

CHAPTER II

REVIEW OF LITERATURE

This chapter presents the literature review of Students' Needs, Students' English Communication Needs, Bilingual Education, Language in Mathematics, Teaching Mathematics through English. This chapter includes Theoretical Framework to place writer's study within the perspective of other studies in the same discipline.

2.1 The Needs Analysis

Needs analysis refers to the techniques for collecting and assessing information relevant to course design (Hyland: 2006). ESP can but is not necessarily related to specific discipline. It also does not aim at certain age group but generally used by adults. It can be assumed that ESP should fulfill what learners need by gaining the information what they expect during learning English. Hyland claims that needs analysis is like any other classroom practice in that it involves decisions based on teachers' interests, values, and beliefs about teaching, learning and language'. In addition, Needs analysis should not be seen as an entirely objective procedure. Needs analysis can involve what learners know, don't know or want to know, and can be collected and analyzed in a variety of ways. Needs analysis is basically an umbrella term that embraces many aspects, incorporating learners' goals and backgrounds, their language proficiencies, their reasons for taking the course, their teaching and learning preferences, and the situations they will need to communicate in (Hyland: 2006).

Ideally, the design of curriculum and pedagogical method at tertiary level should be based on an analysis of learners' needs. An analysis of the language, an ESP approach starts instead with an analysis of the learners' needs. (Stevens: 1997) in Richards (2001:33) point out that the

content of (ESP) course are thereby determined, in some or all of the following ways:(iv) communicative needs: only those communicative needs...are included which are required for the learner's purposes.

The needs, potential and constraints of the route (i.e. the learning situation) must also be taken into account, if we are going to have any useful analysis of learner needs. There fore, needs analysis is a paramount important for course designers of English for specific purposes (ESP). (Dudley-Evans and St. John: 1998) in (Dawning: 2010) describe needs analysis as “the corner stone of ESP” and the key stage in ESP (p.122). it can lead to extremely focused and suitable ESP courses for students at work, and during their study. Needs analysis is done for studying the needs of target students to help them better equip for their work or future career. In this research, the needs of students in bilingual class will be identified and describe the English language needs in classroom.

2.2 Students' Needs

According to student perceptions of learning needs, researchers have found that communication skills are crucial. Kaur and Khan (2010), conducted an needs analysis of English for art and design students in Malaysia, finding that 47 students and 10 staff members perceived English speaking skills as the most useful component of their art and design courses and their careers, followed by English listening, reading, and writing skills. In a literature review, Tseng (2014) found that learning speaking skills was particularly necessary in Asia. In New Zealand, nonnative English speakers from China, Thailand, South Korea, Qatar, and Saudi Arabia learn reading and speaking before writing and listening instruction. Based on the studies reviewed, (Tseng 2014) sought to determine students' needs for language courses. A sample of 83

undergraduate students majoring in the arts participated in the study. The results revealed that the two main language skills in need were conversation and writing. In addition to the compulsory courses, students wanted to be trained in speaking and listening skills; they wanted to understand colloquial verbal expressions from native speakers and to acquire speaking and listening skills for daily life. Specifically, it was also revealed that speaking and listening skills are essential for such students when attending exhibitions, contests, and performances. Furthermore, reading skills are also necessary for understanding specific website content

In this research, the needs of students in bilingual class will be identified and describe the English language needs in classroom.

2.3 Students' English Communication Needs

In the field of bilingual education, there are two differing kinds of language proficiency, the concepts of Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP), first proposed by Jim Cummins in 1984, are fundamental in shedding some light on the development of language proficiency by bilingual students. In other words 'BICS refers to conversational fluency in a language while CALP refers to students' ability to understand and express, in both oral and written modes, concepts and ideas that are relevant to success in school (Cummins 2008: 108). BICS are Basic Interpersonal Communication Skills; these are the "surface" skills of listening and speaking which are typically acquired quickly by many students; particularly by those from language backgrounds similar to English who spend a lot of their school time interacting with native speakers. CALP is Cognitive Academic Language Proficiency; these are the "deeper" skills in language followed by reading, speaking, listening, and writing skill. As the name suggests, is the basis for a learner's

ability to cope with the academic demands placed upon her in the various subjects. Krashen and Terrell (1983:67) maintain in their “Natural Approach” to second language learning that it appears reasonable to assume that a “good basis” in basic personal communication skills will lead to greater success in academic learning skills. Larsen-Freeman (1987:7) challenges this view:”...just because students can speak and hear does not mean that they know how to communicate orally or listen effectively.” “Effectively” refers to academic skills. Larsen-Freeman is suggesting that the specific social and pragmatic skills of oral communication that relate to academic skills require a deeper level of language proficiency than basic interpersonal communication.

The need communication involve language use and language performance needs. Needs can be stated in terms of goal and objectives which, in turn, can serve as the basis for developing tests, materials, teaching activities, an evaluation strategies as well as for reevaluating the precision and accuracy of the original needs assessment (Brown: 1995: p.35).

In this research, students’ English communication needs relevant to academic skills require a deeper level of language proficiency than basic interpersonal communication. The concepts of Cognitive Academic Language Proficiency (CALP) can serve the academic demands to greater success in academic learning skills.

2.4 Bilingual Education

Bilingual education is use of the dual language in teaching and learning activity. Bilingual education should involve teaching in more than one language as the medium of instruction for students to learn regular school subjects (McCarty: 2012).

A primary goal of bilingual education is English language development (Krashen: 2006). He stated that bilingual education helps English in two ways. First, teaching subject matter in the students's first language provides knowledge. It can help students understand the instructions presented in English. Second, bilingual education accelerates English by providing literacy development in the first language, which is a short cut to English literacy. Bilingual education is more effective than all-English programs in helping students to acquire English and to progress academically (Krashen: 2005).

Krashen (1997) has commented, "*The best bilingual education programs include all of these characteristics: ELS instruction, sheltered subject matter teaching, and instruction in the first language.*" It can be concluded that ELS instruction is English directly by learning subject matter taught in English.

Zelasco (2001) stated that bilingual education is a broad term that refers to the presence of two languages in instructional settings, (Richards et.al.:1991) cited in (Santoso: 2006) defines bilingual education as the use of second or foreign language or as the medium of instruction in school for the teaching of subject matter, such as math, physics, or biology.

Language in the classroom used by teachers for organization and the process of acquisition in classroom activities. (Nunan: 1991) claimed that teacher talk is a crucial of importance, not only for the organization of the classroom but also for the process of acquisition. (Liu and Zhao: 2010) also stated that the language that is used by the teacher in language class is served as the source of input of language knowledge for the students. (Liu and Zhao: 2010) classified language teacher become ten major part. They are questioning, inviting, directing, informing, prompting, encouraging, criticizing, ignoring, acknowledging, and commenting.

Some of the language which teachers often use to manage the students in lessons managing classroom by Harmer (2012: 247) they are: Greeting and Starting, Stages of the lesson, Homework, Instructing students to do things, Putting students into groups/re-arranging the classroom, Controlling the class, Asking students to help, Finishing and saying goodbye.

However mathematical classroom language or discourse is about whole-class discussion in which students talk about mathematics in such a way that they reveal their understanding of concepts. Students also learn to engage in mathematical reasoning and debate. Mathematical discourse involves asking strategic questions that elicit from students both how a problem was solved and why a particular method was chosen. Students learn to critique their own and others' ideas and seek out efficient mathematical solutions.

Bilingual is defined as being able to speak two languages equally well because people use it since they are very young (Oxford, 2002 cited in Santoso, 2006). Bilinguality is the psychological state of an individual who has access to more than one linguistic code as a means of social communication; the degree of access will vary along a number of dimensions which are psychological, cognitive, psycholinguistic, social psychological, social, sociological, sociolinguistic, sociocultural and linguistic (Harmer, 1981 cited in Harmer & Blanc, 2000). According to Nunan and Carter (2001: 93) bilingualism refers to the phenomenon of competence and communication in two languages. Steinberg (1993) also defines bilingual as a person who is able to speak and understand two languages

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proficiency by immigrant students. In the author's words 'BICS refers to conversational fluency in a language while CALP refers to students' ability to understand and express, in both oral and written modes, concepts and ideas that are relevant to success in school' (Cummins 2008: 108).

Mathematics teachers can use it any time during a unit of work or be used to determine what students are thinking and understanding in order to build bridges between what they already know and what there is to learn, offer opportunities to develop agreed-upon mathematical meanings or definitions and explore conjectures.

2.5 CLIL Teachers' Roles

Dale and Tanner (2012: p.19) classified new roles of CLIL teachers :

CLIL subject teachers' roles

a. Developing my own language skills

Subject teachers tend to interpret their role as a CLIL teacher as one which involves supplying learners with subject-specific vocabulary lists to learn. Their concerns with the development of their own language skills and knowledge may lead them to focus on themselves, and so there is a tendency to teach from the front and put less emphasis on activating learners.

b. Developing learners' vocabulary

Subject teachers become more aware that they are language teachers as well as subject teachers. They encourage learners to learn language – still mainly new vocabulary – and organise a variety of activities to help them to acquire new words and phrases.

c. Facilitating learners' language

Teacher can activate and encourage learners to communicate in the second language at all stages of the lesson, which means that little or none of the first language is heard during lessons. Mature CLIL subject teachers have developed a wide variety of ways of giving feedback on language as well as content to their learners.

2.5 Language in Mathematics

The Mathematical register refers to a subset of language composed of meaning appropriate to the communication of Mathematical ideas (Kersaint: 2009). In mathematics, language is connected with symbols, pictures, and real-life situations. In a summary of research into the development of mathematical ideas in young children, (Perry and Dockett: 2002: p.101) conclude that 'without sufficient language to communicate the ideas being developed, children will be at a loss to interact with their peers and their teachers and therefore will have their mathematical development seriously curtailed'. That is the reason why a Mathematics teacher should have a sufficient knowledge of language to consider those difficulties.

Haylock (2007: p.100) divided the language difficulties in Mathematics into five categories:

1. Mathematics uses a number of technical words that are not usually met or used by primary school pupils outside mathematics lessons.
2. There are words that are used in everyday English, which have different or much more specific meanings in mathematics.

3. Words in mathematics are characteristically used with precise meanings. But in ordinary everyday English, many mathematical words are misused or used with a degree of sloppiness, which can be a barrier to pupils' understanding of mathematical concepts.
4. The subtitle uses of prepositions in a number of the basic statements in mathematics.
5. Teachers should also recognize the syntactical complexity of many of the statements they make and the questions they pose in mathematics.

2.5 Teaching Mathematics through English

Teaching Mathematics and Sciences by using English can be found in the earlier practice of content-based and immersion Models for Second and Foreign Language Teaching. (Snow in Celce-Murcia. 2001: p.303). It is the integration of language teaching with subject matter instruction. In this study, the subject material which is integrated with English is Mathematics as a content subject.

Mathematics and sciences are dominated by scientific terms and concepts, therefore the acquisition of the content subject concepts must take the sociocultural theory of learning. Related to that theory, Vygotsky (in Celce-Murcia: 2001) points out that speaking and thinking are ways of acting on the material and social world.

In Halliday's concept of Development of a register of mathematics (Halliday:1994), he explains that the development of a new register of mathematics involves the introduction of new "thing-names": ways of referring to new objects or new processes, properties, function and relations. It can be done by (1) interpreting existing words, (2) creating new words out of native word stock, (3) borrowing words from another language. This method also applies in Sciences, Technology, and Biology. In interpreting existing words of Sciences, for example, we can have

set, point, field, row, column, weight, stand for, sum, even (number) and random. CBI will further enlarge the students acquisition on new technical terms as those words that are mentioned before, that will be needed in understanding subject matter texts in university.

Research in the mathematics achievement of a whole student population suggest a connection between math and language that there is a somewhat positive relation between mathematics achievement and verbal proficiency.

1.6 Theoretical Framework

Theoretical framework of this study which starts with the question 'What are the English communication needs of students in bilingual class?'. This was a relevance of English Specific Purposes should fulfill what learners need by gaining the information what they expect during learning English. Need analysis can involve what learners know, don't know, or want to know, and can be collected and analyzed in a variety of ways. In this study focus on students' needs in a bilingual class requires special skill in communication using English language. Need analysis is done for studying the needs of target students to help them better equip for their work or future career (Hyland: 2006).

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population suggest a connection between math and language that there is a somewhat positive relation between mathematics achievement and verbal proficiency.

A primary goal of bilingual education is English language development (Krasen: 2006). This research would develop kinds of language proficiency as the goal. Language proficiency requires to succeed in academic and learning skills can reach from social communication developing. Thus, the research looks for student's material need based on skill-centred approach such as listening, speaking, reading, and writing skills. It is supported by the informal interview as a pilot study.

A connection between math and language that there is a somewhat positive relation between mathematics achievement and verbal proficiency. CLIL education is used for the learning and teaching of both content and language which a subject teacher who is teaching your subject through English or a language teacher working in a bilingual setting.

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A Mathematics teacher and his students as data source. The data was taken from a set questionnaire that it was answered by the participants. The questionnaire has arranged all the necessities that probably the participants need to learn. Then, they chose the material whether they have not mastered and they want to learn. Richard scale was used as the measurement of the ordinal data (they are: very often, often, sometimes, rarely, and never). Based on previous research conducted by (Dawning: 2010), to make sure of the study, the researcher used triangulation data. The material could be considered as important need to be learn if the

participant choose the answer “very often or often”. At the end, the result of the questionnaire was listed as material that they want to learn. It used qualitative study to analyze the data.