Sudan University of Science and Technology

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Exploring the Importance of Developing Critical-Thinking Skills for Sudanese Universities Students of EFL Learners through Collaborative Learning

استكشاف أهمية تنمية مهارات التفكير النقدي لدى دارسي اللغة الإنجليزية لغة أجنبية بالجامعات السودانية من خلال التعليم التعاوني

A Case Study of some Sudanese University English Language Learners

A thesis Submitted in Fulfillment of the Requirements for Degree of PhD in English Language (Applied Linguistics)

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Dedication

To my

Parents,

Husband,

and

Children

To the soul of my former supervisor

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Abstract

This study aims to explore the importance of developing critical-thinking skills for Sudanese universities students of EFL learners through collaborative learning. The significance of the study is to encourage teachers of English language at university level to use this form of collaborative learning method in their classrooms. To achieve such a goal the researcher distributed a questionnaire to the respective teachers at faculty of languages, Sudan University of Science and Technology. The study used the descriptive and analytical method, with the use of statistical package of social science (SPSS) for analysis. The study reached the following findings: critical thinking raises learners' awareness to identify and state issues clearly, logically and accurately, critical thinking raises learners' ability to develop own position and back arguments; critical thinking has ability to make critiques and integrate other perspectives. In addition, the research recommends that students have to work in-group to enhance their communication skills, teacher should depend on critical thinking assignments to hold student's thinking to intellectual standards, teachers should encourage independence and creativity thinking strategies learning during lessons, and the study is concluded with some suggestions for further studies.

Abstract

(Arabic version)

تهدف هذه الدراسة إلى استكشاف أهمية تنمية مهارات التفكير النقي لدى دارسي اللغة الإنجليزية لغة أجنبية بالجامعات السودانية من خلال التعليم التعاوني. تكمن أهمية الدراسة في تشجيع معلمي اللغة الإنجليزية على المستوى الجامعي على استخدام هذا النوع من أسلوب التعلم التعاوني في فصولهم الدراسية. لتحقيق مثل هذا الهدف. قامت الباحثة بتوزيع استبانة على المعلمين المعنيين بكلية اللغات ، جامعة السودان للعلوم والتكنولوجيا. استخدمت الدراسة المنهج الوصفي والتحليلي مع استخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS) للتحليل. توصلت الدراسة إلى النتائج التالية: التفكير النقي يرفع وعي المتعلمين لتحديد القضايا وتحديدها بشكل واضح ومنطقي ودقيق ، والتفكير النقي يرفع قدرة المتعلمين على تطوير المواقف الخاصة بهم والحجج الخلفية ، والتفكير النقي لديه القدرة على النقد ودمج وجهات النظر الأخرى. ويوصي البحث بأن يعمل الطلاب في مجموعة لتعزيز مهارات الاتصال لديهم ، ويعتمد المعلم على مهام التفكير النقي لجعل الطلاب يفكرون وفقاً للمعايير الفكرية ، وينبغي على المعلمين تشجيع استراتيجيات التفكير الاستقلالية والإبداعية أثناء التعلم أثناء الدروس ، واختتمت الدراسة ببعض الاقتراحات لمزيد من الدراسات.

Table of contents

CHAPTER THREE

METHODOLOGY

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

CHAPTER FIVE

MAIN FINDINGS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDIES

List of Abbreviations

Abbr.	Meaning	Abbr.	Meaning
EFL	English As A Foreign Language	NSO	Numerical Scale Only
APA	Statement Purposes Assessment	NLC	Numerical Learned Comments
CL	Collaborative Learning	MMR	Medication Management Review
SCT	Sociocultural Theory	EAP	English Academic Purpose
ZPD	Zone Proximal Development	ATIS	Achievement Test In Integrated Science
TAPPS	Think-Aloud Pair Problem Solving	SVII	Science Vocational Interest Inventory
WNCP	Western And Northern Canadian Protocol	SOAS	Science Oriental Attitudinal Scale
PLTL	Peer-Led Team Learning	RBITT	Research-Based Information On Timely Topics
CCTST	California Critical Thinking Skills Test	ColeCTTE	Collaborative Learning And Critical Thinking In Technology-Enhance Environments

Definitions of Terms

Term	Definition
Critical thinking	Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.
Collaborative learning	Collaborative learning is the educational approach of using groups to enhance learning through working together. Groups of two or more learners work together to solve problems, complete tasks, or learn new concepts.

Chapter One

Introduction

Chapter One

Introduction

1.0. Overview:

This chapter provides description of the theoretical framework of the study. It focuses on the study and the study methodology.

1.1. Background of the Study Problem:

Today's modern methods of learning are trying to encourage teachers and students to combine their intellectual efforts through interaction, in order to try to explore, understand and solve the problems, generate ideas, and finally create a product.

The tendency of modern learning is that students are involved in all activities related to the process of making teaching materials. Collaborative learning has a strong influence on critical thinking through discussion, clarification of ideas, and an assessment of others' ideas. To achieve this goal, the teacher should observe the development process of students in terms of developing skills of learning. The role of teachers in collaborative learning is significantly changed.

According to many authors, when we compare the collaborative learning with passive teaching; group work is giving much better results. Collaborative learning requires working together towards a common goal. This type of learning has been called by various names: cooperative learning, collaborative learning, collective learning, learning, peer teaching, peer learning, or team learning. What they have in common is they all incorporate group work.

However, collaboration is more than co-operation. Collaboration entails the whole process of learning this may include the student teaching one another, students teaching the teacher, and of course the teacher teaching

the student, too more importantly, it means that students are responsible for one another's learning as well as their own and that reaching the goal implies that student have helped each other to understand and learn.

The basis of collaboration learning is constructivism: knowledge is constructed, and transformed by students. The learning process must be understood as something a learner does by activating already existent cognitive structures or by constructing new cognitive structures that accommodate new input. Learners do not receive knowledge from the teacher; teaching becomes a transaction between all the stakeholders in the learning process.

Collaboration can have powerful effects on student learning, particularly for low achieving students. However, a number of factors may moderate the impact of collaboration on student learning, including student characteristics, group composition, and task characteristics.

Proponents of collaborative learning claim that the active exchange of ideas within small groups not only increases interest among the participants but also promotes critical thinking. According to Johnson and Johnson (1989):

> "There is persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than students who work quietly as individuals."

Ohta, (1995) assume that:

> "collaborative talk provides more chance to produce language in a functional manner."

This study sheds light on developing critical thinking through collaborative learning. Empirical research suggest that learners begin developing critical thinking competence at a very young age. Although

adult learners after exhibiting deficient reasoning, in theory, all learners can be taught to think critically by using provided explicit instructions of cooperative or collaborative learning techniques, and constructivist approaches that placed students at the center of the learning process.

1.2. The Study Problem:

This study is planned to investigate how critical thinking skills can be improved and to explore the impact of it on developing collaborative learning strategies. It is clear that most of EFL classroom teaching and learning processes tend to be rather traditional. In other word, group work techniques are nearly ignored and that most of the teaching is done through teacher-centered mode, despite the doubts raised about language learning and its effects on education, the output of collaborative strategies is considered as important components in the process of curriculum development. Therefore, this research going is specifically going to confirm the fact that awareness of learners' thinking and conceptions develop through collaborative strategies; and learners' prosperity can be developed to demonstrate higher-order thinking. Also to affirm those learners' roles are largely ignored by the adoption of teacher-centered mode rather than students-centered mode.

Collaborative learning strategies, on the other hand, are also intended, as in this study, to boost critical thinking skills in EFL learners, regardless of their level or standard. Teaching, as matter of fact, tend to follow teacher centered mode, in other words, learners' roles in the learning process are largely ignored. It is not crystal clear who is to blame; the teacher or the learners frankly speaking, most classroom observers seem to blame the teachers for they usually take the lion's share of classroom time, allowing learners only a minimum share of it. Therefore, this study is an attempt to exploring the impact of using critical thinking skills on the development

of collaborative learning for University Students of EFL as foreign language.

1.3. Questions of the Study

1- To what degree can critical thinking raise the awareness of learners especially universities students?

How can the criteria used for evaluating critical thinking facilitate good judgment?

2- Does critical thinking improve individual's intellectual products through collaborative learning?

3- How can collaborative learning become an efficient and effective process?

4- does collaborative learning strategies support maintain creativity?

5- does critical thinking lead student to recognize the connection between logic and philosophy?

1.4. Hypotheses of the Study

This study is planned to test the following hypotheses:

1- Critical thinking raises the awareness of learner's own thinking and conception.

2- Critical thinking improves individual's intellectual products through collaborative learning.

3- The criteria used for evaluating student’s critical thinking facilitate good judgment.

4- Collaborative learning strategies support maintain creativity.

5- Critical thinking leads student to recognize the connection between logic and philosophy.

1.5. Objectives of the Study

The aim of the current study is to explore the importance of collaborative learning among university students in acquiring English as a foreign language. It attempts to achieve the following objectives:

1- To identify the ways to raise the critical thinking awareness of learners.
2- Exploring the importance of collaborative learning among university students.
3- To know the improving of critical thinking in individual intellectual product through collaborative learning.
4- To know the criteria which used for evaluating collaborative critical thinking.
5- To know the adoption of scientific approaches, maintain the creativity supported by collaborative learning strategies.
6- To know the efficient and effective process of collaborative learning.

1.6. Significance of the Study

English language teachers and learners can use the findings of this study as a guide. No doubt that these findings will encourage teachers of the English language to use collaborative learning method in their classrooms.

1.7. Methodology of the Study

For conducting the present study, a descriptive and analytical method will be adopted. It discusses the methodology, population, the subject, ant the procedure.

The population investigated in this research consists of teachers of English language who have been teaching English Language secondary

level also students of fourth year from Sudan University of Science and Technology.

1.8. Limits of the Study

The study will be limited to students of fourth year at Sudan University of Science and Technology College of Languages, Department of English Language, and also teacher of English language in secondary schools.

The data will be collected by questionnaire and analyzed by SPSS. Fourth year, department of English Language forty students, male and female. And thirty teachers of English Language in secondary schools.

1.8. Structure of the Study

The research is divided into five chapters:

Chapter one presents introduction, statement of the problem, objectives of the study, questions, hypotheses, significance, limits, methodology, definitions of the terms and structure of the study. Chapter two reviews the

relevant literature along with some studies conducted and results obtained. Chapter three presents methodology of the research. It describes the subjects responding to the questionnaire, used to collect data, and procedures to obtain the data from the questionnaire. The chapter also explains how these tools are handled and processed to qualify the validity and reliability of the research. Chapter four analyzes and discuss the data obtained by research tools. Chapter five sums up the findings that the researcher has reached, and it forwards some recommendations and suggestions for further researches in the field.

CHAPTER TWO

LITERATURE REVIEW AND RELATED PREVIOUS STUDIES

Chapter Two

Literature Review and Previous Studies

2.0. Overview

This chapter examines the literature related to the potential of critical thinking skills to promote the development of collaborative learning and rationalizes the relevance of the study. The chapter first provides the etymology and a brief history of the idea of critical thinking followed by an overview of the various conceptions of critical thinking and their implications for learning and teaching. Research relevant to the development of critical thinking skills in academic learning via peer evaluation discussed in three main parts: critical thinking in academic learning; fostering critical thinking via assessment; and key issues in the implementation of peer evaluation activities to promote critical thinking in academic learning.

2.1. The Etymology and Brief History of Critical Thinking

The word „critical“ derives from the ancient Greek „kritikos“ meaning discerning judgment and kriterion“ which means standards, thus implying the development of "discerning judgment based on standards"(Foundation for Critical Thinking, 2009, para 6).

Critical thinking originates from the Western philosophical traditions of ancient Greece.

From this ancient Greek tradition emerged the need, for anyone who aspired to understand the deeper realities, to think systematically, to trace implications broadly and deeply, for only thinking that is comprehensive, well-reasoned, and responsive to objections can take us beyond the surface. (*The Critical Thinking Community, 2009*, para 4)

Socrates and his followers including Plato and Aristotle are credited with establishing critical thinking. Socrates saw dialogue as useful even if it did not solve a problem or produce a specific result. Dialogue which

fosters critical thinking can clarify problems and bring solutions closer. "Socrates understood himself not as a teacher, but as a midwife easing the birth of critical self-reflection" (Delius, Gatzemeier, Sertcan, &Wünscher, p. 9). Socrates established the need to empower oneself by thinking profoundly over matters and not easily accepting others‟ thoughts, especially those in authority (The Critical Thinking Community, 2009*).* He gained a reputation as the ideal critical thinker through his method of questioning and cross-examination of positions (Caroll, 2004).

This research, however did not attempt to develop into Socrates‟ and his followers‟ philosophical ideas of critical thinking as the research interest was mainly on the development of the critical thinking skills via the curriculum.

2.2. Definitions of Critical Thinking

The ability to think critically has been identified as one of the learning outcomes of university education. Since critical thinking is so significant in education and the real world of life, it is worth exploring the different ways the term is used. However, like all abstract concepts, critical thinking is hard to define and results in different interpretations in different contexts. As such, critical thinking is also open to definitions from multiple perspectives: philosophical, psychological and educational. Some definitions are broad and some others are narrow. Attempts to define this complex thinking began over 100 years ago and its meaning has evolved since then. One of the earliest definitions was developed by John Dewey, an American philosopher, psychologist and educator who is known as the „father‟ of the modern critical thinking tradition (Fisher, 2001). He defines it as an “active, persistent and careful consideration of a belief or supposed form of knowledge in thelightofthegroundswhichsupportitandthefurtherconclusionstowhichitten ds” (Dewey, 1938, p. 9). In this definition, Dewey emphasizes reflective

thinking, asking oneself questions
about what to believe through evaluating reasoning, and considering the implications of one's beliefs.

Edward Glaser, the co-author of one of the world's most widely used tests of critical thinking, the Watson-Glaser Critical Thinking Appraisal defines critical thinking as:

1- an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experience;
2- knowledge of the methods of logical enquiry and reasoning; and
3- some skill in applying those methods" (Glaser, 1941, p. 5). Compared to Dewey's definition, which stresses the act of thinking, Glazer identifies three elements of critical thinking: having an attitude of being thoughtful when dealing with problems; knowing; and being able to apply the methods of logical enquiry and reasoning.

The urge for an agreed definition was one of the factors leading to the APA Delphi project being conducted. The two-year project (1988-1990) involved 46 American and Canadian panelists representing different disciplines of studies led by Dr. Peter Facione. An international expert consensus definition of critical thinking was determined and is published in the APA Delphi Report entitled (Critical thinking: A statement of consensus for purposes of educational assessment and instruction) (Facione, 1990a). The agreed definition of critical thinking is "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (p. 2).

Despite the consensus achieved by this large group of experts and the

various earlier definitions of critical thinking, attempts to define it still continue as part of the critical thinking tradition to suit the current topic pertaining to the higher order cognitive skills. A later definition by Scriven and Paul (2004) sees critical thinking as "the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action" (p. 1). These scholars propose an active and skillful use of a set of information processing skills to guide belief and action.

In yet another definition, knowledge is stressed as the basis for the development of alternative ideas and assumptions. According to Yancher and Slife (2003) critical thinking is a cognitive ability that: (1) requires knowledge of the assumptions and underlying world views of a particular discipline or field of inquiry and (2) involves developing ideas and assumptions that are alternatives to existing views. Another relatively recent definition has been provided by Tsui (2003). Tsui sees critical thinking, in a university environment, as involving students‟ abilities to identify issues and assumptions, recognize relationships, make correct inferences, evaluate evidence or authority, and deduce conclusions.

According to Hager, Sleet, Logan and Hooper (2003), the most widely accepted characterization of critical thinking as incorporating abilities and dispositions is due to Robert Ennis (a co-author of other widely used critical thinking test instruments: the Cornell Critical Thinking Test (1985) and the Ennis-Weir Critical Thinking Essay Test (1985)). Underpinning these dispositions and abilities is Ennis‟ conception of critical thinking as "reasonable, reflective thinking that is focused on deciding what to believe and do" (Ennis, 1985, p. 54).

This definition has been considered the generic definition by many

critical thinking scholars (Huitt, 1988; Fisher, 2001; Jenicek& Hitchcock, 2005). Ennis claims that his conception of critical thinking is superior because it includes the following features:

1- focus on belief and action;
2- makes statements in terms of things that people actually do or should do;
3- includes criteria to help us evaluate results
4- includes both dispositions and abilities.
5- disorganized in such a way that it can form the basis for a thinking-across-the-curriculum programme as well as a separate curriculum-specific critical thinking course at the level (Ennis, 1987).

While there are many other definitions of the concept of critical thinking the definitions generally show clearly that critical thinking has both cognitive and affective domains.

2.3. Implications of Conceptions of Critical Thinking for Learning and Teaching

Hatcher (2000) states that a clear conception of critical thinking is integral to education. This is especially because the conception might differ according to the context in which it is used. Without a clear understanding of the concept of critical thinking, difficulties await educators who endeavor to teach and measure it. In learning, for example, Flateby (2011) argues that a clear understanding of how critical thinking applies and relates to learning is important before both critical and learning skills can be developed and assessed.

How critical thinking is conceptualized determines the content of a course and the course assessment. What to include and exclude from a course in critical thinking tends to vary if there is no agreement among teachers over what constitutes critical thinking. Assessment will also be adversely affected as the disagreement will lead to difficulty in setting standardized

tests to measure how much critical thinking learning has taken place. In actuality, assessment should reflect what is taught. If the ability to make inductive or deductive reasoning is to be taught, then measurement of this specific cognitive skill should be undertaken. If critical thinking dispositions are to be developed, the measurement should be geared to measuring them and in accordance with the pre-defined context (AbKadir, 2007).

2.4. Collaborative Learning

Collaborative learning is broadly defined as “a situation in which two or more people learn or attempt to learn something together”, and or more specifically as joint problem solving Dillenbourg, (1999, p.1).

Roschelle and Teasley define collaboration more specifically as “mutual engagement of participants in coordinated effort to solve problem together”, as cited in Dillenbourg(1996, p.2).

Roschelle, (1992) frames collaboration as an exercise in convergence or construction of shared meanings and notes that research on conversational analysis has identified features’ of interactions that enable participants to reach convergence through the constructions, monitoring, and repairing of shared knowledge.

Roschelle and Teasley, (1995) define collaboration as “coordinate, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem” (p.70).

Although there has been an emphasis on collaboration for the past fifty years.

There is a lack of consensus as its definition and a limited understanding of the process of collaboration. Attributes of the phenomenon include:

Reciprocity, Crow (1998); congeniality anger, (1993); partnerships Austin, (2006);

Interaction between equal parties Friend and Cook, (2000, p.6); cooperation

Fitzgibons, (2000); information sharing, shared vision Vygotsky, (1962) joint negotiation of common ground(Olson and Olson n.d.,18).

Kukulska_Hulme,(2004) explain that collaboration is a "philosophy of interaction".

A definition proposed by Shrage, (1990) is: collaboration is the process of shared creation two or more individual with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own.

Collaboration creates a shared meaning about a process, a product or an event. In this sense, there is nothing routine about it. Something is there that wasn't there before. Collaboration can occur by a. mail, over the phone lines, and in person. But the true medium of collaboration is other people.

Real innovation comes from the social matrix… [And] is a relationship with a dynamic fundamentally different from ordinary communication.

Collaboration was regarded as a way of changing instruction in order to have a positive effect on student learning outcomes, such as higher standardized test scores Lance, Rodney, and Hamilton Pennell (2001).

2.5. Foundation of Collaborative Learning

This section presents the supporting theories of CL from Vygotsky's social constructivist theory of mind, second language acquisition (henceforth SLA), and learning motivation. These theories explain the theoretical and conceptual foundations of CL, which have

steered this study given that it focuses not only on individual learner's cognitive development, but on the overall development of learners as well.

2.5.1. Vygotskian Perspective

The concept of CL is largely rooted in Vygotsky's sociocultural theory (SCT)which views learning as inherently a social process activated through the Zone of Proximal Development (ZPD) Dillenbourg, (1999).

Vygotsky's sociocultural constructivist epistemology and highlight how learning is mediated in accordance with context and experience with peers. This view illuminates the causal relationship between social interaction and individual cognitive development.

Learning, from the sociocultural perspective, is essentially a social term rather than individual in nature, where interaction constitutes the learning process Lantolf and Thorne, (2006). Social interaction is viewed as a prerequisite for the growth and development of cognition, and the physical and symbolic tools that mediate human interaction cannot be separated from the social milieu in which it is carried out Wertsch (1993). In other words, mental functions are intertwined with

Socio-culturally determined factors.

Vygotsky, (1978) then based his paradigm on CL, claiming that working with a more capable person is pertinent to personal development. Vygotsky

focused on the individual powerfully rooted in a CL context and famously made the following observations: learning is first mediated on asocial level between a child and other people in his or her environment, and then is internalized by the child on an individual level. Secondly, learning on the social level often involve mentoring provided by more

knowledgeable persons, either by adults or peers, who engage in activity with less experienced persons in a process of guidance or collaboration. In order for level, language serves as a psychological tool to regulate objects, others, and oneself in organizing functions that are critical to mental activity.

CL in the Vygotskian tradition aims at social interaction either among students or between students and essentially assists students in advancing through the Zone of proximal development (ZPD), which he defined as: "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers Vygotsky, (1978, p.86).

This definition indicates that an individual has two levels of development. The actual development refers to already – attained mental functions. At the actual level, the individual works independently without help. In contrast, the potential level of development refers to the functions that the individual is not able to perform independently. When the individual works collaboratively with more capable peers, the potential level of development will be increased. One's ability to perform cognitive tasks independently is premised on the prior social process, as this is regarded as the basic tenet of socio-culturalism in which learning is situated within a given context and is influenced by the social and cultural activities one has experienced.

Based on these discussions, CL by nature creates opportunities to develop students' cognition by activity communicating with more proficient peers and thereby expanding conceptual potential. Thus, within ZPD, more capable students can provide peers with new ideas and thereby establish a mutually beneficial social process of learning. Peers scaffolding also

serves as a mediating tool to promote learners ZPD and it has a valuable role to play in language learning situations.

2.5.2. SLA Perspective:

In SLA, perhaps the best-known perspectives for looking at CL stemmed from Krashe's, (1985) Input Hypothesis. Output Hypothesis, both of which provided rationales for why L2 learners achieved better linguistic competence. The input hypothesis posited that SLA is driven by comprehensible input Krashen, (1985). In other words, the development of a second language depends on the amount of comprehensible input that one receives. This implies that people acquire language when they understand what they have heard or read. In contrast, if the input is above the current level ofL2 proficiency, and is thus not comprehensible, the input would not contribute to L2 learning. The output hypothesis, however, claimed that while comprehensible input is necessary for learning, learners also need opportunities to speak and produce output in order to restructure their inter language grammar Swain, (2000). When students are asked to clarify their output, they reprocess and modify their inter language utterance, which lead to the development of L2 Pica, (1994).

During CL, the exchange of ideas makes the negotiation of meaning possible. Through this process, students have the opportunities to both receive and produce output. CL makes the input possible as the linguistic level of members in CL groups may be more or less at the same level. In a similar vein, Ghaith and Yaghi, (1998) also found that CL enriches the language classroom with comprehensible input as well as promoting frequent and communicative classroom talk in a supportive environment.

Long's interaction hypothesis, (1996) built on the importance of comprehensible input to L2 learning, and highlighted the role of social

interaction in promoting the amount of comprehensible input that students receive Krashen,(1981) this type of interaction includes learners seeking confirmation and clarification when they do not understand the input.

CL has the potential to move students away from their dependence on their teachers and extend their learning on their own Johnson and Johnson, (1989).

2.5.3. Motivational Perspective

In various learning context and situations are related to non-cognitive aspects. Learning does not only involve cognitive skills but also includes aspects of how they feel about learning Cantwell and Andrews, (2002). In the field of L2 or foreign language learning, motivation has been considered as an important factor that determines L2 achievement and attainment. It serves as a driving force to generate learning at the start, and later as a sustaining impetus while in the long tedious process of learning a target language.

Motivational theorists consider that the inherent structure of CL creates a situation in which members in the groups are able to attain personal learning objectives if the co-constructive learning is successful.

Another theory related to the motivational perspectives on CL is the social interdependence theory. Unlike the idea from motivational theorists that students ‘collaboration is due to the incentive structures, social interdependence theorists emphasize that the reasons for peer assistance is because of the care of the other members in the group. This perspective postulates that the effects of CL are strongly mediated by the cohesiveness of the group, which, according to Clement et al, (1994), is a significant component of L2 motivation. Group cohesiveness is an index

of the level of group development, and it determines peer interaction, which in turn determines the learning outcomes. Slavin, (1995) further indicates that cohesive groups are more productive than non-cohesive ones. In other words, positive interdependence resulted in primitive interaction encouraged and facilitated one another's efforts. The more time members of group spend together, the higher inter-member acceptance and collaboration become Slavin,(1995).Dornyei,(1997) therefore views CL as an effective way of creating a cohesive group for the following reasons. It recognizes the importance of teambuilding and contains regular self. Evaluation and the emerging cohesiveness in CL classrooms is also a function of the special dynamics of the CL process.

Furthermore, are able to control and organize their learning. The motivation lists base their claim on extrinsic motivation, whereas the stance of social cohesion theorists' rests on intrinsic motivation. However, both perspective combined, as Dornyei, (1997) suggests, generate a powerful motivational system considered to be particularly fostered by CL, which includes high incentive and high expectations of success as well as intrinsic and extrinsic motivation.

2.6. Characteristic of Collaborative Learning

Jacob et al, (1996) claim that group presents a precondition for CL, and is the word that should be emphasized, being the fundamental structure in which learner work and learn. Johnson and Johnson, (1989) highlight the goal structure of CL, which helps to give an understanding of how it works differently from traditional learning. According to Johnson and Johnson, (1989), the goal structure refers to the type of interdependence amongst students as they strive to achieve learning goals, and can be classified into three categories:

1- In a collaborative goal structure, an individual is able to achieve learning goal when their peers also achieve theirs.
2- In a competitive goal structure, an individual student achieves while others do not.
3- In the individualistic structure, no interrelation between the goal attainments of the different students involved, indicating that one's success is independent from that of others.

2.7. The Benefits of Collaborative Learning

The benefits of collaborative learning:

Generally, collaborative learning was found among universities students to:

2.7.1. Provide more Language Practice Opportunities:

This perspective is highly supported by the traditional method as a means to maximize students, language practice opportunities, as students work together to fulfill a common goal by using the basic language skills Long and porter, (1985) claim that on principal case of students' low achievement of many L2 learners is simply due to the inadequate time they have to practice the language. Correspond to the early finding, claiming that the situation is more serious in large EFL classroom in China when there is an urgent need for students to develop their oral skills. CL, therefore, helps to increase the total individual language practice time by arranging students into small groups where more time can be allocated and

more turn of conversation can be realized.

2.7.2. Improve the Quality of Students Talk:

Ohta, (1995) assume that collaborative talk provides more chance to produce language in a functional manner. CL can be employed to create a

social setting that mimics real-life in the way that language is used. It helps students produce not only in terms of the quantity, but also the quality of speech by engaging themselves I requesting, clarifying, and negotiating conversation during CL. In addition, in a CL directed learning context, the adjustment of language occurs as students need to make themselves understand Long and Porter, (1985). This implies that students speak in different ways to ensure that their peers listen and are able to comprehend

ideas from various sources, which encourage students to speak more accurately and use appropriate language.

2.7.3. Create a Positive Learning Climate:

According to Barfield, (2003), language learning is an emotional and

psychological experience to some extent. Lack of self-confidence will affect students learning, “a public arena of language is an unsupportive and stressful environment”. It seems that the traditional competitive structure of the classroom makes students fearful of making mistakes and they are “vulnerable to what they may perceive as criticism and rejection” Brown (1994, p.174).

However, this is not the case in CL, as it offers learners a much closer and more comfortable feeling without being watched by the whole class or the teacher. It frees the learners from “requirement for accuracy at all costs” and facilitates students “entry into the richer and more accommodating set of relationships in small group interaction, in which a more comfortable and safe environment can be therefore created” (Long and Porter 1985, p.212).

Students engaged in CL activities are able to exchange diverse opinion due to the low- anxiety situation and this lead to more effective learning.

2.7.4. Promote Social Interaction:

Brown (1994, p.159) asserts that *"the best way to learn to interact is through interaction itself"*. CL provides learners with a stage to interact with their peers in a psychologically comfortable and secure situation. In addition, students are able to develop their cognitive learning and interactive skills. In the process of completing the CL tasks, learners are exposed to new ideas and information from different perspectives and approaches through discussing, questioning, and organizing processes, which in turn facilitates student's comprehension and internalization of critical concepts. Their linguistic competence and communicative skills will be improved as well.

2.7.5. Allow for Critical Thinking:

Participating in CL makes students more critical in their thinking Gokhale,(1995). In Gokhale's, (1995) investigation of the effectiveness of individual versus collaborative learning in enhancing drill- practice skills and critical- thinking skills, the result reveal that students engaging in CL performed significantly better compared with those who studied individually. This is because CL encourages critical thinking through the problem-solving process. In other words, CL fosters the development of critical thinking skills through discussion, clarification and the evaluations of peers' opinions.

However, there are still other additional benefits supportive to CL, such as

fostering learner's responsibility and independence. Ellis, (2003) suggests that, by working with a wide range of peers, social and cognitive skills

can be acquired and these skills will in turn assist students in performing individual tasks. Studies have also indicated that there are beneficial effects on students' intrinsic motivation Long and Porter, (1985) CL also enhances students' performance Cantwell and Andrews, (2002) and promotes lifelong learning skills. In addition to these, it increases learners' self-confidence. CL helps students build greater confidence and self-esteem than will occur in a competitive learning classroom and this will lead to increased efforts in language learning and greater willingness to task risks in learning. Many researchers have reported that students working in small groups tend to learn more of what taught. Moreover, they retain the information longer and appear more satisfied with their classes.

2.8. Examples of Collaborative Learning Techniques

According to Cerbin (April 23 /2010), there are some examples of Collaborative Learning Techniques

2.8.1. Think – Pair – Share

The Learning activity involves explaining answer / an idea to another student the instructor poses a question to the class. A student writes a response and then shares it with a student nearby. Students clarify their position and discuss points of agreement and disagreement. The instructor can use several answer to illustrate important points or facilitate a whole class discussion.

Why use it?

1- Keep students engaged in large class.
2- Prime students for whole class discussion.
3- Target key concepts for review.
4- Enhance students – Meta cognition they become more aware of gaps in their thinking.

5- Student responses are feedback to the instructor about home they are making sense of the material.

2.8.2. Reciprocal Teaching:

The learning activity Involves students jointly read a text or work on a task.

Students take turns being the teacher for a segment the text or task. In their

teaching role students lead the discussion, summarize material.

Why use it?

1- To improve students' ability to do specific intellectual activities such as reading primary sources interpreting graphs, analyzing art work.
2- Role of teaching puts students in position of monitoring their comprehension and re-organizing the material.
3- Exposes student to other ways to interpret the material.

2.8.3. Think - Aloud Pair Problem Solving (TAPPS):

The learning activity involves problems students work in pairs and alternate roles. For each problem one is the solver while the other is the listener. The solver thinks aloud. Narrate his or her reasoning process-while solving the problem. The listener prompts the solver to keep talking and asks for clarification but does not intervene to help.

Why use it?

1- Emphasizes process rather than product.
2- Students can practice formulating ideas, rehearse routine skills, attend to
3- sequence, and identify gaps and errors in understanding.
4- Instructors can observe students reasoning process.

2.8.4. Group Grid:

The learning activity involves analyzing, classifying and organizing subject matter. The instructor creates a grid or matrix based on several categories or criteria. Students use the grid to classify course concepts. After groups complete their grids the instructor shows the correct version. Students compare their work, ask questions revise their ideas.

Why use it?

1- To help students process and re-organize information.
2- Useful when students are trying to absorb a lot of information. Analyzing and re-organizing the material is better than simply re-reading it.

2.9. Collaborative Learning Structures

Structures adopted	Brief description	Academic and social function
Concept development		
Three-step interview	Students interview each other in the group, first one-way, and then the other. Each shares the information they learned in the interview.	Sharing and getting acquainted with peers, enhancing participation, developing listening, speaking and communicative skills.
Multifunctional		
Co-op Co-	Students work in groups to	Learning and sharing

op	produce a particular CL product to share with the whole class, each makes contribution to the completion of the task.	complex materials (multiple sources), developing analysis, synthesis, conflict resolution and presentation skills
Communication		
Match mine	Students attempt to match the arrangements from two columns with one student reads the items and other others respond, using oral communication only.	Vocabulary development role talking ability, communication skills.
Mastery of Knowledge		
Role – talking	Each student performs a role in a situational context and makes dialog with peers.	Developing listening, speaking, communication skills and memorizing facts.
Finding differences	Students compare and contrast the similarities and differences	Understanding and differentiating ideas

and making comparisons	based on the understanding of and familiarity with the topic provided.	and concepts; developing analysis and synthesis skills; enhancing skills in making suggestions.

2.10. Critical Thinking in Collaborative Learning

Brookfield (1997, p. 18) claims that "critical thinking is "irrevocably context bound… [and] learning to think critically is an irreducibly social process". This statement supports what was mentioned in the earlier section regarding how the concept of critical thinking is shaped by the context to which it is applied. Critical thinking involves thinking critically about somethingandthat„something"hasadirectinfluenceonhowmuchthinkingisneededbefore any decision is made. Critical thinking can be further promoted when there is some interaction taking place as feedback gained about the choice made provides some indication of the quality of the thinking. The object for thinking and its function for communication contribute to the relevance of teaching critical thinking in collaborative learning lessons. Collaborative learning provides a context for developing critical thinking skills especially as it involves the expression of certain ideas to be shared with a particular audience. Communication between the learner and the reader via the text is indeed a social act. The learner shares ideas and views with an audience and the feedback obtained from the audience benefits the learner's development of critical thinking.

A statement by Condon and Kelly-Riley (2004, p. 56) that "leering is a

tool of thinking" marks the link between critical thinking and leering. Since critical thinking is the central concept underpinning the development of the Critical Thinking for Collaborative learning within this study, it was crucial for this research to have a clear understanding of how critical thinking pertains to collaborative learning.

Sorrell, Brown, Silva and Kohlenberg (1997) clarify that learning requires one "[t]o connect ideas from internal and external sources, critically think about the ideas, and then infer a generalization that gives the separate pieces of information a coherent verbal shape" (p. 14). Bean (2001) asserts that learning "requires analytical or argumentative thinking and is characterized by a controlling thesis or statement and a logical, hierarchical structure" (p. 17). Similarly, Schafersmen (1991) explains that "learning forces students to organize their thoughts, contemplate their topic, evaluate their data in a logical fashion, and present their conclusions in a persuasive manner" (p. 7). Good learning is therefore a reflection of good critical thinking. The sources of ideas can be from across a variety of texts and those based on observation, experience and reflection (Vardi, 1999). Hence, critical thinking in collaborative learning is a manifestation of an author's ability to understand and analyze the ideas, evaluate and synthesize the arguments in a variety of sources before making any conclusions, and then presenting them clearly to an audience. It entails the ability to: understand key concepts and ideas; distinguish the main ideas and arguments from the subordinate ones; judge their relevance and provide reasons; judge the credibility of sources of information; and be able to paraphrase them and later draw conclusions based on all the justifications made. Engaging oneself in all these tasks exercises thinking and heightens it. Olson (1992) argues that thinking can be refined through pre-learning, learning, revising and editing activities. This means, as a learner is engaged in the learning

process, the learner is using his/her judgments to evaluate his/her own text and make any necessary changes to express his/her ideas clearly and confidently to readers. Thus, engaging students in critical thinking during[academic]leering classes is very important but it can only be achieved if the learning assignments foster such work (Reynolds &Moskovitz, 2008).

For the expansion of students‟ critical thinking skills, teaching and learning methods adopted in the classroom should be able to create a conducive teaching and learning environment (Cousins & Ross, 1993; Sorell et al., 1997). Critical thinking is associated with a deep approach to learning (Gadzella&Masten, 1998) which is, in turn, likely to be adopted when learning essay assignments (Elander, Katherine, Norton, Robinson, & Reddy, 2006). Therefore, there is a need to investigate how classroom activities can be adapted to encourage deep learning. Paul and Elder (2005) contend that routine learning practice using the appropriate critical thinking tools is important to be an accomplished learner. Such practice will lead to deep learning and make the learner a more effective communicator of ideas.

2.11. Fostering Critical Thinking via Assessment

Assessment in education plays an important role in tying instruction to learning to meet certain educational goals specified by education administrators and policy makers, and to satisfy the demand of stakeholders that include students, parents, communities and employers. “The new assessment culture aims at assessing higher order thinking processes and competencies instead of factual knowledge and lower level cognitive skills, which has led to a strong interest in various types of performance assessments” (Jonsson &Svingy, 2007, p. 131). “Assessment works best when its purpose is clear, and when it is carefully designed to fit that purpose” (Earl, Katz, & Western and

Northern Canadian Protocol for Collaboration in Education (WNCP) Assessment Team, 2006, p.13).

2.11.1. Assessment Purposes

The three main groups of purposes of assessment are to assess *for learning*, to assess *as* learning and to assess *of* learning (Earl et al., 2006). The three are inter-related with assessment *of* learning more easily distinguished from assessment *for* and *as* learning.

Assessment *of* learning aims to check students‟ learning, usually at the end of a course, and is summative in nature. It summarizes what students are able to do and what they know in comparison with the expected learning outcomes specified in the curriculum or how students achieve in relation to other students (Earl et al., 2006). The evidence gathered from assessment of learning may be used to monitor students‟ progress, compare standards among learning institutions and plan improvement procedures (Learning and Teaching Scotland, 2007; Oosterhof, 2009). The results of assessments may be accessible for public view "as evidence of achievement to parents, other educators, the students themselves, and sometimes outside groups (e.g. prospective employers and other educational institutions)" (Earl et al., 2006, p. 55).

In contrast, assessment *for* learning serves to promote learning as it progresses via the feedback gathered from the assessments. It is formative assessment. A comprehensive definition of the assessment *for* learning is given by Stiggins, Arter, Chappuis and Chappuis (2004) who refer to it as assessment conducted "throughout teaching and learning to diagnose student needs, plan our next steps in instruction, provide students with feedback they can use to improve the quality of their work, and help students see and feel in control of their journey to success" (p. 31). Assessment *for* learning is more than just ongoing assessments of students‟ progress. It also includes how students can benefit from the

feedback to help them to further improve in learning (BlackandWiliam,1998;TheAssessmentReformGroup, 1999; Chappuis, Stiggins, Arter&Chappuis, 2003; Stiggins et al., 2004). Effective assessment for learning requires high quality interactions between teachers and students, and between students and peers (Learning and Teaching Scotland, 2007). Being made aware of their responsibility to make progress, students can monitor their learning by evaluating the feedback gained from their teacher and peers.

Many authors use the term assessment *for* learning to encapsulate the idea of assessment *as* learning (as cited in Earl et al., 2006). One distinctive feature is that assessment *as* learning focuses more on the students who are expected to play an active role in their own learning and assessment rather than passive recipients of knowledge or feedback. Being informed of the learning goals and success criteria, students check their own progress by reflecting on evidence of their learning (Learning and Teaching Scotland, 2007). It is stated that "the ultimate goal in assessment *as* learning is for students to acquire the skills and the habits of mind to be metacognitively aware with increasing independence" (Earl et al., 2006, p. 42). This element of self-review or self-regulation contributes to the overlap between assessment *for* learning and assessment *as* learning. Students need to:

1- possess an appreciation of what high quality works,
2- have the evaluative skills necessary for them to compare with some objectivity the quality of what they are producing in relation to the higher standard.
3- develop a store of tactics or moves which can be drawn upon to modify their own work. (Sadler, 1989, p.119)

2.11.2. Assessment and Development of Critical Thinking

Assessment serves either to supply evidence that learning has taken place

or to help improve students' learning. To achieve the latter in particular, assessment needs to be used as part of the learning process. Shephard (2000) comments:

To accomplish the kind of transformation envisioned, we have not only to make assessment more informative, more insightfully tied up to learning steps, but at the same time we must change the social meaning of evaluation. Our aim should be to change our cultural practices so that students and teachers look to assessment as a source of insight and help instead of an occasion for meting out rewards and punishments. (p. 10)

The idea corresponds to what was argued earlier by Falchikov (1986) that the traditional forms of assessment do not help students develop the competencies they need to face life. Instead it "tends to breed conformity in students and militates against not only personal development but also development of interpersonal skills" (p. 147). Thus, it is timely to consider changes in instruction to help students develop the knowledge and skills which are crucial for facing the life challenges through learner-centred assessment i.e. by self or peers. Brown (1997) argues that "assessment defines what students regard as important, how they spend their time and how they come to see themselves as students and then as graduates … If you want to change student learning, then change the methods of assessment" (p. 7).

As for developing critical thinking skills in collaborative learning, Flateby (2011) comments, "If the thinking components of learning are not addressed in assessment, learning may be viewed more as a skill set and less as a way to develop and express thought. Similarly, if learning is assigned, but only grammar and mechanics are factored into a grade, students generally will not attend to the broader aspects of learning, such as the development of ideas and audience needs" (p. 4). While classroom teacher assessment may acknowledge the importance of the thinking

aspects of learning, the use of self- and peer assessment during the production of a piece of learning may be more effective. Teacher assessment only indicates to students the areas of the learning that need improvement but self- and peer assessment potentially engage students in the thinking process itself as they try to understand, analyse, clarify, comment and defend each other's work in order to improve it. Thus, students can experience the assessment procedure as well as, more importantly, they can realize "the recursive linkage between learning processes and outcomes" (Green, Christopher, & Lam, 1997, p. 263). Besides, they see for themselves what makes quality learning as they evaluate learning on the basis of the assessment criteria and internalize them (Johnson, 2001) and develop their judging skills (Brown et al., 1994). When assessing, students judge the extent to which their own or their peers‟ learning has met the criteria. They need to find evidence from the text to justify the grading made. In fact, they learn to give constructive comments to their peers. The more opportunity they get to practice these activities the better their evaluation and judgment skills are enhanced. With the paradigm shift in learner autonomy, student assessment is deemed appropriate (McNamara & Deane, 1995; Green et al., 1997; Creswell, 2000). Student assessment empowers students to achieve greater learning. It allows students to take charge of their own learning and not be restricted to what is imposed on them to learn by the teacher. Hence, students learn to become independent and decisive.

Todd and Hudson (2007) conducted a study to see whether peer evaluation helped to improve students' learning skills, critical thinking ability and comprehension of material in a public relations course. A modified learning to learn (WTL) assignment was used for a peer evaluation activity.

Students were first asked to find a magazine advocacy advertisement.

Then they were asked to (1) evaluate the advertisement's audience(s) based on its message, publication, topic and request for action and (2) evaluate the communication or message. Two drafts were required for each of these tasks. For each task, both the first and second drafts were evaluated by an anonymous peer evaluator using a grading collaborative learning. This was followed by a teacher evaluation. The teacher evaluated and graded both the original draft and the comments made by the peer evaluator. Discussions of the comments from the teacher and peer evaluator followed. The student evaluator defended his/her comments and the learner challenged the peers and teacher's comments. Corrections and modifications made based on the feedback received before the teacher submitted the final papers for evaluation. They found that the peer evaluation activity benefited the students in all three aspects: improving their learning skills, critical thinking skills and knowledge about public relations. In another study, Odom, Glenn, Scanner and Cannella (2009) aimed to promote higher levels thinking and collaboration among 30 senior nursing students in a research course focusing on how to analyze a research article. A peer evaluation activity used. The study revealed that 95% of the students reported the feedback received through the peer evaluation activity was very beneficial for them in terms of comparing viewpoints, seeing different styles of learning, and clarifying research concepts. Besides, it helped to clarify for them what should be included in a research critique.

Based on the above arguments and studies, it is therefore likely that critical thinking in collaborative learning would fostered via peer and self-assessments. In this study, the potential of peer evaluation, peer review and self-evaluation to promote critical thinking in learning explored. Armstrong and Paulson (2008) define peer evaluation as an activity that "generally involves students rating/grading/judging their

peer‟ papers instead of simply responding to it" (p.403). Strijbos and Sluijsmans (2010) add, "Peer assessment is an educational arrangement where students judge a peer‟s performance quantitatively and/or qualitatively and which stimulates students to reflect, discuss and collaborate" (p. 265). Peer review contrasts with peer evaluation in that peers read, review and edit someone‟s work but no grading is involved (Rieber, 2006). On the other hand, self-evaluation, like peer evaluation, involves grading work but students are asked to grade their own work also using a collaborative learning (Rauch &Fillenworth, 1993). In short, in a peer evaluation activity, students give feedback on peers‟ work by grading it based on the assessment criteria listed in a collaborative learning and provide comments to justify and explain the grading, which made. In a peer review activity, students provide feedback to peers‟ work, which also guided by assessment criteria, but they are not required to assign a grade to it. In a self-evaluation activity, on the other hand, students individually evaluate their own work according to the assessment criteria listed in a collaborative learning. A more detailed discussion on the three approaches presented below.

2.12. Approaches of Developing Critical Thinking

Peer evaluation, peer review and self-evaluation, which either share the collaborative learning environment or the assessment tool, are all potentially very important for helping to develop skills that should benefit students throughout their studies and professional life (Brown et al., 1994). Most importantly, they help develop students‟ critical faculties (Black et al., 2003; Kay, Li, &Fekete, 2007; Evans, 2008). Through peer evaluation

and peer review, students are more reflective of their own strengths and weaknesses as they can see the performance of others. While checking their peer's work, students develop their self-assessment abilities as they

reflect and think critically about the content of the work. When self-assessing, the students are reflecting on their learning process and progress. In other words, students engage in deliberate thoughts about how they are learning and what they are learning. This promotes autonomous learning (Srimavin & Darasawang, 2004; Cassidy, 2006; Saltourides, 2006; Evans, 2008). Guided by their developing critical faculties, students learn to become independent learners.

Both self- and peer assessment require students to be active participants. This activity contributes to their learning (Weimer, 2002; McCombs & Miller, 2008; Murdoch & Wilson, 2008; Blumberg & Weimer, 2009; Campbell, 2010). The evaluative experience helps students develop an evaluative expertise (Sadler, 1989). In fact "inviting students into the shared experience of marking and moderating should also enable more effective knowledge transfer of assessment process and standards" (Rust et al. 2003, p. 152). According to Elander et al. (2006), "critical evaluation has a special status in the context of improving student performance, and familiarizing students with the criteria that are applied to their work, and providing opportunities for them to apply those criteria themselves, may be an especially effective method to promote critical and evaluative thinking more generally" (p. 78). The assessment activities also expose and focus students" attention on the learning objectives being measured (Orsmon, Merry, &Reiling, 2000; Nicol& Macfarlane-Dick, 2006; Lee, 2006).

The three approaches, however, vary in terms of the learning setting provided, the feedback gained and the assessment tools used.

2.13. Learning Setting

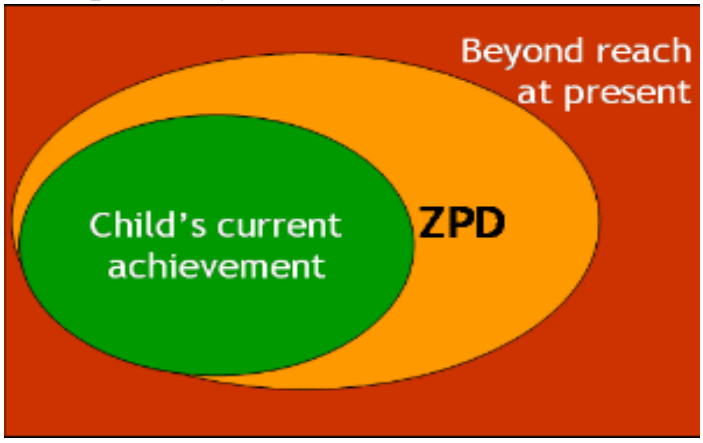
Working collaboratively entails students either working in pairs or groups to share the learning experience and they are made responsible for each other's learning success. It is a learning environment made possible

through peer evaluation and peer review activities.

The terms “collaborative “collaboration” and “cooperative” learning connote students working together in a group to improve learning. Thus, the literature of both collaborative and cooperative learning was referred to. However, collaborative learning was mostly referred to as peer evaluation and peer review in the context of this study were more closely linked to the nature of this learning approach. Cooperative learning is structured and teacher directed, focuses on the end product and is targeted at mastery of foundational knowledge. Collaborative learning, on the other hand, distrusts structure, empowers students and aims at personal and social development (Kagan, 1989; Matthews, Cooper, Davidson, & Hawkes, 1995; Oxford, 1997). Besides, as stated by Smith and MacGregor (1992), “Collaborative learning” is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together” (p. 9). One of the approaches is cooperative learning.

Collaborative learning is influenced by a “social constructivist” philosophy which “views learning as the construction of knowledge within a social context and which therefore encourages acculturation of individuals into a learning community” (Oxford, 1997). The social nature of peer evaluation and peer review fits Vygotsky‟s Zone of Proximal Development (ZPD) which is illustrated in Figure 1.

Figure 1. Vygotsky‟s Zone of Proximal Development (ZPD) as Depicted by Atherton‟s (2011)



In his theory of social development, Vygotsky argues that socialization affects the learning process in an individual. The individual's learning potential is expanded with the help of a teacher or (more experienced) peers further than what he or she is able to do alone (Vygotsky, 1978). The ability of peer evaluation and peer review to promote learning is characterized by this feature. The supportive feedback provided by peers helps accelerate one's learning.

On the other hand, self-evaluation engages students in an individualized learning environment to assess their own learning. However, self-assessment is believed to be able to "promote intrinsic motivation, internally controlled effort, a mastery goal orientation, and more meaningful learning" (McMillan & Hearn, 2008, p. 40).

Compared to working individually, working in teams helps students to achieve higher levels of thought. Information is also held longer (Johnson and Johnson, 1986; Slavin, 1990). This is supported by Totten, Sills, Digby and Russ (1991) and Gokhale, (1995) who assert that collaborative learning enables students to become critical thinkers .Romneys (1996)list of advantages of collaborative learning can help explain what enables the promotion of critical thinking during collaborative work. This includes students‟ willingness to share their difficulties with others in small groups with whom they are familiar, and later gaining confidence when they can solve problems. They learn to accept criticism, as they are also allowed to criticize. Furthermore, during discussions, students learn to tolerate the viewpoint of others. All these are integral to effective learning taking place. Johnson, Johnson and Smith (1991) argue that collaborative learning can be useful "whenever the learning goals are highly important, mastery and retention are important, the task is complex and conceptual, problem solving is desired, divergent thinking or creativity is desired,

quality performance is expected and higher level reasoning strategies and critical thing are needed" p. 40). In addition, Slavin (1995) states that students‟ motivation to learn may affect the time spent on a task. He reported that most studies measuring time on-task reveal higher proportions of engaged time for students in cooperative learning groups compared to the students working individually.

A few studies were found that compared the effect of group and individual work for promoting critical thinking. Group work was found to be more effective than individual work in promoting the acquisition of high-level cognitive reasoning strategies in a study by Skon, Johnson and Johnson (1981). The study involved 86 first grade students who were randomly assigned to work in one of three learning conditions. They found that students in the collaborative condition consistently achieved more highly than students in the competitive and individualistic conditions on all measures of the given tasks (i.e. free-recall, spontaneous retrieval, categorization strategy and awareness of strategy for categorization and retrieval task; explanation for metaphor interpretation; and equations for story problem task).

Gokhale (1995) also found that collaborative learning was more effective than individual learning for enhancing critical thinking. The study involved two groups of 48 undergraduate students enrolled in a Basic Electronics course at Western Illinois University, Illinois. One group was randomly assigned a task to complete individually and the other group completed the task in small groups (the group members were self-selected). A pre- and post-test of critical thinking, developed by the researcher, were administered to all the students. The findings of the study revealed that the students who learned collaboratively performed significantly better than the students learning individually.

In a more recent study, Quitadamo et al. (2009) investigated the effect of

Peer-Led Team Learning (PLTL), a specific form of a small group learning method that promotes discourse and creative problem solving, on critical thinking in undergraduate science courses. To determine students‟ level of critical thinking, the California Critical Thinking Skills Test (CCTST) by Facione (1990b) was used. Results from a quasi-experimental pre-test/post-test control group design revealed that a significantly higher gain in critical thinking was observed for the PLTL students compared to the non-PLTLgroup.

A neutral result was found in Garside's (1996) study comparing the effectiveness of traditional lecture methods of instruction to group discussion methods of instruction in developing critical thinking skills. One hundred and eighteen students enrolled in an introductory interpersonal communication course participated in the study. The results indicated no significant difference in students‟ learning via the two methods.

Despite the studies comparing the effect of collaborative learning versus individual learning on the development of critical thinking skills, the search for studies comparing the effect of peer assessment (peer evaluation and peer review) and self-evaluation on the promotion of critical thinking skills using the two most used education online databases (i.e. EBSCOHost and ProQuest) did not bring out any results. This absence is not surprising given that there are few studies on the use of peer evaluation to promote critical thinking skills. This study addresses the need to offer insights into the possible effects of peer assessments compared to self-assessments.

2.14. Feedback

The next aspect that differentiates the activities is the nature of the feedback students receive. Feedback on a student's performance is essential to help students be self-regulated learners.

Self-regulation according to Butler and Winne (1995) is a style of engaging with tasks in which students exercise a suite of powerful skills: setting goals for upgrading knowledge; deliberating about strategies to select those that balance progress toward goals against unwanted costs; and, as steps are taken and the task evolves, monitoring the accumulating effects of their engagement. (p.245)

The relationship between feedback and self-regulated learning is explained by Nicol and MacFarlane-Dick (2006) below.

Intelligent self-regulation requires that the student has in mind some goals to be achieved against which performance can be compared and assessed. In academic settings, specific targets, criteria, standards and other external reference points (e.g. exemplars) help define goals. Feedback is information about how the student's present state (of learning and performance) relates to these goals and standards. Students generate internal feedback as they monitor their engagement with learning activities and tasks and assess progress towards goals. (p. 200)

The main source of feedback in classrooms is commonly the teachers. This is especially true when the teacher is the authoritative figure in the classroom and when students work individually to assess their own performance. However, when peer evaluation or peer review is adopted in the classroom, not only do students get feedback from the teacher, they also get it from their peers. Peer feedback is normally more immediate than the teacher's feedback. Getting a rapid response is a benefit that students report as being the main determiner for course effectiveness (Wiggins, 1993). To clarify, in learning classrooms where the teacher assesses the work of all students, students will often have to wait for some time before they get some feedback on their performance due to the time their teacher has to take to mark a large number of essays. The delayed feedback will not benefit the students as much as when rapid

feedback is received. After a delay, the students become less attached to the task, and even the joy of getting complements for good work might be reduced. Even worse, when necessary amendments are required, the students find it more difficult to make the corrections as they have become less engaged with the task and might have forgotten some details. Incases where immediate feedback from the teacher is feasible, the feedback might not be as detailed as the students might want. Yet giving thorough comments on students‟ work is time consuming for the teacher and would result in further delayed feedback on the work of other students.

2.15. Assessment Tools

Both peer evaluation and self-evaluation use a collaborative learning to guide evaluation. Peer review, on the other hand, does not use a collaborative learning as it does not involve assigning a grade to a task. Rieber (2006) listed three types of peer review. First, open-ended peer review for advanced students who “have the knowledge, ability, and confidence” (p. 323) to check their peer’s work and minimal reliance on the teacher is needed. Second, is guided peer review where students rely on “a list of general questions [that]... typically summarize the directions and ask the reviewer to consider specific aspects of the peers learning” (p. 323). Third, is directed peer review in which a thorough review can be initiated by providing a checklist. Directed peer review is also useful for students who may have limited learning skills. When used in collaborative peer review, all reviewers will use the same criteria. Directed peer review was used in this doctoral study but is referred to as peer review.

The checklists and scoring collaborative learnings used in any peer review, peer evaluation or self-evaluation activities support the process approach to learning by outlining the criteria or expectations for a

particular piece of work. However, checklists differ from collaborative learnings because they do not provide a measure of quality of performance (Depka, 2007). When the criteria are made available as measures against which assessment is made, learning becomes more focused and self-directed. The scoring guide or collaborative learning which defines the assessment criteria improves the reliability and validity of marking, contributes to a more transparent and explicit assessment, and most importantly, actively engages students with the criteria (Elander et al., 2006). In fact, the collaborative learningiscapableofquantifyingstudents‟performanceobjectivelyandstude ntscansee the specific learning areas that need improvement and mastery (Arthur &McTighe, 2000; Groeber, 2007). Latucca (2005) argues that "this type of criterion-based grading approach alleviates student and instructor fears about the subjective nature of grading and banishes concerns about grading on a curve" (p. 249). Lattuca (2005) further explains that a collaborative learning allows an instructor to "break a complex performance into discrete components that can be individually assessed against a standard" (p. 248). The established criteria and defined standards help to direct students to excel as the use of the collaborative learning informs them of their strengths and weaknesses. This is obvious as the purpose of a collaborative learning is to give students feedback about their progress as well as detailed evaluations of their final products (Andrade, 2000).

Using assessment criteria during peer evaluation, peer review and self-evaluation provides an avenue for deep learning. Assessing the quality of a learning performance against the criteria immerses students in the learning process. The assessment criteria guide and trigger students‟ thinking as they make judgments about the quality of the learning performance. Entwistle (2001) explains that "the influence of assessment

on deep learning is clear-cut. Assessment techniques that encourage students to think for themselves… shift students toward a deep approach. Assessment perceived by students as requiring no more than accurate reproduction of information lets students rely on a surface approach" (p. 16).

Entwistle (2001) further elaborates that deep learning can be promoted through assessment by:

1- Focusing and understanding performance, using tasks to develop and demonstrate understanding and feedback to clarify and stress understanding;
2- Using techniques to tap understanding, including more open-ended questions and less reliance on multiple-choice questions; and
3- Grading in relation to levels of understanding, using qualitative criteria to boost validity. (p.16)

2.16. Peer Evaluation as an Approach to Develop Critical Thinking Skills in Collaborative learning

The literature discussed above suggests that peer evaluation encourages active learning among students. Both the learner and the evaluator have roles to play and both are learning through interaction. Ammer (1998) explains that working with peers provides opportunities for a student to:

1- question the present quality of his or her draft,

2- seek out restatement or elaboration of something that was recently learned,
3- receive constructive correction for misuse of structural aspect of learning.
4- Listen to redirection advice regarding work in progress without the stigmatism of failure that frequently accompanies such assistance directly from a teacher" (p. 268).

The roles of student learners and peer evaluators in producing learned products compared in Figure2.

Figure 2.2 Roles of Learner and Peer Evaluator in Producing Learned Products (Ammer, 1998, p. 268)

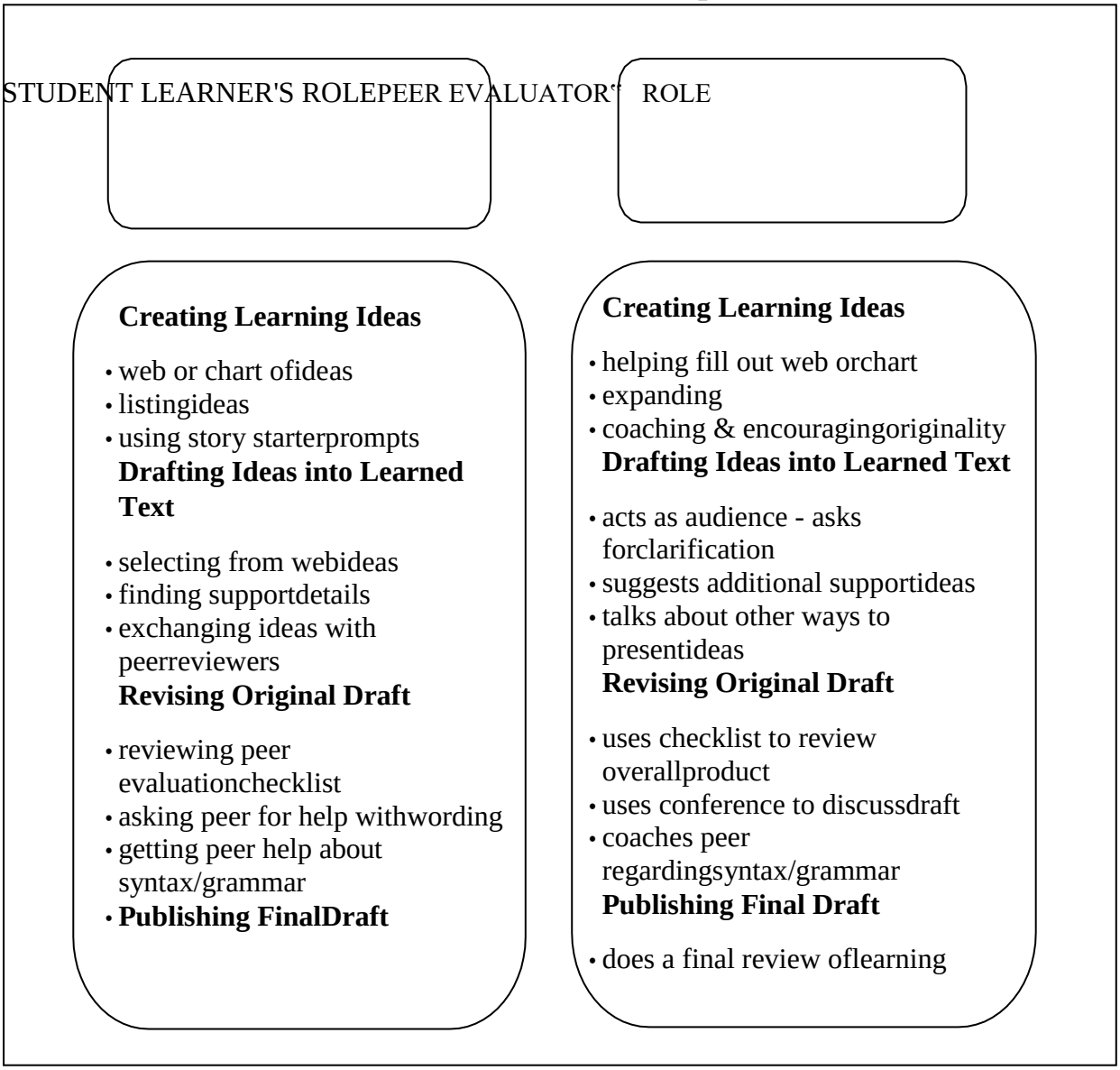


Figure 2 shows a student learner's role around the learning task beginning with brainstorming of ideas, drafting them and revising the drafts. Before getting the work published, a peer evaluator can help improve it by judging what is learned at various stages of the learning process. Evaluating the peer's work allows students to utilize their content knowledge and exercise their evaluation and justification skills (Topping, 1998). For example, in the planning and drafting stages, peer evaluators are expected to provide their ideas on how to

improve the work. While in the revising stage, they are to evaluate the overall product and give comments to improve the paper before its publication. The exercise benefits the development of students‟ critical thinking skills. These roles of student learner and peer evaluator were adapted in the current study as the participants in the peer evaluation group were expected to individually write their essay and exchange it with their peers for evaluation before making improvement on their essay at each stage of learning.

The collaborative work above is possible through peer evaluation and peer review activities. Whatley, Bell, Shaylor, Zaitseva and Zakrzewska (2005) argue that "[c]collaborative and cooperative learning approaches are examples of social learning where learners communicate with the tutor and other learners as they undertake tasks or projects in which learning and cognition can be situated" (p. 34). Both offer feedback from multiple readers including the teacher, which helps students be self-regulated learners (Nicol& MacFarlane-Dick, 2006). Peer evaluation has an added advantage over peer review in that it requires the evaluator to assess the quality of their peer's performance. The exercise of grading the work of a peer requires a careful analysis of the learning performance against a set of expected performance criteria.

Self-evaluation does not offer as great a potential to promote critical thinking skills in collaborative learning as peer evaluation. Although it is guided by a collaborative learning, this activity does not allow input or interaction with peers. Hence, students rely only on the teacher to guide them to Vygotsky's Zone of Proximal Development (ZPD) and on the collaborative learning to indicate important performance criteria. Peer evaluation, on the other hand, allows students to work with peers and receive feedback which is beneficial in helping them advance in their learning in addition to the guidance received from the teacher.

2.17. Key Issues in the Implementation of Peer Evaluation Activities to Promote Critical Thinking in Collaborative learning

Despite the apparent strengths of peer evaluation, implementing it has its own challenges. These include the validity and reliability of the grading, students‟ ability to evaluate, the grouping of students, the amount of time available, and engaging students in the activity. These are discussed in detail below.

2.17.1. Validity and Reliability of Grading

Validity and reliability are important issues for peer evaluation (Brown et al., 1994; Bostock, 2001; Cho, Schunn, & Wilson, 2006). This is especially so when the grades are to be used for summative evaluation. Studies investigating validity, particularly criterion-related validity, frequently measure the agreement between student and teacher assessments (Topping, 1998; Falchikov & Golfinch, 2000; Cho et al., 2006). Falchikov and Golfinch (2000) and Cho et al. (2006) argue that the criterion-related validity of peer assessment can be measured by determining the level of agreement between peers‟ ratings and the teacher's ratings. That is, teachers‟ ratings are used as the criterion for determining the validity of peers‟ ratings. The reliability of peer assessment, on the other hand, can be measured by the similarity between the marks given by peers (as cited in Bouzidi & Jaillet, 2009).

Shin's (2008) study, for example, showed very high validity of peer assessments. In this study, the validity of peer assessments of "Specific Teaching Methods I" course project by undergraduates of Gazi University, Turkey was studied. The Pearson correlation coefficient between the students‟ and teacher's scores of the course project was found to be very high (r=0.99). In another study, Bouzidi and Jaillet (2009) examined the validity of online peer assessment among

engineering students by studying the correlation between marks awarded by peers with those of the teacher, and also between marks awarded by peers incorporating self-assessment with those of the teacher. The correlation coefficients between the teacher's marks and those of the peers for a course assessment done in two consecutive years were also found to be very high (r=0.90) for "exams requesting simple calculations, some mathematical reasoning, short algorithms, and short texts referring to the exact science field (computer science and electrical engineering)" (p.257). Saito and Fujita (2004) investigated the validity of peer assessment of EFL learning by examining the similarity between peer, self- and teacher ratings. The Pearson correlation coefficient of students" and the teacher's scores was high and statistically significant r=0.72 ($p<0.01$) unlike very low and insignificant correlation coefficients between self-rating and teacher rating (r=0.07). A meta-analytic study by Falchikov and Golfinch (2000) involving 48 quantitative studies comparing peer and teacher assessment showed close alignment of peer marks with teacher marks. Despite these studies, maintaining the validity of peer evaluation at an acceptable level is difficult (Dochy, Segers, & Sluijsmans, 1999). Some studies found low validity for peer evaluation when checked against teacher evaluations. A study of peer assessment validity in a study in high school setting by Chang, Tseng, Chou and Chen (2011), for example, revealed low validity (r values for seven assessment criteria ranged between 0.03 to 0.29). In another study by Ryan, Marshall, Porter and Jia (2007), peer evaluations of class participation, using a forced-normal distribution pattern, were found not predictive of faculty evaluations of class participation. Chen and Warren's (1999) and Mowl and Pain's (1995) studies of peer evaluation also showed low validity (r=0.29 and r=0.22, respectively). Lack of practical experience in assessing tasks was found to be a possible

explanation for the low validity in both studies. Mowl and Pain also indicated the low validity of peer evaluation in their study could be due to the subjective nature of the assessment task.

Many studies have found peer assessment to be reliable. A study by Haaga (1993), for example, investigated the reliability of peer assessments made by graduate students majoring in psychology when the identity of the assessor and learner were concealed from each other. A reliability checks against a list of criteria used for assessing the students‟ term papers, using the Pearson product-moment correlation between pairs of students assessing common papers revealed modest reliability (r=0.55). In a recent study, Marin-Garcia, Miralles and Marín (2008) examined the reliability of the peer evaluation of oral presentations. The results showed the reliability of peer evaluation based on the average scores of ratings across a list of nine assessment criteria developed together with the students, was high (r=0.90) when there were more evaluators (more than 10 per presentation) compared with the estimated reliability of the marks given by one student marker which was modest (r= 0.47). Similar results were found in Xiao and Lucking‟s (2008) study involving undergraduate students enrolled in a foundations course of teacher education. The peers‟ ratings of drafts of an article produced by the students for inclusion in an online textbook called *Wik ibook* were done for two rounds. An intra-class correlation analysis of the peer assessments revealed statistically significant coefficients for the first round assessment of three raters (r=0.62, p<.005) and for the second-round assessment of twenty raters (r=0.75, p<.001). Hafner and Heffner's (2003) 3-yearstudy of peer-group rating involving 107 college biology students indicated moderate inter-rater reliability using Spearman's rank order correlation coefficient of approximately 0.40–0.50. Negative results, however, were found in other studies including by Chang et al.

(2011). In that study, peer assessment of Web-based portfolios produced individually by 72 senior high school students was done. The inter-rater reliability investigation based on Kendall's coefficient of concordance revealed insignificant coefficients for all the six raters per group assessment. Results for the six groups ranged from 0.05 to 0.94. Low reliability of peer evaluation was also found in Gopinath‟s (1999) study involving MBA students. Analysis using Kendall's coefficient of concordance on the consistency of peers‟ scoring on two groups of students assessments of their mid-term and final exams revealed weak consensus (i.e. Class 1- midterm=0.44, final=0.49; Class 2: midterm=0.25, final=0.24).

Studies on the validity and reliability of peer evaluation or assessment show a range of findings, some with high validity and reliability and some low. But the literature generally shows that peer assessment is relatively valid and has moderate reliability. Bias in marking (Newstead & Dennies, 1990), unfamiliarity with the assessment criteria (Mowl& Pain, 1995; Falchikov & Golfinch, 2000; Freeman, 1995) and the number of raters are some possible explanations for low validity and reliability of peer evaluation (Sung Sung, Chang, Chang, & Yu, 2010).

Some suggestions to improve the validity and reliability of peer evaluation therefore include: training and familiarising the students with the grading criteria (Mowl& Pain, 1995; Falchikov&Golfinch, 2000; Freeman, 1995; Campbell, Mothersbaugh, Brammer, & Taylor, 2001; Stanton, 1999), and increasing the number of evaluators (Sung et al., 2010). It was also suggested that over time, when students are given more opportunities to evaluate, it helps to increase the reliability of peer evaluation (Marin-Garcia &Miralles, 2008; Mat Daud et al., 2011a).

In this study, peer evaluation was used for formative evaluation purposes to provide feedback to students about the quality of their collaborative

learning from their peers. The collaborative learning used included assessment of how „critical" the students had been in presenting their ideas. The main purpose was to trigger students" critical thinking when evaluating the work of their peer, and when understanding and negotiating the rippers "evaluation of their own work. In other words, its use in the study was more as a learning mechanism than an assessment mechanism. Despite this however, the reliability and validity of the peer evaluation using the Collaborative Learning was investigated for two reasons. One reason was that a valid collaborative learning would help to ensure that students would consider the important elements of what was expected of them when they were assessing, providing feedback, and considering the feedback given by peers. The second reason was, although the intended aim of the developing Collaborative Learning was to help provoke critical thinking during peer evaluation, an acceptable level of reliability and validity would enable the Collaborative Learning to also be used as an assessment tool.

2.17.2. Evaluation Ability

Differing levels of skill among evaluators leads to issues of the accuracy and reliability of feedback given during peer evaluation. Liu and Carless (2006) affirm that "we cannot reliably assess something, if we do not know what we are trying to assess or by what means we come to a judgment" (p. 285). Evaluation ability affects students" acceptance of the peer evaluation activity both as the assessor and assesse. Peer feedback may not be accurate and effective (Ferris, 2008) and, therefore, students might be misleading or misled by peers (Jarvis & Gibson, 1997). Feedback provided without the assessor having strong content knowledge, critical ability, and evaluation experience can be harmful to learning. This is further discussed below.

As mentioned earlier, two of the advantages of peer assessment are that it

helps students to develop evaluation and justification skills, and to utilize content knowledge (Topping, 1998). However, low mastery of the skills and knowledge about how to evaluate collaborative learning can affect the quality of the peer evaluation. Falchikov (2001) comments that reflective criticism of a peer's work is required before feedback can be supplied. Those being assessed therefore, should be able to expect constructive comments from their peers. In some instances, students may resist peer evaluation when students believe that peers lack credibility for evaluating their learning performances. Instead, the teacher is regarded the most reliable and qualified to do the evaluation as revealed in studies by Sengupta (1998) and Cheng and Warren (2003). In both studies which were conducted in Hong Kong, the students had some resistance towards peer evaluation. In Sengupta‟s (1998) study in a secondary school learning class, students‟ responses to interviews indicated that the students believed they were not fit to evaluate. This was related to their perceived inability to correct grammatical errors which was shaped by their experience with error corrections. Similarly, Cheng and Warren's (2003) study involving undergraduates taking an English for Academic Purpose (EAP) course in the Hong Kong Polytechnic University revealed that the students involved in the study still doubted they would be able to peer assess effectively even after some training was provided.

One possible explanation for the findings above is that eastern cultures empower teachers in knowledge transmission and assessment. The students therefore, are deprived of the experience to peer evaluate. Peer evaluation is alien to students‟ educational experience, which has been passive and receptive due to the long-practiced approach of knowledge and skills transmission rather than transformation (Hassan, Jamaludin, Sulaiman, &Baki, 2010). Asking the students to peer evaluate also means challenging long-held notions about the teacher as sole knowledge

provider and assessor.

Notwithstanding the above demands of students to possess some level of content knowledge and critical and evaluative skills, Kagan and Kagan (2010) assert that the issue of „the blind leading the blind" should not be a barrier to implementing collaborative work like peer evaluation. They explain that this can be dealt with if sufficient input and guidance is available from the teacher. Thus, the presence of the teacher to facilitate the activity is crucial. This means that the teacher's role is not undermined by peer evaluation as the teacher is required to play an active role to ensure the effectiveness of a peer evaluation activity. The teacher is expected to facilitate and monitor the learning process (Hiltz & Benbunan-Fich, 1997; Ingleton, Doube, Rogers, & Noble, 2000). Webb (2009) states that teacher's role in collaborative learning includes "preparing students to collaborate, forming groups, structuring group work to guide or require students to engage in certain processes, and engaging in certain types of discourse with groups and the class" (p.6).

2.17.3. Student Engagement

Poor student engagement creates a threat to effective peer evaluation activities. Slavin (1995) asserts that group members" contributions are vital for group work. Smith and McGregor (1992) agree that effective learning requires students to be actively working with information, ideas or skills. Thus, a lack of student commitment to peer evaluation activities may affect their learning. Not only do students grade their peers" work on a less than thorough assessment of the work (Leki, 1990), quality of the feedback was also seen to be a problem (Acton, 1984).

As stated above, students" evaluation ability could be one factor. Students believe that assessing peers who are less capable is easier than assessing those who are more able (Falchikov, 2001). Therefore, it is common that students are reluctant to evaluate peers they know are more able than

them. Better students might also feel less respectful and appreciative of evaluations from peers who are weaker than them.

„Loss of face“ may also inhibit active engagement in peer evaluation. In a studyby Miller and Ng (1994) on the peer assessment of oral language proficiency among Chinese level students, many of the students who participated in the study did not favor being assessed by their classmates. The students who were used to teacher evaluation regarded it as embarrassing to have peers comment on their work. They preferred not to let their performance be so vulnerable to their peers“ comments. These students also did not feel comfortable assessing others“ work. One student commented that the equal status assumed among the classmates was threatened when peer evaluation was practiced.

Students“ reluctance to peer evaluate may also be due to the effort required of them. Effective peer evaluation requires dedication and hard work. Besides the grading task following a careful examination of the given work; negotiations of ideas, defending one's work and asking for clarification all contribute to the load. Students who have limited experience with learning activities requiring critical thinking especially will feel this most. Halx and Reybold (2006) explain that “when student first begin to think critically, they often experience discomfort because critical thinking calls for students to reflect; set aside their established assumptions; and consider other, sometimes counter, perspectives” (p. 295). This may result in some degree of pressure which in turn leads to students disengaging or withdrawing from the peer evaluation activity. Furthermore,

students“traditionalattitudestoauthoritycouldinfluencetheextentofstudents“ engagement in the peer evaluation activity (Sengupta, 1998). For some students, the teacher is the sole knowledge provider and is the person responsible for responding to their work and determining the quality of

the work. When students are required to be active and be in control oftheirlearningthiscreatesamismatchofthetraditionalpracticeandthecurrent practice.

This conflict of practice has affected students‟ readiness to participate in peer evaluation activities especially in the initial stage they are introduced to it.

All the above are generally true among Sudanese students who have no or little experience peer evaluating which therefore makes them less confident and less comfortable with evaluating others and being evaluated by others.

2.17.4. Grouping of Students

When carrying out a classroom activity, one of the concerns is finding the most appropriate grouping of students that is able to maximize learning. In the literature, discussion on grouping of students revolves around the size of the group, the selection of group members and the duration of the group (e.g. Johnson, Johnson, & Holubec, 1994; Murdoch, & Wilson, 2004; Arends & Kilcher, 2010). Detailed discussion of each follows below. Although group formation for cooperative learning has been extensively discussed in the literature, it has not received much research attention (Potosky & Duck, 2007).

Determining the best group size is essential for effective learning. The decision is commonly influenced by the purpose and nature of the task (Murdoch &Wilson, 2004), students‟ previous experience of working in groups, the availability of resources and space, and the duration of time given for the activity (Johnson et al., 1994). Generally, the ideal size is believed to be four to six people per group as larger groups normally are not able to function well as students tend to disengage from the learning activities (Arends Kilcher, 2010; Murdoch & Wilson, 2004). Johnson et al. (1994) add that, it is hard to monitor students‟ effort and contribution

to the group activity when the group is too big. In contrast, Rau and Heyl (1990) argue that smaller groups have "less diversity; and may lack divergent thinking styles and varied expertise that help to animate collective decision making" (as cited in Gokhale, 1995, p. 25). However, it is advisable that pairs are formed for students who do not have much experience working in groups. Laughlin, Hatch, Silver and Boh (2006) studied the effects of group size on solving letters-to-numbers problems among 760 students at the University of Illinois. The participants were randomly assigned to solve the problems either individually, or in groups of two, three, four or five people. The results indicated that all those working in groups of three, four and five performed significantly better than those working individually or those working in pairs. The groups of three, four, and five people did not differ from each other. Thus, the study concluded that groups of three are sufficient to solve intellectual problems but suggested further research needed to be done to determine the appropriate group size for other problem-solving tasks such as solving survival problems.

In terms of the selection of group members; age, gender, academic ability, interest and learning style are among the main characteristics considered. The questions are whether to form heterogeneous or homogeneous groups randomly or non-randomly selected by the teacher or by the students themselves. A careful selection of group members can help optimize the possible learning benefits that will be gained through collaborative learning. Arguments on the best choice are discussed below. Many researchers believe that heterogeneous groups are likely to produce better academic and cooperative results than homogeneous groups (e.g. Johnson et al., 1994; Murdoch & Wilson, 2004; Arends &Kilcher, 2010). With the opportunity to work with a wider range of people, students are exposed to "more elaborative thinking, more frequent giving and

receiving of explanations and greater perspective-taking in discussion material, all of which increase the depth of understanding, the quality of reasoning and the accuracy of long-term retention" (Johnson et al., 1994, p. 26). This supports the proposition that working collaboratively enhances critical thinking development. One issue raised is whether the high achieving students benefit from heterogeneous groupings. Kagan and Kagan (2010) assert that working with lower achieving students enables the higher achieving ones to develop social and emotional skills which are more useful to securing a job than IQ or academic success.

Despite the claims that heterogeneous groupings produce better effects on learning than homogeneous groupings, there is research that suggests that heterogeneity is not the determining factor for effective learning (e.g. Cheng, Lam, & Chan, 2008; Moody & Gifford, 1990). Studies finding the opposite (i.e. homogeneous groupings are better than heterogeneous grouping) were also found. Adodo and Agbayewa (2011), for example, conducted a study comparing the effect of homogeneous and heterogeneous ability level grouping class teaching on students‟ learning outcomes in Integrated Science. The research participants were 60 junior secondary school students who came from two schools. Two groups of 30 students (15 males and 15 females) each were formed. The study revealed that the homogeneous ability group performed better in the achievement test in integrated science (ATIS), science oriented attitudinal scale (SOAS) and science vocational interest inventory (SVII) than the heterogeneous ability group. Results from the survey questionnaire also showed that the students were in favor of working in homogeneous groups. The findings from this study corroborate the research-based information on timely topics (RBITT) magazine on ability grouping (2002) which reports that having students with similar ability in groups resulted in better learning gains than those with mixed abilities.

2.17.5. Time Factor

Peer evaluation requires more time than self-evaluation and peer review. Not only is more time needed to grade peers‟ learning after carefully analyzing it, but also to discuss the feedback. Romney (1996) argues that working collaboratively is slower than traditional methods of learning. When the teacher is the decision maker, there is not much room for arguments. However, when peer evaluation is adopted, students need to clarify, defend and suggest ideas. Despite this, she asserts that the discussion itself is worth holding. Gokhale (1995) explains that, “The peer support system makes it possible for the learner to internalize both external knowledge and critical thinking skills and to convert them into tools for intellectual functioning” (p. 28). During the discussion, students exchange ideas, are more sensitive to others‟ views, think deeper about the issue, thus making them more active in the learning process.

Second, additional time is crucial especially at the initial exposure to the activity. The reason being that to familiarize students with the new learning experience and to get those who are not familiar to work comfortably witheach other takes time as discussed above.

Students also perceive peer evaluation activities as time consuming (Topping et al., 2000; Falchikov, 2001; Odom et al., 2009). This is particularly of concern when coverage of the syllabus is at the heart of the course. Liu and Carless (2006) corroborate that “when under pressure to cover a certain amount of content within a specific module, many lecturers may perceive peer feedback as an unwanted extra” (p. 286).

Albeit the greater time consumption, Knight and Steinbach (2011) argue that the benefit gained should be of paramount consideration. Stone (2001) points out that if we expect students to show their best thinking, sufficient time for them should be provided.

Having analyzed the strengths and challenges of peer evaluation in the

literature, this study therefore sought to throw some light into the possibility of developing critical thinking skills through the use of the Critical thinking for Collaborative learning designed for undergraduate students‟ use in peer evaluation activities.

2.18. Learning Strategy

Define the term of “Learning Strategy” is not simple and easy. There are a lot of definitions about learning strategy which have been defined by experts who concern on this matter. According to Longman Advanced American Dictionary the word “learning” means knowledge gained through reading and study, and “strategy” means well plan actions for achieving an aim...(2007, p. 908,p.1573).According to Richard, Platt, Platt(1998, p. 261)learning strategies is “Intentional behavior and thoughts that learners make use of during learning in order to better help them understand, learn or remember new information. The seamy include focusing on certain aspects of new information, analyzing and organizing information during learning to increase comprehension, evaluating learning when it is completed to see if further action is needed. “Several definitions above indicate that learning strategy has wide range including many aspects which attempt to focus on a goal. In acquiring some aspects as mentioned, a student needs to learn how to get as many information as possible from someone, media, or other sources as well as learn how to solve problem that might come from the student itself or other matters. Therefore, in order to understand more specific about how the students learn, it is necessary to understand student development, because it help them to adjust with the proper strategy. There are three courses in the developmental program in order to assert the way students learn.

Cognitive Models:

More recently, behaviorist frameworks have benefited from the inclusion of cognitive models based on the teachers' and learners' abilities to connect new learning with prior knowledge or understanding, evolving into metacognition models that emphasize the students' participation in the creation of meaning and comprehension. Metacognition refers to the student's awareness of their own learning and thinking processes. (Boroch,Hope, Smith, Gabriner, Mery,Johnstone,&Asera,2010, p.52)

According to Svinicki (1999, p. 13) as cited inBorochetal.(2010, p.52)explain that metacognition was the first way of theorizing to promote the idea that the learner had to be driving the process of learning. This term shows that the learning process is in the student hand which means they think and they figure out the problems by themselves.

On the other side, constructivist promote the view that the knowledge is created in relation to the web of knowledge students already have. The world is interpreted from a network of previous understanding, and "knowledge is 'constructed' by each learner in terms of his or her perceptions of the world and the learner's mental models", (O'Banion, 1997, p. 83) as cited in Boroch,et al.(2010, p.52).This statement means that student learning is related to their prior knowledge which encourages them to have the need of active learning strategy in order to gain information. By having it, the students have their own perception and afford to understand the world knowledge.

Meriam, Caffarella, & Baumgartner(2006)as cited in Boroch et al.(2010,p.53) explain that in a social cognitive framework integrates both behaviorist and constructivist theories, supporting the notion that students learn by observing others, which sometimes termed "observational" or "social" learning. This theory means a student has a natural learning in their social life where he or she will independently socialize to the people

or environment so that be able to facilitate them in gaining information, help, skills and everything else that they need.

2.18.1. Motivation Theories:

Order to gain information. By having it, the students have their own perception and afford to understand the world knowledge. Meriam, Caffarella, & Baumgartner (2006)as cited in Boroch et al.(2010,p.53) explain that in a social cognitive framework integrates both behaviorist and constructivist theories, supporting the notion that students learn by observing others, which sometimes termed "observational" or "social" learning. This theory means a student has a natural learning their social life where he or she will independently socialize to the people or environment so that be able to facilitate them in gaining information, help, skills and everything else that they need. Motivation Theories. For students, motivation is important aspect on their study. Most theories centered on adult learners incorporate some aspect of motivational control. According to Svinicki (2004) as cited in Boroch et al.(2010, p.53) asserts that "when the learner feels in control of the learning process, it is more likely that he ro she will be motivated to engage or try." This statement shows when the students feeling good at their way of learning, the student's motivation will raise and otherwise, it could bring down when the students feel bored or being stuck of information and knowledge.

Motivation ears students to abettor path, in accordance to their own goal. When they put the certain goal, he or she needs to have several plans or steps in order to reach and maintain it with full of responsibility. Kleinbeck, Quast, &Schwarz(1989, p. 54) as cited in Boroch et al.(2010, p.54) explain that "Student will perform better if they know what goals they are seeking and if those goals are personally important to them."

2.18.2. Problem Solving and Critical Thinking:

A university student especially who study at two majors, need more skills to develop their ideas in solving various problems during study. There could be problems from their task at college, time, environment or other which potential disrupt and stuck them away.

Boylan (2002, p. 25) as cited in Boroch et al.(2010, p.54) asserts that "Alack of well-developmental critical thinking skills is often a causative factor in the failure of developmental students. "Therefore, it is essential for student to improve their critical thinking skills and solving problem. In order to improve developmental levels of skill and help students achieve optimal levels of ability, the students must be consistently challenged and supported. (Boroch,et al, 2010,p.55).

Furthermore, King and Vann Hecke (2006, p.16)as cited in Boroch et al.(2010, p. 55)explain that "Skill theory suggest that students use cognitive frameworks to solve problems and that, concomitantly, problems inspire new learning." It means students need to explore themselves in gaining help to solve problem in studying, such as the need of good in critical thinking, having good relationship to people and providing resource of knowledge.

2.18.3. Types of Learning Strategy:

There are several types of learning strategy which defined by experts .Warr& Allan (1998) distinguish between three categories according to the kind of resources used in the regulation of behavior:

- Cognitive learning strategies: skills in rehearsing a material to be learned or in organizing it into main theme. In cognitive learning strategy, student needs to focus on their goal. There are a lot of

subjects that they should learn during every semester, so that those things make student thinks well in managing their study. The more subjects they take, the more problems that they faced. According to de Bettencourt (1987)as cited in Agran(1997, p. 176), rather than focusing on changing behavior, cognitivists suggest that problem solving involves modifying a student's thought or mental representation. Students have difficulty problem-solving because they are strategy deficient, or have limited awareness of their own cognitive processes. Therefore, in order to maximize the cognitive learning strategy, student needs to figure out several tactics which enable to help them. Cognitive tactics are thetools used by a student to solve specific problems or complete a particular task. They include rehearsal, transformation, organization, and motivation tactics.(Agran, 1997, p. 202).Martin (1997) elaborates that the student may use a rehearsal tactic, such as verbally stating information over and over, to enhance memorization. For instance, most of people used rehearsal tactic to remember a phone number by repeating the number over and over until capable to write it down. Another cognitive tactic, Martin (1997) explains the student can use to complete tasks is to transform or change the information in a way that will enhance memory. Transformation tactics include paraphrasing, imagery, and mnemonic devices. In addition Martin (1997) also explains the third point about organizational tactics such as clustering, categorizing, and prioritizing can be used to structure information in a way that is more meaningful and will enable memorization. Martin (1997) also enhances motivational tactics in cognitive tactic which may be incorporated into a learning strategy to promote self-reinforcement and positive self-talk. For instance, a student who says to himself "he will do the

best for an examination, because he has studied hard." This self-talk will give appositive approach to his encouragement instead of negative self-talk.

- Behavioral learning strategies: preferences for seeking help from others, for trial and error or for written instruction. This type of learning is related to the ways student take to gain self-determination that can be from within themselves or others. Sometimes student needs to share thought what he/she is thinking. It is essential to find other sources in order to improve student capacity in learning. Warr & Allan (1998) assert that behavioral learning strategies consists of practical activities that probably of particular relevance to the interaction with materials and equipment that is required in many occupational training sessions. Interpersonal help-seeking is a strategy to obtain assistance from other people. This involves proactive behavior to support understanding by asking for help (Ryan & Pintrich, 1997). Student who needs support or help from others should12improve their soft skill in order to have suitable source, such as communication skill, operating computer, or searching any sources on internet or library. Moreover, seeking help from written material is a non-social correlate of interpersonal help seeking, because it means to obtain information from written documents, manuals, computer programs and other non-social sources. Practical application is strategies to develop knowledge by trying something out in practice, and it is something more than mental activity or active help-seeking (Warr & Downing, 2000). Behavioral learning strategies is important for student in associating with their capability in doing something or solving problems. By gaining help from others, will ease them in solving such obstacles they face.

- **Self-Regulating Strategies:**

  self-regulated learning is acombination academic study skills and self-discipline that makes learning easier, so that the students get more motivated (Glynn, Aultman, & Owens, 2005, p.112). This is important to student in enhancing their management skill otherwise they may faceless motivated and may result in failure in academic life. In term of self-regulating strategies, several aspects should be looked at. The aspects are controlling emotions, motivation and comprehension. Self-regulated learning emphasizes the importance of personal responsibility and knowledge control and skill(Zimmerman,1990). These strategies are important for students when they enter the university level. According to Boroch et al.(2010,p. 81) that many students have varieties of difficulties when they interuniversity at the first year because “they lack of the emotional or psychological maturity or the cultural capital to comfortably immerse themselves into both expectation and norms of this new “world” (university).Several instances of the strategies may not be overlooked. A number of strategies have been used by students and also with different preferences, here preparation before studying and note taking are discussed. The students may prepare their lesson before the class start by reading some material concerning the subjects. According to Svinicki (2004, p.185)as cited in Boroch et al. (2010, p. 85)that “prior knowledge impacts what learners pay attention to, how they perceive and interpret what they are experiencing, and how they store new information based on what they already know. “Another strategy according Zimmermann Pons (1986) is social assistance and reviewing previously class notes

and notes on text material. This strategy is usually used by several students related to those who pay full attention to the lecturers' speech. When they listen for some important issues and or facts, they take some notes in order the subject to be reviewed after the class. As can be seen from self-regulated strategies proposed by several experts above, those points will assist the students in their study. Moreover, this strategy enhances student's self-rule to be obeyed by them in their study. Therefore, self-regulated learning strategies will be used in the current study.

2.19. Classroom Contract

Creating a "classroom contract" is an activity for teachers to increase learner engagement and students' accountability for their own learning from the very first class. The contract is a set of rules and expected behavior, negotiated by the teacher and the students. Student engagement can be an issue in many classrooms, and any practice that helps keep the students focused in the classroom in beneficial to teaching and learning. By jointly negotiating expectations in the classroom, the teacher and the students alike are accountable for their actions. The contract also gives students a sense of autonomy and agency in their learning.

This activity is best done at the start of the semester or with any new class, it can be done in as little as 30 minutes but can be extended to 60 minutes, depending on the students' level of English and how the teacher wants to run the activity.

The activity starts with the teacher dividing the class into groups of four or five students and asking them to brainstorm the qualities of good students and good teachers that they would like to see in their classroom and learning environment. The teacher may have to provide an example or two, especially for lower-level students—for example, "The teacher

should always be prepared for class" or "Students should attend class on time." As this might take place in one of the first lessons of the semester, it is a good time for students to think about their future learning. The activity can be an informal discussion with the teacher monitoring; however, it is important that students take notes on their ideas, as they will be used later. Once discussions are finished, whole-class feedback can be done with groups invited to share their ideas with the class.

The teacher then elicits or introduces the idea of a "contract." It may be easiest to explain a contract as an "agreement" between two people or parties (in this case, the two parties are the students and the teacher). Pictures are also useful to help solidify the concept in students' minds. The goal should be for students to understand that the contract is a set of ideal classroom practices and behavior and that it is for both themselves and the teacher.

Once students understand the notion of a contract, the teacher reminds them of the qualities of good teachers and good students— brainstormed in the previous step—and explains that these can be used to create the rules and guidelines for the classroom contract. At this stage, it is also useful to introduce or review the vocabulary items that students might need; modal verbs are useful (e.g., should/should not, must/must not) along with forms of the verb to be (e.g., are/aren't, is/isn't).

Students then work together in groups to make a classroom contract. While some teachers may be hesitant to let students suggest rules that the teacher must follow, in my experience this has not been an issue. The students' suggestions are often along the lines of being prepared for classes, assigning a reasonable homework load, rewarding good behavior, and not being too strict. In my experience, there has never been an instance of an unreasonable request by students.

Teachers who are uncomfortable with letting the students decide points to

include in the contract could pre-prepare their side of the contract with standard teacher responsibility points such as, “The teacher will try to make learning interesting,” “The teacher will be fair to all students,” “The teacher will let students know how they are being graded/ evaluated before an assignment or test,” and “The teacher will make sure homework helps students reach their learning goals.”

To conclude the discussion, the teacher invites students to write their suggestions on the board or a large piece of paper (or more than one piece), which has “Teacher” and “Students” sections. Be prepared for humorous suggestions such as “no homework,” “handsome teacher,” and “only play games” to be among the things written. Common points that are suggested for students are “must do homework,” “don’t be late,” and “be prepared to learn.” For the teacher, common suggestions include “be prepared to teach,” “make lessons interesting,” and “don’t be too strict.”

After suggestions have been written, the teacher then negotiates each point’s inclusion in the final contract for both students and the teacher. Again, this is an opportunity for guided language practice with modals or imperatives: “Students should …,” “The teacher will …,” “Everyone must …,” and so on. Additionally, it may be beneficial to classroom rapport if students word their rules in a positive light—for example, “Students will attend classes on time” rather than “Students must not be late.”

Certain points—such as those regarding the use of cell phones and the L1 in class— are recommended to be nonnegotiable, depending on the teacher. The teacher should make clear that rules of the school or institution must be followed. In the case of the school’s regulations, the teacher can explain or lead a discussion on why those regulations are in place. It is also helpful to mention limits or exceptions, such as, “Cell phones can be used for dictionaries or research, but not for online

shopping or social media."

I have three points that are nonnegotiable for students:

1- Remember that mistakes are not bad. They help us learn.
2- We will always try and put our best effort into our work.
3- We will use mobile phones responsibly.

The last point, responsible mobile phone use, will depend on the context and the teacher; it is ultimately up to teachers or their institutions to decide what is appropriate for their situation. Personally, I like to add these nonnegotiable points at the end of the contract, as students may write these or similar rules into their version. That makes a good segue into explaining these contract terms and the reasons behind them—especially the points about mistakes and trying—in order to help create a better classroom environment.

2.20. Previous Studies

2.20.1. Local Studies:

Amna Elsharif Elfadil (2016), investigating the importance of collaborative learning among universities students in acquiring English as a foreign language. Sudan University for Science and Technology. A thesis submitted in partial fulfilment for the requirement of M.A degree in Applied linguistics. The study attempts to investigate the importance of collaborative learning among universities' students in acquiring English as foreign language. The research is of a descriptive analytical nature, the researcher used a questionnaire to collect the data. Data has been processed statistically. The population of the study is the universities students of second year, English Language. The sample of the study was forty students at English Department, second year, at the College of Language, Sudan University of Science and Technology. The research reached into results which show that collaborative learning enhances students learning and achievement. The researcher recommends that

Students should be aware of the importance of collaborative learning, also Collaborative learning should be encouraged to be used among universities students.

2.5.2. Regional Studies:

Gohale. A, critical thinking for the academic year 1995. The present research was designed to study the effectiveness of collaborative learning as it relates to learning outcomes at the college level, for student at college of technology. This study examined the effectiveness of individual learning versus collaborative learning in enhancing drill- and practice skills and critical. Gohale's study relied on many research instruments in order to test the validity of his hypotheses and to collect reliable data. Henceforth, the outcomes of this study show that, it was found that students who participated in collaborative learning had performed significantly better in the critical thinking test than students who studied individually. It was also found that both groups did equally well on the drill- and practice test. The difference between Gohale study and the current study as what are mentioned below: Firstly, Gohale study was on undergraduate students at college of Industrial Technology, enrolled at Western Illinois University, Macomb Illinois, while the current study focuses only on the English language students. Secondly, Gohale's study focuses on two topic drill- and practice skills and critical thinking skills, whereas the current study has no specific topic. Gohale's study is an experimental study, while the current study is descriptive analytical study.

Giedrė Klimovienė, (2006) Developing Critical Thinking through Cooperative Learning, Studies About Languages, the study aims to focus on critical thinking skills might help a learner achieve positive results in any field, foreign languages included. The problem is that the basic

intellectual standards essential to critical thinking are not typically taught in schools. Therefore, young people at the university frequently display poor reasoning and problem-solving skills. This fact encouraged the authors of this study to analyze the development of critical thinking in university environment while teaching Business English (BE). The research methodology has been based on humanistic philosophy and cognitive theory related to a constructivism principle which recognizes teaching as an active process. The study presents both theoretical and practical considerations of the development of critical thinking. The focus is on Cooperative Learning (CL) activities that appeared to be effective techniques for developing critical thinking. The article analyses the most successful CL structures being applied in the foreign language classroom disclosing their content and effect on critical thinking skills. The classroom research carried out at the Lithuanian University of Agriculture confirms that CL creates favorable conditions for learners to become critical thinkers.

2.5.3. International Studies:

Mandusic, L. Blašković (2015). The Impact of Collaborative Learning to Critically Thinking. Trakia Journal of Sciences. Trakia University the study aims to actively involve all participants in the collaborative interaction. So far, the students were passive listeners who are just absorbing information from teaching materials and teachers. They were not included in collection of information, commenting and analysis. In active learning, the role of students is significantly changed because they need to take responsibility for their learning. Active learning is learning that encourages and stimulates the development of thinking by adopting real-life situations, as well as imaginary situation in simulated area. Baseline information is a goal that needs to be analyzed and solved

by students' critical thinking. Students develop personal skills and positive attitude towards learning. One of the concepts of active learning is collaborative learning. In today's modern way of teaching, teachers and students are combine intellectual efforts to explore, understand and solve the problem. They generate ideas, and finally create a product. Collaborative learning has a strong influence on critical thinking through discussion, debate and assessment of different conclusions. In collaborative learning it is very important to set terms. For example; forming an ideal group of students, selecting members according to mutual interests and viewpoints. At each stage of learning and common interaction the teacher must give students right to opinion. Each member of the group must be responsible for their own work (Individual responsibility, Slavin, 1980). On the other hand group is responsible for each member. Collaborative learning has a role to reduce the feeling of individual loneliness. When a group of students are working together they develop a sense of belonging. The aim of this paper is to indicate the advantages and disadvantages of collaborative learning and specify a need to make this type of learning with maximum results and the development of specific skills. A comparison of collaborative learning with passive learning is in order to prove that the learning in groups give much better results. Students are more independent, happier, less lonely, have sense of belonging and thus enhance learning and encourage personal development.

Antone M. Goyak (2009), The Effects of Cooperative Learning Techniques On Perceived Classroom Environment and Critical Thinking Skills Of Preserves Teachers, A Dissertation Presented to The Faculty of the School of Education Liberty University In Partial Fulfillment of the Requirements for the Degree Doctor of Education the study aims to

analyzed the effects of cooperative learning techniques versus lecture techniques on the following aspects of a higher education classroom: (a) the perception of a student's learning environment and (b) a student's critical thinking skills. Preserves teachers at a small Midwest college completed the College and University Classroom Environment Inventory (CUCEI) and the Watson-Glaser Critical Thinking Appraisal, Form-S (WGCTA-FS). Results revealed significantly higher means in the cooperative learning group in four of the eight constructs within the CUCEI. Results within the WGCTA-FS disclosed no significant differences between the means of the two groups. The outcomes of this study suggest that cooperative learning techniques have merit and profit in the undergraduate classroom. Suggestions for further research were also included.

Meredith Godat (2012) Collaborative Learning and Critical Thinking in Technology-enhanced Environments: An Instructional Design Framework, Thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy, Centre for Learning Innovation , Faculty of Education, Queensland University of Technology. This study aims to look at the impact that technology-enhanced learning environments have on different learners' critical thinking in relation to educative ability, technological self-efficacy, and approaches to learning and motivation in collaborative groups. These were explored within an instructional design framework called CoLeCTTE (collaborative learning and critical thinking in technology-enhanced environments) which was proposed, revised and used across three cases. The field of investigation was restricted to three key questions: 1) Do learner skill bases (learning approach and educative ability) influence critical thinking within the proposed CoLeCTTE framework? If so, how?; 2) Do learning

technologies influence the facilitation of deep learning and critical thinking within the proposed CoLeCTTE framework? If so, how?; and 3) How might learning be designed to facilitate the acquisition of deep learning and critical thinking within a technology-enabled collaborative environment? The rationale, assumptions and method of research for using a mixed method and naturalistic case study approach are discussed; and three cases are explored and analyzed. The study was conducted at the level (undergraduate and postgraduate) where participants were engaged in critical technical discourse within their own disciplines. Group behavior was observed and coded, attributes or skill bases were measured, and participants interviewed to acquire deeper insights into their experiences. A progressive case study approach was used, allowing case investigation to be implemented in a "ladder-like" manner. Cases 1 and 2 used the proposed CoLeCTTE framework with more in-depth analysis conducted for Case 2 resulting in a revision of the CoLeCTTE framework. Case 3 used the revised CoLeCTTE framework and in-depth analysis was conducted. The findings led to the final version of the framework. In Cases 1, 2 and 3, content analysis of group work was conducted to determine critical thinking performance. Thus, the researcher used three small groups where learner skill bases of educative ability, technological self-efficacy, and approaches to learning and motivation were measured. Cases 2 and 3 participants were interviewed and observations provided more in-depth analysis. The main outcome of this study is analysis of the nature of critical thinking within collaborative groups and technology-enhanced environments positioned in a theoretical instructional design framework called CoLeCTTE. The findings of the study revealed the importance of the Achieving Motive dimension of a student's learning approach and how direct intervention and strategies can positively influence critical thinking performance. The findings also

identified factors that can adversely affect critical thinking performance and include poor learning skills, frustration, stress and poor self-confidence, prioritization of over learning; and inadequate appropriation of group role and tasks. These findings are set out as instructional design guidelines for the judicious integration of learning technologies into learning and teaching practice for higher education that will support deep learning and critical thinking in collaborative groups. These guidelines are presented in two key areas: technology and tools; and activity design, monitoring, control and feedback.

2.21. Summary of the Chapter:

Literature has shown that market domination and industry penetration into educational institutions will drive the development of infrastructures and programs that integrate technologies in the classroom. Technologies are characterized by affordances that can enrich the learning experience in the classroom and support distributed student groups and become tools for convenience, control, and communication. Learning approach and motivation, technological self-efficacy and educative ability are functions of deep learning and critical thinking performance, and in this study, are taken from the holistic, socio-constructivist perspectives of learning.

This study attempted to explore the research questions above within the CoLeCTTE framework to support deep learning and critical thinking processes in technology-enhanced, collaborative and contextualized learning environments.

The concept of collaborative learning, the grouping and pairing of students for achieving an academic goal has been widely researched and advocated throughout the professional literature. The term “collaborative learning” refers to an instruction method in which students at various

performance levels work together in small groups toward a common goal. The students are responsible for one another's learning as well as their own. Thus, the success of one student helps other students to be successful. Proponents of collaborative learning claim that the active exchange of ideas within small groups not only increases interest among the participants but also promotes critical thinking.

CHAPTER THREE

METHODOLOGY

Chapter Three

Methodology

3-1 Overview

The aim of this chapter is to describe the design and methodology used in conducting this study. It provides details about research population; participants, data collection, procedures and instruments used in this study. The questionnaire is the tool of data collection in this study. The reliability and validity of these tool is presented comprehensively. It concludes by explaining the type of data analysis and ethical concerns.

3-2 – Research Methodology

This thesis adopted the descriptive analytical method. The whole research describes phenomena and analysis the results. the study is conducted in Sudan University for Science and Technology, fourth year students, and professors in different universities.

This study is mixed method, both quantitative and qualitative were used to collect data from selected participants. These methods assisted in building a base on a complete understanding of the research problem.

3-2-1 – A mixed Method Approach

A mixed method study involves the collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given apriority, and involve the integration of the data at one or more stages in the process of research Cres Well et al ,(2003)

Creswell. (214) added mixed method is a research approach, popular in the social, behavioral, and health sciences, in which researchers collect , analyze and integrate both quantitative and qualitative data in a single

study or in sustained long – term program of inquiry to address their research questions .

3-3 Population and Sampling

In this study, the population was (60), 40 Sudanese English foreign language learners in Sudan University for Science and Technology fourth year, and 20 professors in different universities which are located in Khartoum State.

3-4 Data Collection Techniques

The items of the questionnaire are mainly developed based on the research objectives and research questions.

3-4-1 Questionnaire

The questionnaire is a basic tool and plays an important role in gathering information. The questionnaire was well designed by the researcher with cooperation with the supervisor and then it was handed to three professor assistance, two of them from SUST- college of Education and the other one from university of Al-Gazira The questionnaire consists of five hypotheses.

3- 4 Validity and Reliability of Questionnaire Test.

Cranach's Alpha Method: -

(A) Stability Test:

Stability means the stability of the scale and its non-contradiction with the same, i.e., the scale gives the same results with a probability of equal to the value of the parameter if it is applied to the same sample. It is used to measure the stability of the "Cronbach, s Alpha", according to the following equation:

$$\alpha = \frac{k}{k-1}\left[1 - \frac{\sum s^2{}_i}{s_i^2}\right]$$

Where (k) is the number of test words

(k-1) Number of test words - 1

($\sum s^2{}_i$) The variation of the scores of each test vocabulary

(s_i^2 The total variance of the total test vocabulary

The value of the Cronbach coefficient is between zero and one true. If there is no constant in the data, the value of the parameter is equal to zero. Increasing the coefficient of alpha Cronbach means increasing the reliability of the data than the opposite of the sample results on the study population.

(B) Validity Test:

Validity is a measure used to determine the degree of sincerity of the respondents through their answers on a given scale. Validity is calculated in many ways, including the square root of the stability coefficient. The value of Validity and stability ranges from zero to the correct one. Self-Validity of the questionnaire is the measurement of the tool. The validity of the tool to measure what was set for him (researcher) to find self-Validity statistically using the equation of self- Validity is:

Validity =$\sqrt{\text{Stability}}$

The following is a table showing the results of the stability and honesty test for all the study axes:

Table (3.1) Results of Stability and Validity Test for the Study Variables.

Axes	Number of item	Stability	Validity
First scale	7	0.61	0.77
Second scale	10	0.78	0.88
Third scale	4	0.70	0.84
Fourth scale	6	0.78	0.88
Fifth scale	7	0.72	0.85
Total scale	34	0.82	0.91

Source: Preparation of the researcher from the study data, 2021.

Table (1) shows that the values of stability for all study variables are greater than (60%). These values mean the availability of a high degree of internal stability of all the axes of the questionnaire. It is therefore possible to say that the standards adopted by the study have internal stability. These answers are to achieve the objectives of the study and analyze the results.

And that the values of Validity for all the variables of the study is greater than (70%) and this result refers to the efficiency of the questionnaire and its ability to what is required of honest and consistent results.

Table (3.2) Validators' Schedule

Name	Academic Position	University or Institutions
Dr. Abdel-Kareem Kakum	Assistant professor	Sudan University for Science and Technology
Dr. Sami Balla	Assistant professor	Sudan University for Science and Technology
Dr. Mubarak Siddig Saeed	Assistant professor	Aljazeera University

CHAPTER FOUR
DATA ANALYSIS, RESULTS AND DISCUSSION

Chapter Four

Data Analysis and Discussion

In this chapter the researcher will discuss the five hypotheses according to the (SPSS).

4.1 Analysis of Hypotheses:

4.1.1 Analysis of First Hypothesis:

(Critical thinking raises learner's awareness of his or her own thinking and conception).

Frequency distribution of the first hypothesis data:

Table (4.1) Frequency distribution of the first hypothesis data.

Items	strongly disagree		disagree		neutral		agree		strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
1/Critical thinking raises learners' awareness to identify and state issues clearly, logically and accurately.	0	.0%	0	.0%	3	5.0 %	37	61. 7%	20	33.3 %
2/Critical thinking raises learners' ability to ask pertinent questions	0	.0%	0	.0%	7	11.7 %	29	48. 3%	24	40.0 %
3/Critical thinking raises learners' ability to develop own position and back arguments	0	.0%	3	5.0%	16	26.7 %	26	43. 3%	15	25.0 %
4/Critical thinking raises learners' ability to make summaries, identify	0	.0%	6	10.0 %	17	28.3 %	25	41. 7%	12	20.0 %

relevant points of View.										
5/Critical thinking raises learners' ability to analyze, do synthesis and make decisions	0	.0%	3	5.0%	20	33.3 %	29	48. 3%	8	13.3 %
6/Critical thinking has ability to make critiques and integrate other perspectives	1	1.7 %	3	5.0%	20	33.3 %	25	41. 7%	11	18.3 %
7/Critical thinking has ability to use explicit language and communicate effectively	0	.0%	15	25.0 %	17	28.3 %	19	31. 7%	9	15.0 %
Total scale	**0.14**	**0.24 %**	**4.28**	**7.14 %**	**14.2**	**23.8 0%**	**27.1**	**45.2 4%**	**14.1**	**23.5 6%**

Source: Preparation of the researcher from the study data, 2021.

The highest percentage of approval was for the first statement (Critical thinking raises learners' awareness to identify and state issues clearly, logically and accurately), reaching (95) %, while the percentage of non-approval was (0)%. and for neutrals, their percentage reached (5) %.

The lowest percentage of approval was for the seventh statement (Critical thinking has ability to use explicit language and communicate effectively), as it reached (47) %, while the percentage of those who did not agree to it was (25) %, and for neutrals, their percentage reached (28) %.

-Approval of the axis as a whole reached (69)%, while the percentage of non-approval was (7)%. This result indicates that the sample members agree on the scale by (70) %.

Descriptive analysis and significance differences of the first hypothesis data.

Table (4.2) shows the arithmetical mean, the standard deviation and the (T) test for the significance of differences of the first hypothesis data.

Items	Mean	Std. Deviation	T	sig	Degree of
1/Critical thinking raises learners' awareness to identify and state issues	4.2833	.55515	17.906	.000	High
2/Critical thinking raises learners' ability to ask pertinent questions	4.2833	.66617	14.922	.000	High
3/Critical thinking raises learners' ability to develop own position and	3.8833	.84556	8.092	.000	High
4/Critical thinking raises learners' ability to make summaries, identify	3.7167	.90370	6.143	.000	High
5/Critical thinking raises learners' ability to analyze, do synthesis and	3.7000	.76579	7.080	.000	High
6/Critical thinking has ability to make critiques and integrate other	3.7000	.88872	6.101	.000	High
7/Critical thinking has ability to use explicit language and communicate	3.3667	1.02456	2.772	.007	Medium
Total scale	**3.8476**	**.44237**	**14.842**	**.000**	**High**

Source: Preparation of the researcher from the study data, 2021.

The degree of approval of items first hypothesis was high, this is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19).

4.1.2. Analysis of Second Hypothesis:

(Critical thinking improves individual's intellectual products through collaborative learning).

Frequency distribution of the second hypothesis data:

Table (4.3) Frequency distribution of the second hypothesis data.

Items	strongly disagree		disagree		neutral		agree		strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
1/Using collaborative learning promotes students critical thinking.	0	%0.	0	%0.	6	10.0 %	27	45.0 %	27	45.0 %
2/Students thinks best when they learn collaboratively with other students on a course assignment.	0	%0.	1	1.7 %	10	16.7 %	11	18.3 %	38	63.3 %
3/By using collaborative learning students at the end of the course, achieve high degrees.	0	%0.	1	1.7 %	6	10.0 %	15	25.0 %	38	63.3 %
4/Collaborative learning establishes beneficial social process of learning.	0	%0.	1	1.7 %	10	16.7 %	20	33.3 %	29	48.3 %

5/Working in group enhances the Student communication skills.	1	1.7 %	1	1.7 %	6	10.0 %	13	21.7 %	39	65.0 %
6/Collaborative learning creates opportunities to develop students' cognition.	1	1.7 %	1	1.7 %	5	8.3 %	27	45.0 %	26	43.3 %
7/Working in groups fosters exchange of knowledge, information and experience.	1	1.7 %	2	3.3 %	9	15.0 %	24	40.0 %	24	40.0 %
8/Students intend to use Collaborative learning at universities.	1	1.7 %	7	11.7 %	14	23.3 %	16	26.7 %	22	36.7 %
9/Collaborative learning should be encouraged to be used between universities students.	0	%0.	3	5.0 %	22	36.7 %	13	21.7 %	22	36.7 %
10/Students must use collaborative learning at universities	1	1.7 %	6	10.0 %	29	48.3 %	13	21.7 %	11	18.3 %
Total scale	**0.5**	**0.85 %**	**2.3**	**3.85 %**	**11.7**	**19.5 %**	**17.9**	**29.8 %**	**27.6**	**45.9 %**

Source: Preparation of the researcher from the study data, 2021.

The highest percentage of approval was for the first statement (Using collaborative learning promotes students critical thinking.), reaching (90)

%, while the percentage of non-approval was (0) %. and for neutrals, their percentage reached (10) %.

The lowest percentage of approval was for the tenth statement (Students must use collaborative learning at universities), as it reached (40) %, while the percentage of those who did not agree to it was (12) %, and for neutrals, their percentage reached (48) %.

-Approval of the axis as a whole reached (76)%, while the percentage of non-approval was (5) %. This result indicates that the sample members agree on the scale by (76) %.

Descriptive analysis and significant differences of the Second hypothesis data.

Table (4.4) shows the arithmetical mean, the standard deviation and the (T) test for the significance of differences of the second hypothesis data.

Items	Mean	Std. Deviation	T	sig	Degree of
1/Using collaborative learning promotes students critical thinking.	4.3500	.65935	15.860	.000	High
Students thinks best when they learn 2/collaboratively with other students on a course assignment.	4.4333	.83090	13.362	.000	High
3/By using collaborative learning students at the end of the course, achieve high degrees.	4.5000	.74788	15.536	.000	High
4/Collaborative learning establishes beneficial social process of learning.	4.2833	.80447	12.357	.000	High
5/Working in group enhances the Student communication skills.	4.4667	.87269	13.018	.000	High

6/Collaborative learning creates opportunities to develop students' cognition.	4.2667	.82064	11.956	.000	High
7/Working in groups fosters exchange of knowledge, information and experience.	4.1333	.91070	9.640	.000	High
8/Students intend to use Collaborative learning at universities.	3.8500	1.10200	5.975	.000	High
9/Collaborative learning should be encouraged to be used between	3.9000	.96901	7.194	.000	High
10/Students must use collaborative learning at Universities	3.4500	.96419	3.615	.001	High
Total scale	**4.1633**	**.50989**	**17.673**	**.000**	**High**

Source: Preparation of the researcher from the study data, 2021.

The degree of approval of items second hypothesis was high, this is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19).

4.1.3. Analysis of Third Hypothesis:

(The criteria used for evaluating student's critical thinking abilities is good).

Frequency distribution of the third hypothesis data:

Table (4.5) Frequency distribution of the third hypothesis data.

Items	strongly disagree		disagree		neutral		agree		strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
1/Critical thinking assignments should address fundamental & powerful concepts and should be substantive and meaningful.	0	%0.	0	%0.	10	16.7 %	30	50.0 %	20	33.3 %
2/Critical thinking assignments should require students to use appropriate cognitive skills.	0	%0.	0	%0.	16	26.7 %	31	51.7 %	13	21.7 %
3/Critical thinking assignments should hold students' thinking to intellectual standards.	0	%0.	0	%0.	33	55.0 %	14	23.3 %	13	21.7 %
4/Critical thinking assignments should ask questions requiring reasoned judgment within conflicting systems or	1	1.7 %	6	10.0 %	28	46.7 %	19	31.7 %	6	10.0 %

complex questions requiring evidence and reasoning within one system.										
Total scale	**0.25**	**0.43 %**	**1.5**	**2.50 %**	**21.75**	**36.2 %**	**23.5**	**39.1 %**	**13**	**21.6 %**

Source: Preparation of the researcher from the study data, 2021.

The highest percentage of approval was for the first statement (Critical thinking assignments should address fundamental & powerful concepts and should be substantive and meaningful.), reaching (83) %, while the percentage of non-approval was (0) %. and for neutrals, their percentage reached (17) %.

The lowest percentage of approval was for the fourth statement (Critical thinking assignments should ask questions requiring reasoned judgment within conflicting systems or complex questions requiring evidence and reasoning within one system.), as it reached (42) %, while the percentage of those who did not agree to it was (12) %, and for neutrals, their percentage reached (46)%.

-Approval of the axis as a whole reached (61)%, while the percentage of non-approval was (3) %. This result indicates that the sample members agree on the scale by (61) %.

Descriptive analysis and significance differences of the third hypothesis data.

Table (4.6) shows the arithmetical mean, the standard deviation and the (T) test for the significance of differences of the third hypothesis data.

Items	Mean	Std. Deviation	T	Sig	Degree of approval
1/Critical thinking assignments should address fundamental & powerful concepts and should be substantive and meaningful.	4.1667	.69298	13.041	.000	High
2/Critical thinking assignments should require students to use appropriate cognitive skills.	3.9500	.69927	10.523	.000	High
3/Critical thinking assignments should hold students' thinking to intellectual standards.	3.6667	.81650	6.325	.000	High
4/Critical thinking assignments should ask questions requiring reasoned judgment within conflicting systems or complex questions requiring evidence and reasoning within one system.	3.3833	.86537	3.431	.000	medium
Total scale	**3.7917**	**.56028**	**10.945**	**.000**	**High**

Source: Preparation of the researcher from the study data, 2021.

-The degree of approval of Items third hypothesis was high, this is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19).

4.1.4. Analysis of Fourth Hypothesis:

(Collaborative learning strategies support maintain creativity).

Frequency distribution of the fourth hypothesis data:

Table (4.7) Frequency distribution of the fourth hypothesis data.

Items	strongly disagree		disagree		neutral		agree		strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
1/There is adopting scientific usage of discussion as a teaching strategy for the subjects that students learn.	0	%0.	3	5.0 %	7	11.7 %	23	38.3 %	27	45.0 %
2/Teachers encourage independence and creativity thinking strategies learning during lessons.	0	%0.	7	11.7 %	8	13.3 %	26	43.3 %	19	31.7 %
3/Teachers support students-centered learning.	0	%0.	11	18.3 %	20	33.3 %	14	23.3 %	15	25.0 %
4/Teachers are flexible in dealing with teaching strategies.	0	%0.	13	21.7 %	22	36.7 %	13	21.7 %	12	20.0 %
5/Critical thinking and problem solving are important skills for students.	0	%0.	3	5.0 %	27	45.0 %	22	36.7 %	8	13.3 %
6/Teachers use strategies	1	1.7	11	18.3	13	21.7	22	36.7	13	21.7

to encourage active learning, interaction, participation and collaboration among students.		%		%		%		%		%
Total scale	**0.16**	**0.28 %**	**8**	**13.3 %**	**16.1**	**26.9 %**	**20**	**33.3 %**	**15.6**	**26.1 %**

Source: Preparation of the researcher from the study data, 2021.

The highest percentage of approval was for the first statement (There is adopting scientific usage of discussion as a teaching strategy for the subjects that students learn.), reaching (83) %, while the percentage of non-approval was (5)%. and for neutrals, their percentage reached (12) %.

The lowest percentage of approval was for the fourth statement (Teachers are flexible in dealing with teaching strategies.), as it reached (42) %, while the percentage of those who did not agree to it was (22) %, and for neutrals, their percentage reached (36) %.

-Approval of the axis as a whole reached (60)%, while the percentage of non-approval was (13) %. This result indicates that the sample members agree on the scale by (60) %.

Descriptive analysis and significance differences of the fourth hypothesis data.

Table (4.8) shows the arithmetical mean, the standard deviation and the (T) test for the significance of differences of the fourth hypothesis data.

Items	Mean	Std. Deviation	T	sig	Degree of
1/There is adopting scientific usage of discussion as a teaching strategy for the subjects that students learn.	4.2333	.85105	11.225	.000	High
2/Teachers encourage independence and creativity thinking strategies learning during lessons.	3.9500	.96419	7.632	.000	High
3/ Teachers support students-centered learning.	3.5500	1.06445	4.002	.000	High
4/ Teachers are flexible in dealing with teaching strategies.	3.4000	1.04476	2.966	.000	High
5/ Critical thinking and problem solving are important skills for students.	3.5833	.78744	5.738	.000	High
6/ Teachers use strategies to encourage active learning, interaction, participation and collaboration among students.	3.5833	1.07816	4.191	.000	High
Total scale	**3.7167**	**.67390**	**8.238**	**.000**	**High**

Source: Preparation of the researcher from the study data, 2021.

The degree of approval of Items fourth hypothesis was high, this is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19).

4.1.5. Analysis of Fifth Hypothesis:

(Critical thinking leads student to recognize the connection between logic and philosophy).

Frequency distribution of the fifth hypothesis data:

Table (4.9) Frequency distribution of the fifth hypothesis data.

Items	strongly disagree		disagree		neutral		agree		strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
1/critical thinking identifies alternative interpretations for data or observations.	0	%0.	1	1.7 %	8	13.3 %	32	53.3 %	19	31.7 %
2/critical thinking identifies new information that might support or contradict a hypothesis.	0	%0.	2	3.3 %	8	13.3 %	38	63.3 %	12	20.0 %
3/critical thinking explain how new information can change a problem.	0	%0.	2	3.3 %	26	43.3 %	24	40.0 %	8	13.3 %
4/critical thinking separates relevant from irrelevant information.	0	%0.	5	8.3 %	19	31.7 %	28	46.7 %	8	13.3 %
5/critical thinking integrates information to	0	%0.	3	5.0 %	22	36.7 %	27	45.0 %	8	13.3 %

solve problems.										
6/critical thinking learns and apply new information.	0	%0.	5	8.3 %	18	30.0 %	29	48.3 %	8	13.3 %
7/critical thinking uses mathematical skills to solve real-world problems.	1	1.7 %	14	23.3 %	21	35.0 %	14	23.3 %	10	16.7 %
Total scale	**0.14**	**0.24 %**	**4.57**	**7.60 %**	**17.4**	**29.0 4%**	**27.4**	**45.7 %**	**10.4**	**17.3 %**

Source: Preparation of the researcher from the study data, 2021.

The highest percentage of approval was for the first statement (critical thinking identifies alternative interpretations for data or observations), reaching (85) %, while the percentage of non-approval was (2)%. and for neutrals, their percentage reached (13) %.

The lowest percentage of approval was for the seventh statement (critical thinking uses mathematical skills to solve real-world problems), as it reached (40) %, while the percentage of those who did not agree to it was (25) %, and for neutrals, their percentage reached (35) %.

-Approval of the axis as a whole reached (63)%, while the percentage of non-approval was (8) %. This result indicates that the sample members agree on the scale by (63) %.

Descriptive analysis and significant differences of the fifth hypothesis data.

Table (4.10) shows the arithmetical mean, the standard deviation and the (T) test for the significance of differences of the fifth hypothesis data.

Items	Mean	Std. Deviation	T	sig	Degree of
1/critical thinking identifies alternative interpretations for data or observations.	4.1500	.70890	12.566	.000	High
2/critical thinking identifies new information that might support or contradict a hypothesis.	4.0000	.68889	11.244	.000	High
3/critical thinking explain how new information can change a problem.	3.6333	.75838	6.469	.000	High
4/critical thinking separates relevant from irrelevant information.	3.6500	.81978	6.142	.000	High
5/critical thinking integrates information to solve problems.	3.6667	.77387	6.673	.000	High
6/critical thinking learns and apply new information.	3.6667	.81650	6.325	.000	High
7/critical thinking uses mathematical skills to solve real-world problems.	3.3000	1.06246	2.187	.003	Medium
Total scale	**3.7238**	**.49408**	**11.348**	**.000**	**High**

Source: Preparation of the researcher from the study data, 2021.

The degree of approval of Items fifth hypothesis was high, this is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19).

4.2 Test of Hypotheses:

The researcher used the (t-test) to test the study hypotheses.

4.2.1 Test of First Hypothesis:

(Critical thinking raises learner's awareness of his or her own thinking and conception).

Table (4.11) t-test for the first hypothesis

Calculate (t) value	Significant value	Inference
14.842	.000	High

Source: preparation of the research from the study data, 2021.

According to the table (4.11), the degree of approval of Items first hypothesis was high, this is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19). And standard deviations are close to the correct one, and the values of (T) test is statistically significant with a probability values less than statistical significance level (.05), and the overall average of the scale was (3.84), which means that there are differences between this averages and the average scale (3) in favor of approval.

This result confirms the verification of the first hypothesis developed by the researcher (Critical thinking raises learner's awareness of their own thinking and conception) with an approval rate of 70%.

4.2.2 Test of Second Hypothesis:

(Critical thinking improves individual's intellectual products through collaborative learning).

Table (4.12) t-test for the second hypothesis

Calculate (t) value	Significant value	Inference
4.1633	.000	High

Source: preparation of the research from the study data, 2021.

According to the table (4.12), the degree of approval of Items second hypothesis was high. This is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19), and standard deviations is close to the correct one, and The values of (T) test is statistically significant with a probability values less than statistical significance level (.05), and the overall average of the scale was (4.16), Which means that there are differences between this averages and the average scale (3) in favor of approval.

This result confirms the verification of the second hypothesis developed by the researcher (Critical thinking improves individual's intellectual products through collaborative learning) With an approval rate of (76) %.

4.2.3 Test of Third hypothesis:

(The criteria used for evaluating student's critical thinking facilitate good judgment).

Table (4.13) t-test for the first hypothesis

Calculate (t) value	Significant value	Inference
3.7917	.000	High

Source: preparation of the research from the study data, 2021.

According to the table (4.13), -The degree of approval of Items third hypothesis was high, This is shown by the arithmetical averages of the

sample members on Items that fall within the high score (3.40 to 4.19), and standard deviations is close to the correct one, and The values of (T) test is statistically significant with a probability values less than statistical significance level (.05), and the overall average of the scale was (3.79), Which means that there are differences between this averages and the average scale (3) in favor of approval.

This result confirms the verification of the third hypothesis developed by the researcher (The criteria used for evaluating student's critical thinking abilities is good) With an approval rate of (61) %.

4.2.4 Test of Fourth hypothesis:

(Collaborative learning strategies support maintain creativity).

Table (4.14) t-test for the second hypothesis

Calculate (t) value	Significant value	Inference
3.7167	.000	High

Source: preparation of the research from the study data, 2021.

According to the table (4.14) -The degree of approval of Items fourth hypothesis was high, This is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19), and standard deviations is close to the correct one, and The values of (T) test is statistically significant with a probability values less than statistical significance level (.05), and the overall average of the scale was (3.71), Which means that there are differences between this averages and the average scale (3) in favor of approval.

This result confirms the verification of the fourth hypothesis developed by the researcher (collaborative learning strategies support maintain creativity) With an approval rate of (60) %.

4.2.5 Test of Fifth hypothesis:

(Critical thinking leads student to recognize the connection between logic and philosophy).

Table (4.15) t-test for the first hypothesis

Calculate (t) value	Significant value	Inference
3.7238	.000	High

Source: preparation of the research from the study data, 2021.

According to the table (2.15) the degree of approval of Items fifth hypothesis was high, This is shown by the arithmetical averages of the sample members on Items that fall within the high score (3.40 to 4.19), and standard deviations is close to the correct one, and The values of (T) test is statistically significant with a probability values less than statistical significance level (.05),and the overall average of the scale was (3.72), Which means that there are differences between this averages and the average scale (3) in favor of approval.

This result confirms the verification of the fifth hypothesis developed by the researcher (Critical thinking leads student to recognize the connection between logic and philosophy) With an approval rate of (63) %.

Summary of the chapter

According to the five hypotheses of this study we can summarize the verifications as the following:

The first hypothesis was accepted according to its result with the agree of (76) % of sample members.

The second hypothesis was accepted according to its analysis with the agree of (61) % of the sample members.

The third hypothesis also was accepted according to its approval by the rate (63) % of sample.

More over the fourth hypothesis was approved from its indications of the results by the rate (63) % of the sample.

The fifth hypothesis also was accepted from its approval by the rate (70) % from the sample members.

These results confirm the verification of these five hypotheses of this study.

CHAPTER FIVE

MAIN FINDINGS, CONCLUSION, RECOMMENTDAIONS AND SUGGESTIONS FOR FURTHER STUDIES

Chapter Five

Findings, Conclusion, Recommendations and Suggestions for Further Studies

5.1 Summary of the Study:

The research is basically designed to dealt with exploring the impact of using critical thinking skills on the development of collaborative learning for university students of EFL as foreign language, the researcher adopted descriptive method, and participants were 60, 40 students of Sudan University for Science and Technology, and 20 were professors of difference universities Therefore, the researcher reached on many findings and recommendation as following:

5.2 Findings:

1- Critical thinking raises learners' awareness to identify and state issues clearly, logically and accurately.
2- Critical thinking raises learners' ability to develop own position and back arguments
3- Critical thinking has ability to make critiques and integrate other perspectives
4- Students thinks best when they learn collaboratively with other students on a course assignment.
5- Collaborative learning establishes beneficial social process of learning.
6- Collaborative learning creates opportunities to develop students' cognition.
7- Students intend to use Collaborative learning at universities.
8- Students really like working in collaboration.
9- Critical thinking assignments should require students to use appropriate cognitive skills.

10- Teachers encourage independence and creativity thinking strategies learning during lessons.

5.3. Recommendations:

In the light of the findings, the following recommendations are suggested:

1- It is important for teacher to use collaborative learning to promote students critical thinking.
2- Student should work in-group to enhance their communication skills.
3- Teacher should depend on critical thinking assignments to hold students thinking to intellectual standards.
4- Teachers should encourage independence and creativity thinking strategies learning during lessons.
5- The researcher encourages the researchers to make studies on critical thinking and collaborative learning because of its important to promote learning among the students.

5.4. Suggestions for Further Studies:

The researcher suggests teachers and students to:

1- Developing critical thinking skills strategies for academic purposes for high secondary students.
2- Developing critical thinking strategies for adult learners.
3- Exploring the importance of adopting critical thinking in curriculum of secondary stage.
4- Developing critical thinking skills through autonomous work.
5- Investigating the importance of developing critical thinking through argumentative techniques.

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Appendices

Appendices

Appendix (A)

بسم الله الرحمن الرحيم

Sudan University of Science and Technology

College of Graduate Studies

Dear learner …

Thank you for agreeing to take part in this important questionnaire. It is a part of thesis Submitted in Fulfillment of the Requirements for the Degree of PhD in English Language (Applied Linguistics). Titled (**Exploring the Importance of Developing Critical-Thinking Skills for Sudanese Universities Students of EFL Learners through Collaborative Learning)** through this brief questionnaire, your answers will be helpful in enhancing the learning process to the researcher and the universities students to meet their needs. Your responses will only be used for questionnaire purposes.

Thank you very much for your time.

Researcher

The Study Hypotheses:

First Hypothesis:

(Critical thinking raises the awareness of learner's own thinking and conception).

No	Statement	Strongly Agree	Agree	Neutral	Dis agree	Strongly disagree
1	Critical thinking raises learners' awareness to identify and state issues clearly, logically and accurately.					
2	Critical thinking raises learners' ability to ask pertinent questions					
3	Critical thinking raises learners' ability to develop own position and back arguments					
4	Critical thinking raises learners' ability to make summaries, identify relevant points of View.					
5	Critical thinking raises learners' ability to analyze, do synthesis and make decisions					
6	Critical thinking has ability to make critiques and integrate other perspectives					
7	Critical thinking has ability to use explicit language and communicate effectively					

Second Hypothesis:

(Critical thinking improves individual's intellectual products through collaborative learning).

No	Statement	Strongly Agree	Agree	Neutral	Dis agree	Strongly disagree
1	Using collaborative learning promotes students critical thinking.					
2	Students thinks best when they learn collaboratively with other students on a course assignment.					
3	By using collaborative learning students at the end of the course, achieve high degrees.					
4	Collaborative learning establishes beneficial social process of learning.					
5	Working in group enhances the Student communication skills.					
6	Collaborative learning creates opportunities to develop students' cognition.					
7	Working in groups fosters exchange of knowledge, information and experience.					
8	Students intend to use Collaborative learning at universities.					
9	Collaborative learning should be encouraged to be used between universities students.					
10	Students really like working in collaboration.					
11	Students must use collaborative learning at universities					

Third Hypothesis:

(The criteria used for evaluating critical thinking facilitate is good judgment)

No	Statement	Strongly Agree	Agree	Neutral	Dis agree	Strongly disagree
1	Critical thinking assignments should address fundamental & powerful concepts and should be substantive and meaningful.					
2	Critical thinking assignments should require students to use appropriate cognitive skills.					
3	Critical thinking assignments should hold students' thinking to intellectual standards.					
4	Critical thinking assignments should ask questions requiring reasoned judgment within conflicting systems or complex questions requiring evidence and reasoning within one system.					

Fourth Hypothesis:

(Adopting scientific approaches that maintain creativity supported by collaborative learning strategies)

No	Statement	Strongly Agree	Agree	Neutral	Dis agree	Strongly disagree
1	There is adopting scientific usage of discussion as a teaching strategy for the subjects that students learn.					
2	Teachers encourage independence and creativity thinking strategies learning during lessons.					
3	Teachers support students-centered learning.					
4	Teachers are flexible in dealing with teaching strategies.					
5	Critical thinking and problem solving are important skills for students.					
6	Teachers use strategies to encourage active learning, interaction, participation and collaboration among students.					

Fifth Hypothesis:

(Critical thinking leads student to describe the connection between logic and philosophy)

No	Statement	Strongly Agree	Agree	Neutral	Dis agree	Strongly disagree
1	critical thinking identifies alternative interpretations for data or observations.					
2	Teachers encourage independence and creativity thinking strategies learning during lessons.					
3	critical thinking explain how new information can change a problem.					
4	critical thinking separates relevant from irrelevant information.					
5	critical thinking integrates information to solve problems.					
6	critical thinking learns and apply new information.					
7	critical thinking uses mathematical skills to solve real-world problems.					

Appendix (B)

No.	Name	Position	University
1	Dr. Abdel-Kareem Kakum	Assistant professor	Sudan University for Science and Technology
2	Dr. Sami Balla	Assistant professor	Sudan University for Science and Technology
3	Dr. Mubarak Siddig Saeed	Assistant professor	Gezira University