

Teaching Reading in an ESP classroom: a Case Study at the department of Computer Sciences

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Abstract

In this paper, we will shed light on the importance of teaching reading to ESP students, and more particularly English for Computer Sciences. In fact, reading is very motivating when related to the subject-matter of the students since they will discuss topics related to the field of Computer Sciences such as programming a computer, the processing of data, the operating system, the different memories of a computer, viruses...etc. In addition, we will discuss some of the concepts related to reading such as the schematic knowledge, language in use and both bottom-up and top-down processing.

1.1 Introduction

English is learned best in context, and the topics will provide a context for learning. In a unit for Computer Science, themes such as software, data processing, mainframes, input, output devices, and computer capabilities are all appropriate and relevant for the students since they are familiar with these topics in their content courses. The reading texts are the basis from which classroom activities are developed. It is very important to understand what ESP represents, and can accept the various roles that Practitioners need to adopt to ensure its success. Moreover, authenticity was the main idea behind ESP, and is a skills-based approach to materials development and design in ESP courses. ESP teachers took the learners needs into account to create appropriate ESP teaching materials. Reading was crucial and texts were made more specific to meet these needs.

1.2 Communicative Language Abilities

We should reconsider the following question: 'What does it mean to know a language?'

In order to answer to this question, one should know first in what specific situational context we are interested. In fact, knowing a language implies to know its rules first and the ability to apply them in real-life. Can students be able to communicate without fear and hesitation? The problem is that learners of English master the system of the language, but when it comes to practice, they fail. Thus, students should be involved in use rather than usage. Yet ESP teachers need to know that all communication has a structural level, a functional level and a discoursal level for successful interactions in a real context. In this sense, there are aspects that help us to understand the components of language ability such as whether to include strategic competence; the treatment of the four skills and the background knowledge. Are all these components necessary for the negotiation of meaning?

In what follows, we will shed light on these concepts to measure the ability of learners to communicate in real life.

1.3 Communicative Competence

One shall take the term communicative competence as the ability to use the language system appropriately in any context. According to Chomsky (1965), 'Competence is the perfect knowledge of an ideal speaker-listener of the language in a homogeneous speech community'. On the other hand, Hymes (1972) points out that Chomsky's competence/performance model does not provide an explicit place for sociocultural features. He also argues that Chomsky's notion of performance seems confused between actual performance and its underlying rules. Hymes suggests the following:

- Whether something is formally possible.
- Whether something is feasible
- Whether something is appropriate.

- Whether something is actually performed.
- Halliday (1971, 72) points the following:
 - He rejects the dichotomy of competence and performance.
 - 'Meaning Potential' covers both knowing and doing
 - He suggests the notion of language function.
 - He follows the Firthian view of language. Language is a mode of human behaviour.
 - The importance of the context of situation.

Moreover, Widdowson (1978), usage is knowledge of the system of the language, and use is the realization of the language system as meaningful communicative behaviour. For him, an utterance has a communicative value. An utterance with a well-formed grammatical structure may not have a value for communication in a given context. According to Canale and Swain (1980), Canale (1983), there are four components of communicative competence:

- Grammatical competence (mastery of the language system)
- Discourse competence which concerns the mastery of how to combine form and meanings to achieve communication in both forms.
- Sociolinguistic competence which implies the production and the understanding of utterances in different sociolinguistic contexts.
- Strategic competence which implies the mastery of verbal and non-verbal communication strategies (Breakdowns in communication).

On the other hand, for Savignon (1983), the development of learner's communicative competence is defined as 'expression, interpretation and negotiation of

meaning which involve the interaction between two or more individuals, and the role of context are essential.

Bachman (1990) states that there are models of CC:

- *Language competence

- *Organizational competence (grammatical competence, textual competence (cohesion and coherence, conversational analysis.

Communicative competence has been criticized by many writers because it concerns native speakers, and sets the impossibility for the learners to become like native speakers since the needs are different. Here, we can refer to Saville-Troike (1989) who points the following: 'the needs vary according to a social context'. We would like to shed some light on the various models proposed. Communicative competence focuses on how foreign or second language learner uses his/her foreign or second language command and what he utters in several settings. The opposition of Hymes to Chomsky's linguistic competence adopts new directions; for example, Hymes criticizes Chomsky's linguistics theory. He asserts that the system of language or linguistic competence has distinct characteristics like 'phrase structures'. He further argues that linguistics competence does not include social aspects of language. According to Hymes, linguistic theory must also take into account performance since it is the only way that can be related to the social aspect of language. In this view, he points out the following:

'The concept of performance will take on great importance, in so far as, the study of communicative competence is seen as an aspect of what from another angle may be called the ethnography of symbolic forms, the study of the variety of genres, narration, dance, drama, song,

instrumental music, visual art, that interrelate with speech in the communicative life of a society and in terms of which the relative importance and meaning of speech and language must be assessed.'

(Hymes, 1971, p.284)

Moreover, Hymes focuses on the ability of use for pedagogical purposes as opposed to Chomsky who develops linguistic competence for the study of the language system. Such a theory of communicative competence has an impact on foreign language teaching, and more particularly within the communicative approach. It is also important in the selection and the grading of items to be taught. In fact, we cannot say that Chomsky's view is irrelevant since the study of language is essential. Linguistic competence generated by Chomsky is concerned with the description of language; whereas, communicative competence is generated for educational purposes. In fact, both are complementary. Even if Hymes opposed Chomsky's view, he asserts the following:

'There are rules of use without which the rules of grammar are useless.'

(Hymes, 1971, p.278)

In the context of education, Widdowson (1978) views language learning as the knowledge of the rules of grammar, and the ability to use language to communicate. He asserts the following:

'We do not only learn how to compose and comprehend correct sentences as isolated linguistic units of random occurrence; but also to use sentences appropriately to achieve communicative purposes.'

(Widdowson, 1978, p.57)

He argues that several years of learning English does not guarantee language communication. He shares the views of Hymes. According to them, learners acquire both knowledge of grammar and knowledge of appropriateness. Thus, we need to teach communicative competence and linguistic competence. Therefore, he comes up with two notions of performance 'usage' and 'use' that we have defined elsewhere in this thesis. Moreover, Widdowson suggests two other important aspects of meaning 'significance' and 'value'. Significance is the meaning that sentences have in isolation from particular situations; on the other hand, value is the meaning that sentences take on when they are used to communicate. Widdowson (1978). Teaching in this case focuses on the acquisition of both kinds of competence by providing linguistic and communicative contexts. Linguistic contexts enable students to select which form of sentences is contextually appropriate; whereas, communicative context focuses on use. In this case, grammar must help the learner to acquire the mastery of language for communicative use. On the other hand, Canale and Swain (1980) assert that the sociolinguistic idea of Hymes is of paramount importance to the development of a communicative approach to language teaching. They focus on social context, grammar and meaning. According to Canale and Swain (1980), rules of use are not enough without usage (grammar). A further model is proposed by Rivers (1972): 'skill getting and skill using'

According to her, skill getting implies that teachers isolate elements of skill, and provide the students to practice them in a separate way. Skill using implies that the students should be on their own and not directed by the teacher. The students at this stage can use anything to express themselves (gestures, drawings). These proposed models can be very useful in the design of effective syllabuses. In language teaching the material presented to the students is not

motivating since it does not reflect the real world. It is high time to reconsider our view in designing a syllabus, and to see what the main principles of language abilities are. In the next discussion, we will see the abilities of the students at the four skills.

1.4 The Four Skills

When we refer to English skills, we think about: reading, listening, speaking and writing. Of course other skills such as pronunciation, grammar, vocabulary and spelling all play a role in effective English communication. Each skill will depend on the level of the students and their needs. The aims of language teaching are defined in terms of the four skills. For Widdowson (1978), speaking and listening are related to the aural medium and reading and writing are related to the visual medium. Speaking and writing are productive skills; however, listening and reading are receptive skills. The main aim in language learning is to acquire communicative competence since the acquisition of the linguistic skills does not mean the acquisition of communicative abilities. The skills should be related to use, and this fact involves an understanding of the communicative value of the system of language in context.

1.5 Reading:

Finding authentic material may not be difficult, but finding appropriate materials according to the level of the learner is difficult. We should consider what background knowledge is necessary for a full comprehension.

‘Reading is the process of constructing meaning through the dynamic interaction among the reader’s existing knowledge, the information suggested by the written language, and the context of the reading situation.’

(Anthony, Pearson and Raphael, 1993 p.284)

In fact, reading is not passive since it involves the reader in active interaction. The meaning of a text is constructed by readers. There is a link between a text and the previous knowledge of the readers. This knowledge facilitates comprehension. In addition, reading means to grasp the meaning of any passage. There are objectives for reading, such as reading for extracting information (medical information, computing science information...). This process may depend on a grammatical knowledge, and a previous knowledge of the subject matter of the students.

‘If teachers understand the nature of reading comprehension and learning from a text, they will have the basis for evaluating and improving learning environment.’

(Tierney and Pierson, 1994 p.496)

Grabe (1988:56) asserts that ‘reading is a dialogue between the reader and the text.’ The task of the teacher is to build both formal and content schemata for his/her readers in order to facilitate the act of comprehension. For example, students should be familiar about the rhetorical organization of the text. Moreover, language teachers have to be able to use authentic texts for reading instructions, and point out features which can be incorporated into exercises, and here we refer to the authentic text (genuine text). In ESP, the reading skill is of primary significance since the main objective of ESP students is to extract information for research. Moreover, reading is a process of recognition and interpretation. The main objectives of reading are the following:

1-To develop meaningful communication

2-The selection of appropriate reading passages

3-Introducing tasks for communication

It is crucial that readers comprehend texts by relying on their prior knowledge. This process requires both bottom-up and top-down processing. According to schema theory, reading comprehension is an interactive process between the text and the prior knowledge of the readers (Rumelhart, 1980). For Anderson et al, every act of comprehension involves one's knowledge of the world. The focus of second language and foreign language is on the construction of language; for example, each well-formed sentence and each well-formed text has a meaning. Generally, failures in comprehension are due to the difficult words that exist in the text. Moreover, schema theory has shown the importance of background knowledge in the comprehension of authentic specialized texts. In fact, our understanding of something is a function of our past experiences or what is called schemata (Rumelhart, 1980). Other terms are used such as frames (Fillmore 1976), scripts (Schank and Abelson 1977), Scenarios (Widdowson). We have schemata for going to the hospital, stadium, etc). Students comprehend texts when they can relate the new experience to an existing knowledge. A high degree of background knowledge can overcome linguistic deficiencies. In our case, students of English for computing science can rely on their background knowledge to facilitate the task of comprehension even if they don't master the language. We can help them by asking the following question: 'What is the main idea of the text? On the other hand, Bloomfield and Baruhart (1961) assert that the first task of reading is learning the code or the alphabetic principle by which written marks conventionally represent phonemes. According to Dechant (1991), bottom-up models operate on the principle that the written text is hierarchically organized (grapho phonic, phoneme, syllabic, morphemic, word and sentence levels), and the reader processes the smallest linguistic units to decipher the higher units

(sentence syntax); whereas, top-down reading suggests that the processing of a text begins in the mind of the reader (meaning-driven process). In this context, comprehension is the basis for decoding meaning (Goodman, 1985) and (Smith, 1994). This model focuses on what the reader brings to the text. Its principle is to proceed from whole to part. Readers can comprehend even if they don't recognize each word, and reading for meaning is the objective of reading rather than to identify unknown words. In addition, the amount of information gained through reading is of primary importance in this case. Experienced teachers rely on top-down processing; however, inexperienced teachers rely on the bottom-up processing; for example, the structural approach is bottom-up (from details to generalities, and the communicative approach and task based approach are top-down. It is crucial to understand that the interpretation of discourse and the negotiation of meaning rely on two kinds of knowledge (language as a text, and language as discourse). Therefore, we can rely on the following chart for a better understanding. The forthcoming is the sum up of G.Cook (1989) in his book 'Discourse'.

Language	
As a text	as discourse
Functions of language (formal)	language in context
Systemic knowledge (grammar, lexis, phonetics...)	schematic knowledge
Atomistic approach	holistic approach
Particularities to generalities particularities	from generalities to particularities
It is a bottom-up approach	it is a top-down approach

In fact, the comprehension of texts in a specific discipline could be achieved with both knowledge of the subject area and knowledge of the language; however, the systemic knowledge could be the better predictor, in the sense that grammar could be an emergency for the comprehension of texts for general English readers as opposed to ESP readers who need to rely on their background knowledge. Therefore, deficiencies of grammar for ESP students can be solved when they rely on their background knowledge to achieve convergence (negotiation of meaning of the text). In this case, the specificity of a text requires knowledge of the subject. In fact, to know a language (decoding meaning) requires both knowledge of the language and the ability to use it for communication. Furthermore, in order to guess the meaning from discourse, we don't need to focus on form. This does not imply to neglect grammar since knowing the rules of language may help students how to build correct sentences. ESP students should be competent because competence facilitates the comprehension of sentences and should not be denied. Consider the following example: 'When the metallic film is magnetized, it produces bubbles'. The presence or absence of these bubbles represents bits.' A computer science student can understand this sentence since he is familiar with the subject; whereas, an EGP student may encounter difficulties since he is not familiar with the register of this sentence, but he/she can rely on his systemic knowledge to achieve comprehension if he can reach the underlying system. At least, he/she can recognize the grammatical elements (subject, verb). It is crucial to understand that the topic of the text has a reference, and when you read, you found a vacuum that you will fill it with facts from the real world, and the text is supposed to obey the four maxims of Grice. Therefore, the readers can give sense to the text because of their pragmatic meaning, or their background knowledge. ESP teachers in computing science face an

audience (Master one students particularly) who have a practical and conceptual knowledge of their field of speciality; however, these students may encounter difficulties in exploiting authentic texts. It is important to note that bottom-up reading should require word recognition, spelling and phonological processing as well as morphosyntax and lexical recognition. In this case, readers should grasp information from the written texts, and identify the meaning of words, and then go to the meaning of larger units such as phrases and sentences. Grammar is usually ignored in the process of teaching reading to ESP students. According to Dudley-Evans (1998), the weaknesses of grammar interfere with comprehension of meaning, and the main problem of the readers is the transfer between L1 and L2, but training students in learning reading strategies can facilitate such transfer. The majority of ESP readers in any questionnaire-based survey cite that reading is not difficult as the other skills; however, the main problem encountered is an ability to read at adequate speed. Another important drawback is the understanding of the meaning of both general and specific terms. Generally, ESP students read for a purpose in order to obtain information. This aspect involves comprehension. The following are the main strategies of reading according to Jordan (1997:143):

- 1-Prediction
- 2-Skimming
- 3-Scanning
- 4-Drawing inferences and conclusions
- 5-Deducing unknown words
- 6-Understanding graphic information
- 7-Understanding text organization

These strategies are the basis of material development in ESP. In our case, the most important points to take into consideration are the followings:

1-Reading for the main idea

2-Reading for grasping information

3-Understanding the meaning of words according to their context without the need of using dictionaries

4-Understanding graphics, charts, tables, pictures and diagrams, and to be able to convert them into written texts without reproducing the text

5-Summarizing using simple and complex sentences

In our case, the selected texts should be authentic and related to the subject matter of the students, and the comprehension of texts requires relevant vocabulary practice, grammar focus and tasks based on the comprehension of the selected passages (articles from academic journals). It is necessary to focus on the psychological approach first (Bloor, 1985). This approach will focus on 'what takes place in the mind of the individual reader'. This may be possible at word recognition. ESP students meet unknown words and phrases in a text. In this case, the role of the teacher is to ask them to scan first headings and sub-headings. This fact allows them to set the scene; moreover, using contextual clues is a good technique for deciphering the meaning of the difficult words in a text. Moreover, the linguistic approach seems to be very important (Glendinning and Holmstrom, 1992). This focuses on the level of words and sentences of the text. The ability to read effectively may be achieved when the students can handle the linguistic features of a given text. We can rely on grammatical exercises such as to ask students to summarize a text using their own style or to transfer a chart from the text to a written passage. We will suggest some of these activities in practice.

1.6 A Model in an ESP Classroom

The basic components of a computer, the input, the output, the memory, and the processor operate only in response to commands from the control unit. The control unit operates by reading

one instruction at a time from memory and taking the action called for by each instruction. In this way it controls the flow between main storage and the arithmetic-logical unit. Binary arithmetic, the logical operations and some special functions are performed by the arithmetic-logical unit. The primary components of the ALU are banks of bi-stable devices, which are called registers.

Questions

1-Find a title to this passage

2-Define the following words from the text: processor /flow / registers/ arithmetic-logical unit

3-Which tense is used in this passage and why? Present, future or past

4-Build sentences with: However/ and/ on the other hand

5-Write a short paragraph about the components of the computer (5 lines), and then plan a chart.You can start as what follows:

The computer



Conclusion

Generally speaking, materials control the instruction. Materials appropriate for a specific class need to have an instructional approach, method and technique which suit the student's needs. There are components which are important for the process of teaching a language: Students, teachers, materials, teaching methods and evaluation. ESP teachers can modify, delete or add lessons according to the student's expectations; in other words, they can teach without a specific textbook. In fact, what is important is to evaluate the suggested material. We have tried to demonstrate that reading and comprehending authentic texts in ESP is a must in the design of a programme.

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