ERIZAR

THE IMPACTS OF

NATURAL DISASTER TEACHING MODULE (NDTM)

ON SECONDARY SCHOOLS STUDENTS IN WEST ACEH

UNIMAL PRESS

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KEBERKESANAN MODUL PENGAJARAN BENCANA ALAM KE ATAS PELAJAR SEKOLAH MENENGAH DI ACEH BARAT

Abstrak

Kerajaan Indonesia dari pelbagai peringkat semakin menyedari kepentingan pendidikan bencana alam, justeru itu mereka telah menambahkan pelaburan pendidikan di dalam aktiviti-aktiviti yang berkaitan. Tujuan kajian ini adalah untuk mengkaji keberkesanan penggunaan Modul Pengajaran Bencana Alam (NDTM) ke atas pelajar-pelajar sekolah menengah di Aceh Barat, Indonesia dari aspek pencapaian akademik dan pembelajaran Bahasa Inggeris pelajar-pelajar. Di samping itu, kesan terhadap motivasi pelajar di dalam mempelajari Bahasa Inggeris juga diberi perhatian. Populasi kajian terdiri daripada pelajar-pelajar sekolah menengah yang belajar di sebuah sekolah awam kerajaan di Indonesia. Seramai 30 pelajar dari Gred 8 diletakkan di dalam kumpulan kawalan dan 30 pelajar lagi ditempatkan di dalam kumpulan eksperimen. Kedua-dua kumpulan diarahkan menjawab soalan pre dan post serta menjawab soalan kaji selidik, manakala para guru hanya menjawab soalan kaji selidik. Pengajaran berasaskan *quasi-experimental* dikendalikan di dalam kelas Bahasa Inggeris mengikut jadual waktu yang telah ditetapkan. Guru melaksanakan pengajaran eksperimental ini dan bertindak sebagai fasilitator. Adalah didapati bahawa aras perbezaan yang signifikan di antara skor kumpulan telah diuji dengan menggunakan ujian-t dan hasil kajian menunjukkan terdapat perbezaan yang signifikan di antara skor min kumpulan kawalan dan kumpulan rawatan. Berdasarkan dapatan, hanya dua dari tujuh null hypothesis diterima. Hasil kajian juga menunjukkan bahawa pengajaran modular boleh meningkatkan motivasi pelajar dalam mempelajari bahasa Inggeris dan bahan pengajaran yang dibina mampu membolehkan kedua-dua kumpulan pelajar yang lemah dan cerdas memahami konsep-konsep yang sukar. Kajian ini mencadangkan agar pembina dasar pendidikan mengambil langkah-langkah yang proaktif bagi pembangunan pendidikan di peringkat sekolah menengah.

THE IMPACTS OF NATURAL DISASTER TEACHING MODULE (NDTM) ON SECONDARY SCHOOLS STUDENTS IN WEST ACEH

Abstract

The Indonesian government has realised the importance of education in these recent days by increasing the investment in education in all fields including English language studies. This study purported to irnvestigate the impacts of the use of Natural Disaster Teaching Module (NDTM) on secondary school students in West Aceh, Indonesia on students' academic, English learning achievements, and students' motivation in learning English. The population of the study comprised the secondary school students studying in a public school in Acheh, Indonesia. The control group and the experimental group was of equal size, each having 30 students from the 8th grade. The pretest and posttest of the same test was administed on the students in both groups in the beginning and end of the study. The questionanaires were also distributed to the two groups upon completion of the experimental course. The teachers were also required to answer the questionnaires. The quasi-experimental teaching was conducted during the regular teaching hours of English class. The pretest results were used to identify the English proficiency of the two groups in the beginning of course. The result indicated that there was a significant difference found between the two group scores as shown in the posttest. Besides, only two out of seven null hypotheses were accepted. The results of the survey also indicated that the modular teaching could improve students' motivation in learning English. The study indicated that the materials designed were useful for both groups of students (low and advanced), and the materials also enabled them to comprehend the difficult concepts and keep them on track in the learning process. This study recommends that educational policy makers take proactive steps in future for the development of English education at both the primary and secondary school levels. The teacher training institutions should train teachers in developing and applying different modules in different subjects.

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Approval

I certify that an Examination Committee has met on 4 th July 2016 to conduct the final examination of Erizar, on his thesis entitled "The Impacts of Natural Disaster Teaching Module (NDTM) on Secondary Schools Students in West Aceh", in accordance with the regulations approved by the senate of Universiti Sultan Zainal Abidin. The Committee recommends that candidate be awarded the relevant degree, and it has been accepted by the Senate of Universiti Sultan Zainal Abidin as fullfilment of the requirements for the Degree of Doctor of Philosophy English Language Studies, in TESL. The members of Examination Committee are as follows :

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Declaration By Candidate

I hereby declare that the thesis is based on my original work except for quotations and citations, which has been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Sultan Zainal Abidin or other institutions.

_____

Erizar

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Declaration By The Supervisor

This is to confirm that :

The research conducted and the writing of this thesis was under my supervision.

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Faculty of Languages and Communication

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List of Abbreviations

AAP	American Academy of Pediatric
ACEID	Asian Centre of Educational Innovation for Development
ARD	Accurate and Reliable Dictionary
CBC	Curriculum Based Competence
CG	Control Group
CLD	Culturally Linguistic Diverse
EFL	English as a Foreign Language
EG	Experiment Group
ELL	English Language Learning
ESL	English Second Language
ESLs	English Second Language Learner
ESP	English for Specific Purposes
ESTEEM	The Expert Teaching English Teaching Education Manual
LEP	Limited English proficient
MT	Modular Teaching
NDTM	Natural Disaster Teaching Module
NRC	National Research Council
SEE	Structured English Emersion
SIA	Standardized Item Alpha
SIOP	Sheltered Instruction Observation Protocol
TE	Teacher Education
TESOL	Teaching English to Speakers of Other Languages
UNESCO	The United Nations Educational, Scientific and Cultural Organization

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CHAPTER 1.
INTRODUCTION

1.1 Background of the Study

The first chapter of this dissertation outlines the purpose and significance of the study. The significance is addressed by discussing how the study contributes to the theoretical body of knowledge and the practical aspects of communication professionals in the field of teaching English.

1.2 Problem Statement

Natural disasters, such as earthquakes and tsunamis, are largely unpredictable. With the advancement of science and technology, early warning systems can be implemented to save people's lives. However, even with advanced systems in place, the impact of natural disasters can be enormous in terms of both loss of life and property, as well as the trauma experienced by the victims, which may last throughout their lives. Natural disasters can only be mitigated to minimize the losses and hardship suffered, not only during disasters but also in the process of restoration and rehabilitation.

Nowadays, there has been a significant increase in the number and variety of disasters happening worldwide, which have caused losses of human life and destructions of property. Many countries throughout the world, Asia and the Pacific in particular, are vulnerable to natural disasters, such as earthquake, tornado, tsunami, flood, volcano, and so forth.

There are many definitions of the word 'disaster' and disasters are often classified into categories such as nature, technology, and human-induced. A disaster is commonly understood to occur in a situation where local resources are overwhelmed, requiring more resources than are immediately available (Rouhban, 2010). These resources include tangibles such as equipments and supplies for disaster response, intangibles such as knowledge of appropriate techniques used during a disaster to save lives or extricate victims, and the blends of both categories, such as personnels who have specialized trainings and skills.

Based on the Government of Indonesia's law No.24 (2007), natural disaster is defined as an event or a series of events caused by nature, humankind and/or both that occur abruptly or slowly, resulting in loss of life (both social and economical), vast property loss, disruption of infrastructures or facilities, environment, and loss of access to live. Shaw and Krisnamurthy (2009) stated that natural disasters are a serious disruption of the functioning of the society, causing widespread human, material or environmental losses which exceed the ability of the affected society to cope on its resources. From the definition of disaster, natural disasters may occur rapidly or slowly. Natural disasters that occur rapidly include earthquakes, tsunamis, flash floods, windstorms, volcanic eruptions, and landslides. These disasters, due to their sudden occurrence, are very difficult or impossible to forecast.

In addition to this, disaster is defined as a social phenomenon that occurs when a community suffers exceptionally, no routine, levels of disruption and loss (Smith, 2004). A disaster can occur because of a hazard, which is naturally occurring, a human-induced process, or an event with the potential to create a loss. When a hazard becomes an active reality and when damages relevant to man is inflicted, it becomes a disaster (McDonald, 2003). Although the origins and the causes of disasters are diverse, the consequences to the society are more or less similar, which include extensive losses of lives, economic losses, destruction of the buildings and natural environment, and widespread disruption to local institutions, livelihoods and education sectors (Haigh & Amaratunga, 2010).

AIDMI (2009) defined disaster as an event that causes sudden disruption to the normal life of a society and causes damage to property and lives, to such an extent that the affected society is not able to cope using its own resources. A disaster is not just the occurrence of an event, such as an earthquake, flood, conflict, health epidemic or an industrial accident; it occurs if that event/process negatively affects human populations. A disaster occurs when a hazard exposes the vulnerability of individuals and communities in such a way that their lives are directly threatened or sufficient harm has been done to their community's economic and social structure to undermine their ability to survive (AIDMI, 2009).

Natural disasters, including storms, earthquakes, droughts, volcanic eruptions, and tsunamis, occur approximately 400 times a year, with an average of 74,000 deaths and more than 230 million-affected people (Christensen, 2011). One of the keys to survive from

a disaster is being properly prepared; thus, people need appropriate disaster education, which includes elements of prevention, and planning when a disaster occurs. Christensen (2011) added that there is a definite necessity for our nation's citizens to prepare better in order to respond safely in times of a disaster. It is likely that the earlier concepts and skills are learned, the easier those concepts and skills are remembered and the more proficient the implementation would become.

Furthermore, natural disasters become phenomena that affect human life. CRED (2008) stated that the growing rate of natural disasters is highly correlated to the increasing vulnerability of households and communities in developing countries, as previous socioeconomic vulnerabilities may worsen the impact of a natural disaster, making more difficult the process of recovery. Therefore, the impact of natural disasters might result in an immediate increase in poverty and deficiency (Carter et al., 2007).

One of the countries which is frequently hit by natural disasters is Indonesia. It is located at three world plates: Eurasia, Pacific, and Indo-Australia. There are a number of natural disasters such as earthquakes and tsunamis which have hit the country and caused deaths of thousand people (Department of Education, 2010). For this regard, it is compulsory to make all parties involved in natural disaster education. In 2005, Indonesia ranked the seventh country mostly affected by natural disasters (UNESC0, 2005). The country is at risk to earthquakes, floods, landslides, volcanos, storm and so on.

Aceh is one of the provinces located in Indonesia, which is frequently affected by natural disasters. It is located in the northern part of Sumatra Island. A number of natural disasters occurred in Aceh recently, causing sadness of its people due to deaths and destructions of infrastructures as well as property. For example, an earthquake and tsunami hit Aceh on 26 December 2004,which was considered as one of the biggest natural disasters in the 21st century, killing hundreds thousand people (Sardjunani & Hadi, 2010).

The natural disasters have contributed to the negative impact on the development of all sectors in Indonesia. One of them is the educational sector that causes the process of teaching-learning program not running well. For instance, the earthquake and tsunami that hit Aceh in December 2004 indicated that students were among the most vulnerable to natural disasters. The table below shows the number of students affected by the natural disaster in Aceh and other provinces in Indonesia.

Table 1.1: Report on Natural disaster damages and losses assessment 2004-2010 (BNPP, 2011)

Damages of school Facilities caused by natural disaster in Indonesia disaster	Number of schools/education facilities damaged	Damages and Losses (Billion IDR)	Life's losses
Earthquake and Tsunami, 26 December 2004 in Aceh- Nias	2065	1041	45.000 students died /or missing 1.870 teachers died and missing
Earthquake 27 May 2006. Yogyakarta – Central Java	2097	1739	506 students and 36 teachers died
Earthquake 30 September 2009, West Sumatra	1290	6188	235 students and 34 teachers died
Earthquake 12 September 2007, Bengkulu and West Sumatra	1177	2354	25 students died
Flood in Wasior, West Papua	277.9	1451	63 students and 5 teachers died

The history has shown that the needs of children have usually gone largely unmet during disasters. It has been asserted that the needs of children are often excluded from attention during disaster due to their lack of power to voice their concerns and the fact that the majority of disaster professionals do not possess specific child health or child development expertise (Peek, 2008).

obayashi and Shaw (2001) proposed that there are reasons why students need to learn natural disaster: (1) students are one of the most vulnerable elements of the society; (2) they are the future generation; (3) they can transfer the disaster education to parents and community.

Moreover, the integration of subject matter content (e.g., enviromental issues, societal issues, and disaster issues) has generated wide interest in learning English (Paterson, 2010). Disaster education has been imployed many immersion schools in the world (e.g., Japan, India, and Bangladesh). The same thing also occurs in Indonesia, in which the government has encouraged the

authorities in educational sector to integrate subject matter content into English Language Learning and Teaching (ELLT) (Diknas,2003).

In Indonesia, the English proficiency of students has been continually declining over the years as shown in the low performance in national examination in their competencies in the use of English (Ministry of Education, 2010). Students have great difficulty in expressing their ideas in the classroom which could also be attributed to the utter neglect of developing their competencies.

The development of the students' English proficiency has become the main focus of teachers, educational policy, and educational stake holders who have seen the need to strengthen students English proficiency. They have recognized the need to provide the necessary materials related to disaster education that allow the English class to assume an equal role with other subjects (Msanjila, 2007).

The use of modules is an alternative instructional design for the learning and satisfaction of the students. In English class, the students work on their own and the teacher's role is to guide and monitor the progress of the students in doing their individual tasks. With the use of the modules in English classroon, students work on various activities related to natural disaster issues that are interesting and challenging enough to maintain focus and attention (Cruickshank, 2003).

Peters (2010) suggests five rationales for integrating the teaching of disaster and language. First, for succesful language learning, the language syllabus must take into account the eventual uses the learner will make of the target language. Second, the use of informational content increases motivation in the language course and thus promote learners more effective learning. Third, the teaching should consider the previous experiences of the students. Fourth, language should be taught through a focus on contentualized use rather than on fragmented examples of correct sentence level usage. Fifth, the association of form and meaning assist learners to obtain new elements in the language learning.

Considering the importance of having adequate disaster materials for schools in West Aceh, mainly for secondary school students, the researcher is intrigued to develop a Natural Disaster Teaching Module using contructive approach for ESL classes in West Aceh. In the module, the researcher included the contructive approach that enables students to relate their new knowledge on the natural disaster to their previous knowledge. As suggested by Brown

(2007), while students are learning a subject using a module, they also learn and integrate language skills in subject matter lessons in order to discuss, solve problems, read, and write opinion in lessons.

1.3 Purpose of the Study

This study purports to investigate the impacts of Natural Disaster Teaching Module on secondary school students' English performance in SMPN 1 West Aceh.

1.4 Research Objectives

Based on the research purpose, this study attempts to reach several objectives :

1.4.1 To examine the effects of Natural Disaster Teaching Module on secondary school students' English performance in reading.

1.4.2 To identify the secondary school students' motivation in learning English using Natural Disaster Teaching Module.

1.5 Research Questions

Based on the research objectives which were formulated, several research questions were constructed. They are:

1.5.1 What are the effects of Natural Disaster Teaching Module on secondary school students' English performance in reading?

1.5.2 To what extent does the Natural Disaster Teaching Module improve students' motivation in learning English?

1.6 Research Hypotheses

Based on the research questions, several research hypotheses were formulated. They are:

Ho1: There is no significant difference in the mean score of reading performance of the students in the experimental group and those in the control group in the pre-test.

Ho2: There is no significant difference in the mean score of reading performance of the students in the experimental group and those in the control group in the post-test.

Ho3: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental group in the pre-test.

Ho4: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental group in the post-test.

Ho5: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the control group in the pre-test.

Ho6: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the control group in the post-test.

Ho7: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental and control group in the the pre test.

Ho8: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental and control group in the the post test.

Ho9: The modular teaching will not improve students' motivation in learning English.

1.7 Conceptual Framework

The conceptual framework represents the holistic view of issues that will be analyzed. It also represents theoretical framework which is based on some factors such as demography, the process, and the result of teaching (Cresswell, 2005).

The essence of constructivism is that learners construct new understandings using what they already know (Hoover, 1996). Constructivism is comprised of two main schools of thought: cognitive constructivism and social constructivism. One strand, cognitive constructivism, was developed by Piaget (1972), who theorized that children develop in a series of ordered, age, dependent stages, sensorimotor, preoperational, concrete operations, formal operations until they are able to reason logically, advancing through mechanisms of assimilation, accommodation and equilibrium (Sandwell, 2002) .

Another strand is social constructivism which was developed by Vygotsky (1978), who said that social interaction plays an important role in the development of learners' cognition (Sandwell, 2002). A child will learn more when given hints, provided with guiding information such as prompts on index cards, and having task

rather than letting him or her alone to explore new concepts and knowledge (Lewin, 2001). Vygotsky's theory and research are instrumental in understanding how and why scaffolding works (Lewin, 2001).

Scaffolding refers to all the teacher's interactions with the students that facilitate their learning without reducing the development of their learning autonomy. It is a process of guidance, support and reinforcement that helps the student overcome difficulties, master their ways of studying and their techniques of working on the progress that they are making (Bruner,1997). In addition, McKenzie (1999) said that scaffolding is like building a bridge from students preconceptions to a deeper,wiser, more astute view of whatever truth matters for the question or issue at hand.

Researchers have developed scaffolding from social-constructivist theory to describe how adults support children's learning through assistance (Bruner, 1983; Wood et al, 1976). Recently, some researchers have focussed on studying scaffolding in classrooms from a perspective that emphasizes either teacher or task support.

Hammond and Gibbons (2001) and Maloch(2002) explored cla ssroom scaffolding as temporary teacher support for children. This generally linear process is characterized by co-operation and a patient adult who assesses progress and adjusts assistance when necessary. The adult gradually transfers control to the child, who is ultimately able to perform a task independently.

Donovon and Smolkin (2002) focussed on the metaphor of scaffolding to explore the level of support embedded in diverse writing tasks for groups of children (from kindergarten to grade 5). The authors concluded that, although context was important, different tasks supported children's ability to demonstrate writing genre knowledge to various degrees.

In English classroom, scaffolding is a support mechanism that teachers use to assist students. For example, when teachers provide the vocabulary or basic information before introducing a new concept, they are scaffolding. Another example of scaffolding is that when a teacher uses an instruction material (e.g., modular teaching) to help his students in learning English (Lerman,2000).

In this research, the researcher introduced the Natural Disaster Teaching Module, in which it requires the teacher to integrate all the pieces of the constructive theory. For instance, the methodology is student-centered. The role of the teacher in this approach was as a

facilitator and the module was used to scaffold the students. Therefore, students must be assessed for learning style, interest, and benchmark skill levels before the module is taught. In addition, students must be actively engaged in their learning in order to construct the meaning. The reprensentation of my conceptual is as shown below :

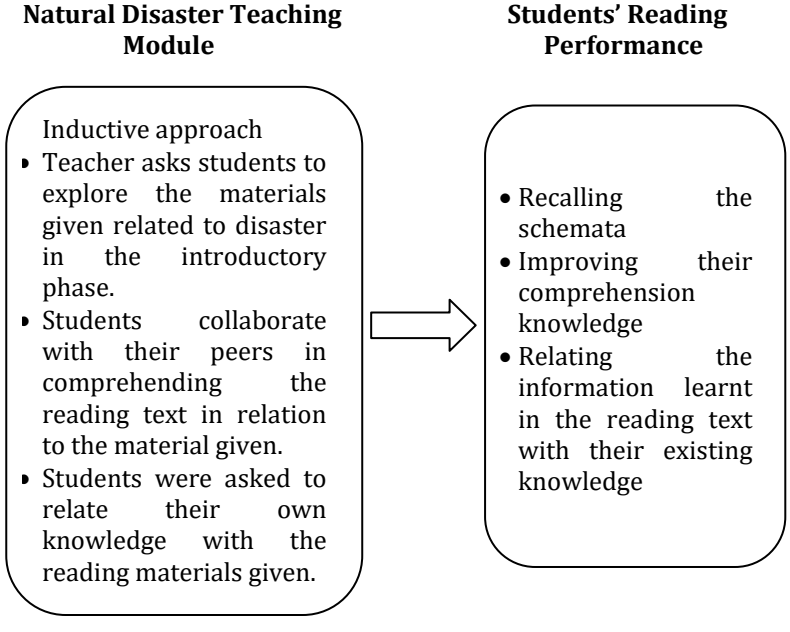

Figure 1.1 :
The Conceptual Framework

1.8 Significance of the Study

Today, English has become the lingua franca of the world, which replaces French in the field of diplomacy, German in the field of science and technology, and Latin in the field of literature and art. In fact, one out of five persons on the earth speaks English; it has become an official or co-official language of 45 countries of the world (Minkova & Stockwell,2001).

However, in some developing countries, such as Indonesia, English is taught as a compulsory subject; yet, the performance of students is very poor. The teacher community is unaware of current research in the field of English language teaching. They follow out-

dated methods, which result in boredom and lack of interest in the classroom; this is also related to the poor competency of the teachers in academic and professional areas (Behlol, 2009).

Some research pointed out that ESL students need to learn the academic content of disaster education while simultaneously they develop their English language skills (August & Hakuta, 1997; Cadeiro & Rodriguez, 2008). They need to learn new information and procedures while they learn new vocabularies, structures, and academic discourses (McKeown et al., 2004).

Natural disaster education is a very important part in the school curriculum.If it is applied from an early age, it would be successful and will yield positive results. A good platform for the implementation of natural disasters education is the formal aspect of education, precisely, subjects in elementary and secondary schools, including English will provide broad opportunities for understanding of all aspects of natural disasters (Milosevic et al, 2012)

Tabiati (2002) stated that an important goal of the natural disaster education is to convey a positive attitude and respect for the environment in general. More specifically, education about natural disasters should provide not only information, but also thorough understanding of the issues, as well as attitudes and skills that will enable adequate response in a crisis. Therefore, in Asia countries such as Indonesia, India, Bangladesh, teaching the natural disaster education will promote and create successful and sustainable societies in schools (Tabiati, 2002)

Lie et al. (2002) indicated that English teachers have many opportunities to heighten students' knowledge about natural disaster while remaining committed to improving their English skills. Using meaningful language instruction, such as module, will encourages students to think critically, provides them with real world knowledge, increases motivation, and promotes learner autonomy.

Considering the importance of mastering English for children to face the challenges in their future life in Indonesia, the education of scholars and researchers of developed and developing countries has recognized modules as the most beneficial and effective learning resource. It is a specific learning resource because group of contents or single subject matter content are covered in the module. It ensures active participation of students to make the learning process alive and dynamic (Ali & Elfessi, 2004).

Natural disaster teaching module will be useful for the secondary school teachers, students, textbook writers and the policy makers to improve the teaching learning process in the subject of English at secondary level. The module will develop and promote self-learning habits among the students. It will enable the students to get feedback at the spot, which will motivate them to go ahead with utmost interest and commitment. Also, the module provides an opportunity to students to pace their learning process according to the level of their ability. It is a very flexible and convenient strategy to enable them to interact with the learning resource in different settings and situations.

Moreover, the natural disaster teaching module can be administered from secondary school students to university students acroos the countries which are frequently hit by the natural disaster. It gives liberty to students to repeat any part or skip any section on the basis of his or her capacities and previous experiences. In this learning model, the students do not sit in the classroom as passive learners as we observe in the traditional teaching method. They act and interact confidently in the classroom.

The module will be helpful for the textbook writer to design and formulate the books. In the module based learning resource, content, and learning experiences are directly linked to it which keeps the textbook writer on the track. In this way, the writer is able to produce to the material according to the objectives of the module and the unit. As a result, the textbook material will be more tangible, pragmatic and practical oriented. In addition, the basic guidelines given in the components of the module will assist the department of education, policy makers, to determine the natural disaster course outlines.

1.9 Limitation of the Study

The present study has some limitations. First, the students were reluctant to participate in the study because they did not like the change to their regular routines. While some students might appreciate the variety in lesson materials, others might feel uncomfortable discussing such topics related to dissaster education with their peers in English classroom. The second limitation was the teacher themselves. They might not like to get involved in the research because they felt that disaster education is not appropriate for the ESL class and the module itself would be additional burden for them.. The next limitation was the time constraint. The researcher

had to carry out this experimental research by reviewing the students' academic calendar. This has caused the researcher to shorten his experimental teaching than he has already planned. The last limitation was the financial resources. Due to the fact that this research was self-sponsored, the researcher had difficulties in funding the supporting materials for his research.

1.10 Operational Definition

Term limitations are served to give evidence and clarify the meanings of terms used in this thesis. These terms are:

a. Natural Disaster Teaching Module

The Natural Disaster Teaching Module that the researcher means here is the materials taught at the sec school of Aceh in attempting to improve students' understanding of natural disasters and their risks.

b. Secondary School Students of West Aceh

Secondary school students of West Aceh are defined as a group of students studying at middle schools in West Aceh. Their level of age is between 13 and 14 years old. Since there are a number of middle schools in West Aceh, the researcher proposed only one middle school which he expected could be the sample of the research project.

c. Constructivist

According to Glaserfeld (2003), constructivist is a theory to explain how knowledge is constructed in human beings, particularly when information meets existing knowledge that is developed by experiences. Constructs are the different types of filters we choose to place over our realities to change our reality from chaos to order.

Moreover, constructivist is defined as a learning theory which states that people learn best when they actively construct their knowledge. One of the essential elements of constructivist approach is learners'prior knowledge. Learners will not be able to solve any given problem unless they have relevant prior knowledge and skills (Duffy et al., 2002).

1.11 Summary

In Indonesia, the English proficiency of students has been continually declining over the years as shown in the low performance in national examination in their competencies in the use of English. The development of the students' English proficiency has become the main focus of teachers, educational policy, and educational stake holders who have seen the need to strengthen students English proficiency. They have recognized the need to provide the necessary materials related to disaster education that allow the English class to assume an equal role with other subjects.

The use of modules is an alternative instructional design for the learning and satisfaction of the students. In English class, the students work on their own and the teacher's role is to guide and monitor the progress of the students in doing their individual tasks. With the use of the modules in English classroon, students work on various activities related to natural disaster issues that are interesting and challenging enough to maintain focus and attention.

Moreover, in this research, the researcher introduced the Natural Disaster Teaching Module in which requires the teacher needs to integrate all the pieces of the constructivist theory. For instance, the methodology is student-centered. Therefore, students must be assessed for learning style, interest, and benchmark skill levels before the module is taught. Also, students must be actively engaged in their learning in order to construct the meaning. In the next chapter will be discussed about the literature review.

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CHAPTER 2.
REVIEW OF LITERATURE

2.1 Introduction

In this chapter, the definitions and concepts of English Language Learning and Teaching were given. The theoretical framework which frame the present study was also presented. Finallly, the previous studies which were related to the present study were reviewed.

2.2 English Language Learning and Teaching

Today, the development of English Language Learning and Teaching (ELLT) is really unprecedented (Seidlhofer, 2004). In Indonesia, it has been recognized as essential skills to acquire in order to be successful in a globalized society. For English itself, it is a core element of the secondary school curriculum, and college students study English to find good jobs after graduation. In short, there is a keen interest in what it takes to be a successful English language learner.

In more recent years, studies on learning strategy instruction and learner autonomy have demonstrated that Language Learning Strategies (LLSs) can be instructed to language learners and that learner autonomy together with motivations for language learning can lead to successful language learning outcomes (Keene & Zimmermann, 1997).

Language educators have long used the concepts of four basic language skills: Listening, Speaking, Reading, Writing. These four language skills are sometimes called the "macro-skills". This is in contrast to the "micro-skills", which are things like grammar, vocabulary, pronunciation and spelling (Aydogan & Akbarov,2014). The four basic skills are related to each other by two parameters: the mode of communication (oral or written) and the direction of communication (receiving or producing the message).

Aydogan and Akbarov (2014) added that listening comprehension is the receptive skill in the oral mode. When we speak of listening what we really mean is listening and understanding what we hear. Listening comprehension is the receptive skill in the oral mode. When we speak of listening what we really mean is listening and understanding what we hear. Speaking is

the productive skill in the oral mode. Like the other skills, it is more complicated than it seems at first and involves more than just pronouncing words. Speaking is often connected with listening. For example, the two-way communication makes up for the defect in communicative ability in the traditional learning.

Reading is the receptive skill in the written mode. It can develop independently of listening and speaking skills, but often develops along with them, especially in societies with a highly-developed literary tradition. Reading can help build vocabulary that helps listening comprehension at the later stages, particularly. Writing is the productive skill in the written mode (Farris and Kaczmarski, 1988). It is more complicated than it seems at first, and often seems to be the hardest of the skills, even for native speakers of a language. This is because it involves not just a graphic representation of speech but the development and presentation of thoughts in a structured way. The whole-language theoreticians strongly imply that all aspects of language interrelate and intertwine.

They further claim that students should be taught and given the opportunity to simultaneously use all language arts (listening, speaking, reading, and writing) in meaningful, functional, and cooperative activities (Carrasquillo, 1993; Farris, 1989). These activities are often centered around topics that build upon students' background knowledge (Freeman, 1994).

In the present study, the researcher focus on the reading skill. The reason is that the researcher intend to introduce the reading module which are found to be very scarce as reading materials in Indonesian secondary schools.

2.2.1 The English Curriculum in Indonesia

The curriculum is a device that is an answer to the needs and challenges of the community (Oliva, 1997). Societal challenges can be categorized into various levels such as national levels, local, and the nearby environment (regional). These challenges do appear out of nowhere, but reconstructed by a group of people and usually formalized by decision makers. Reconstruction is difficult and becomes increasingly difficult when it has to concern the various interests with respect to various levels and dimensions of life. A common mistake is the reconstruction is too focused on one level, national level, for example, or on a dimension for a particular discipline. Weakness in the reconstruction also occurred at a time

using the wrong assumptions to project future needs of society and reconstruction based on that assumption.

The Ministry of Education of Indonesia (Diknas) (2010) set a sense of the curriculum as a set of plans and arrangements regarding the purpose, content, and teaching materials and methods used to guide the implementation of learning activities to achieve specific educational goals. The expression can be used as consideration in developing a curriculum. With such understanding, curriculum developers can define the scope of work to be done, which is the development of objectives, the development of content and subject matter, and the process to learn the material.

As stated by Diknas (2003), other components such as English learning resources can be added to the curriculum. In overall, the development of English curriculum needs to consider four dimensions. These four components are interrelated but require special attention and special management. These four components are:

i. The English curriculum in the dimensions of the idea
ii. The English curriculum in the dimensions of the document
iii. The English curriculum in the dimension of process
iv. The English curriculum of the output dimension

The philosophical aspects of the English curriculum determine the identified problems and formulate answers. Therefore, from the philosophical aspects, it is seen that the English curriculum is developed to address the needs of the community in the development of disciplines, technology, religion, socio-cultural issues, economics, nationality, law, etc. The four dimensions present the theory as well as models and designs used in the curriculum. The English curriculum must be adapted to the national education goals. Diknas (2003) stated that English curriculum is developed based on the following principles:

a. The Potential, Developments, Needs and Interests of Learners and the Environment

The English curriculum was designed based on the principle that learners have a central position to develop the competence to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become citizens of a democratic and accountable. To support the achievement of these goals tailored competence development with the potential learners, developments, needs and interests of learners and the

demands of the environment.

b. Diverse and Integrated Materials

The English curriculum is developed by taking into account the diversity of learner characteristics, conditions, and levels and types of education, without distinction of religion, ethnicity, culture and customs, as well as socio-economic status and gender. The English curriculum shall include the substance of the charge component of the curriculum, local content, and self-development in an integrated manner, and arranged in a meaningful linkage and continuity between the right and substance.

c. Responsive to the Development of Science, Technology, and Art

The English curriculum is developed based on the realization that science, technology and art of growing dynamically, and, therefore, the spirit and content of the curriculum encourages students to follow and make the proper development of science, technology, and art.

d. Relevant to the Needs of Life

The English curriculum development is done by involving stakeholders to ensure the relevance of education to the needs of life, including civic life. Therefore, the development of personal, thinking, social, academic, and vocational skills is a must.

e. Comprehensive and Sustainable Activities

The substance of the English curriculum include the overall dimensions of competence, the field of scholarly study and subjects planned and presented on an ongoing basis in all levels of education.

f. Lifelong Education

The English curriculum focuses on the development, cultivation and empowerment of students. The curriculum reflects the linkages between the elements of formal education, non-formal and informal, considering the conditions and demands of the ever-evolving environment and the development of the whole human.

g. Balance between National and Regional Interests

The English curriculum is developed by considering national interests and regional interests to build the life of society, nation and state.

It is the aspiration of Diknas, therefore, to look for the best teaching approaches and methods to develop the English curriculum in Indonesia,especially in Aceh.

2.3 The Theoretical Framework (Constructive Approach)

Santrock (2011) stated that the contructive approach is often differed from direct instruction. The former is learner-centered; teachers facilitate and guide learning; learning is an active construction of knowledge by the learners. In contrast, direct instruction is a highly structured teacher-centered approach; the teacher directs and controls most of the learning activities, which are laid out in a clear scope-and-sequence program to maximize time utilization.

In addition, constructivist is an approach to teach based on research about how people learn. Many researchers say that each constructs knowledge instead of receiving it from others (McBrien & Brandt,1997). Briner (1999) illustrated that students are constructing their knowledge by testing ideas and approaches based on their prior knowledge and experience, applying these to a new situation and integrating the new knowledge gained with pre-existing intellectual constructs.

The constructivist theory pointed out that learners make sense of the world by synthesizing new experiences into what they have understood. They form rules through reflection on their interaction with objects and ideas. When they encounter an object, idea or relationship that does not make sense to them, they either interpret what they see to conform to their rules or they adjust their rules to account better for the new information (Brooks &Brooks, 1993).

Sushkin (1999) stated that in the constructive theory, the emphasis is placed on the learner or the student rather than the teacher or the instructor. The learner interacts with objects and events and thereby gains an understanding of the features held by objects or events. The learner, therefore, constructs his/her own conceptualizations and solutions to problems. Learner autonomy and initiative are accepted and encouraged.

Based on the views on the meaning of constructivist learning, it can be summarized as the follows: Constructivist is the idea that students construct or concept actively their knowledge based on existing knowledge and experience. In this process, the student will adjust the received knowledge with existing knowledge to build new knowledge.

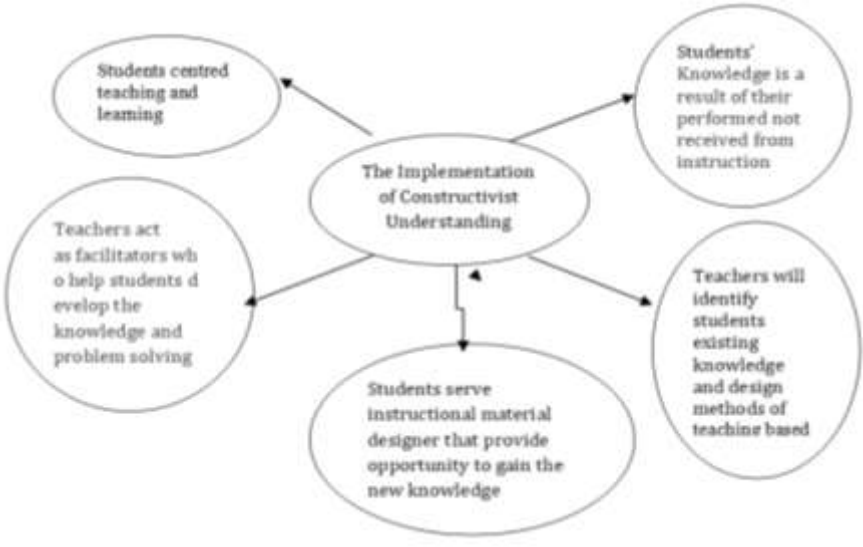

Figure 2.1:
The Implication of Constructivist Understanding
(Sushkin ,1999)

Constructivist assumed that students are always active in building new knowledge through interaction with others and through manipulation of knowledge and experience which they have acquired previously (Billett,1996 & Kerka 1997).With this approach, students are encouraged to think critically and creatively, to ask questions in the form of inquiry and learning through activities.This view assists students in learning to introduce a more effective construction in which they will appreciate the in-depth subject(Confrey, 1990). In addition, Santrock (2011) added that there are two major strands in constructivist theory: cognitive constructivism and social constructivism. The two share common fundamental assumptions—that people construct their own understanding and knowledge of the world, hence teachers facilitate and guide (rather than direct and mold) learning.However, cognitive and social strands differ in their emphasis specifically:

i. The cognitive contructive approaches, grounded primarily on Piaget's work, emphasize on learners' cognitive construction of knowledge and understanding.
ii. The social contructive approaches, grounded on Vygotsky's work, emphasize on collaboration in the production of knowledge and understanding.

a. Cognitive Constructivism

Jean Piaget explains a comprehensive stage theory regarding human development by saying that information as initially perceived by man is not in a form that is immediately understood and usable. Instead, he capitalizes on prior experiences to create mental models-schemas. These mental models or schemas are gradually changed and modified, enlarged and made more sophisticated, as the individual acquires more experience. Learners construct knowledge by transforming, organizing, and reorganizing previous knowledge and information (Santrock, 2011).

- Schema

Mahon and Caramazza (2009) defines schema as actions or mental representations of conceptually organized systems / networks of information. Children have mostly behavioral schemas (physical activities like sucking, looking, and grasping), while mental schemas (cognitive activities like strategies and plans for solving problems) develop later in childhood and become enormously diverse in adulthood. They are mental frameworks, abstract mental structures that represent our understanding of the world. According to Anderson (2003), there are some characteristics of schemata:

i. Schemata are always organized meaningfully, which can be added to, and, as an individual gains experience, develop to include more variables and more specificity.
ii. Each schema is embedded in other schemata and it contains subschema.
iii. Schemata change moment by moment as information is received.
iv. They may also be reorganized when incoming data reveals a need to restructure the concept.
v. The mental representations used during perception and comprehension, and which evolve as a result of these processes, combine to form a whole which is greater than the sum of its parts.

Moreover, there are assumptions supported by the schema theory of learning (Spaeth & Walter, 1995):

i. It is important to present all the necessary lower-level facts before proceeding to teach at higher levels of the knowledge hierarchy.

ii. People can reason with higher-level concepts if they have learned all of the prerequisite lower-level information.
iii. It is important to use teaching steps, which correspond to the internal sequence in which the brain processes information.

b. Social Constructivism

Social constructivism emphasizes that knowledge is first constructed in a social environment and is then appropriated by individuals. Social interactions and involvement with others are very important aspects in the process of knowledge building and construction. If Piaget (1972) focused on individual cognition, Vygotsky (1978) focused on the child embedded in a socio-cultural context, which values collaboration, social interaction, and socio-cultural activity (McLeod, 2007).

2.3.1 The Characteristic of Constructivist Approach based on Vygosky (1978)

According to Lebow (1993), the characteristic of Constructivist is as shown below:

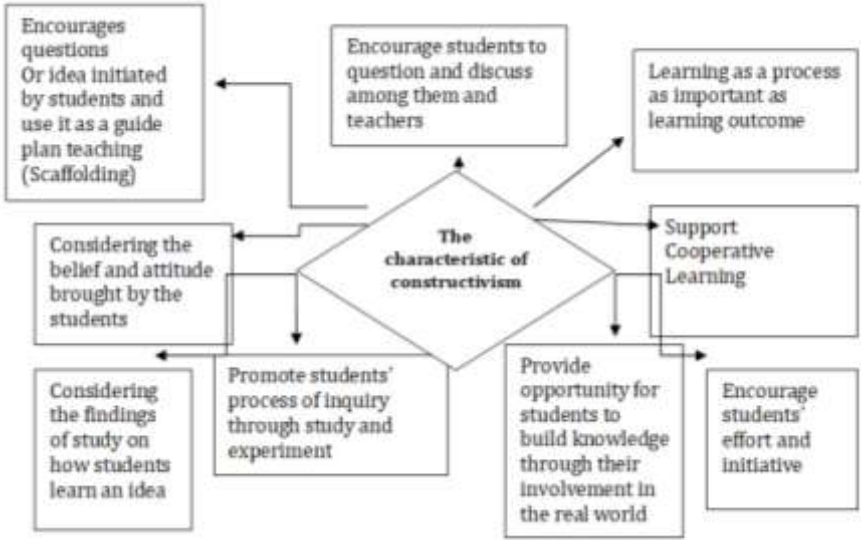

Figure 2.2:
The Characteristic of Constructivist

2.3.2 The Advantages of Constructivist Learning Approach

Dick (1994) indicated that the advantages of Constructivist approach can be observed in the teaching-learning process as illustrated below:

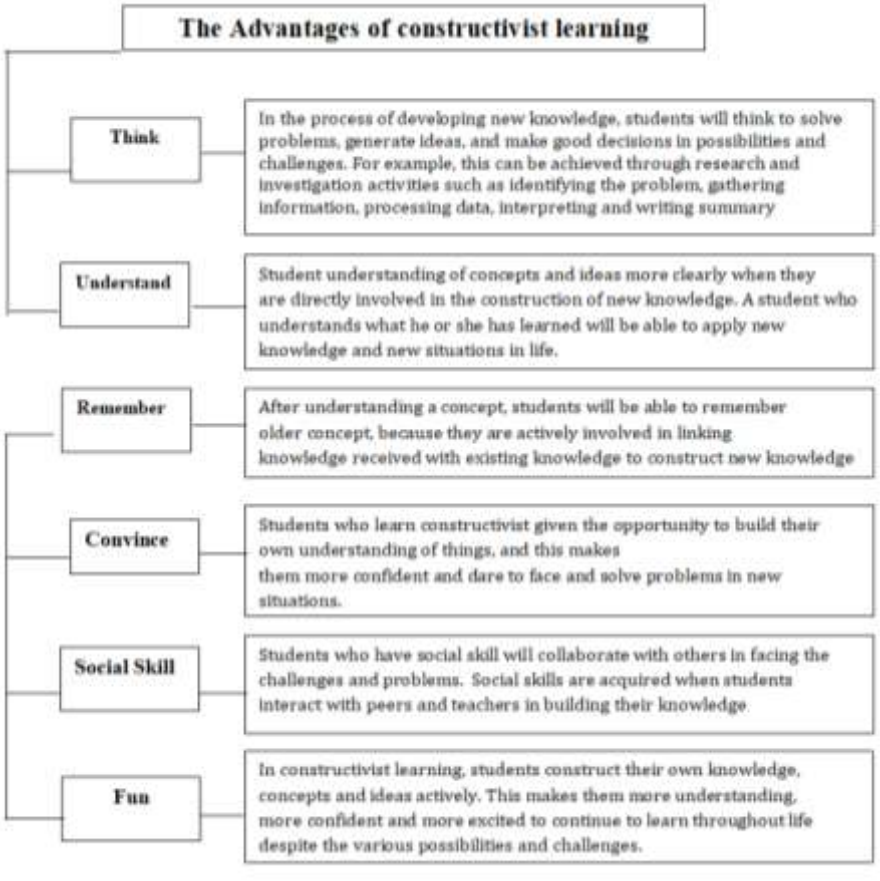

Figure 2.3 :
The Advantages of Constructivist Learning Approach
(Dick, 1994)

2.3.3 The Role of Students and Teachers and Challenges in Constructivist Class

When implementing constructivist learning in the classroom, the role of students and teachers will change. Gardner (2000) figured out that there are some changes in the classroom in particular on the

role of students and teachers as well as the challenges that may be faced by them in constructivist learning.

2.3.3.1 The Role of Students:

i. Students take the initiative to submit the questions and issues, and then they individually analyzed and responded to questions. They handle their own learning and problem solving.
ii. Students regularly discuss with the teacher and with others.
iii. The discussions will help students change or reinforce their ideas. If students have the opportunity to submit their views and listen to others' ideas, students can build their knowledge
iv. Students challenging hypothesis has been made and is encouraged to discuss and to make predictions. Students are given a lot of space and a chance to test their hypothesis, particularly through group discussion.
v. Students use data and physical materials, manipulative or interactive to help them generate ideas and knowledge.

2.3.3.2. The Role of Teachers:

i. Encouraging students to explain their ideas and appreciate their views.
ii. Structuring lessons to challenge students' perceptions.
iii. Helping students understand the relevance of the curriculum to their lives.
iv. Evaluating learning through everyday activities in the classroom, not just in the form written test.
v. Encouraging students to do the work in the form of solutions, analyze, predict, explore and make hypotheses.
vi. Encouraging pupils to explain their answers more.
vii. Encouraging students to discover through inquiry questions and to ask questions to others.
viii. Providing students enough time to answer questions after the question is put.
ix. Providing students enough time to make connections between the ideas that have been generated.
x. Promoting cooperative learning in the course of a particular task.
xi. Guiding students get the right answer

2.3.3.3 The Challenges faced by Constructivist Teachers:

i. Teachers feel they do not teach.
ii. Practice developed in Constructivist learning is considered unrealistic.
iii. Teachers feel that their descriptions are not important anymore.
iv. Control class has slightly dropped.
v. Teachers who are changing their teaching methods to support the contructive approach require professionalism and strengthening the confidence of the school.

Although there are some difficulties associated with the implementation of constructivist learning, the difficulty should be seen as challenges to be overcome by a teacher.

2.3.4 Constructivist in Teaching English

At the heart of constructivist theory is the principle that learners construct, rather than record knowledge. It highlights the importance of prior knowledge, social interaction, and the authentic tasks towards the construction of knowledge and understanding (Eggen & Kaucha, 2010).

Piaget and Vygotsky believed that students are curious and actively involved in their own learning and the discovery and development of new understandings/schema. According to Vygotsky (1978), much important learning by the students occurs through social interaction with a skillful tutor. The teacher may model behaviors and/or provide verbal instructions for the child. Vygotsky refers to this as co-operative or collaborative dialogue. The students seek to understand the actions or instructions provided by the teacher then internalize the information, using it to guide or regulate their own performance.

Jamaluddin et al. (2012) explained that constructivism was believed to be relevant to student-centered learning (SCL). In the application of this approach, the constructivist teacher would use appropriate pedagogies that promote active learning as opposed to passive learning. Most teachers are familiar with the lecture mode for the delivery of lessons, mainly because if we go through an entire education system, from primary school to university level, it only focuses on paying attention to the teacher. Traditionally, the teacher is expected to know everything about the subject that he or she is teaching. That knowledge is then transferred to the students, who sit

passively in the classroom,listening and writing everything that is said or taught by the teacher. Memorisation or rote learning skills are critical for students. The ability to recall the lessons during the examinations or tests is then taken as the definitive indicator or measurement that the students have learned from the prescribed syllabus (Jamaluddin et al., 2012).

In addition, Duffy and Jonassen (2002) said that in contructive approach, there is more than one truth (or more than one way to understand the facts or to see the truth). Each student will construct his own knowledge based on personal experiences, cultural and social issues and the influences of peers. In other words, knowledge must have meaning to the individual in constructivism; remember that it is not the end point that is the ultimate or overriding concern. The process of getting there should be the focus.

In the traditional classroom, the focus is on accomplishing the syllabus so that students will be ready for the examinations. On the contrary, in the constructivist classroom, the teaching process is like the journey, not only give the priority to the destination. This creates tension in many disciplines stating that the product is most important thing (Driscoll, 2000). Jamaluddin et al. (2012) offered some well-established principles or foundation that might help teachers to be successful in teaching students in the classroom:

i. Support student autonomy: Respect students' ideas. Help them to find out their own identity by encouraging them to ask questions, analyse data and find their own answers, so it encourages them to take responsibility for their own learning.
ii. Ask the students open-ended questions: Even if the teacher has the answer, do not oppose to the students' answers. The teacher should give enough time to students to think and respond.
iii. Endorse higher-order thinking; the teacher should emphasise on the need to analyse and then synthesise, not merely compile a collection of facts or other people's opinions.
iv. The teacher should encourage discussion between him or her and the students and among the students themselves help them to reinforce their ideas and it exposes them to multiple perspectives.
v. Assign problem-oriented activities: Such activities help to develop problem-solving skills as students actively seek knowledge relevant to their disciplines.

vi. Give authentic real-world assignment: Such assignment enables students to create a realistic environment that challenges them to re-examine their current schema.
vii. The teacher should come up with collaborative learning that allows students to negotiate meanings and share ideas.
viii. The teacher should encourage self-assessment through self-reflection, so that students become aware of how they learn. Students must be able to explain how and why they solve a problem in a certain way. They are supposed to reach deep down in order to recognise their weaknesses and strengths and acknowledge the external stimulus that support their learning.

Furthermore, Jamaluddin et al. (2012) had some advice for teachers as they relearned the skills to embrace constructivism. First, the teacher should be aware of the kind of person he or she is, because it influences how he or she will interact with the students. As a constructivist teacher, one of your the greatest virtues will be patience. The teacher will find that lessons take longer to accomplish, especially when he or she knows that the students still do not have the skills to be constructivist learners. When they ask questions in class, be patient. Learn to wait for responses from the students. Also, the teacher will have to learn how to deal with the awkward moments of silence while waiting for answers. He or she will need perseverance and persistence to keep asking questions and waiting for answers, even though he or she already has the answers and all the students are giving them 'the look', saying silently: 'Just give us the answers already!' The teacher will frequently encounter a passive audience and it will take substantial effort on their part to get the students to take an active role in their learning.

The teacher may be an expert or authority and know everything, so there is to know about his or her subject area. The teacher should demonstrate the command of the knowledge or expertise, only if to make the mark and convince the students that the teacher knows the subject well. As a constructivist teacher, the teacher's job is to design a journey of discovery with multiple pathways that may all lead to the same destination. He or she needs to constantly focus on the process of learning. What a teacher know is obviously important, but this is not about the teacher, instead focus on the student.

Second, the teacher should design the journey with several 'rest stops' so that it will provide opportunities to reflect and to modify the pathways leading to learning. Designing lessons will build

students' prior knowledge. If there is no prior knowledge, then a teacher has to provide the scaffoldings or stepping stones or building blocks so that the students are not grasping at thin air. The teacher also should plan lessons and projects with interconnected sections or parts with increasing complexity.

Finally, how will the teacher know that the students have learned? The experts in education indicated that learning has taken place when the students' schemata have been modified. In language teaching, a teacher must be able to detect changes in the students' understanding or perceptions of the subject matter. Since the constructivist classroom should never be quiet, the teacher will face moments of triumph as well as moments of despair.

Researchers and ELLT practitioners need to integrate the elements of the constructivist approach if they would like to develop or design any ELT materials, for example a module.

2.3.5 The Previous Studies on the Integration of Constructivist Approach in ELT

Mmela (2006) conducted study on implementing integrated literacy approaches in an English classroom in Malawi. The purpose of the study was to discover how teachers learn to teach. This was done through the process of answering the question "How does a teacher acting as a co-researcher come to understand the learner-centered integrated literacy approaches in an English classroom in Malawi?" The result of study indicated that the teacher can learn to teach and to integrate literacy using constructive approach.

Le Grice et al. (1999) found that using constructivist approach to teach English to 8-10 year old students was effective in improving the students'English proficiency. Thirty participants were randomly assigned to three instructional groups using three different methods, one of which was a constructivist method for teaching English. All three groups of students improved their scores. However, the students in the constructivist group had larger improvements. The remaining groups showed improvements but, at the one year follow up, the improvements were not maintained. On the other hand, retention scores were significantly higher for the constructivist group. This study demonstrates that contructive approaches can be useful in improving standardized test scores for low achievers students and the results may have longer lasting benefits than other techniques and theories.

Altun and Büyükduman (2007) conducted a qualitative study in Turkey. The twenty-six students and one teacher included in the study were from an English preparatory program. In their instruction, the teachers used constructivist principles and students and teachers were observed over the three days of implementation. Students appeared to be more on task and active during the class hour and stated that they were better able to connect their learning to previous knowledge by participating more in group work. The students were also better able to make connections by utilizing the examples of their peers. This increased participation in the classroom resulted in a more permanent retention of the vocabulary. Additionally, students felt more able to concentrate on the curriculum and produce new knowledge. They attributed this to the removal of the previously prescribed goals of the class and the freedom to acquire their own knowledge. Building on prior knowledge is the cornerstone of constructivism.

Yang (2002) conducted a qualitative study in which he found that new knowledge of one subject can be built while reinforcing previous knowledge from another subject. Similarly, Boekaerts and Minnaert (2006) conducted a study of 95 university sophomores in the Netherlands to examine how levels of interest in the content material related to three psychological need states: perceived autonomy, competence and social relatedness. All three psychological needs fluctuated over the course of the study, typically ebbing during the middle of a course but resurging nearer to the end. Boekaerts and Minnaert (2006) found that if a student felt satisfied in any two of the three psychological need areas that student tended to translate that satisfaction into an overall positive learning experience. For example, though a student may not feel autonomy in a group situation, he or she might feel the group worked well together (social relatedness) and they learned a significant amount of material (competence) and consequently come away from a learning experience with a positive overall opinion. A group that doesn't work well together, but whose members feel relatively autonomous and productive (competence) will also tend to have a more positive overall experience. This study demonstrated that constructivist techniques need not satisfy all three psychological needs simultaneously. As long as a majority of psychological needs are satisfied, students feel they had a positive learning experience. ELL students present a particular challenge, especially when taught in an inclusive setting. This sufficiency of satisfying a majority of

psychological needs may be helpful when applied to English Language Learners. These learners may need to be approached with a variety of constructivist techniques for optimal learning and a positive learning experience.

2.3.6 Summary

In this chapter, the researcher has defined the definitions and concepts of English Language Learning and Teaching. Today, English has been recognized as essential skills to acquire in order to be successful in a globalized society. Also, it is a core element of the secondary school curriculum, and college student.

The theory of constructivist and the integration of the constructivist approach in the module were also discussed. Constructivist is the idea that students construct or concept actively their knowledge based on existing knowledge and experience. In this approach, the student will adjust the received knowledge with existing knowledge to build new knowledge.Also, students are encouraged to think critically and creatively, to ask questions in the form of inquiry and learning through activities.

In the next chapter, research methodology, the researcher will describe the research design of the present study.

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CHAPTER 3.
RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes and justifies the data collection method employed in the study. This chapter also outlines how the researcher analyzed his data. It begins with descriptions of the method the researcher chose and why the method was employed. In doing so, the researcher cited relevant literature about the method. Next, it presents the details of every step of the data gathering and analysis.

The purpose of this study was to find out the impacts of Natural Disaster Teaching Module (NDTM) on secondary school students in West Aceh. The researcher developed a module that consists of five topics related to natural disasters, namely earthquake, tsunami, flood, volcano, and landslide. The topics were adopted from a book entitled '*Teaching Disaster Risk Reduction with Interactive Method*'.

The literature was reviewed and experts' opinions were obtained for the development of the components of the module. The draft module was revised in the light of the opinions of the experts. The components of the module are title, introduction, method of study, general objectives, specific objectives, content (input), learning activities, pre-test, post-test and feedback (UNESCO,1978).

The basic language skills focused on the design of the activities and self-assessment tests of the units. The learning tasks were designed from easy to difficult level. "Introduction" was given at the beginning of each unit of the module to motivate the students and to introduce them to the tasks they had to perform. General objectives were given at the beginning of the module and specific objectives are given at the beginning of each unit of the module. The objectives of the units focused on the basic language skills (Behlol, 2009).

3.2 Research Design

This study was designed as a quantititave study. The quantitative study that was conducted was an embedded experimental approach (Creswell,2005). One of the important of this approach is that it begins with need analysis.

Pre-requisite knowledge was required from the students to solve the exercises given in the module. The detailed list of recommended reading material was also given at the end of each unit

(Behlol, 2009). The students were supposed to use the material for better mastery on the learning tasks. The module consisted of 5 units and was taught in 10 weeks.

It also consumed 40 hours of the students for solving the activities given at the end of the units of the module. Equal time would not be allocated for the teaching of all the units; rather, it was divided based on the difficulty of the task and length of the units. The design for the validation of the module is illustrated by the following table:

Table 3.1 : The Symbolic Presentation of the Design

	Experimental	**Control**
High achiever	Cell 1	Cell 2
Low achiever	Cell 3	Cell 4

3.2.1 Quasi Experimental Research

Quasi-experiments are studies that aim to evaluate interventions but do not use randomization. This research design aims to demonstrate causality between an intervention and an outcome. Using this basic definition, it is obvious that many social researchers choose not to randomize the intervention for some reasons such as (1) ethical considerations, (2) difficulty of randomizing subjects, (3) difficulty to randomize by locations,and (4) small available sample size (Harris et al., 2001).

A part of that, Creswell (2002) stated that many experimental situations occur in education in which researchers need to use the intact group. This might happen because the availability of the participants or because the setting does not allow for artificial groups. In addition, a quasi-experiment includes assignments but not random assignments of the participants to the group, since randomly assigning participants to the two groups might disrupt classroom learning (Gall et al., 1996).

The key difference between experiments and quasi-experiments is that researcher does not randomize the participants into the measured groups (Leedy & Ormrod, 2010). For this research, the researcher used the two existing groups of students for his population or sample and they were not randomly assigned;

therefore, the quasi-experiment approach was the approach method used.

The implementation of this study had the following steps: first, it determined the students'achievement in English through natural disaster teaching module; the second was the effect on the students' understanding, which was integrated into English class; third, the theory of teaching and teaching strategy using the constructivist approach; fourth, the integrationof the constructivist approach in teaching natural disaster; and fifth, preliminary descriptive research activities towards the development of teaching modules using the constructivist approach.

3.2.2 The Procedure of Quasi Experimental Teaching

The quasi-experimental teaching was conducted in the students' class during the regular class hours, which were scheduled for English class. The teacher carried all of the experimental teaching during the instructional period and acted as the facilitator during the teaching, preparing the materials and discussing any questions asked by the students. The researcher formulated the timescale of the quasi-experimental teaching that indicated the length of the teaching process as shown below:

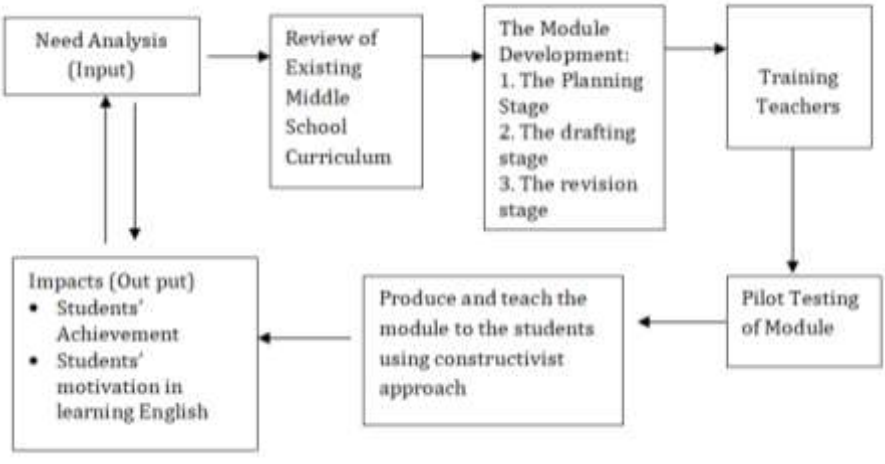
Table 3.2: The Time Scale of the Quasi-Experimental Teaching and Assessment

	Pre-test	Treatment	Post-test
	1	8	1
Cumulative	1	8	1

A pre-test was carried out one week before the intervention, in which the duration was 4 hours per week (one hour = 45 minutes). A post-test was given a week after the intervention to examine the impact of the intervention. It was indicated that the duration of the treatment was rather short, but Norris and Ortega (2000) assured that the length of instruction did not really influence the observed instructional effectiveness.

3.2.3 Research Framework

The research framework of the research is as shown below:



Adapted from de Koning et al.(1998) and Dick & Carey (2001)

Figure 3.1:
The Research Framework

In the research framework, the researcher focussed on developing the Natural Disaster Teaching Module (NDTM), theories of delivering the contents, and instructional design which pertains to the teaching tools of the natural disaster for ESL class in West Aceh. It is widely accepted that module has become an important part of teaching-learning process. According to Daries (2000), a module is a specific type of learning resource which might contain self-contained and self-instructional packages, with learning paced by each student based on his/her individual needs and ability.

Using modules in teaching is an approach that might be considered as a modification of the improvement upon the famous concept of programmed instruction.This approach is based on the well-established and universally recognized phenomenon of individual differences among learners which necessitate the planning for the adoption of most appropriate techniques (Farooq, 2007). Also, Taneja (2002) defined a module as a unit of work in a course of instruction, that is virtually self-contained and a method of teaching

that is based on the concept of building up skills and knowledge in a discrete unit.

It is a more flexible approach that has been commonly adopted in order to meet the specific requirement of students or to satisfy the special needs of particular students studying on their own pace at distance from the parent institution (Race, 1994). From some definitions stated by experts, the module can be defined as a teaching strategy for arranging learning experiences in education, which has been receiving much attention. When teaching students by using a module, a teacher plays his role as a facilitator in using the module rather than the traditional dispenser of knowledge.

Moreover, in formatting the conceptual framework, the researcher took some phases. First of all, the researcher conducted a needs analysis. The term needs analysis generally refers to activities that are involved in collecting information that will serve as the basis for developing something new and will meet the needs of a particular group of students (Iwai et al.,1999), while Waks (2011) defines need analysis as an inquiry into the existence of needs directed to develop plans, goals, and objectives of activities.

Needs analysis (also known as needs assessment) has a vital role in the process of designing and carrying out any language courses, whether it is English for Specific Purposes (ESP) or general English course; its centrality has been acknowledged by several scholars and authors (Richterich & Chancerel, 1999; Berwick, 2000). Also, the importance of carrying out a needs analysis for developing English for Specific Purpose is emphasized by Fulcher (1999).

The researcher questioned students and teachers by using a questionnaire and interviews. The researcher developed a questionnaire of need analysis based on the questionnaires of BPPD(2012) and Farooq (2007). Students were asked to answer questions by selecting the provided answer (a,b,c,d). These questions are related to their knowledge on natural disasters and whether or not they need to be taught natural disasters by using the module.

All students (N=30) were Indonesian students that speak Indonesian as their first language and were studying English as a Foreign Language (EFL). The participants consisted of 24 females (80%) and 6 males (20%). At the time of the study, they were between 12 and 14 years old.When the students were asked about what they did when the natural disaster occurred, 13 students (44%) said they panicked and did not know what to do, while only 4 students (13%) ran out the class which was the lowest percentage.

Then,when the students were asked about what their teachers did when the natural disaster happened, they also gave similar answers, in which 10 students (33%) were the most dominant one, answering that most teachers panicked and did not know what to do. By contrast, only 5 students (17%) mentioned that the teachers asked them to leave the classroom when the natural disaster occured.

This finding corresponds with Perry and Lindell (2003) who illustrated that most of the teachers did not know what to do and felt tremendously panicky when the natural disaster occurred. The next question is related to the actions carried out by the school when the natural disaster occurred. 17 students (57%) indicated that the school used to call students' family and very rarely provided guidance on further actions to be done. The school also seldom contacted the board of local natural disaster management. This is relevant to research conducted by American Academy of Pediatric (2008) indicating that many school systems did not provide further instructions to students when natural disasters occurred.

Moreover, when the students were asked about their knowledge of natural disasters, most of them mentioned that they just knew little about the natural disasters (47%), and even some (33%) of the students answered that they knew nothing at all. It is obvious that the students lacked knowledge on natural disasters. At worst, all of the students (100%), asked whether they had adequate education on natural disaster, answered that they did have adequate education on it.

These findings support the studies of Burrell and Heiselt (2012), Clarke and Braun (2013), and Farazmand (2007) which show that many school students do not have adequate knowledge on natural disasters. Therefore, students were considered among the most vulnerable people to natural disaster. One of the essential parts of this questionnaire was to ask the students if they needed to enhance their understanding of natural disasters. All students (100%) expressed that they did need to improve their knowledge of natural disaster. Also, the students were asked if they needed a media for learning natural disasters. All students (100%) agreed that the media was necessary for the study of the natural disasters.

The next question was related to the type of media that was considered appropriate for learning natural disasters. Most of the students, which were 14 (47%), informed the researcher that the module was the best media that they could use. The students were also asked whether they agreed or not about learning natural

disasters using a module. 80 percent of their responses indicated that they strongly agreed that natural disaster education should be taught by using the module. The same thing had been proved by other countries, such as Japan, India and Sri Lanka which had successfully taught students about natural disasters using a module (Shaw & Kobayashi, 2001, Kalyani et al., 2014). The last question explored students'opinions on whether they believed or not learning natural disasters using a module would improve their understanding of natural disasters. All students (100%) responded that they were sure that the learning could improve their understanding of natural disasters. This aligns with Kashmaruti and Xhiang (2004) and UNESCO (2010) that confirmed the effectiveness of a module in developing students' understanding on natural disasters.

Additionally, the interviews for teachers needed to be carried out to determine their basic knowledge of natural disasters and to ensure that they need natural disaster education to teach their students in the classroom. The researcher developed the interview question by referring to Coveleski (2014), Waugh and Streib (2006), and LIPI (2007).

Initially, the researcher asked questions related to natural disaster education. First, the teachers were asked about their understanding on the natural disaster. Some of the teachers expressed their understandings: "As far as I know, natural disaster is an event that always occurs in Aceh such as an earthquake, flood and storm. Even in 2004,there was a very big disaster, namely the earthquake and tsunami "; "A tragedy that often occurs in Indonesia, especially in Aceh"; "The event that always scares me and my family because we do not know what to do ", and" An event that often occurs in Aceh". After asking about the definition of the natural disaster, the researcher continued the next question, which was the impact of the natural disasters on the education sector in Indonesia. The mentioned the following responses: "In my opinion, natural disasters had extremely negative impacts in education in Aceh because it can hinder the learning process in schools"; "Natural disasters can make students and teachers lack of motivation to learn and teach" ; "The development of education will run very slowly due to the natural disaster "; "Natural disasters can affect academic achievement of my students at school "; and "Many teachers and students become the victims of the natural disaster that affect the development of education ".

After being informed about the impact of natural disasters on the education sector, the researcher asked about the government's role in dealing with natural disasters in schools. Here are the answers given by the respondents: "The government continues to campaign on the importance of understanding about natural disaster education, but I have not seen a real step undertaken"; “Our government is less aware of the importance of natural disaster education in schools "; “The government is still very slow to socialize natural disaster education in school "; and "Based on my observation, the government still has not made a real step in the natural disaster education in schools".

Furthermore, the researcher asked about the government's policy in preparing the curriculum of natural disasters in the school: "Until now there is no natural disaster curriculum implemented in Indonesia, I think this is an indication that the government’s policy still does not meet our expectation "; “Until today, I find out that the curriculum of natural disasters is still a discourse "; ”The government has always stressed on the importance of natural disaster education in schools, but until now there has been no single curriculum on disaster made "; and "The government's policy on the need for natural disasters in the school curriculum is still not real".

After getting answers from the teachers about the government’s policies in preparing the curriculum of natural disasters, the researcher wanted to know about the efforts made by teachers in teaching natural disasters in the classroom. Here are some answers given by the respondents: "To be honest, my understanding of natural disasters is very little. Therefore, I only teach educational natural disaster to students based on what I got from the mass media"; "I usually find materials about natural disasters from magazines or the media and teach them to students "; "I told the students to access the internet and find materials about natural disaster "; and "I just teach my students about natural disaster by sharing my experiences when an earthquake and tsunami hit Aceh in 2004".

Then, the researcher figured out whether the teachers used media in teaching about natural disasters to students: "I only use the media or tools that are simple, such as card and pictures"; I brought some pictures about natural disasters to the classroom "; I do not use the media, because I only talked about the natural disaster to my students based on my experience"; and "I use some pictures that I print from the internet".

The last question in the interview dealt with things needed by the teachers in order to teach natural disasters to their students effectively. The researcher obtained some answers as follows: "I really hope that the government provides a media either a book or module that helps us in teaching natural disasters to students; 'The government should set the curriculum of disaster in Indonesia and prepare a medium of learning. One such medium is the module';'to make the teaching process run effectively, we need to follow other countries such as Japan, Bangladesh, and India. They use natural disaster teaching module in the schools and believe that the module will assist students in understanding the natural disaster'; and'Teaching natural disaster should be done systematically by using a medium. I believe one of the media that has been proven its effectiveness is the module. "

Based on the above questions, it could be concluded that the efforts made by the teachers to teach students natural disasters were not optimal. Having finished the need analysis phase, the researcher proceed to the next phase, which was reviewing the existing curriculum of middle school. The researcher wanted to find out if the current curriculum integrated the disaster education. The result of the review indicated that the current curriculum does not clearly discuss the natural disaster education. Then, the researcher proceeded the next phase which as process of developing a module. As stated by UNESCO (1978), there are major stages in preparing the developing of a module; they are planning, drafting, and revision.

In the planning stage, the researcher identified the target of the group for whom the module was intended. Having identified the target of the group, the researcher prepared the topics based on information gained from the need analysis (ACEID, 1995). Once the planning stage was done, the researcher drafted the module. Drafting the module required creative writing skill,which is essential to make the modular materials understood by the users. Once the drafting stage was accomplished, the next stage was module revision. The module was reviewed in terms of the format, the component, the editing, and the typing errors. The researcher made revisions on the module after getting some feedback from the teachers and experts.

Having finished the development phase, the researcher trained the Englihs teachers on how to use the module in their English class. After that, the pilot study was conducted. According to UNESCO (2005), the purpose of conducting a pilot study is to check the adequacy of the module in terms of the readability, difficulty level,

and content organization. The adequacy of the test items may also be checked. For this research, the researcher took another class of secondary school students to the pilot study group in order to judge the adequacy of the module based on students' performance and make necessary corrections.

Having finished the pilot study, the researcher produced the module and asked the English teachers to teach the module to their students using constructivist approach. Briner (1999) proposed that students are constructing their own knowledge by testing ideas and approaches based on their prior knowledge and experience, applying these to a new situation and integrating the new knowledge gained with pre-existing intellectual constructs. The constructivist theory posits that students make sense of the world by synthesizing new experiences into what they have previously understood. Since most of the secondary school students in West Aceh have experienced disasters in their lives, the researcher believed that using the constructivist approach in the disaster module would help students understand the content of the module. As the result, the output of teaching-learning process could be achieved.

The last phase was evaluating the impacts of the module. Evaluation is a continuous and comprehensive process in module development (Sharma & Singhal,2010). There are at least three stages where the researcher underwent evaluation by taking various tests. First, there was a pre-test, conducted at the beginning to explore students'understanding on the module. Along with the module, the key answers were provided. Afterward, there was a formative test at the end of each learning unit or learning activity.

Similar to the pre-test, the test was scored by the researcher by using the answer key supplied in the manual. This acts as reinforcement to the students in their learning endeavor (ACEID, 1995). Lastly, the post-test served as a check on how well the students have studied the module. Like the other tests, this test has a key answer and a statement of the ability expected to be accomplished by the students before they go to the next module.

3.2.4 The Teaching of Natural Disaster Module Using Constructivist Approach

The teaching of module requires students to actively interact with the learning material, not just passively read the material alone. It is accompanied by a specific learning objective, so that students know the objectives to be achieved after participating in learning.

Dick et al. (2001) stated that a module is basically structured as follow: learning aims, learning outcomes, resources, learning and teaching strategies, assessment criteria and evaluation. Also, it should be equipped with a pretest and a post-test and feedbacks.

The learning test levels are designed from easy to difficult. The English skill is incorporated into each unit to promote the natural way of language learning. Language is not studied in a day or a month, but it takes longer time and continuous efforts on the part of learners. Introduction is given at the beginning of each module to motivate students and introduce them to the test they are going to complete/do.

The general objectives of the module and specific objectives of each unit are given at the beginning. The objectives of the module focus on English skills. The content and assessment tests are linked to the objectives of the module. Pre-test is designed to identify the abilities of the students to deal with materials presented in the module.

Validation and effectiveness of the module were checked by teaching them in the classroom with their help. The same pre-test was used as a post-test of the study to determine the effectiveness and validation of module. The students were advised to perform the learning tests before skipping on the next unit and check the answers in the feedback portion. The learning tests are related to the previous experiences of the students.

The teacher/tutor used the constructivist approach and played the role of a guide or a facilitator during the learning process. The teacher prepared teaching materials and converted them to a PowerPoint presentation. During the teaching-learning process, the teacher taught students about natural disasters and had a discussion continuously for almost 2 hours. The students were expected to acquire knowledge delivered and take notes on the lesson. This approach developed only the simplest thinking skills, such as memorising facts and practising the lesson.

The following steps were done by the teacher when teaching students using the constructivist approach:

1. At the beginning of the lesson;
   i. Asked students to recall their prior knowledge on natural disasters from their experience or informal sources and activated their schemata that might improve their learning quality. Given the limitations of sensory and working memory,

the students were not asked to tell them quickly, rather they were challenged to speak more about natural disasters.

ii. The teacher connected students' prior knowledge to the present lesson. The use of analogies, metaphors and similes created new connections with existing schemata. The use of frequent summaries, guiding statements and cognitive maps helped students change their schemata and then elaborated upon by the students themselves.

2. Provoked thinking during the lesson
   i. The teacher included slides to remind students to pause and ask thought-provoking questions.
   ii. The teacher allowed students time to think and respond; accept responses without being judgmental; probe and prompt; do not show favouritism.
   iii. Reconnected to the lesson flow.
   iv. The teacher provided sufficient time to build students' confidence, but not at the expense of teachers' lesson goals.

3. At the end of the lesson
   i. The teacher asked students to summarise their understanding of the lesson.
   ii. The teacher provided a summary of the lesson
   iii. The teacher provided advance questions for the next lecture

In addition to this, the students had to perform the activities on the basis of the following guidelines to implement the module in the classroom under the guidance of the teacher /tutor.

1. Pre-test was given to the sample group (all of the students were taken as a sample before their allocation in the control and experimental groups) for assigning the students in the control and experimental groups. The scores of the pre-test were used as a base line data for the study.
2. Study materials were given to students and methods of working with the study material were explained.
3. Before starting any activity, the teacher explained to the students about the importance of doing the test.
4. The teacher informed the students about the objectives of the unit of the module before working on it.
5. Feedback was provided at the end of each activity.
6. Extra time was provided to students who are not able to

perform the test well

7. The teacher decided the time limit for the activities, method of teaching, and level and nature of homework assigned to students in consultation with the students..
8. Guidance was given to students for obtaining and studying the extra reading material. The teacher helped students get the material and show them the way it would be read. This extra material is not for all of the students but for those who studied at greater pace.
9. The key words and terminologies used in the module were taught to the students by the teacher who was assigned to the experimental group so that they were better able to interact with the material effectively and efficiently.

3.3 Population

The focus of this study was to find out the impacts of Natural Disaster Teaching Module on secondary school students in West Aceh. The students studying at middle school level constituted the population of the study. These students belonged to middle and lower class families having an almost similar socio-economic background.

Most of their parents worked as government officers, traders,and fishermen.The students were studying at public sector institutions where the unified system of enrollment, teaching and assessment was practiced. The curriculum and facilities available for the students were also the same.

3.4 Sample

Two sections A and B of the 8th class from randomly selected schools, Government Middle Schools in Johan Pahlawan sub-district, West Aceh were taken as the sample of the study. The school was selected randomly because the public sector institutions have similar criteria of students' enrolment, evaluation and other facilities (Diknas, 2010).

The entry qualifications, age, curriculum including the audio-visual aid facilities were similar. The teachers teaching at middle school level had unified educational standards for the appointments, working hours and mode of operation in the classroom (Diknas, 2010). The sample students were divided into two groups: experimental and control groups. Both groups will be equated on the basis of the pre-test.

According to Borg et al. (2003), there are several aspects that must be considered in determining the sample size. The first is the degree of consistency; the second is the accuracy required by the study; the third includes data analysis and recommendations; and the fourth is related to fund and time.

Basically, the selection of a sample must represent the population studied. Based on this consideration, the researcher determined his research on two parts: first, the sample for testing the teaching modules, and second, samples for the experimental and control studies. The samples of this study were students of 8thaged between 13 and 15 years old. It could be predicted by referring to the regulation of the Ministry of Education on the minimum age for children to start their primary school level, which is 6 years old (Diknas, 2003).

The samples from the two classes were ranged from experimental group (with constructivist teaching) and controlling group (traditional teaching). Thus, two teachers who were assigned to teach in experimental group and control group conducted the teaching. Before conducting the experimental teaching, the researcher needed to know the English proficiency level of the students for the homogenity of the sample. Therefore, the researcher asked their written report from the English teachers. The reports are as presented in the following tables :

Table 3.3 : The English Proficiency of Students Class 8-1

No	Name	Grade	Remark
1	Abdulllah	74	
2	Ali Muharram	76	
3	Ardian Ramadhani	72	
4	Atika Ayana	80	
5	Bahrul Hayat	78	
6	Cut Nadia	80	
7	Dian Siti Utami	72	
8	Dinda Meliana	72	
9	Elsa Maulini	80	
10	Ferdian Herliandi	70	
11	Fitriani	72	
12	Kamila Zikra	80	
13	Meilia	72	
14	Muhammad Arif	70	
15	Muhammad Fahrial	76	
16	Muktadar	70	
17	Nadia Setiana	70	
18	Nazwa Riski	72	
19	Nidaul Ulfa	80	
20	Riska Dwiyanti	74	
21	Roza Andina	76	
22	Sayyidah Naila	73	
23	Silmi Fathin	76	
24	Sri Ayu	77	
25	Sukiyan	78	
26	Syaufa	76	
27	T. Aris Munanadar	77	
28	Teguh Firmansyah	77	
29	Vanessa Putri	80	
30	Wulandari	80	
	Total	**2260**	
	Average	**75**	

Table 3.4 : The English Proficiency of Students Class 8-2

NO	Name	Grade	Remark
1	Firza Aulia	70	
2	Zikri Saputra	70	
3	Surya Bakti	70	
4	Sakya Nasarah	72	
5	Rahmad Maulana	72	
6	Cut Adinda Kanaya	70	
7	Satri Ramadhan	78	
8	Sandita Dharma	76	
9	Ade Isra	76	
10	Cut Aprillia	77	
11	Davis Sulaiman	74	
12	Wayan Murdana	76	
13	Rahmadani	73	
14	Muhammad Noval Fauzi	76	
15	Dea Mawaddah	77	
16	Muyassar	80	
17	Gebyna Sekar	78	
18	Adam Phoenna	80	
19	Desi maulisa	80	
20	Cut Natasha	72	
21	Desi Fauziah	78	
22	Maisarah	72	
23	Zahrul Ramadhan	76	
24	Mulya Tanjung	72	
25	Muhammad Suriadi	80	
26	Akhyar	80	
27	Fadhillah	80	
28	Teuku Arif Molana	80	
29	Julia Ulfa	74	
30	Dora Susanti	70	
	Total	**2259**	
	Average	**75**	

Table 3.5 : The Profile of Secondary School

Name	: SMPN 1 Meulaboh
Established	: 1972
Address	: Jl. Merdeka, Suak Indrapuri, Meulaboh, Aceh Barat
Postcode	: 23600
Level	: Secondary
Status	: State

- The background :

Education is one of the most important things in the reconstruction of Aceh after the tsunami on December 26, 2004. The field of education includes rebuilding educational facilities, where the tsunami has destroyed thousand of school building and killed teachers and students. The damage and loss of the teachers means a great impact on the lives of the people of Aceh. Most Acehnese children must drop their education which will negatively impact their future. In addition, their problems became more severe because the tsunami has left a huge psychological trauma that require special psychological treatment caused by the tragedy.

Therefore, the reconstruction of the education sector is one of the fundamental aspects in the process of rehabilitation and reconstruction of Aceh after the earthquake and tsunami. Together with other important areas of social-cultural, economic and political development of education is absolutely necessary, because it will determine the future of Aceh. Within the framework of this addition, the government gave a very big concern in rebuilding the educational facilities in Aceh. They are intensively involved in the rehabilitation and construction of school buildings, provision of education in emergencies, and mental development of the children of Aceh who suffered psychological trauma resulting from the tsunami.

Thus, in order to achieve the qualifying standard of education, the teaching -learning process at SMPN 1 Aceh Barat will also consider the values of local wisedom expecting to give a social value for the development of the people of Aceh.

- Vision :

To create a positive educational environment for the children of Indonesia in Aceh and to improve the quality of human resources who have the academic ability and skill.

- Mision:

To organize a creative learning process which will develop the potential of the students by preparing them with the knowledge and skill to interact within social life

Source : SMPN 1 West Aceh

Moreover, teachers who taught English in 8th year class at SMPN 1 (Secondary School) Meulaboh were involved in providing input and ideas of developing teaching constent of natural disasters; they were composed of two teachers teaching English subject. The profile of English teachers teaching at SMPN 1 West Aceh is shown in the following table :

Table 3.6 : The Profile of Teachers Teaching English at Secondary School No.1 , West Aceh Regency

Factor/The background	Criteria/Status/group	Mark
The Location of School	Urban / Rural	Urban
The Status of school	State Middle School Private Middle School	State Middle School
The Level of school	Grade A/ Grade B	Grade A
Sex	Male Female	2 4
Experience in Teaching English	<5 years 5-10 years >10 years	 4 2
Experience in Teaching English in 8th grade	<5 years 5-10years >10 years	 2 4
Number of hours teaching English in a week	<10 hours >10 hours	 6
The Academic background	Graduate of English Department	6

Source : SMPN 1 West Aceh

3.5 The Threat to the Validity Study

This study took certain measures to control two kinds of threats to the validity of quasi-experimental study between internal validity and external validity. Gay and Airasian (2000) affirmed that internal validity focuses on to what extent an effect occurred in the dependent variable caused solely by the manipulation of the independent variable. This means that the internal validity focuses on factors that may affect the experimental findings and it is not because of the external variables.

According to Isaac and Michael (2002), there are different types of threats to internal validity; history, maturation, pre-test, the instrument, and the difference in the selection of participants, mortality, and maturation. They further explain that there are seven main threats to external validity, the pre-test treatment interaction, interaction treatment selection, treatment interference multiple, variable-variable specialization, diffusion cartilage, the effect of the researcher and the effect of reactive.

3.5.1 Internal Validity

As previously stated, the internal validity consists of several factors: (1). history, (2) the pre-test of an experimental study, (3)the maturity of the participants, (4)the high reliability, (5) the selection of participants, and (6) mortality.

1. **History**

The period between the pre-and post-test can affect post-test (Gay &Airasian,2000).

Solution: The pre-and post-tests are carried out simultaneously for the experimental group and the group.

2. **Pre-test of an experimental study**

Students who have already taken the pre-test might try harder or remember questions to get high scores in the post-test.

Solution: The sequence of answers between pre-test and post-test should be different.

3. **Maturity**

Maturity refers to the process of internal change that happens to an individual and this can have an impact on the post-test.

Solution: There should be a control group so that the post-test scores caused by the maturity can be set aside after comparing them with the post-test scores of the experimental group.

4. High reliability

The use of the instrument in the research can lead to reliability problem if it does not measure appropriately or it measures with a different way when it is used at the second time.

Solution: A pilot test to test the validity and reliability of all the instruments used in the study was conducted.

5. The Selection of Participants

The differenceof participant selection can produce different groups. For example, in a study comparing two methods of teaching, a group with high intelligence will show high performance no matter which method is used to teach them.

Solution: The homogeneity capability testing in both groups (experiment and control groups) was conducted.

6. Mortality

Lack of participants in the groups studied either the control group or the experimental group threatening the validity of the experimental study.

Solution: The research was conducted in the same year.

3.5.2 External Validity

External validity is defined as the extent to which a study's results can be generalized and applied to other people or settings (Gregory & Robert,2011). Generally, group research employing randomization will initially possess higher external validity than studies (e.g., case studies and single-subject experimental research) that do not use random selection/assignment. Campbell and Stanley (cited in Isaac &Michael, 2002) have identified four factors that adversely affect a study's external validity.

An interaction between how the subjects are selected and the treatment (e.g., the independent variable) can occur. If subjects are not randomly selected from a population, their particular demographic/organism characteristics may bias their performance and the study's results may not be applicable to the population or to

another group that more accurately represents the characteristics of the population.

Pretesting subjects in a study may cause them to react more/less strongly to the treatment. In such situations,the researcher(s) cannot conclude that members of the population who do not take the pretest would perform in a similar manner to the participants in the study. In other words, to generalize the results of the study, the researcher would have to specify that a particular type of pretesting is also done because the pretesting could be serving as an extra, unintentional independent variable (Rumpus, 2003).

In addition to this, Hock and Roger (2002) assured that the performance of subjects in some studies is more a product or reaction to the experimental setting (e.g., the situation where the study is conducted) than it is to the independent variable. Forexample, subjects who know they are participants in a study, or who are aware of being observed may react differently to the treatment than subjects who experience the treatment but is not aware of being observed, and so forth.

Studies that use multiple treatments/interventions may have limited generality because the early treatments may have a cumulative effect on the subjects' performance. If a group experienced treatment X1, and the first treatment is followed by a second (X2), their measured performance after X2 will be affected by both treatments not just X2's because the effects of X1 are not erasable(Creswell, 2002).

3.6 Research Instrument

The pre-test was conducted to find out the competencies of the students to deal with the material presented in the module. The same pre-test was used as a post-test to find out the difference between the performance of the control and experimental groups to validate the module. The students were advised to perform the learning tasks before skipping to the next unit and checking the answers in the feedback section. The learning tasks were related to the previous experiences of the students (UNESCO, 1978).

Moreover, The researcher uses research instruments to answer the following research questions:

RQ 1: What are the effects of Natural Disaster Teaching Module on secondary school students' English performance in reading ?

To answer this question, the pre-test and post-test should be given to the students (Behlol, 2009). The pre-test was used to find out the competencies of the students to deal with the material presented in the module. The test was constructed by the researcher and revised in the light of the opinions of the experts (Appendix A). The validation of the module was checked by administering the same pre-test as a post-test to the subjects of both experimental and control groups by changing the arrangement of the items on the pattern of"Even Odd Numbers"(AppendixB).

The tests signified students' achievement in learning English before and after the module was taught. The format of the test was essay and multiple choices. At the beginning of the data collection process, the students were divided into control and experimental groups in which there were 30 students in each group.

The training was about the concepts of modular teaching, individualized instruction, lesson planning, use of reinforcement techniques, role of the teachers as facilitators, learner centred teaching and solution of work sheet problems. The researcher conducted seven days training for the teacher. The experiment continued for 8 weeks.

RQ 2: To what extent does the Natural Disaster Teaching Module improve students' motivation in learning English?

The quantitative method of data collection was through the use of a questionnaire. Lightbrown and Spada (1999) pointed out that "when researchers are interested in finding out whether an individual factor such as motivation and engagement affects second language learning,they will usually select a group of learners and give them a questionnaire to measure the type and degree of their motivation."

For this research, the researcher developed a questionnaire to investigate students' motivation in learning English (Appendix G). The questionnaire was developed by referring to some sample questionnaires designed by Johnson and Dalen (2001) Holownych (2001), Manoli et al. (2007), and Tsai (2006).This questionnaire contained 22 items and was distributed to students in Sekolah Menengah Pertama Negeri

(SMPN) 1 West Aceh.

The questionnaire was based on a five- point Likert Scale.The different sections of the questionnaire are: i) students'knowledge on modular teaching, ii) students' engagement in the use of modular teaching, and iii) students'motivation towards the use of modular teaching in ESL classroom.

According to Shih et al. (2004), the development of the questionnaire involved the following steps: first, a comprehensive review of related literature related to the development of the instrument for investigating schools to get an idea for constructing a questionnaire for the study; second, the present situation of middle schools in West Aceh, which was also taken into account when designing the questionnaire; third, the researcher's experience in trainingthe prospective middle school teachers in West Aceh; last, the draft copy of the questionnaire which was presented to the experts to review and critiques regarding its format and content. The last procedure was repeated several times until the questionnaire was regarded complete. The approval and revised version of the questionnaire was translated into Indonesian and distributed to the students.

3.6.1 Validity of the Questionnaire

The validity of an instrument refers to its ability to measure what it purposes to measure (Evans, 2000). Borg and Gall (2003) propose that invalid instruments could lead to erroneous research conclusions.The content validity of the questionnaire is validated by the following procedures. First, a review of relevant survey instruments was completed, and the findings were used as the basis for initial construction of the questionnaire. Second, the experts completed the developmental procedures and content of the questionnaire. Third, the Indonesian version of the questionnaire was distributed to experts involving the university professors and schoolteachers to check the accuracy and clarity of the questionnaire. Comments and suggestions were used to revise the questionnaire in order to make sure that the questionnaire would measure what it should measure.

3.6.2 Reliability of the Questionnaire

Borg and Gall (2003) pointed out that reliability is an extremely important characteristic of any instrument. It is defined as the level of internal consistency or stability of the measuring device over time. Cronbach's Coefficient Alpha (α) is an appropriate method to determine the coefficient of internal consistency when items are not scored dichotomously (Thorndike et al.,1991).

Students' responses were analyzed using SPSS program in order to calculate the Cornbach's Coefficient Alpha (α). In order to make questionnaire data ready for computer processing, checkmarks on the questionnaire were converted to numeric data. Likert Scale rating values of 1-5 were employed to score the responses in different part of the questionnaire for computer processing.

3.7 Pilot Study

Before the actual data collection was done, the researcher conducted a pilot study. The purpose of the pilot study was to assess the validity of the research instruments. For this research, the researcher took another middle school, SMP 2 Meulaboh, for his pilot study school; 15 students were involved in the pilot study.

3.7.1 Pilot Study and Instrument Reliability

The reliability goal of this study was to provide consistent results over repeated administration of the test (Rudner & Schafer, 2001). The pilot version of model development contained 22 questions 50 multiple-choice questions which were piloted with 15 randomly selected secondary school students who took ESL class. These 15 students were not included in either the treatment group or the control group.

The results of the pilot test were used to determine the reliability of the instrument for the pre-test and post-test (Gall et al., 1996). The goal of the pilot study was to modify the pre-test and post-test, and to establish the internal consistency reliability of the perceptions of the participants (Gray,2004). The internal consistency reliability was calculated by applying the Cronbach's coefficient alpha method using SPSS 20.

3.7.2 Item Analysis and Procedure

The result of the pilot study was used to determine each test item's difficulties and discrimination. According to Worthen et al. (1999), test items scored below 20 % or 80 % need to be removed or revised from the test instrument.

3.8 Data Analysis

The data will be analyzed using the Statistical Package of Social Sciences (SPSS) version 20. The raw scores obtained from pre-test and post-test were presented in a tabular form for the purpose of interpretation. For the manipulation of data, the means, standard deviations and differences of means were computed for each group. The significance of difference between the mean scores of both the experimental and control groups on the scores of pre-test and post-test were tested at 0.05 level by applying t-test. For questionaire on students motivation, the data will be analyzed using percentage.

3.9 Summary

The focus of this study was to find out the impacts of Natural Disaster Teaching Module on secondary school students in West Aceh. The students studying at middle school level constituted the population of the study. These students belonged to middle class and lower middle class families having a similar socio-economic background. Two sections A and B of the 8th class from randomly selected school, Government Secondary School in Johan Pahlawan sub district, West Aceh were taken as a sample of the study.

This study was implemented through the following steps: first, it determined the students'achievement in English through natural disaster teaching module; the second was the effect on the students' understanding, which was integrated into English class; third, the theory of teaching and teaching strategy using the contructive approach; fourth, the integration of the contructive approach in teaching natural disaster; and fifth, preliminary descriptive research activities towards the development of teaching modules using the contructive approach.

In addition, the quasi-experimental teaching was conducted in the students' class during the regular class hours, which were scheduled for English class. The teacher carried all of the experimental teaching during the instructional period and acted as the facilitator during the teaching, preparing the materials and

discussing any questions asked by the students. In this study,a mixed method design (quantitative and qualitative methods) was used in order to collect data that were analyzed using statistical methods, as well as specific data used to develop the lessons. In the next chapter will be discussed about the analysis of data.

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CHAPTER 4.
ANALYSIS OF DATA

4.1 Introduction

In this chapter, results from the data analysis are presented.The chapter also discusses research literature relevant to the findings and the research implications.It begins by outlining the descriptive analyses (e.g., validity and reliability tests). The results of the tests of hypotheses were included. Tables and figures are employed in this chapter to illustrate and summarize all numeric information.

This study was conducted to find out the impacts of Natural Disaster Teaching Module on secondary school students in West Aceh. The researcher developed a module which consists of five topics related to natural disasters. They were earthquakes, tsunamis, floods, volcanos, and landslides.

The topics were adopted from a book entitled *'Teaching Disaster Risk Reduction with Interactive Method' (Grades V-IX)*. The module was developed by following the guidelines given by UNESCO Regional Office for Education in Asia and Oceania (1978).

The components of the module are title, introduction, method of study, general objectives, specific objectives, content(input), learning activities, pre-test, post-test and feedback. The basic language skills were focused on designing the activities and self-assessment tests of the units. The learning tasks were designed from easy to difficult level. Every lesson was started with introduction to motivate students and give an explanation about the task.

General objectives were given at the beginning of the module and specific objectives were given at the beginning of each unit of the module. The data of the study were collected and analyzed to determine the validity of the material developed as a module based on the result scores of the students in the control and experimental groups.

4.2 The Implementation and Result of Pilot Study

The accuracy of the testing of hypotheses on the relationship of research variables is highly dependent on the quality of data used in the testing. Therefore, before testing the hypotheses, it is necessary to test the validity and reliability of the research instruments used.

The test of the research instruments in both validity and reliability of the 15 respondents found that the result was valid in which the correlation had a significant value (p) lower than Alpha 0:05 (Sugiyono, 2002); an instrument is reliable if it has a reliability coefficient of 0.6 or more (Arikunto, 2002). The questions (50 items) and questionnaires (22 items) met the requirements of the validity test, because each had a significant value (p) less than 0.05 alpha. Thus, all of the items could be included in the further analysis in this research.

Moreover, the reliability coefficient using the formula had been interpreted by referring to the reliability criteria suggested by Arikunto (2002), that the reliability of the criteria for group achievements is considered adequate if the Alpha coefficient is from 0.60 to 0.70 .The criteria of reliability coefficient index could be seen in the folllowing table :

Table 4.1: The Criteria of Realiability Coefficient Index

No.	The Interval Index of Reliability	Remarks
1	< 0.200	Very Low
2	0.200-0.399	Low
3	0.400-0.599	Fair
4	0.600-0.799	High
5	0.800-1.00	Very High

Source: Arikunto, 2002

In addition, the results of the reliability test of the instruments of this study were presented in the following table:

Table 4.2 : The Reliability Test of Instrument

Variable	**Alpha Cronbach (***based on standardized items***)**	Remarks
50 Questions	0.974	The level of reliability is very high
22 Questionnaires	0.960	The level of reliability is very high

Based on the data shown in the table, it could be proposed that all of the items used as a measure of the observed variables are reliable, because the Cronbach alpha values of the variables tested had SIA (Standardized Item Alpha) higher than the standardized reliability value (0.6). This means that no matter how many times the question were given to the respondents, their responses would not be so much different from the values presented above.

4.3 The Analysis of Experimental Group and Control Group

The statistical tools, such as t test, mean, the difference of means, standard deviation, degree of freedom, and Levene's tests, were applied to analyze the data of the study. Obtained results along with the analyses and interpretation arepresented in the following pages.

Ho 1: There is no significant difference in the mean score of reading performance of the students in the experimental group and those in the control group in the pre-test.

Table 4.3: Group statistics of experimental and control group in the pre-test

	N	Mean	Std. Deviation	Std. Error Mean
Experimental	30	44,73	10,16	1,85
Control	30	42,73	5,741	1,04

This table shows the means, standard deviations and standard error of the means of two groups. The mean of the experimental group was 44,73 while control group was 42,73. The standard deviations were 10,16 and 5,741 respectively. The standard errors of the means were 1,85 and 1,04 respectively. These analyses were used as baseline data to find out the significant difference between the two groups for the purpose of determining the validation and effectiveness of the designed material as a module by the application of t test

Table 4.4: Significance of difference between the mean score of experimental and control group in the pre-test

Type of Test/group	Levene's test		t				
						t	
Pretest	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
Ex+Con	9,902	0,003	0,939	58	0,352	2	2,131

This table indicated that the difference between the mean score of reading performance of the students in the experimental group and those in the control group in the pre-test was significant. The degree of freedom of the two groups was 58 and mean difference was 2 on 0,05 level. The standard error of the means was 2,131. The p value was 0,352 on 0.05 level, which was not significant. Hence, it was proved that there was no significant difference between the mean score of reading performance of the students in the experimental group and those in the control group in the pre-test, and it was declared that the significant difference was not found.

Ho 2: There is no significant difference in the mean score of reading performance of the students in the experimental group and those in the control group in the post-test.

Table 4.5: Group statistics of the mean score of experimental and control achievers in the post-test

	N	Mean	Std. Deviation	Std. Error Mean
Experiment	30	47,17	5,253	0,959
Control	30	64,97	11,254	2,055

This table shows the means, standard deviations and standard errors of the means of experimental and control group on post-test.

The mean of experimental group was 47,17 and that of the control group was 64,97. Their standard deviations were 5,253 and 11,254 respectively. The standard errors of the means were 0,959 and 2,055. The analysis of this table was used as baseline data to apply t test to observe the results of the study of the experimental and control group on post-test.

Table 4.6: Significance of difference between the mean score of the experimental and control group in the post-test

Type of Test/group	**Levene's test**		**t test**				
Post-test	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
Ex+Con	14,729	0,008	-7.850	58	0,000	-17,800	2,267

The table shows the difference between the mean score of reading performance of the students in the experimental group and those in the control group in the post-test, which was found to be significant on the t test. The degree of freedom of the two groups were 58 and the mean difference was -17,800 on 0,05 level. The p value was 0,000 on 0,05 level, which was significant. It was proved that there was significant difference between the mean score of reading performance of the students in the experimental group and those in the control group in the post-test.

Ho 3: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental group in the pre-test.

Table 4.7: Group statistics of mean score of high and low achievers of experimental group in the pre-test

Pre Ex Class	N	Mean	Std. Deviation	Std. Error Mean
Low	20	32,85	2,601	0,582

High	10	48,70	5,945	1,880

The table indicates the means, standard deviations and standard errors of the means of high and low achievers of experimental group in the pre-test. The mean of the low achievers of the experimental group was 32,85, while the high achievers was 48,70. The standard errors of the means were 0,582 and 1,880 respectively. The standard deviation of the low achievers was 2,601 and the high achievers was 5,945. These results help to determine the validation of the designed material as a module under the study by identifying the difference in the performance scores of the two groups.

Table 4.8: Significance of difference between mean score of high and low achievers of experimental group in the pre-test

Type of Test/group	**Levene's test**		**t test**				
Pretest	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
Ex+Con	31,972	0,000	-10,2	28	0,000	-15,850	1,547

The table shows the difference between the mean score of reading performance of the high achievers and low achievers of the students in the experimental group in the pre-test which was significant. The degree of freedom on 0.05 level was 28 and the difference between the means was -15,850 and the difference between standard errors of the means was 1,547. The p value was 0,000 on 0.05 level which was significant. Therefore, it was proved that there was significant difference between the mean score of reading performance of the high achievers and low achievers of the students in the experimental group in the pre-test.

This finding was supported by Reis and McCoach (2000) who stated that underachievers have lower academic self-perceptions, lower self-motivation and self-regulation, and less goal directed behavior, and more negative attitudes toward school than high achievers do.

Ho 4: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental group in the post-test.

Table 4.9 : Group statistics of experimental group in the post-test

Post Ex Class	N	Mean	Std. Deviation	Std. Error Mean
Low	18	57,39	4,500	1,061
High	12	76,33	8,228	2,375

This table indicates the analysis of the means, standard deviations and standard errors of the means of the the high and low achievers of experimental group in the post-test. The mean of the low achiever group was 57,39 and of the high group was 76,33. The standard deviations were 4,500 and 8,228 respectively. The standard errors of the means were 1,061, 2,375 of the low, and the higher achiever groups.

These results help to determine the validity and effectiveness of the designed material as a module by identifying the difference from the performance scores of the two groups on post-test.

Table 4.10: Significance of difference between mean scores of the high and low achievers of experimental group in the post-test

Type of Test/group	**Levene's test**		**t test**				
Post Ex Class	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
	8,522	0,001	-8,151	58	0.000	-18,944	2,324

This table indicates the difference between the means scores of the high and low achievers of the experimental group in the post-test. The degree of freedom was 58 and the difference between the means

was -18,944. The standard error of the means was 2,324 while the p value on t test was 0.000 on 0.05 level that was highly significant. Thus, it was proved that there was significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental group in the post-test. These results align with the studies conducted by Pareek and Rao (2000), and Ali and Elfessi (2004). They believed that the module based learning resource created interest in learning for the individuals; as a result, they were able to demonstrate higher achievements as compared to students taught with the textbooks.

In this respect, the higher achievements of the students in the experimental group proved the readability, difficulty level, and content organization of the material designed as the module up to the required standard for the secondary class students. It also determined that the developed material as a module was valid by the higher performance of the students in the experimental group.

Ho 5: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the control group in the pre-test.

Table 4.11: Group statistics of the mean score of the high and low achievers of the control group in the pre-test

Model1	N	Mean	Std. Deviation	Std. Error Mean
Low	16	38,50	3,307	0,827
High	14	47,57	3,694	0,987

This table indicates the analysis of the means, standard deviations, and standard errors of the means of the high and low achievers of the control groups in the pre-test. The mean of the low achievers of the control group was 16 and of high achievers was 14. The standard deviations were 3,307 and 3,694 respectively, while the standard errors of the means were 0,827 and 0,987.

The statistical analysis in this table was used a baseline data to apply t test to find out the results of the study of the high and low achievers of the control groups on pre-test.

Table 4.12: Significance of difference between the mean scores of the high and low achievers of the control group in the pre-test

Type of Test/group	Levene's test		t test				
Pre- test	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
High+Low	0,001	0,972	-7,09	28	0.000	-9,071	1,278

This table shows the difference between the mean score of reading performance of the high achievers and low achievers of the students in the control group in the pre-test was significant. The degree of freedom was 28 and difference between the mean scores was -9,071, whereas the difference between standard errors of the means was 1,278. The p value on t test was 0.000 on 0.05 level, that was highly significant. It was declared that the performance of the high achievers was significantly different from the low achievers in the pre-test. Sarwar et al. (2009) revealed that high achievers had better study orientation, study habits and attitude towards study than low achievers.

In this respect, the higher achievements of the students in the control group proved the readability, difficulty level, and content organization of the designed material as a module up to the required standard for the secondary level students. It also indicated that the developed material as a module was valid by the higher performance of the students in the experimental group.

However, Ali and Elfessi (2004) proved that module based learning materials had equal benefits for high and low achievers. It involves the students in the learning process and brings learning to their level. It gives freedom to students to proceed at their own pace; therefore, the high and low achievers have an equal chance to be benefited according to their own capacities.

Ho 6: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the control group in the post-test.

Table 4.13: Group statistics of the mean score of high and low achievers of the control group in the post-test

Post Cont Class	N	Mean	Std. Deviation	Std. Error Mean
Low	17	43,59	2,808	0,681
High	13	51,85	3,783	1,049

The table shows the analysis of the means, standard deviations, and standard errors of the means score of the high and low achievers of the control groups on post-test. The mean of the low achievers of the control group was 43,59 and of the high achievers was 51,85. The standard deviations were 2,808 and 3,783 respectively while the standard errors of the means were 0,681 and 1,049 of the control groups respectively.

Table 4.14: Significance of difference between the mean score of the high and low achievers of the control group in the post-test

Type of Test/group	**Levene's test**		**t test**				
Post test	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
High+Low	0,041	0,841	-6,87	28	0.000	-8,258	1,202

The above table indicates the difference between the mean scores of the high and low achievers of the control group in the post-test. The degree of freedom was 28 and difference between the means was -8,258. The difference between standard error of the means was 1,202. The p value on t test was 0.000 on 0.05 level which was highly significant. It was proved that there was significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the control group in the post-test.

Farha (2004) in her study has revealed that high achievers attributed their success and failure mostly with effort and ability. Also, Raon (2000) indicated that low achievers were less motivated towards studies and perceived academic learning as being less useful. However, As indicated by Sontakey (1986), high achievers and low achievers did not differ significantly in achievement motivation

Ho7 : There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental and control group in the the pre test.

Table 4.15: Group statistics of the mean score of high and low achievers of the experimental and control groups in the pre-test

Pre- Class	N	Mean	Std. Deviation	Std. Error Mean
Low	9	39,56	3,127	1,042
High	10	48,70	5,945	1,880

The table shows the analysis of the means, standard deviations, and standard errors of the means score of the high and low achievers of the experimental and control groups in the pre-test. The mean of the low achievers was 39,56 and of the high achievers was 48,70. The standard deviations were 3,127 and 5,945 respectively, while the standard errors of the means were 1,042 and 1,880 of the experimental and control groups respectively.

Table 4.16: Significance of difference between the mean score of the high and low achievers of the experimental group in the pre-test

Type of Test/group	**Levene's test**		**t test**				
Pre- test	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
High+Low	12,419	0,003	-4,12	17	0.001	-9,144	2,218

The above table indicates the difference between the mean scores of the high and low achievers of the experimental and control group in the pre-test. The degree of freedom was 17 and difference between the means was -9,144. The difference between standard error of the means was 2,218. The p value on t test was 0.001 on 0.05 level which was highly significant. It was proved that there was significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental and control group in the the pre test.

Elizabeth et al. (2009) conducted a study on learning styles of high and low achievers has revealed that no significant difference exists in learning styles between the low achiever and high achiever students. However, Julie (1999) in his study on high and low achievers classroom interaction patterns have revealed that high achieving informants initiated more interactions than the low achievers.

Ho 8: There is no significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental and control group in the the post- test.

Table 4.17: Group statistics of the mean score of high and low achievers of the experimental and control groups in the post-test

Pre- Class	N	Mean	Std. Deviation	Std. Error Mean
Low	7	39,14	3,436	1,299
High	12	47,42	6,171	1,781

The table shows the analysis of the means, standard deviations, and standard errors of the means score of the high and low achievers of the experimental and control groups in the post-test. The mean of the low achievers of was 7 and of the high achievers was 12. The standard deviations were 3,436 and 6,171. The standard errors of the means were 1,299 and 1,781 of the experimental and control groups.

Table 4.18: Significance of difference between the mean score of the high and low achievers of the experimental group in the post-test.

Type of Test/group	Levene's test		t test				
Post-test	**F**	**Sig.**	**T**	**Df**	**p value**	**Mean Difference**	**SE D**
High+Low	15,987	0,001	-3,24	17	0.005	-8,274	2,553

The above table indicates the difference between the mean scores of the high and low achievers of the experimental and control group in the post-test. The degree of freedom was 17 and difference between the means was -8,274. The difference between standard error of the means was 2,553. The p value on t test was 0.005 on 0.05 level which was highly significant. It was proved that there was significant difference in the mean score of reading performance of the high achievers and low achievers of the students in the experimental and control group in the the post test.

McCoach and Siegle (2001) conducted a study on a comparison of high achievers' and low achievers' attitudes, perceptions and motivations. The purpose was to examine differences in high school students between high achieving and low achieving students'academic self perceptions, attitudes toward school and teachers, and motivation. The study showed that high achieving students exhibited more positive academic self-perceptions, motivation/self regulation, goal valuation, attitudes toward school, and attitudes toward teachers than low achieving students. The two groups differed a lot from each other in all the these areas.

Ho 9: The modular teaching will not improve students' motivation in learning English

To answer this hypothesis, the researcher distributed the questionaire asking about the students' perceptions on the modular teaching . The questionaire covered the following aspects: i) students' knowledge on modular teaching, ii) students' engagement in the use of modular teaching, and iii) students' motivation towards the use of modular teaching in ESL classroom.

The participants were asked about their perceptions of the modular teaching,whether it would affect their interests for learning English or not. After the post-test was administered, the treatment group answered a four-point Likert-type survey to understand students' perceptions of the modular teaching.

The four point Likert-Type Scale survey had 22 questions developed by the researcher by referring to the previous students' perception instruments, Holownych (2001), Manoliet al. (2007), and Tsai (2005). The students were asked to rate from 4 to 1 (4= strongly agree; 3= agree; 2=disagree;1=strongly disagree) related to their perceptions toward the use of the modular teaching. The raw data for the perception survey in the treatment are shown in the table.

Perception survey items were statements about students' perceptions toward the modular teaching in terms ofthe following categories: 1) motivation:agreement on whether the modular teaching provides clear instructions and facilitates learning the content, 2) enjoyment: agreement on whether the modular teaching provides learner-controlin a learner centric environment allowing comfortable learner's pace, and 3) frustration: agreement on whether the modular teaching is a difficult way of learning English. The remaining items on the survey involved statements about students' perceptions on learning performance toward the use of the modular teaching,which were categorized as 1) agreement that the modular teaching improves vocabulary acquisition, 2) agreement that the modular teaching improves reading skills, and 3) agreement that the modular teaching improves grammar.

Perception category 1 (motivation: agreement on whether the modular teaching provides clear instructions and facilitates learning the content) includes item 1,6,21and 24 from the perception survey. These items are:

1. The modular teaching provided clear instruction for the Task.
6. The modular teaching was well organized.
21. The modular teaching facilitated me in thinking about what I read.
24. The modular teaching made me more attentive inlearning than the other method of teaching

Table 4.19: Descriptive Analysis of Perception Category 1: Motivation Treatment Group

Scale Responses	Items Number				F	%
	1	6	19	22		
4 (SA)	11	15	16	10	52	43.3
3 (Agree)	19	15	14	20	68	56.7
2 (Disagree)	0	0	0	0	0	0
1 (SD)	0	0	0	0	0	0

Data in table 4.19 shows a positive attitude for survey item 1,6,19,and 22 The participants that strongly agree (rating of 4) were composed of 43.3% (52) participants, and 56.7% (68) of the participants that indicated a positive attitude on the modular teaching as motivating and facilitating content learning. The results of attitudinal survey are in line with the findings of Chuo (2004) and the reports of several articles (Castronova, 2002; Lipscomb 2003, Snider & Foster, 2001). In designing instructional activities, the language teacher should realize that language learning focuses on both accuracy and application in different contexts; learners must be given opportunities to participate in multiple contexts. These opportunities will result in learners' heightened motivation (Ngeow, 1998). Ngeow (1998) suggested teaching strategies that can be used to foster motivation and promote transfer opportunities of language skill, which include 1) taking ownership in learning, 2) promoting intentional cognition to learning in various contexts, and 3) the increase authenticity of learning tasks and goals. The concepts underlying these strategies appear to be consistent with the concept of a modular approach.

Perception survey item category 2 (enjoyment:agreement on whether the modular teaching provides the learner control in a learner centric environment) includes the attitudinal items (Items 3, 7,13,21), as listed below :

3. The modular teaching was enjoyable for me in learning the content.
7. The modular teaching provided a comfortable pace for learning the content.
13. The modular teaching content was easier to learn than the other method

21. The modular teaching allowed me to have control of my own learning pace.

Table 4.20: Descriptive Analysis of Attitudinal Category 2 : Enjoyment Treatment Group

Scale Responses	Items Number					
	3	**7**	**13**	**21**	**F**	**%**
4 (SA)	11	10	9	17	47	40
3 (Agree)	19	17	21	13	70	60
2 (Disagree)	0	3	0	0	0	0
1 (SD)	0	0	0	0	0	0

In comparison to the data revealed in table 4.19, table 4.20 indicates a positive attitude survey items 3,7,13, and 21 in which 40 % (47) of the respondents rated this items as 4 (strongly agree) and 60 % (70) of the respondents rated this items as 3 (agree). No student rated survey item 2 (Disagree) and 1 (Strongly Disagree). This indicates a positive attitude on modular teaching learning as enjoyable, providing leaner-control in a learner centric environment.

The result corresponds to the learner-centered cognitive/constructivist view of language learning (Kern and Warscheur, 2000; Liao, 2004; Nunan 1989). In the trends of technology and language learning, a teacher plays an important role as a facilitator (Anton,1999; Nunan ,1989). However, it is impossible to facilitate an effective learning if the learning activity is not planned and designed systematically to support a learner-centric environment. Thus, before advocating the learner centric idea in instructional design, teachers (the facilitators) need to be trained in terms of the theory and implications of utilizing a modular teaching before implementation.

The negative attitudinal item category 3 (Frustration: agreement on Modular teaching being difficult) includes the attitudinal items (item 2,4,5,8 and 11), as listed below:

2. The modular teaching took moretime than the traditional other teaching method.
4. The modular teaching was difficult because of my lack of vocabulary.
5. The modular teaching articles were hard to read.

8. The modular teaching made no difference in my learning of the content.
11. The modular teaching was difficult to understand.

Table 4.21: Descriptive Analysis of Attitudinal Category 3 Frustration Treatment Group (N=30)

Scale Responses	Items Number						
	2	**4**	**5**	**8**	**11**	**F**	**%**
4 (SA)	0	0	1	2	0	3	2
3 (Agree)	0	3	0	2	4	9	6
2 (Disagree)	24	16	17	20	13	90	60
1 (SD)	6	11	12	6	13	48	32

Data in table 4.21 indicates an unenthusiastic attitude for survey item 2,4,5,8 in which 60% (90) of the respondents rated this item either 2 (disagree) or1 (strongly disagree). However, 9 students(6%) rated 3(Agree) and 3 students (2%) responded the item as 1 (strongly disagree). Item 2 stated: The modular teaching took more time than the other teaching method. This indicates that the 24 students perceived the modular teaching as not taking more time than the other teaching methods.

Item 4 affirmed that: The modular teaching wasnot difficult for students because of lack vocabularies. In fact, the data indicate that the modular teaching was not difficult for them because they did not lack of vocabulary. Thus, this descriptive statistic on item 4 seems to show that students were not having a difficulty or a negative attitude toward the use of the modular teaching because of the issue of the lack of vocabulary.

The result reflects the studies on second language difficulties (Anderson,2003 & Barfield,1999). The factors to explain the modular teaching being difficult might be twofold: 1) L2 reading difficulty, and 2) lack of on line reading strategies. If an L2 reader is not familiar with culturally-based knowledge or content schema, or a reader does not process the same linguistic base as the L1 reader, the L2 reader will encounter difficulties (Singhai, 2001). Other studies (Anderson, 1984; Lee & Schaller, 1997) also pointed out a lack of proficiency in L2 as being the primary reason for L2 reading difficulties. Bartfield (1999) also concluded three main difficulties in reading stories:comprehension of characters/plot development,vocabulary,

and sentence syntax; and the four main difficulties in reading thematic academic text, which are vocabulary,technical phrases,sentence length, and background knowledge.

The remaining ten items on the survey involve the statement about students' perceptions of their learning performance when using the modular teaching,which was categorized as 1)agreement that the modular teaching improves vocabulary acquisition, 2) agreement that it improves reading skill, and 3) agreement that the modular teaching improves grammar concepts. The data related to the survey items on students' perceptions of learning performance in category 1 (agreement that the modular teaching vocabulary acquisition) includeitems 9, 15,16,17 as listed below :

9. The modular teaching increased my vocabulary in English.
15. The modular teaching helped me identify contextual clues within the articles.
16. The modular teaching helped me complete the task portion.
17. The modular teaching aided in my completion of the vocabulary activities.

Table 4.22 : Descriptive Analysis of Perception Category 1 : Improving Vocabulary Treatment Group N=30

Scale Responses	Items Number				F	%
	9	**15**	**16**	**17**		
4 (SA)	12	14	11	12	49	41
3 (Agree)	14	16	19	18	67	56
2 (Disagree)	3	0	0	0	3	2.5
1 (SD)	1	0	0	0	1	0.5

Data in table 4.22 indicates a positive perception for survey items 9,15,16, and 17.Of the respondents, 56% (67) rated these items as a 3 (agree) and 41%(49) rated these items as a 4 (strongly agree), and only 2.5 % (3) responded rated item 2 and 0.5% (1) respondents rated 1.

It indicates that students have a positive attitude on learning performance using the modular teaching . The results correspond to the studies of Chun and Plass (1997), Davis and Lyman Hager (1997), and Horst, et al. (2005), who reported that using Modular teaching helped EFL learners associate lexical items with different types of

references; therefore, it fostered richness of recall cues and increased retention.

Data related to the survey items on students' perceptions of learning performance in category 2 (agreement on that the modular teaching improves reading skills) include the statements (item 10, 12, 14) as listed below:

10. The modular teaching aided in identifying the main idea in each article.
12. The modular teaching increased my reading skills.
14. The modular teaching provides an easy method for re-reading the articles.

Table 4.23: Descriptive Analysis of Perception Category 2: Improving Reading Skills Treatment Group N=30

Scale Responses	Items Number				
	10	**12**	**14**	**F**	**%**
4 (SA)	11	17	11	39	43
3 (Agree)	18	11	19	48	53
2 (Disagree)	1	1	0	2	2.5
1 (SD)	0	1	0	1	1.5

In comparison to the data revealed in table 4.22, table 4.23 also indicates a positive attitude for survey items 10,12, and 14 in which 53 % (48) of respondents rated this item as a 3 (agree) and 43 % (39) of respondents rated it as 4 (strongly agree) while only 2.5 % (2) respondents rated item 2 and 1.5 % (1) respondent rated item 1. It indicates that students have a positive perception of their own learning performance using a modular teaching.

The results correspond to related studies, such as Cubillos (1998), Liu and Littlewood (1997), LeLoip and Ponterio (2003) and Levine, et al.,(2000). The evidence in these investigations was found to support the modular teaching as beneficial to ESL/EFL reading skills. The data to survey items on students' perceptions of performance in category 3 (agreement that the modular teaching improves grammar concepts) include the statements (item 18, 20) as listed below:

18. The modular teaching grammar utility helped me to complete the task portion of the grammar
20. The modular teaching provided grammar instruction that improved my grammar concepts.

Table 4.24 : Descriptive Analysis of Perception Category 3 : Improving Grammar Concepts Treatment Group N=30

Scale Responses	Items Number			
	18	**20**	**F**	**%**
4 (SA)	11	13	24	40
3 (Agree)	18	17	35	60
2 (Disagree)	1	0	0	0
1 (SD)	0	0	0	0

Data in table 4.24 show a positive attitude for survey items 18, 20. This composed of 60 % (35) subjects who rated item 18 and 20 as a 4 (strongly agree) and 40% (24) subjects who rated item 18 and 20 as a 4 (strongly agree), while there was no student rating either item 2 (disagree) or item 1 (strongly disagree). The result of the students' perceptions toward the modular teaching-learning experience corresponds to the reports of Chuo (2004), Lipscomb (2002), Lou and McGreger (2001) and Snider (2000).

4.4 Summary

The difference between the mean scores of the high achievers of the experimental and control groups on post-test was significant. The p value on t test was 0.000 on 0.05 level, that was highly significant. Thus, it was proved that there was a significant difference between the mean scores of the high achievers of the experimental group and control group on the post-test; it was declared that the performance of the experimental group was significantly different than the performance of the control group on the post-test. In addition to this, the difference between the means scores of the low achievers of the experimental and control groups on the post-test was found to be highly significant. The p value was .000 on 0.05 level, which was highly significant. Hence, it was proved that there was a significant difference between the mean scores of

the low achievers of the experimental and control groups on post-test.

To investigate if the modular teaching improves students' motivation in learning english, the researcher classified students' perceptions into some categories: 1). motivation: agreement on whether modular teaching provides clear instructions and facilitates learning the content, 2) enjoyment: agreement on whether the modular teaching provides learner-control in a learner centric environment allowing comfortable learner's pace, and 3) frustration: agreement on whether the modular teaching is a difficult way of learning English. The results of the students' perception survey from all categories indicate that the modular teaching improves their motivation in learning English. In the next chapter will be discussed about the conclusions

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CHAPTER 5 .
SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary

The purpose of this chapter is not only to reiterate what the researcher found but also to discuss what his findings mean in relation to the theoretical body of knowledge on the topic and his profession. This chapter also addresses what the findings meant for communication professionals in the field of English teaching. It also outlines the limitations of the study and proposed areas for the future research.

As stated in the first chapter that the purpose of this study was to find out the impacts of the Natural Disaster Teaching Module on the secondary school students in West Aceh. The researcher developed a module consisting of five topics related to natural disaster. They were earthquake, tsunami, flood, volcano, and landslide. The topics were adopted from a book entitled '*Teaching Disaster Risk Reduction with Interactive Method*'. The module was developed by following the guidelines given by UNESCO Regional Office for Education in Asia and Oceania (1978).

The literature was reviewed and the experts' opinions were obtained for the development of the components of the module, while the draft module was revised in the light of the opinions of the experts. The components of the module are Title, Introduction, Method of study, General objectives, Specific objectives, Content (Input), Learning activities, Pre-test Post-test and Feedback (UNESCO, 1978).

The basic language skills were focused on designing the activities and self- assessment tests of the units. The learning tasks are designed from easy to difficult level. "Introduction" was given at the start of each unit of the module to motivate and brief the students about the task that are going to be performed by them. General objectives are given at the start of module and specific objectives are given at the beginning of each unit of the module.

Pre-test was conducted to find out the competencies of the students to deal with the material presented in the module. The same pre-test was used as a post-test to find out the difference between the performance of the control and experimental groups to validate module. The students were advised to perform the learning

tasks before skipping to the next unit and checking the answers in the feedback portion. The learning tasks are related to the previous experiences of the students (UNESCO, 1978), and the detailed list of recommended reading material was also given at the end of each unit (Behlol, 2009).

The students were supposed to use the material for better mastery on the learning tasks. The module, consisting of 5 units, and will be taught in 10 weeks and it consumed 40 hours of the students for solving the activities given at the end of the units of the module. Equal time was allocated for the teaching of all the units, which were divided on the basis of the difficulty of the task and length of the units.

The module was validated by conducting lessons in the classroom and having obtained the difference between the performance scores of the experimental and control groups on post-test. For this purpose, the guidelines were obtained from Pareek and Rao (2000). Pre-test was constructed by the researcher to equalize of both the control and experimental groups and to find out the competencies of the students to deal with the material presented in the module (Appendix A). At the end of teaching learning sessions of the designed material as a module, the same pre-test was used as a post-test after changing the arrangements of the items on the pattern of even and odd numbers (Appendix B).

The test was constructed in consultation with the experts and pilot tested .Some of the items were modified on the basis of difficulty levels and discrimination indices to make them valid, in which a significant difference between the mean scores of both the experimental and control groups was measured at 0.05 level by applying t-test. For this purpose, the students of both groups were divided into two halves i.e. high achievers (above the mean score) and low achievers (below the mean score). This division was made on the basis of pre-test scores.

Two sections A and B of 8th class from secondary school of West Aceh, SMPN 1 (name of school) were taken as a sample of the study. The school was selected randomly because the institutions in public sector have similar criteria for students' enrolment, evaluation and curriculum. The teachers teaching at middle level had uniform educational standards for their appointments, working hours and mode of operation in the classroom.

The majority of the students studying in the public sector institutions belonged to the families of middle and lower middle class. The sample students were divided into experimental and control groups. Both of the groups were equated based on pre-test, in which each group consisted of 30 students. Two teachers, of similar educational qualification and teaching experience, were selected from the sampled school; one teacher was randomly assigned to the control group and the other to the experimental group.

The research questions are stated as follows:

1. What are the effects of Natural Disaster Teaching Module on secondary school students'English performance in reading?
2. To what extent does the Natural Disaster Teaching Module improve students' motivation in learning English?

5.2 Findings

1. What are the effects of Natural Disaster Teaching Module on secondary school students'English performance in reading?

   The pre-test and post-test was conducted to answer this question. The both tests signified students' achievement in learning English before and after the module was taught. The students were divided into control and experimental groups in which there were 30 students in each group. The results of the test found that the difference between the means of the experimental and control groups on post-test was significant. The degree of freedom was 58 and the difference between the means was found -17.800. The standard error of the means was found 2.26 while the p value on t test was found 0.000 on 0.05 level that was highly significant. Thus, it was proved that there was a significant difference between the mean scores of the experimental and the control groups on post-test, and it was declared that the achievements of experimental group was significantly higher than the achievements of the control group on post-test.

   These results were also supported by the studies conducted by Pareek and Rao (2000). They believed that the module based learning resource created interest in learning for the individuals, and as a result they were able to demonstrate higher achievements as compared to the students taught

with the textbooks. In this respect, the higher achievements of the students in the experimental group proved the readability, difficulty level and content organization of the material designed as module up to the required standard for the secondary class students. It also determined that the developed material as a module were valid by the higher performance of the students in the experimental group.

Sarwar et al. (2009) revealed that high achievers had better study orientation, study habits and attitude towards study than low achievers. In this respect, the higher achievements of the students in the control group proved the readability, difficulty level, and content organization of the designed material as a module up to the required standard for the secondary level students. It also indicated that the developed material as a module was valid by the higher performance of the students in the experimental group.

In constrast, Ali and Elfessi (2004) proved that module based learning materials had equal benefits for high and low achievers. It involves the students in the learning process and brings learning to their level. It gives freedom to students to proceed at their own pace; therefore, the high and low achievers have an equal chance to be benefited according to their own capacities.

Farha (2004) in her study has revealed that high achievers attributed their success and failure mostly with effort and ability. Also, Raon (2000) indicated that low achievers were less motivated towards studies and perceived academic learning as being less useful. In constrast, as indicated by Sontakey (1986), high achievers and low achievers did not differ significantly in achievement motivation. Also, Elizabeth et al. (2009) conducted a study on learning styles of high and low achievers has revealed that no significant difference exists in learning styles between the low achiever and high achiever students. On the other hand, Julie (1999) in his study on high and low achievers classroom interaction patterns have revealed that high achieving informants initiated more interactions than the low achievers.

Furthermore, McCoach and Siegle (2001) conducted a study on a comparison of high achievers' and low achievers' attitudes, perceptions and motivations. The purpose was to examine

differences in high school students between high achieving and low achieving students'academic self perceptions, attitudes toward school and teachers, and motivation. The study showed that high achieving students exhibited more positive academic self-perceptions, motivation/self regulation, goal valuation, attitudes toward school, and attitudes toward teachers than low achieving students. The two groups differed a lot from each other in all the these areas.

2. To what extent does the Natural Disaster Teaching Module improve students' motivation in learning English?

   For this research, the researcher developed a set of questionnaire to investigate students' motivation in learning English (Appendix G). The questionnaire was developed by referring to some questionnaires samples designed by Johnson and Dalen (2001) Holownych (2001), Manoli, et al., (2007), and Tsai (2006). This set of questionnaire contained 22 items and were distributed to students in Sekolah Menengah Pertama (SMP) 1 West Aceh.

   The questionnaire was based on a five point Likert Scale. The different sections of the questionnaire are: i) students' knowledge on modular teaching, ii) students' engagement in the use of modular teaching iii) students' motivation towards the use of modular teaching in ESL classroom. The remaining items on the survey involved statements about students' perceptions on learning performance toward the use of the modular teaching, which were categorized as 1) agreement that the modular teaching improves vocabulary acquisition, 2) agreement that the modular teaching improves reading skills, and 3) agreement that the modular teaching improves grammar. The result of students' perception survey from all categories affirmed the modular teaching could improve their motivation in learning English. It supported the concept of Barnes et al. (2000) who proved that modular approach creates interest and motivation in the students that positively contribute to their academic achievement. Also, the result correspond to the reports of Chuo (2004), Lipscomb (2002), Lou and Mc Greger (2001) and Snider (2001). During the modular teaching implemented in the classroom, students improved their motivation and felt the module was beneficial

to language learning in West Aceh.

5. 2.1 Implication

In Indonesia, the English proficiency of students has been continually declining over the years as shown in the low performance in national examination in their competencies in the use of English (Ministry of Education, 2010). Students have great difficulty in expressing their ideas in the classroom which could also be attributed to the utter neglect of developing their competencies.

English is considered important at all level of education from elementary to graduate level (Ministry of Education, 2010). To cope with the competitive edge in the age of technology and information,mastering English is the key to academic success (Levine & Reves, 2000). Therefore, the development of the students' English proficiency has become the main focus of teachers, educational policy, and educational stake holders who have seen the need to strengthen students English proficiency.

They have recognized the need to provide the necessary materials that allow the English class to assume an equal role with other subjects (Msanjila, 2007). The use of modules is an alternative instructional design for the learning and satisfaction of the students. In English class, the students work on their own and the teacher's role is to guide and monitor the progress of the students in doing their individual tasks. With the use of the modules in English classroon, students work on various activities related to natural disaster issues that are interesting and challenging enough to maintain focus and attention (Cruickshank, 2003).

It is important for English teacher to be familiar with using module in order to support performance of students. With the aid of a module, English teaching can be delivered in a more motivating and students centred way at the middle school level. Therefore, in this regard, English teachers in Indonesia, specifically in Aceh, are supposed to attend workshop and training on how to use modules that help tem in creating a good atmospher in teaching-learning program.

The reseacher in this study employed contructive approach and to facilitate the English learning of the students. Through this approach, the researcher tried to bring disaster education to promote their English skills.Some of the strategies ,such as the use of visual aids and activities guides as well as adapting reading materials were employed to make the content of disaster materials more

accessible to their students.In addition, content was also made more accessible by providing opportunities for English students to build their vocabulary skills in order to language learning.

Teachers situated their students' learning by engaging them in various active learning activities that had the hands aspect where students were required to engage with the materials and participate in learning disaster, the social aspect where they were required to interact with each other in peer groups creating multiple opportunities for language use, and the meaning-making aspect where they were required to engage critically with the disaster content they were learning.

Moreover, these activities addressed students' needs to learn disaster and English simultanelously (Stoddart & colleagues 2002). The teacher in this study should contextualize their instruction by explicitly linking the exploration of disaster phenomenon and language activities. In this study, the students seemed engaged in communicative interactions during these activities which in turn promoted purposeful language. As seen from the findings of this study, this type of instruction can be achieved in secondary classrooms by involving students in different types of active learning experiences in which they participate in activities and interact with others.

Teachers must look for ways to expose their students to a classroom environment that is both language-rich and supportive where teachers understand and meet the learning needs of their individual students. The findings of this study show that contructive approach provides more opportunities for students to engage and participate in their English class. This approach also has the added benefits of reducing the language burden and providing more avenues for English students to engage with the disaster education while simultaneously increasing their opportunities for improving their English skills.

5.3 Conclusions

Module is a new strategy for arranging learning experiences in education and it has been receiving much attention. The strategy of learning module has become a part of all level of teaching English. A learning module is a self-package dealing with one specific subject matter/unit. It can be used in any setting convenient to the student and may be completed at the learner’s own pace. Sufficient theories and practices are available for the practical applicaation of modular

teaching in the classroom. Thus, a study was conducted in order to check the impacts of modular teaching on secondary school students in West Aceh. Obtained data was analyzed, interpreted and conclusion were drawn.

The comparison of pre-test scores of both the experimental and the control group by applying statistical analysis reflected that there was no significant difference between the two groups, which was 0.352 and both the groups were almost equal with respect to English basic skill. Therefore, the null hypothesis, 'there is no significant between the mean scores of the experimental and control group on pre-test,' was accepted.

On the other hand, the comparison between the means post-test scores of both experimental and the control group showed significantly different which was 0,000 on 0,05 level. Hence, the null hypothesis,' there is no significant different between the mean scores of the experimental and control group on post-test, 'was rejected.

The difference between the mean pre-test scores of high and low achievers of the experimental group was significant (0,000 on 0,05 level). Hence, the null hypothesis,'there is no significant difference between the mean scores of high and low achievers of experimental group on pre-test,'was rejected. Also, the comparison of high and low achievers of experimental group on post-test was found significantly different , which was 0.000 on 0,05 level. Hence, the null hypothesis,' there is no significant different between the mean scores of high and low achievers of experimental group on post-test, 'was rejected.

The comparison of mean scores of high and low achievers of control group on pre-test was significantly different which was 0.000 on 0,05 level. Therefore, the null hypothesis,'there is no significant different between the mean score of high and low achievers of control group on pre-test,'was rejected.

The comparison of mean scores of high and low achievers of control group on post-test was also different which was 0.000 on 0,05 level. Therefore, the null hypothesis,'there is no significant different between the mean score of high and low achievers of control group on post-test,'was rejected.

Additionally, the difference between the mean scores of high and low achievers on pre-test was significant (0.001 on 0,05 level). Thus, the null hypothesis,'there is no significant difference between the mean scores of high and low achievers of the experimental and control groups on pre-test,'was rejected. Also, the difference between

the mean scores of high and low achievers on post-test was significant (0.005 on 0,05 level). The null hypothesis,'there is no significant difference between the mean scores of high and low achievers of the experimental and control groups on post-test,'was rejected

Furthermore, to investigate if the module improves students' motivation in learning English in the class room, the researchers classified students perceptions into some categories; 1).Motivation: agreement on modular teaching provides clear instruction and facilitates learning the content, 2). Enjoyment: agreement on whether the modular teaching provides learner-control in a learner centric environment allowing comfortable learner's pace, and 3) Frustration: agreement on whether the modular teaching is a difficult way of learning English.

The remaining items on the survey involved statements about students' perceptions on learning performance toward the use of the modular teaching, which were categorized as 1) agreement that the modular teaching improves vocabulary acquisition, 2) agreement that the modular teaching improves reading skills, and 3) agreement that the modular teaching improves grammar. The result of students' perception survey from all categories affirmed the modular teaching could improve their motivation in learning English.

It supported the concept of Barnes et al. (2000) who proved that modular approach creates interest and motivation in the students that positively contribute to their academic achievement. Hence, the hypothesis, 'the modular teaching does not improve students' motivation in learning English,' was rejected.

5.4 Recommendations

The researcher finalized his work by giving some recommendations to those who are involved in educational stake holders in Indonesia, specifically in West Aceh :

5.4.1 Recommendation for the Policy Makers

The policy makers may take steps in administrative and academic areas for the development of modules in the system of education at middle school level in West Aceh. As the study proved that module-based learning material was more effective, which develops independent, learning habits in the learners. In this regard, the Ministry of Education may provide sufficient funding facilities and necessary administrative and academic help to develop modules

at secondary level . They may support the school libraries by strengthning and enriching with sufficient books on the development of module. Also, the school principles in West Aceh should have been provided special funds to perform this responsibility.

Teacher training institutions may conduct workshops for the training of the teachers for the development of modules for the study of different subjects at secondary schools level. The modules can be validated by teaching in the classroom on high, low and average ability students prior to organizing an actual session of teaching in any discipline at any level with the help of modules.

The institution should train teachers to revise and update module continuously to incorporate the new developments in the light of latest researches in the respective subjects. However, before introduction of modular teaching at large scale in schools , it is necessary to arrange in service training of teachers along with preparation of modular instructional material. This study was deficient in respect of content covered and time used. The quality could be improved if more resources were available.

In addition, Textbook Board may take steps for writing of the English textbooks and other disciplines on modular patterns. These books may be validated by conducting lessons in the classrooms with their help as proposed in this study. Therefore, there is need to transform the textbooks of various subjects in modular form since the traditional textbooks do not meet the criteria of modular approach.

5.4.2 Recommendation for Professional ESL Practitioners or Teachers in Aceh

Educational experts believe that all students deserve an education that leads them to do things they never thought possible. Therefore, we should seek to create an environment where ESL learners have the courage, skills, and support to meet the same academic goals as all other students. When given sincere respect, personally meaningful instruction, and engagement in a diverse community of learning, ESL learners thrive and become leaders of their own learning.

English teachers in West Aceh should believe that students learn best when engaged in authentic, meaningful, and developmentally appropriate tasks that generate an immediate urgency to learning language (Willis, 2007). For example, ESL

learners may develop their English skill when they learn English by using an intructional module. In teaching students using a modular teaching, teachers should be able to create a good school environment that may help students develop the courage necessary to learn new language materials (Igoa,1995; Rodriguez, 2008).

Moreover, the findings of this study demonstrated significantly different achievement between the experimental group and control group students. This results axiomatically verified the value of integrating natural disaster education into ESL class in Indonesia, specifically in Aceh. Therefore, teachers are encouraged to participate in training to develop their disaster knowledge in order to effectively facilitate English instruction.

When designing and delivering English instruction, teachers should appropriately use the natural disaster module to maximize students' learning experience by presenting both verbal and visual materials simultaneously to construct referential connections. Also, It was observed that students significantly enhanced their motivation in performing specific tasks related to lesson taught through the natural disaster module module. Previous study (Chuo, 2004) and other articles (Castronova, 2002; Lou & MacGregor, 2001; Marco, 2002; Snider & Foster, 2001) indicate that the instructional module benefits ESL learners.

Based on the results of this current study, it m ay be insightful for ESL teachers to embrace the natural disaster module for improving students' understanding in Natural disaters as well as English skills. With the aid of the natural disaster module, ESL materials will be delivered in a more motivating and learner-centric way at secondary school level.

The natural disaster module design and implementation workshops should be attended in order to properly incorporate module into instruction. In designing of, ESL teachers need to provide proper scaffolding to students, such as a study guide and a concept mapping template in order to keep students on task and to facilitate higher order learning (Lou & MacGregor, 2003).

In ESL instruction, English teachers who are teaching in secondary level should understand student difficulties. They should also act as a guide through the natural disaster module for the students. In addition, the module has enabled student to utilize existing knowledge to develop new understandings. The approach has changed the role of the language teacher. In a traditional classroom setting, the teacher is a knowledge transmitter. However,

the role a teacher plays in the modular teaching is more of a facilitator (Anton, 1999).

5.4.3 Recommendation for Further Research

Most of today's students are not sufficiently to learn about disaster education using a module, and thus may not be prepared to understand any issues related to. Also, an interactive feedback facility embedded in the natural disaster module, could be used to determine if there is a correlation between the frequency of using the feedback mechanism and students learning performance.

The effect of natural disaster teaching module should be investigated in a variety of learning disciplines in the subject of Physics, Chemistry, Mathematics, Computer science, Indonesian studies, and Islamic studies on the same pattern, and some other variables such as attitude, background status of the student, level of intelligence should be controlled.

In addition, a more in depth analysis of students' motivation in learning English using a module is needed. It should include exploration of what the teachers' and students' role play and how they interact in a module learning environment by using both observation data method and motivational survey.

This study only examined the approach used for teaching English students in secondary content area classes. Future research could examine the type of learning assessments that would be more organic to such instructional strategies. As indicated by Taraban et al (2007), contructive approach is more consistent with student-centered classes. Future research may identify essential aspects of contructive approach and investigate how they apply to English classroom in high school settings.

Additional studies could research different ways of incorporating multiple intelligences in English classroom. Also, it would be beneficial to investigate the type of tasks teachers could provide and the manner in which they could provide them to enable their students to participate meaningfully and how conceptual learning is imparted by these strategies. Investigating ways in which teachers could design activities that promote higher order thinking skills in their students would also help.

Moreover, future research could examine how constructist approach can maximize language use in order to help students develop their language proficiency. Allowing students to work in heterogeneous group is one way to promote language use. If lessons

and activities are not designed appropriately, students could get off task easily in group settings. An area of future research could be investigating some of the features of well developed English lessons and activities suitable for group work with students.

Future studies might examine the specific demands involved in learning academic language and ways in which teachers could meet those demands in order to help their English students. Based on the findings of this study, new research could examine different types and levels of language curricular materials particularly appropriate for diverse groups of English learners.

Furthermore, there needs to be more research conducted in the field of constructivist- based teaching and English Language learners' understanding of science. This was an exploratory case study to examine the middle school science classroom of a constructivist-based teacher and how constructivist teaching helps students understand science. Since this was an exploration to identify the relationships between contructive approach and student understanding, this case was limited to teachers and his students in one specific environment. Therefore, constructivism is an appropriate strategy for teachers to help students understand science.

Further research is needed to determine if these findings are transferable to a larger audience, or if they are unique to this teacher. It is possible that as an experienced teacher, other teaching variables might be equally influential in helping English language learners understand science. In addition, further research should involve a large number of teachers and students, additional grade levels, additional subjects, and additional environments.

Future research might also explore the constructivist-based teaching of teachers who have endorsements in both middle school science and English Second Language. Examining teachers who have a middle school science endorsement and English Second Language might lead to new discoveries explaining how English language learners understand science at the middle school level.

Additionally, further research is needed to more deeply understand the relationship between constructivist-based teaching, assessment strategies, and male and female English Language Learners. In education, we face important decisions regarding the education of our children that will affect our lives and the lives of countless millions. In a time of increased accountability and testing,

we need to be sure our testing strategies are free of bias as well as language and cultural bias.

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The Indonesian government has realised the importance of education in these recent days by increasing the investment in education in all fields including English language studies. This study purported to irnvestigate the impacts of the use of Natural Disaster Teaching Module (NDTM) on secondary school students in West Aceh, Indonesia on students' academic, English learning achievements, and students' motivation in learning English. The population of the study comprised the secondary school students studying in a public school in Acheh, Indonesia. The control group and the experimental group was of equal size, each having 30 students from the 8th grade. The pretest and posttest of the same test was administed on the students in both groups in the beginning and end of the study. The questionanaires were also distributed to the two groups upon completion of the experimental course. The teachers were also required to answer the questionnaires. The quasi-experimental teaching was conducted during the regular teaching hours of English class. The pretest results were used to identify the English proficiency of the two groups in the beginning of course. The result indicated that there was a significant difference found between the two group scores as shown in the posttest. Besides, only two out of seven null hypotheses were accepted. The results of the survey also indicated that the modular teaching could improve students' motivation in learning English. The study indicated that the materials designed were useful for both groups of students (low and advanced), and the materials also enabled them to comprehend the difficult concepts and keep them on track in the learning process. This study recommends that educational policy makers take proactive steps in future for the development of English education at both the primary and secondary school levels. The teacher training institutions should train teachers in developing and applying different modules in different subjects.

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