materials and Assignments

Example Topics covered:

Explicit grammar and metadiscorsal elements focus on how to shift focus through verb tense. Using authentic sample reports have student's list verbs and verb tenses in the abstract and introduction. (Allow about 20 minutes). Guide them in figuring out the move structures of verb tense in these sections. Create a list of verbs on the white board, organizing verbs by general semantics (present/show/address, analyze, define, determine). Explicitly discuss tense shifts in these two segments.

Use texts such as Lerche, I., and Noeth, S. (2004) to introduce the report template to students. Have the students identify the following: the Abstract and Introduction: focus of study, objectives of study, background information, relevant theory, and previous studies identified. (Allow about 45 minutes).

End the Unit with a review of the main points, an explicit explanation of PBL and guided design and how it applies to Engineers. Handout of the Accreditation Board for Engineering and Technology system in the USA requirements for graduates (15 minutes).

Example assignment: Writing a lab report

Overall goal: Be able to define a multivariate problem, by using a guided design, as well as be able to identify basic components in the problem and have the ability to suggest alternative views.

Specific outcome objectives: be able to have collaborative skills through peer learning and groups work. Also be able to develop self-assessment strategies. Be able to write lab reports with the usage of standard English format.

Materials: Mock-up lab scenarios based on undergraduate lab course work in petroleum engineering.

Methods: Task-based, step-by-step, formulaic writing method that works from simple to complex problems. Tasks: Assessment: performance based.

Assessment: The papers will be assessed on a rubric that would evaluate the length of the assignment, spelling and grammar, proposal format, references, organization, readability and style, rhetorical purposes and content.

Example assignment: Writing an article summary

Overall goal: Be able to comprehend the article assigned including technical vocabulary as well as summarize article, as well as suggest ideas with or against the views of the writer of the article.

Specific outcome objectives: Be able to summarize with the least grammatical errors as well as be able to discuss issues and provide their own views on topics.

Materials: Articles selected by professor of the course.

Methods: formulaic writing method that works from simple to complex problems.

Assessment: The papers will be assessed on a rubric that would evaluate the length of the assignment, spelling and grammar, proposal format, references, organization, readability and style, rhetorical purposes and content.

Example assignment: Writing a technical memo

Overall goal: be able to provide a memo that encompasses simplicity as well as all the information required in a simplified way, by magnifying only the critical ideas in the memo.

Specific outcome objectives: Being able to transform paragraphs into memos.

Materials: Activities will be in the form of handouts to the students with problem as well as proposal activities that need to be transferred from paragraphs into memo form.

Methods: formulaic writing method that works from simple to complex problems.

Assessment: Again the papers will be assessed on a rubric that would evaluate the length of the assignment, spelling and grammar, proposal format, references, organization, readability and style, rhetorical purposes and content.

Example: Research Projects

Goal: Being able to assess the problem and provide multiple suggestions to the problem either in a group or as an individual student, with the least interference from the teacher.

Specific outcome objectives: Be able to write a report that is divided into paragraphs that begins with the problem and be able to define the objectives and goals

and finally be able to suggest solutions to the situation imposed. Be able to identify problems and define key issues and address alternatives.

Materials: providing them with problematic situations that require their solution.

Methods: Task-based and Mock-up lab scenarios based on undergraduate lab course work in Petroleum Engineering.

Assessment: Each section would be handed in individually and evaluated according to a rubric; the students will have the chance to correct their work and hand in a final project copy that will be evaluated according to a rubric that looked into handing in the project on time as well as grammatical and syntactic features.

Class Plan for Unit 1 and Unit 2

Review syllabus and course expectations. Answer any questions. (10 minutes)

Writing diagnostic task. (See handout in Appendix B) (30 minutes).

Introduce a discussion of cultural differences and expectations of students through indirect questioning (20 minutes). Use guided design to facilitate this discussion. Sample initial questions include:

Have you ever had an American professor teach your undergraduate classes?

What were some of the differences you noted.

What do you see as being difficult in graduate school?

What do you see as being easy in graduate school?

Divide learners into pairs or groups of 3. Have them identify their expectations, their experience with American culture, what they see as being easy and as being

difficult. Give them 10 minutes or so to discuss and make some notes and then regroup and develop a list of cultural differences and expectations. Steer the discussion into ideas about meeting those expectations, using guided design principles.

Writing Task -- Opinion on Collaborative Writing paper. Allow at least 30 minutes for this task. Handout guided design steps to complete this assignment. Practice collaborative writing with a problem-based learning scenario. (See handout) This would be an implicit introduction into problem based learning. Allow at least 45 minutes for this task.Discuss the process used to develop alternatives and solutions (have them define PBL in their own terms).

Unit 2: General Lab Report Structure, Abstract and Introduction Sections of Lab Reports (8 hours)

Introduce a general checklist for Lab Report Structure. (Allow about 1 hour). Discuss each segment and identify specific components in those segments. Use the students knowledge of scientific method to drive the discussions. Outline on the board the segments and components. Have students summarize each segment in their notebooks8. Introduce the idea of self-checklists. Have students start by summarizing the information presented so far in their notebooks. Provide outline on overhead of topics covered:

Expectations

Working in Teams

Collaborative writing

Basic case study analysis techniques in problem-based learning.

Verbs and tense shifts in the Abstract and Introduction of Lab Reports

Shift focus to verb use in technical reports: Using sample reports, (authentic), have the students list verbs and verb tense in the Abstract and Introduction (Allow about 20 minutes). Guide them in figuring out the move structures of verb tense in these sections. Create a list of verbs on the white board, organizing verbs by general semantics (present/show/address, analyze, define, determine). Explicitly discuss tense shifts in these two segments.

Use texts such as Lerche, I., and Noeth, S. (2004), to introduce the report template to students. Have the students identify the following: the Abstract and Introduction: focus of study, objectives of study, background information, relevant theory, and previous studies identified. (Allow about 45 minutes)

End the Unit with a review of the main points, an explicit explanation of PBL and guided design and how it applies to Engineers. Handout and review the Accreditation Board for Engineering and Technology requirements for graduates (15 minutes).