

**The Impacts of Collaborative Learning on Developing
Critical Thinking in English Classroom: A Study among
High School Students in Two Private Schools in Abu Dhabi**

أثر التعليم التعاوني في تنمية التفكير النقدي في صف اللغة الإنجليزية : دراسة بين
طلاب المرحلة الثانوية في مدرستين خاصتين في أبوظبي

by

MARYANA GHAZI ALRABADI

**A thesis submitted in fulfilment
of the requirements for the degree of
DOCTOR OF EDUCATION**

at

The British University in Dubai

October 2020

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**A thesis submitted to the Faculty of Education
in fulfilment of the requirements for the degree of
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DECLARATION

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Maryana Ghazi AlRabadi

Student name

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ABSTRACT

Schools in the United Arab Emirates (UAE) shifted from following traditional teaching system to using technologically-advanced classrooms. Subsequently, by the time the students start their new learning experiences, they need to adapt different forms of learning processes, such as adapting higher educational learning system, and sharpening their thinking skills. Critical thinking skills are essential factors that can be engraved in the learner at any point of the educational hierarchy. Thus, it is better clenched in students at the tertiary stage as they become more mentally matured to overcome challenges. Also, students' thinking skills need to be sharpened early by providing them learning strategies which promote them to think why and how, instead of only asking what. Additionally, the study concludes that students need to acquire 21st century thinking skills in English classroom integrated with technology as they enter the working life of society. This thinking process helps the students to think critically, and acquire the knowledge meaningfully when they encounter it in real life situations. Therefore, the purpose of this study is to understand how collaborative learning develops students' critical thinking skills in English classroom among high school students in two private schools in Abu Dhabi. In addition, the conducted research used mixed method approach (quantitative and qualitative methods) which is suitable for this research as it would answer the main research question and would increase the validity of the research (Creswell, 2003). As a result, the study will contribute in increasing the abilities of students who would use their critical thinking skills effectively in English classroom through collaborative learning in future and promoting shared responsibilities within students and teachers by developing effective communication skills.

ملخص البحث

تحولت المدارس في الإمارات العربية المتحدة (الإمارات العربية المتحدة) من نظام تدريس تقليدي إلى فصول دراسية متقدمة تقنيًا. فبحلول الوقت الذي يبدأ فيه الطلاب تجاربهم التعليمية الجديدة ، يحتاجون إلى تكييف أشكال مختلفة من عمليات التعلم ، مثل تكييف نظام التعليم العالي وشحن مهارات التفكير لديهم. مهارات التفكير النقدي هي عوامل أساسية يمكن نقشها في المتعلم في أي نقطة من التسلسل الهرمي التعليمي. وبالتالي ، فمن الأفضل ثباتها في الطلاب في المرحلة الجامعية حيث يصبحون أكثر نضجًا عقليًا للتغلب على التحديات. أيضًا ، يجب صقل مهارات التفكير لدى الطلاب في وقت مبكر من خلال تزويدهم باستراتيجيات التعلم التي تشجعهم على التفكير في السبب والكيفية ، بدلاً من السؤال فقط عن ماذا. بالإضافة إلى ذلك ، خلصت الدراسة إلى أن الطلاب بحاجة إلى اكتساب مهارات تفكير القرن الحادي والعشرين المدمجة في صف اللغة الإنجليزية مع التكنولوجيا عند دخولهم الحياة العملية للمجتمع. تساعد عملية التفكير هذه الطلاب على التفكير النقدي ، واكتساب المعرفة بشكل هادف عندما يواجهونها في مواقف الحياة الحقيقية. لذلك ، فإن الغرض من هذه الدراسة هو فهم كيفية تطوير الأعمال التعاونية لمهارات التفكير النقدي للطلاب بين طلاب المدارس الثانوية في صف اللغة الإنجليزية في مدرستين خاصتين في أبو ظبي. بالإضافة إلى ذلك ، استخدم البحث الذي تم إجراؤه منهجًا مختلطًا (الطرق الكمية والنوعية) وهو مناسب لهذا البحث لأنه يجيب على سؤال البحث الرئيسي ويزيد من صحة البحث. ولذلك ، ستساهم الدراسة في زيادة قدرات الطلاب الذين سيستخدمون مهارات التفكير النقدي الخاصة بهم بشكل فعال من خلال الأعمال التعاونية في المستقبل وتعزيز المسؤوليات المشتركة بين الطلاب والمعلمين من خلال تطوير مهارات الاتصال الفعال.

DEDICATION

I hereby dedicate this work to the dearest people to my heart, to my mother, may her soul rest in peace, who throughout her life has supported me with her love, prayers, and encouragement, and to my father who has never stopped supporting me with his kindness, care, and advice. Without my parents' blessings and assistance, I would never be what I am today.

To my sisters and brothers

To my lovely family

To Dr. Solomon Arulraj David, my thesis supervisor, who has facilitated and constituted my entire study work

To every person who has assisted me throughout this interesting and challenging journey

To everyone who believed in me

I love you all, and thank you with all my heart for being there for me all the time, and proving the support.

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Table of Contents

<u>CHAPTER 1: INTRODUCTION</u>	1
<u>1.1. Overview of the Chapter</u>	1
<u>1.2. Background and Motivation to the study</u>	1
<u>1.3. Statement of the Problem</u>	6
<u>1.4. Purpose and objectives of the Study</u>	10
<u>1.5. Research Questions</u>	11
<u>1.6. Rationale for the Study</u>	12
<u>1.7. Structure of the Dissertation</u>	14
<u>CHAPTER 2: LITERATURE REVIEW</u>	15
<u>2.1. Chapter Overview</u>	15
<u>2.2. Conceptual Framework</u>	17
<u>2.2.1. Definitions of Critical Thinking in Educational Context</u>	18
<u>2.2.2. Competing Definitions of Critical Thinking</u>	21
<u>2.2.3. Utilization of Techniques and Pedagogy to Enhance Critical Thinking in K-12</u>	22
<u>2.2.4. The Educator's Role in Developing Critical Thinking Skills</u>	25
<u>2.2.4.1. Results of Increased Critical Thinking</u>	26
<u>2.2.5. The Importance of Collaborative Learning</u>	27
<u>2.3. Theoretical Framework</u>	30
<u>2.3.1. Critical Rationalism</u>	30
<u>2.3.2. Piaget's Cognitive Development and Language Learning</u>	31
<u>2.3.2.1. Piaget's Basic Concept</u>	32
<u>2.3.3. Stages of Cognitive Development</u>	33
<u>2.3.3.1. Why is Piaget's Theory so Often Misrepresented and Unjustly Criticized?</u>	35
<u>2.3.3.2. Eight Basic Structures of Thinking</u>	36
<u>2.3.4. Collaborative Learning and the Conversation of Mankind by Kenneth A. Bruffee</u>	37
<u>2.3.4.1. Collaborative Learning in English Classroom</u>	39
<u>2.3.5. Gardner's Theory of Multiple Intelligences</u>	41
<u>2.3.5.1 Gardner's Theory of Multiple Intelligences in Relation to Collaborative Learning in English Classroom</u>	43
<u>2.3.5.2 Critical Perspectives of Collaborative Learning</u>	45
<u>2.3.6. The Importance of the Social Context to Learning</u>	46

<u>2.3.6.1. The Constructivism Theory in Learning</u>	46
<u>2.3.7. Vygotsky's Theory of Cognitive Development</u>	47
<u>2.3.7.1. Vygotsky's Three Social Development Theorem (1962)</u>	49
<u>2.3.7.2. The Effectiveness of Vygotsky's Theory</u>	49
<u>2.3.7.3. Limitations of Vygotsky's Theory</u>	50
<u>2.3.8. Anderson's Phases of the Practical Inquiry Model</u>	51
<u>2.4. Review of Related Literature</u>	52
<u>2.4.1. The Importance of Critical Thinking</u>	52
<u>2.4.2. Model of Critical Thinking and Its Modification</u>	53
<u>2.4.3. Teaching for Critical Thinking</u>	55
<u>2.4.4. Assessing Critical Thinking Outcomes</u>	55
<u>2.4.5. Promoting Critical Thinking in the UAE</u>	56
<u>2.5. Summary</u>	57
<u>CHAPTER 3: METHODOLOGY</u>	60
<u>3.1. Overview of the Chapter</u>	60
<u>3.2. Research Approach</u>	60
<u>3.3. Data collection Plan</u>	64
<u>3.3.1. Site, Population, Sampling & Participant Selection</u>	66
<u>3.3.2. Instruments</u>	68
<u>3.3.2.1. Quantitative Instrument</u>	68
<u>3.3.2.1.1 Surveys</u>	69
<u>3.3.2.2 Qualitative Instruments</u>	72
<u>3.3.2.2.1 Interviews</u>	73
<u>3.3.2.2.2 Lesson Observations</u>	75
<u>3.4. Pilot Study</u>	76
<u>3.5. Data Analysis Plan</u>	77
<u>3.6. Scope of the Study</u>	78
<u>3.7. Ethical Considerations</u>	79
<u>3.8. Researcher Role</u>	79
<u>3.9. Trustworthiness</u>	81
<u>3.9.1. Reliability and Validity</u>	82
<u>3.9.1.1. Questionnaire Validation: Factor Analysis</u>	83
<u>3.9.1.2. Exploratory Factor Analysis (EFA)</u>	83

3.9.1.2.1 <i>Sample Size</i>	84
3.9.1.2.2 <i>Correlation Analysis</i>	84
3.9.1.2.3 <i>EFA Assumptions</i>	86
3.9.1.3 <i>Confirmatory Factor Analysis (CFA)</i>	89
3.9.1.3.1 <i>The Measurement Model Validity and Reliability</i>	89
3.9.1.4 <i>Reliability Analysis</i>	91
3.10. <i>Statistical Limitation of the Study</i>	91
CHAPTER 4: RESULTS, ANALYSIS AND DISCUSSION	92
4.1. <i>Overview of the Chapter</i>	92
4.2. <i>Analysis of the Quantitative Data (Survey)</i>	92
4.3. <i>Questionnaire Validity and Reliability</i>	93
4.3.1. <i>Exploratory Factor Analysis</i>	93
4.3.1.1. <i>Descriptive Analysis of the EFA Extracted Four Factors of the “Impacts of Collaborative Learning in Developing Critical Thinking” Scale</i>	96
4.3.2. <i>Confirmatory Factor Analysis (CFA)</i>	97
4.3.2.1. <i>Measurement Model Psychometric Evaluation</i>	97
4.3.2.2. <i>The Measurement Model: CFA Model Fit</i>	100
4.3.2.3. <i>Descriptive Statistics of Questionnaire Factors Proposed by the Researcher</i>	102
4.4. <i>Answering Research Question II</i>	104
4.4.1. <i>Independent-samples t Test: Gender</i>	104
4.4.2. <i>Independent-samples t Test: Nationality</i>	107
4.4.3. <i>One-sample t Tests</i>	110
4.4.4. <i>Group Differences in Students’ Perceptions about the Role of Collaborative Learning in Developing their Critical Thinking Skills</i>	114
4.4.4.1. <i>Gender</i>	114
4.4.4.2. <i>Nationality</i>	118
4.5. <i>Summary of Quantitative Data Analysis</i>	121
4.6. <i>Analysis of the Qualitative Data</i>	122
4.6.1. <i>Interview Analysis</i>	122
4.6.1.1. <i>Participants</i>	123
4.6.1.2. <i>Interviews Data Analysis Strategy</i>	124
4.6.1.3. <i>The Interview Data Thematic Analysis Process</i>	125
4.6.1.4. <i>Findings and Results of Interview Thematic Analysis</i>	126

<u>4.6.1.4.1.Theme 1: Perception of the Concept of Critical Thinking</u>	126
<u>4.6.1.4.2.Theme 2: Perception of the Concept of Collaborative Learning</u>	127
<u>4.6.1.4.3.Theme 3: Learning Environment</u>	128
<u>4.6.1.4.3.1.Sub-theme 3.1: Teacher Role</u>	128
<u>4.6.1.4.3.2.Sub-theme 3.2: Students Preferences</u>	130
<u>4.6.1.4.3.3.Sub-theme 3.3: Students Communication</u>	130
<u>4.6.1.4.4.Theme 4: Impact of Collaborative Working on Developing Critical Thinking</u>	131
<u>4.6.1.4.5.Theme 5: Collaborative Learning Challenges</u>	132
<u>4.6.1.4.6.Theme 6: Recommendations to Improve Collaborative Learning</u>	133
<u>4.6.2.Analysis of Lesson Observation Data</u>	133
<u>4.6.2.1.Findings of Observation Checklist Analysis</u>	134
<u>4.6.2.2.Observer Reflections</u>	139
<u>4.6.3.Analysis Summary</u>	141
<u>4.6.3.1.Summary of Interview Data Analysis</u>	141
<u>4.6.3.2.Summary of Observation Data Analysis</u>	143
<u>4.7.Triangulation of Findings</u>	144
<u>CHAPTER 5: CONCLUSION</u>	146
<u>5.1. Overview of the Chapter</u>	146
<u>5.2. Summary of the Study</u>	146
<u>5.3. Key Findings</u>	149
<u>5.4. Discussion of Key Findings</u>	150
<u>5.4.1.Research Question 1</u>	150
<u>5.4.2.Research Question 2</u>	151
<u>5.4.3.Research Question 3</u>	153
<u>5.4.3.1.Teachers' Perceptions on Critical Thinking</u>	153
<u>5.4.3.2.Teachers' Perceptions on Collaborative Learning</u>	154
<u>5.4.3.3.Learning Environment</u>	155
<u>5.4.3.4.Impact of Collaborative Learning on Developing Critical Thinking</u>	156
<u>5.4.3.5.Collaborative Learning Challenges</u>	156
<u>5.4.3.6.Recommendations to Improve Collaborative Learning</u>	157
<u>5.4.4.Research Question 4</u>	157
<u>5.5. Recommendations</u>	158
<u>5.6.Implications</u>	159

<u>5.7.Limitations</u>	160
<u>5.8.Scope for Further Study</u>	161
<u>5.9.Concluding Note</u>	161
<u>REFERENCES:</u>	162
<u>APPENDIX A: CONSENT LETTER (STUDENTS)</u>	182
<u>APPENDIX B. CONSENT LETTER (TEACHERS)</u>	183
<u>APPENDIX C. PERMISSION TO CONDUCT STUDY 1</u>	184
<u>APPENDIX D. PERMISSION TO CONDUCT STUDY 2</u>	186
<u>APPENDIX E. SAMPLE OF SURVEY QUSTIONNAIRE</u>	188
<u>APPENDIX F. SAMPLE OF INTERVIEW QUESTIONS</u>	191
<u>APPENDIX G. SAMPLE OF LESSON OBSERVATION CHECKLIST</u>	194
<u>APPENDIX H. CORRELATIONS</u>	197
<u>APPENDIX I. HISTOGRAMS OF EFA FOUR FACTORS</u>	199
<u>APPENDIX J. HISTOGRAMS OF CEL ADAPTED QUESTIONNAIRE FACTORS</u>	200

List of Illustrations:

	Page
Figure 2.1 Demonstration of the conceptual analysis in the thesis	27
Figure 2.2 The eight elements of thought	37
Figure 2.3 The chart of multiple intelligences (MI) by Howard Gardner	42
Figure 2.4 Model of critical thinking and its modification	54
Figure 3.1 The process of conducting a sequential design	62
Figure 3.2 Correlation matrix	85
Figure 4.1 Scree plot	93
Figure 4.2 CFA Measurement Model	101
Figure 4.3 Six iterative phases of thematic analysis	125
Figure 4.4 Sample word cloud of collaborative working, generated by NVivo	126
Figure 4.5 Screenshot of initial coding nodes in NVivo	126
Figure 4.6 Percentage of collaborative works across classes	134
Figure 4.7 Collaborative work observations achievement	138
Figure 4.8 Structural model for the impacts of CL on developing CT	145

List of Tables:

Table 2.1. Key findings table of the literature review of the thesis	59
Table 3.1. The phases of the proposed study’s data collection plan	65
Table 3.2. Sample demographics	71
Table 3.3. Descriptive statistics and reliability coefficients of questionnaire factors – pilot study	77
Table 3.4. Kaiser – Meyer – Olkin measure of sampling adequacy	86
Table 3.5. Extraction communalities and measures of sampling adequacy (MSA)	87
Table 4.1. Rotated Component Matrix	94
Table 4.2. Descriptive Statistics for the Four Factors of the “Impact of Collaborative Learning in Relation to Critical Thinking” Scale	96
Table 4.3. Correlation of Composite Scores	97
Table 4.4. CFA AMOS output: Standardized factor loadings (λ) of construct items with calculated convergent validity measures: Cronbach’s Alpha (α), CR, and AVE	98
Table 4.5. Measurement Model Fit Indices	102
Table 4.6. Descriptive Statistics for the Adapted CEL Questionnaire Factors	103
Table 4.7. Correlation of Adapted CEL Questionnaire Factors	103
Table 4.8. Results of Independent-Samples t Tests, Categorical Variable: Gender	104
Table 4.9. Results of Independent-Samples t Tests, Categorical Variable: Nationality	107
Table 4.10. Results of One-Sample t Tests	111

Table 4.11. Results of One-sample t Tests for Females and Males	115
Table 4.12. Results of One-sample t Tests for Emirati and Expatriate Students	119
Table 4.13. Summary of observer reflections	139
Table 4.14. Observer reflections across classes	140

CHAPTER 1: INTRODUCTION

1.1. Overview of the Chapter

Students need systematic and integrated guidance in learning to sharpen their critical thinking skills in English classroom. It is crucial to realize in fact that critical thinking is not survival thinking (Schafersman, 1991:p.3); it needs careful and purposeful development of particular skills in processing information such as beliefs, point of views, and solving problems. Additionally, several studies showed the effectiveness of collaborative learning on the cognitive and behavioural levels of learners (Lonchamp, 2006; Smith, 2005). This chapter introduces some elaborations related to critical thinking and how it could be enhanced through collaborative learning in English classroom. It also covers the background and motivation to the study, statement of the problem, and the objectives of the study. Further, it discusses the research questions, the rationale for the study, and the structure of the dissertation.

1.2. Background and Motivation to the Study

Education was only available in the UAE's urban areas in 1970. As a result, if someone wanted to get a better education, they had to travel abroad. However, with the formation of the United Arab Emirates in 1971, an effective education system was established. Education has always been and continues to be one of the UAE's top priorities. New educational initiatives are being developed and launched at all educational levels. Additionally, some of the world's best universities are creating programs in the UAE, thus attracting outstanding and talented students from all over the world. As a result, the structure of education in the UAE has become outstanding, taking education in the UAE to the next level (Fox, W., & Al Shamisi, S., 2014).

The United Arab Emirates' education system is relatively new. There were few formal schools in the country in 1952. However, a school construction initiative in the 1960s and 1970s helped to expand the educational system. In September 2010, a new school model was applied (ADEC, 2010), and newer features were added in the last decade. Education, including basic and

secondary, is now universal. Approximately 650,000 pupils were enrolled in 1,256 public and private schools in the academic year 2006-2007. Additionally, In the 2013-2014 academic year, approximately 910,000 students were enrolled at 1,174 public and private schools.

Additionally, the education system in the United Arab Emirates is divided into three categories: public schools, private schools, and higher educational institutions. The Arabic curriculum is followed in public schools, whereas the private schools follow 15 different curriculums. Schools that follow national curricula from the U.S, U.K, India, and the Ministry of Education (MoE) cater to a total of 90 percent of the private school student population. Other curricula include International Baccalaureate (IB), Canadian, German, French, and Japanese (O.M. Suliman, 2000).

Remarkably, Abu Dhabi is the top region by number of private schools in the United Arab Emirates. In 2017, the number of private schools in Abu Dhabi was 192, which accounts for 33.86% of the UAE's total number of private schools. The top 5 regions in the UAE (Abu Dhabi, Dubai, Sharjah, Ajman, and Ras al Khaimah) account for 96.30% of the number of private schools in the country. The United Arab Emirates' total number of private schools was estimated at 567 in 2017 (Warner, R., & Burton, G., 2017).

Furthermore, the UAE now has the second-highest number of international schools in the world, after China, with the majority of them teaching British and American curricula in English. In 2018, the UAE had 624 international schools with 627,800 students enrolled (up from 548 schools with 545,074 students in 2016). The vast majority of these schools are located in urban areas like Dubai, but they are spreading elsewhere as well (O.M. Suliman, 2000).

Noticeably, schools in the United Arab Emirates (UAE) moved from following traditional system to using technologically-advanced classrooms where its landscape has come a long way. Therefore, since the '90s, education in the country has developed to fit the needs of a highly-competitive job market, and schools play a big part in making a student employable. The UAE Vision aims to make itself among the best countries in the world by the Golden Jubilee of the Union. The UAE Vision 2021 was launched by H.H. Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, at the closing of a Cabinet meeting in 2010. The Vision is also guided by the National Work

Program launched by His Highness Sheikh Khalifa Bin Zayed Al Nahyan, the president of the UAE, and adopted by their Highnesses the Rules of the Emirates and Members of the Federal Supreme Council. So in order to translate the Vision into reality, its pillars have been outlined into six national priorities and education is represented as one of the key focus sectors of the government plan in the approaching years.

The National Agenda of education (2021) in the UAE views education as a primary element for the development of a nation and the best investment in its youth. The Agenda, in addition, focuses on providing first-rate education system which will need a complete transformation of the current education system and teaching methods to equip all schools and universities with smart systems and devices for all teaching plans, projects and research. In other words, there will also be significant investments to reinforce enrollment of developed teaching methods by all means starting from preschools to international standards to shape learners' personalities and their future. So by the time the students start their new learning experiences, they need to adapt the learning process that take different forms, such as adapting higher educational learning system, getting to know their peers, and involving in higher order / critical thinking skills.

Most teachers might be impressed to know that critical thinking is not a new term or skill and it can be traced back many centuries ago. Actually, it has been practiced during the ancient time, particularly, by Socrates and Plato (Paul, et al. 1997). Critical thinking definition might seem hard specifically because the concept heads to be used repeatedly without truly reflecting on its real meaning. Therefore, critical thinking can be stated as a quality that can be developed throughout life. But how can critical thinking be defined if it is not just a measure applied in education? According to Elder, 2007, critical thinking is self-planned, self-regimental thinking which tries to reason fairly at the highest level of quality. Anyone thinks critically in a regular manner tries to live rationally, reasonably, empathically. Each one is strongly aware of the inherited imperfect nature of human thinking when left unchecked.

Schafersman (1991: p.3) suggested that critical thinking means correct thinking in the tracking of related and reliable knowledge about the world. In other words, critical thinking is reasonable, reflective, responsible, and adept thinking that concentrates on deciding what to do. People who think critically can ask suitable questions, collect relevant data, sort through the data effectively

and creatively, reason logically from the gathered data, and come to conclusions that are reliable and trustworthy about the world that help them live and behave successfully in it.

On the other hand, understanding the nature of collaborative learning in relation to critical thinking includes identifying instructional strategies that promote group critical thinking of high school students' engagement in class. Many educators encourage collaborative learning (Kuh, Nelson Laird, & Umbach, 2004; McKinney & Graham-Buxton, 1992). The motive of collaborative learning is proposed from cognitive constructivism. Learning involves developing by representing more advanced mental and problem-solving abilities through the use of tools, information resources, and input from others (Windschitl, 2002, p. 137). Slavin (1999, p. 193) describes the practical part of collaborative learning as an approach for asserting thinking skills and increasing higher-order learning, and as a method to prepare students for an increasingly collaborative learning force.

Clear group goals are important to enhance the quality of the critical thinking and decision making of collaborative learning groups to accomplish tasks that need reflection (Shaw, 1976). Shaw (1976, p. 323) explains that when the task of the group is clearly explained, it is an example of goal clarity, and when the manner of completing the task is clearly identified, it is referred to goal-path clarity. Maier's (1963) study on developmental steps of decision-making groups advocates Shaw's suggestions. Maier found that groups without an arranged plan to follow when reaching a decision were more possible to output low-quality decisions, whereas groups provided with successive instructions generated high-quality decisions. Slavin's (1999) assertion on clear group goals for collaborative learning groups is harmonious with the research of Shaw and Maier. Clear group goals and clarity in the applied procedures to complete the group's task guide and strengthen the thinking of each group member as well as the decisions and judgments that the group has reached.

Consequently, critical thinking skills need to be an initial stage at students' life in accommodating to the learning style at schools. Their thinking skills need to be sharpened as early as possible by giving them learning strategies, which promote them to think why and how, instead of only asking what. The thinking process of why and how helps high school students to think critically, and acquire the knowledge meaningfully so they can encounter it to real life situations. Also, it is common to see how students nowadays look for an easy life. They live in

the world of technology without looking beyond the challenges that would come after. Some of them do not recognize the real involvements that human beings will have in a short or long term. Social media advertisements allow to raise critical questions about people's behavior including one's self (Arend, B., 2009).

Moreover, the importance of critical thinking in education has been distinguished by leading scholars (Paul, 1995, 2011; Elder, 2002, 2005; Fisher, 2001) and has been the concentration of education reforms in many parts of the world. Fisher (1998, p. 5) for example, believes that the goal of this movement is to generate a 'thinking curriculum,' placing the development of thinking skills at the core of the educational process. Because of the rapid technological shift that has brought about wide changes in the way people work, communicate and learn, skills such as analysis and evaluation have become essential and necessary. As a result, Paul (1995) thinks that critical thinking is "the core of well-understood educational reforms and rebuilding because it is the core of the modifications of the 21st century" (pp. 97-98).

In addition, critical thinking is regarded essential not only for achieving educational achievement results based on the narrow criteria of standardized testing but as Paul (2008) stated, the benefits of critical thinking overtake school life, improving highly the quality of life and professionalism in the workplace. Critical thinking assists not only the individual but society in general as Beyer (1995) argued, suggesting that critical thinking skills are tools for cohesive social operation. In addition, as Beyer (1995) thinks, critical thinking helps individuals to make decisions and evaluate personal, social, economic and political issues related to information (p. 28), while Brookfield believes that critical thinking is a permanence skill that people need to make their path through life (Johanson, 2010, p. 27).

On the other hand, the world is witnessing a significant shift in the way English as an international or second language (L2) is thought of and delivered to teenagers and young adults in both secondary and tertiary education. A "content subject" is one in which the majority of students in a class, as well as the majority of the population outside that class, do not speak the language as their first language (L1). This is the case for the latter criterion that separates English medium instruction (EMI) from content-based learning, or content-based language learning, as described by some researchers such as Stoller (2004). Therefore, there is a crucial need to learn English language in modern education especially in the UAE that has more than two hundred

nationalities and one hundred and fifty ethnic groups (UAE Ministry of Education & Youth 2000, p. 24).

Finally, the researcher's motivation to carry out this study is that there has been little research done on the impacts of collaborative learning in developing critical thinking in English classroom among high school students in the UAE and specifically in two private schools in Abu Dhabi. The study, therefore, targeted high school students aged between 14 to 18 years old to investigate their critical thinking skills during collaborative learning. It is noted also that this study focuses on how the suggestions be used to assist high school students in becoming "critical thinkers" by presenting a case study that investigates the impacts of collaborative learning in developing critical thinking skills in English classroom. In addition, the recommendations may help facilitate critical thinking skills development that are proposed by the end of this research.

1.3. Statement of the Problem

According to a study published in 2017 by PricewaterhouseCoopers (PwC) Middle East, a global network of 158 businesses with over 250,000 individuals dedicated to providing high-quality assurance, consultancy, and tax services, it is expected from the private school sector in the UAE to continue to drive its education market to 2020. So in order to solve real life problems and situations, a person needs critical thinking skills which belong to education's most central targets and one of its most valued results. Also, high school students now need to gain critical thinking skills and learn to work collaboratively for the acquisition of the 21st century skills that they require for their working life in future. In other words, learning is considered complete and holistic only when a student is able to effectively perform and fulfil his/her responsibilities and duties towards self, school, family, society and above all, the nation. However, the goal is to enable today's students to be good citizens and responsible human-beings who are well-aware of their potential and competence. Simply teaching to test or learning for exams is not going to prepare a student to face everyday life situations. Therefore, (Kivunja, CH., 2014) strongly argues that people should benefit from 21st century skills such as creativity and collaboration, which are critical to the empowerment of children and teenagers to deal with the issues and concerns related to their life.

To illustrate, 21st century skills significantly help adolescents in their everyday life. 21st century skills have shown several learning outcomes that are advantageous for people of age 11-18. These outcomes include: describing physical, psychological and socio-emotional changes in self and peers, demonstrating comfort with changes during adolescence, explaining strategies to enhance strengths and improve upon weaknesses, displaying healthy habits consistently, practicing safety guidelines for self and others, using social media responsibly, building positive relationships, identifying causes of conflicts and responding appropriately, respecting differences and diversity and so on.

In addition, every high school teacher must have heard at some point throughout their teaching career of the term “critical thinking”. This term seems to be found in educational topics, articles and syllabuses. Additionally, there seems to be a general agreement on its correctness and usage. For that reason, readers might not expect that little is known about critical thinking, what it is, what it counts and how to incorporate it into lesson plans.

Critical thinking is in short supply as Einstein stated in his informal observation and as Deanna Kuhn reported in her book “The Skills of Argument” (1991) where she found that half of the people cannot reason and argue. On the other hand, Pascarella (1991) suggested that critical thinking can be taught, although the benefit could be low. In other words, high school students who attain useful instruction and practice in critical thinking skills show to get a benefit in critical thinking skills over other high school students not receiving such instruction. Also, Stella Cottrell (2005) states in her book “Critical Thinking Skills / Developing Effective Analysis and Argument” that Critical thinking gives a person the tools to use wonder and doubt effectively so that he/she can analyze what is before him/her. It helps in making better and more informed decisions about whether something is likely to be true. If a person can analyze clearly the basis of what he/she takes as true, he/she is more capable to discern when it is reasonable to be trusting and where it is useful to be skeptical.

On the other hand, a study by J.A. Pearce II and L. Hatfield (2002) suggests that collaborative approach is essential at the workplace to identify stubborn challenges, contribute actions and specialized resources, weigh government influence, and value the benefits of the business. These five successful collaborative social initiatives are the principles that young learners will need to follow in their future careers and where they need to start off from their classrooms. In addition,

O'Toole (1997: 47) noted that participants' experience who are used to traditional way of thinking in one collaborative effort has shown predominant mode of action and their techniques and processes seldom last. It has become obvious that the participants' traditional ways of thinking needs to be changed in order to completely understand the impacts of these collaborative accommodations.

Collaborative learning manifests critical thinking. In other words, collaborative learning is very important in achieving critical thinking. According to (Gokhale, 1995), individuals are able to attain higher levels of learning and retain more information when they work in a group rather than alone. This applies to both the facilitators of knowledge, the teachers, and the receivers of information, the students.

Furthermore, collaborative learning involves students' shared intellectual effort by engaging individuals in interdependent learning activities (Smith, B. L., & MacGregor, J. T., 1992). Many people have found this to be beneficial in helping students learn more efficiently and effectively than if the students were to learn individually. Some positive effects from collaborative learning activities include: enabling students to learn more material and gather new information by engaging with one another and ensuring everyone understands, retaining more information through thoughtful discussion, and having a more positive attitude toward learning and each other by working together.

When compared to traditional learning methods in which students non-interactively receive knowledge from a teacher, collaborative learning showed an improvement of student engagement in classrooms. Additionally, student retention and academic performance within classrooms are increased (Prince, M., 2004). Researchers discovered that students who worked together in small groups achieved much more than students who worked individually (Lou, Y., Others., 1996). To illustrate, in more than 40 studies of elementary, middle, and high school English classrooms, discussion-based methods improved comprehension and critical-thinking skills for students from all ethnic and socioeconomic backgrounds. Even ten-minute discussions with only three students boosted perceived understanding of important plot events and characters.

Additionally, Budesheim & Lundquist (1999) discussed briefly the learning objectives of higher education system in three presumptions. These presumptions are substantial as they promote

higher order thinking and critical thinking as well as advocate for a position that is compatible with one's own viewpoint causes biased assimilation, whereas arguing for a position that is not compatible with one's own viewpoint lowers this tendency. To illustrate, higher education system must offer to its students' various point of views and information that learners have not experienced before. Second, students need to be endowed with the ability of analyzing issues critically of their ideas and opinions. Overall, critical thinking skills are not usually obtainable for students in the lump of higher education system, and therefore practices in relation to higher order thinking are needed to inspire these skills because higher education success relies on the level to which its students are guided and supported to think independently and critically, and build up their viewpoints according to evidences, values and principles, so that they can work successfully with people who come from different backgrounds with diverse perspectives.

In addition, Students stated that the critical thinking practice such as found in a debate exercise allowed them to have a better understanding of the subject matter, retain key concepts and information, and comprehend key concerns on the subject. Debate, according to students, helped them grasp other ideas and decrease bias. Following the debate, some students stated that their attitudes and perspectives had shifted in compared to traditional approaches which helped them improve critical thinking and higher order thinking capabilities.

Furthermore, Bensley and Murtagh (2012) believe that teaching critical thinking is still controversial and perplexing for several instructors, due to the lack of clarity in the definition of critical thinking and the broad selection of approaches suggested to best teach critical thinking (Abrami et al., 2008; Bensley and Murtagh, 2012). Bensley and Spero (2014) found, for example, proof for the efficiency of direct approaches to teaching critical thinking, a suggestion reflected in earlier study Abrami et al., 2008; Marin and Halpern, 2011). Although their findings were positive, some research have failed to find corroboration for measures of critical thinking (Burke et al., 2014) and others, however, have found positive variable corroboration for instructional approaches (Dochy et al., 2003).

There is a lack of study examples on the best pedagogical methods to teaching critical thinking at various grade levels. Thus, more study is required to offer an empirically grounded method to teach critical thinking, and there is also a requirement to build proof based measures of critical thinking that are suitable to the grade and age. The ability "Detect baloney" by (Sagan, 1995)

was one method of teaching critical thinking and planning the topic in its easiest terminologies. Sagan (1995) has suggested essential tools for skeptical thinking to distinguish poor arguments, avoid misconceptions, and how to reach claims using critical thinking approach which basically have the potential to be an efficient teaching tool across a selection of abilities and ages. An empirically validated kit is still not found, despite the fact there is much to deduce from the literature on pedagogical approaches to fixing cognitive biases, fighting pseudoscience, and teaching methodology (e.g., Smith, 2011).

Several studies such as (Duran & Sendag, 2012; Melhem & Isa, 2013) concentrated on critical thinking skills among high school students. Also, there is a study by (Thabet, 2008) who shed the lights on public schools in UAE enhancing critical thinking as one of the main goals of education, and another similar study by (George Jean Saad, 2015) who concentrated on private schools in UAE fostering critical thinking as one of the main objectives of education. Thus, there has been no specific study that emphasized on the significance of applying critical thinking skills especially in English classrooms at schools in Abu Dhabi in the UAE.

Moreover, the development of critical thinking is viewed as one of the most substantial goals of education and evidence for the opportunities to gain such intellectual skills has been sparse and not enough (Sufian A. Forawi, 2016). On the other hand, the development of critical thinking skills through collaborative learning has become one of the primary goals of the National Agenda of education (2021) in the UAE. Therefore, this study clarifies the impacts of collaborative learning in enhancing critical thinking in English classroom in two high schools of the private sector in Abu Dhabi that high school students require to identify arguments, make conclusions, and evaluate the evidence for alternative perspectives.

1.4. Purpose and Objectives of the Study

The purpose of this study is to understand the impacts of collaborative works in developing critical thinking in English classroom among high school students in two private schools in Abu Dhabi. The following are the objectives:

- To understand the impacts of collaborative learning in developing critical thinking among high school students in existing literature.

- To explore high school students (in two private schools in Abu Dhabi) views on the role of collaborative learning in developing critical thinking through survey.
- To account the perceptions of English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students through semi-structured interview.
- To record the experiences of teachers and students (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students through observation.

As mentioned above, this study is framed within a mixed method approach that includes a quantitative tool through surveys and qualitative tools through interviews and lesson observations to explore understanding the impacts of collaborative learning in developing critical thinking in English classroom among high school students in two private schools in Abu Dhabi.

1.5. Research Questions

The focus of this research is to investigate the impacts of collaborative learning in developing critical thinking in English classroom among high school students in two private schools in Abu Dhabi. Therefore, the research questions that were planned in the study are:

- ❖ What are the impacts of collaborative learning in developing critical thinking among high school students (in existing literature)?
- ❖ How do high school students (in two private schools in Abu Dhabi) perceive the role of collaborative learning in developing critical thinking (explored through survey)?
- ❖ What are the perceptions of the English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students (explored through semi-structured interview)?
- ❖ How are teachers and students in English lessons (in two private schools in Abu Dhabi) experience the impacts of collaborative learning in developing critical thinking (explored through observation)?

Through these research questions of the study, the researcher will attempt to discover whether collaborative learning among high school students have effects on their critical thinking development in English classroom and to what extent.

1.6. Rationale for the Study

Critical thinking skills are essential factors for all aspects of life. Human beings were driven to develop their intellectual ability since the appearance of the first cultures in which teaching played an important role such as in Ancient Greece with the first Pre-Socratic learned men. Thus, essential efforts have been made to develop our thinking skills. Critical thinking ability can be engraved in the learner at any point of the educational hierarchy. The only difference is the level of interaction at each level. Critical thinking also is considered to be central to higher levels of education or a significant goal of learning (Fisher, 2003). Therefore, even if it is substantial to begin enhancing critical thinking in the learner straight from the primary school, it is better clenched in students at the tertiary stage as they become more mentally matured to overcome challenges. As a result, studying collaborative learning supporting critical thinking in English classroom in secondary school students in two private schools in Abu Dhabi is important in response to the need for effective teaching instructions and helping students with diverse abilities acquire and practice different strategies in learning that they need for the 21st century requirements.

As mentioned above, The National Agenda of education (2021) in the UAE views education as a main source for the development of a nation and providing first-rate education system. Thus, it was important to conduct the study in Abu Dhabi the capital city of the UAE. Moreover, understanding the impacts of collaborative learning in developing critical thinking in English classroom among high school students in two private schools in Abu Dhabi is essential to understand the ways collaborative learning develops critical thinking. For example, many researchers believe that collaborative learning may benefit ELL students (Carlo et al. 2004; Saenz, Fuchs, and Fuchs 2005; Vaughn, Cirino et al. 2006). In other words, collaborative learning give students an opportunity to talk to peers instead of teachers, and studies show ELL students often benefit from receiving bilingual support from their peers.

Additionally, there are several questions that are raised on how to develop the ability in high school students, and what method to adopt in order to efficiently improve critical thinking skills

in students. To illustrate, critical thinking is about being both willing and able to evaluate one's thinking, and could be enforced through the teaching and learning of any subject of school's curriculum. Thus, developing critical thinking skills in high school students includes adopting point of views instead of making judgments as one applies critical thinking.

Another point, bringing debatable topics into the English classroom is much preferred among learners, as it creates an interactive developing environment that builds reflection, rational judgment, and sharing various perspectives. Studies suggest that debate is a useful method for developing and promoting critical thinking and communication skills (Camp & Schnader, 2010; Paul & Elder, 2007). It also fosters active learning and the articulation of an argument. To demonstrate, it acquires and uses information and evidence to support a principle in an understandable method, think, assess and rebut contrasting arguments (Rudd, 2007).

As a result, the study will participate in increasing the abilities of high school students who would use their critical thinking skills effectively in English classroom through collaborative learning in future. Sosu (2013) illustrated that critical thinking concentrates on problem solving where individuals are required to come up with solutions, so as a result, critical thinking supports problem identification and solving. Moreover, (Fisher, 2005) suggested that the improvement of critical thinking skills does not necessarily happen naturally and should therefore be practiced clearly. However, particular factors should be taken in consideration including curriculum that plays a major part in the development of critical thinking skills.

High school teachers as facilitators need to model critical thinking skills themselves in order to inspire their students to develop critical thinking and to create more awareness of critical thinking in their classrooms. Both Lau (2011) and Asleitner (2002) asserted the importance of discussing critical thinking with learners. On the other hand, Brookfield (2012) proposed developing teaching strategies in order to develop critical thinking skills. Ultimately, in the early years of the 21st century, groupthink would still seem to be a characteristic of much political and social thinking. The desire to be a critical thinker is important – but the thoughts need to be expressed strongly and possibly acted on by linking them with expression and action and different capacities that become related (Barnett, 1997, 2006).

Schools, colleges, and universities, on the other hand, have continued to raise the profile of English as a medium of instruction in the UAE. Ayari detailed the difficulties Arab youngsters

have in spelling, word identification in isolated contexts, and becoming multilingual readers in Arabic and English in 1996. This has been a source of concern in the Arab world for decades, particularly in terms of weakening the Arabic language (Tollefson and Tsui 2004). Bilingual schools have become a popular option to monolingual Arabic education, and their numbers have continued to rise. With English growing root in science, business, and new vital professional sectors in the Arab world, Emirati parents see potential for their children in bilingual schools.

All in all, the study obviously shows the relation between efficient instruction and the improvement of critical thinking skills of high school students. Consequently, the research plans to make the methods of teaching useful to learners through applying successful procedures after carrying out the research by following quantitative and qualitative methods that would benefit every stakeholder at school.

1.7. Structure of the Dissertation

The purpose of this research is to explore the impacts of collaborative learning in developing critical thinking in English classroom among high school students in two private schools in Abu Dhabi. The literature review in chapter two shows the relevance to the facts linked to the current study and presents its theoretical framework. Particularly, it gathers and builds theories and empirical studies about the concepts of critical thinking in relation to collaborative learning. Furthermore, the importance of critical thinking and the possible sources and strategies to enhance critical thinking in English classroom among high school students are also reviewed and discussed as well. Chapter three discusses and describes the specific methodology that was conducted in this study including the research approach, data collection plan, instruments, data analysis plan, scope of the current study, and some ethical considerations. Chapter four presents both quantitative and qualitative results, analysis, and summary of the research. Key findings, limitations, recommendations and concluding notes for further research are provided in chapter five.

CHAPTER 2: LITERATURE REVIEW

2.1. Overview

The theoretical framework and the literature review of this section discuss the literature on critical thinking and collaborative learning of different aspects in education and examine the field of research in critical thinking in relation to collaborative learning that were discovered to find the shared meaning and explanation of the notion. Further, three chief methods were chosen on the base of their connection to the educational environment and knowledge for learners: the educational, the psychological and the philosophical. Also, a differentiation is made about what English language is constituted of, in terms of mental capabilities, dexterities and person characteristics – critical thinking skills and placements. Thus, this part concentrates on merging center disciplinary literature on critical thinking skills to justify for the reader the position of the researcher and help in selecting what skills and placements includes in this research.

Moreover, the literature review plays a vital role to define the limits of the studied topic. It equips endorsed standards and principles into the conceptual framework and methodology of the study. Through the literature review of this research study it is anticipated to illustrate different strategies that would enhance critical thinking skills in English language classroom, and demonstrate essential aspects that will be taken in consideration while teaching/learning English skills. In addition, potential helpful relations were depicted to construct a theoretical framework. The researcher deduced that, in an Emirati context, choosing from the assent on core skills of English language and perhaps impacting on placement – student encouragement and self-organization, learning environment- would be viewed exciting to try the efficiency of an English language skills involvement.

The literature related to the teaching/learning sides of critical thinking skills deals with what works and what does not from prior study plans. It discusses the improvement and the development steps of critical thinking skills in teaching/learning English language. Therefore, studies linked to instructional matters in critical thinking skills are disclosed. The literature

focused on how best critical thinking skills can be taught to students, what needs to be considered in classroom conditions when teaching English language. Furthermore, the final stage of the literature review explores some of the practical matters and challenges of theory in the study. This involves the complications and limitations of the research in the real-world, the provocation of trying a whole method to teach critical thinking and the instructional validation, learning environment, and student willingness.

On the other hand, it is important to note that the UAE's education system is relatively new, and it, like the country as a whole, has seen significant changes in the last 50 years (Kevin Kamal, 2018). Historically, Islam dominated education in the region, which took place in mosques or study circles directed by Imams. The Emirates did not begin to construct a sophisticated, mass-scale education system until after the discovery of oil and independence from Britain in 1971. The UAE was able to construct a public education system equivalent to Western schools in just a few decades, almost at warp speed, because to newly discovered petroleum resources. The education system now closely mimics that of the United States. There are K-12 schools, two-year associate degrees, four-year bachelor's degrees, two-year master's degrees, and doctorate degrees available. Education has improved at a quick and comprehensive rate. According to UNESCO, the country's adult literacy rate increased from 32% for women and 57 percent for men in 1975 to over 90% for both in 2005. In that year, the female youth literacy rate was 97 percent, far higher than the current world average of 86 percent.

Further, government schools in the UAE segregate male and female students at all levels except in kindergarten, while private institutions offer co-educational environment. In 2018, the Ministry of Education decided to implement mixed gender classes in public schools, allowing the mixing of boys and girls in Grades 1 to 4. During the academic year 2018-2019, mixed classes were applied in public schools for Grade 1 students only, and the new rule is supposed to be applied gradually in the coming years. On the other hand, most public schools are used to segregating male and female students when they reach the 5th grade.

With that being said, the UAE has focused on educating both men and women. In 1975, the rate of adult literacy was 54% among men and 31% among women. However, literacy rates for both genders today are close to 95%. To illustrate, female students account for the majority of students in public schools in the UAE. In addition, Emirati women make up 70% of all university

graduates in the country, more than 10,000 students of the Higher Colleges of Technology are women, and at the prestigious Masdar Institute of Science and Technology in Abu Dhabi, 60% of Emirati graduate students are women.

Additionally, in Abu Dhabi and Dubai, private schools are regulated by ADEK and KHDA, respectively, but in the other emirates, they are regulated by the federal Ministry of Education. Although private institutions are not under direct government supervision, they are constrained by rules established by the federal ministry and local governments. Every Emirati person has a legally mandated right to an education, which is supplied free of charge in public schools. From the age of six through the end of grade twelve, all students are required to attend school (or the age of 18). Most courses are taught in Arabic at Emirati public schools, while English and other languages are also taught at the UAE's numerous private schools and colleges. English is the primary language of instruction in higher education.

To summarize, the UAE government has taken a number of significant initiatives to keep the country's education on line with the most recent advancements in education quality. The government has done a great contribution to ensure that their education system is consistently upgraded, hence propelling education in the UAE forward with newer features (ADEC, 2012).

2.2 Conceptual Framework

There are a few terms that are related to critical thinking that should be examined before discussing the concept of critical thinking in relation to collaborative work. This will be emphasized and further explored in this section. These notions are definitions of critical thinking in educational context, utilization of techniques and pedagogy to enhance critical thinking in K-12, and problem-based learning. The other notion is the educator's role in developing critical thinking skills as well as the results of increased critical thinking skills that can be developed by having a more standard concept of what critical thinking involves. Overall, the various definitions of critical thinking in the context of education will be elaborated below.

2.2.1. Definitions of Critical Thinking in Educational Context

Defining critical thinking might seem hard especially that the definition faces to be employed frequently without really reflecting on its proper meaning. As a start, it is implied that critical thinking is a feature to be developed throughout life. But it is not a proportion that is just applicable to education. According to (Paul, R., Elder, L., & Bartell, T. 1997), critical thinking is not a novel practice or notion. A lot of teachers might be impressed to learn that critical thinking can be tracked back to many centuries ago. It has been trained from old times, notably by Socrates and Plato. So what is critical thinking? How can critical thinking be identified? Critical thinking is self-planned thinking which tries to contemplate at the upmost level of modality in a just-minded method. (Elder, 2007) stated that people who think regularly try to live reasonably. They are sharply conscious of the innately rifted nature of human thinking when departed uninspected.

It is essential to recognize that critical thinking is not survival thinking; it requires cautious and intentional evolvment of particular skills in adapting data, regarding beliefs, thoughts, solving problems. Schafersman (1991: p.3) suggests that critical thinking means right deliberating in the search of linked and credible knowledge about the universe. In other words, it is logical, reflective, responsible, and masterful thinking that concentrates on determining what to have faith in or act.

A person who thinks critically can ask proper questions, collect related data, effectively and creatively set through this data, reflect reasonably from this data, and come to credible and dependable inferences about the universe that allow a person to live and behave successfully in it.

Raymond S. Nickerson (1987) offered a holistic list of capabilities and behaviors which describe critical thinkers. They are individuals who:

- Arrange ideas and express them precisely and consistently
- Expel verdicts if there's no adequate prove to upkeep a decision
- Can learn alone and have continuous curiosity in doing so

- Try to predict the possible outcomes of optional behaviors
- Enforce problem-solving procedures in autonomy

According to (Smith & Szymanski, 2013), K-12 educators and administrators are forced to teach and follow the requirements as commanded by the standardized assessments in to follow up with other countries. Because of this enforcement, many students are leaving the K-12 education system missing the critical thinking skills that are essential to succeed in higher education or at the workplace. Therefore, critical thinking is a definition that gives much discussion without much action. Also, there are different claims that critical thinking is not being concentrated on. The necessity to have better results on assessments is just one of them. Challenges such as how to identify critical thinking or how to teach it through social interaction annoy educators who consider improving critical thinking skills of their students (Choy & Cheah, 2009).

Therefore, critical thinking skills have been identified significantly for the increasing workforce and demands of the 21st century. According to Gervev, Drout, and Wang, 2009, there are more requirements for staff that are endowed with advanced critical thinking skills, negotiation and communication skills, and problem solving skills. Advanced critical thinkers and powerful communicators show behavior that is admired and appreciated in both academic and vocational conditions (Mason, 2007; Rudd, 2007; Kosciulek & Wheaton, 2003). However, training these employees in future in the area of critical thinking and communication skills is a debatable topic which is still likely open to question (Lord, 2008). Experts and scholars have begun to look into different techniques and ways that might encourage and enhance critical thinking and oral communication skills in the classroom in regard to the great attention and need to these skills in developing workforce (Halpern, 2003).

There are many reasons to justify the interest of researchers and educators concerning critical thinking. The reasons for education as stated by Vieira (2003) in general are a summarized below:

- ❖ First is the meaning of critical thinking itself. According to Wright (1992), education requires critical thinking (p.37). This suggests that people are able to think critically about their beliefs rationally to support and justify them. Also, they can protect themselves from manipulations, cheaters and exploiters (Boisvert, 1999).

- ❖ Secondly, results of critical thinking beliefs show that people can be helped in breaking away from selfish behaviors (Wright, 1992). In other means critical thinking is important to be able to live in a competent society which leads towards a conscientious participation in democratic institutions, where each citizen has to make rational decisions. To illustrate, in order for democracy to exist and function, citizens are required to think critically by having the capability to make judgments of value and interact with others as well as to solve problems and work collaboratively with co-workers to find sufficient solutions (Gunn, Grigg & Pomahac, 2007). Moreover, Hare (1999) claims that ethics is a third line of justification in which the human being has capabilities that no other animal has. This is why the child, like the adult, should be treated with respect shown for someone who is able to grow in a responsible manner. Thus, good teaching suggests that our educational goals include the development of critical thinking (p. 95).
- ❖ Thirdly, modern life places a significant influence on human rationality and critical thinking due to its complexity with regard to issues related to disagreements (Barak, Ben-Chaim & Zoller, 2007). Ennis (1996) and Paul (1993) believe that for citizens to live, work and function effectively they need to use critical thinking skills to assess, make decisions and judgments according to the information they need to obtain in order to believe and employ. In addition, they need to utilize these skills to ensure global socio-economic development in consideration to human's needs to protect the ecological environments that human beings are dependent on for their survival (Boisvert, 1999). These skills can help people to engrave meaning to life and help them in overcoming the obstacles they encounter (Chaffee, 1998).
- ❖ Lastly, people need to use critical thinking skills to have remunerative personal lives that include managing private roles, continuing to learn and avail from society (Dam and Volman, 2004; Newman, 1990). Therefore, encouraging critical thinking in students allows them to become lifelong, independent learners as part of the long-term objectives of education (Tsui, 1999). Furthermore, critical thinking is essential for the students' future as it prepares them to deal with several challenges that they will face in their lives, careers and at the stage of their personal commitments and responsibilities. According to Genç (2008) and Browne and Keeley (2000), critical thinking skills are helpful for people

throughout their school experience and as citizens. These skills can be useful to students when they are requested to:

- ✓ Respond critically,
- ✓ Initiate an argument,
- ✓ Assess the quality of reading or discussion,
- ✓ Write an essay,
- ✓ Participate in class.

Moreover, students who move to higher education and the workforce are missing intellectual and practical skills and comprehending of what the notion is (Rowles et al., 2013; Choy & Cheah, 2009; Henderson Hurley & Hurley, 2013). Most of the time, critical thinking has been ignored at the elementary, middle, and high school stages where students are taught how to learn and how to analyze data.

In addition, when students reach to the stage of higher education or the workforce, the educators and trainers are pushed to start teaching critical thinking skills as contrasted to starting with the data that requires to be carried. Halx and Reybold (2005) proposed that learning needs hard work, but critical thinking needs utmost effort of intellectual ability that discomfort students and teachers because it requests personal reflection. Therefore, much critical thinking has been left for higher education to teach and use because of lack time provided to K-12 educators.

2.2.2. Competing Definitions of Critical Thinking

Michael Scriven and Richard Paul state that critical thinking is the intellectual behavior process of skillfully understanding, applying, analyzing, synthesizing, and evaluating data gathered from observation or experience as a guide to an action. It is based on global intelligence values. Critical thinking can be viewed as having two components: 1) a set of data and belief creating skills, and 2) the habit, relied on intellectual commitment. It is therefore contrasted with

acquisition and retention of information alone, the possession of skills, and the only use of those skills. (Scriven and Paul, 2008a)

Critical thinking must be a learned skill. It is a habit of mind to use and accept the outcomes of these reasoning skills. That is, critical thinking is a set of intellectual virtues comprised by good thinkers. However, it does not involve mindless application of a set of logical rules. It is suggested that there must be some kind of metacognitive awareness on the part of the thinking process. Harold Brown (1995) suggested the difference between reasoning and thinking in a way that adapts to the rules of logic.

On the other hand, Richard Paul and Linda Elder believe that critical thinking triggers elements of thought, and global intellectual standards and virtues. To illustrate, critical thinking is a mode of thinking about any subject, content, or issue in which the thinker develops the quality of thinking by skillfully analyzing, assessing, and rebuilding it. Critical thinking is self-directed. It requires effective communication and problem-solving skills, as well as a commitment to overcome ego-centrism and socio-centrism (Scriven & Paul, 2008b).

2.2.3. Utilization of Techniques and Pedagogy to Enhance Critical Thinking in K-12

21st century skills play a significant role in the core areas of each person's life. The development of skills such as critical thinking skills, communication skills and creativity is important for students. According to (Andreas Schleicher, 2010), the need for 21st century skills is as follows: "Today, because of rapid economic and social change, schools have to prepare students for jobs that have not yet been created, technologies that have not yet been invented and problems that we don't yet know will arise." Students may prepare for all of these challenges by acquiring 21st century skills, which shows how important these skills are. Therefore, students benefit from a myriad of learning outcomes associated with 21st century abilities. For example, children aged 3 to 10 have utilized these skills to express needs and emotions, solve problems by demonstrating curiosity, approach and respond to people beyond primary caregivers, interact with objects in the environment, demonstrate positive view of self, participate in group activities using interaction skills, demonstrate understanding of others' emotions and viewpoints, identify where help is required and so forth.

Remarkably, each skill within the 21st century skills framework has proved to have broad outcomes that affect each individual positively. Firstly, critical thinking leads to effective reasoning and enables the person to use reasoning appropriate to the situation to reach a desirable outcome (Halpern, D. F., 1984). For instance, strong critical thinkers demonstrate inquisitiveness with regard to a wide range of issues, show concern to become and remain well-informed and are open-minded regarding divergent world views (Ennis, R. H., 1962). Also, when motivated with integrity and justice, critical thinking can be a great service to humanity.

Creativity, on the other hand, which is the tendency to produce or recognize ideas, alternatives, or possibilities that might be useful in solving problems, communicating with people, and entertaining ourselves and others comes as a result of critical thinking skills. According to (Steve Jobs, 2005), “innovation distinguishes between a leader and a follower”, because creativity and innovation allow a person to think creatively, work creatively with others and implement creative ideas in order to make a useful contribution. Additionally, critical thinking is a skill that plays a significant role in schools, as it can be used to solve dilemmas of the curriculum (McPeck, J. E., 1981).

Additionally, educators have been aware of the importance of critical thinking skills as a result of learning. The skills of the 21st Century have defined critical thinking as one of many essential learning and innovation skills to prepare students for post education and the workforce in future. A study reported that a deep concentration on improving critical thinking skills in K-12 can increase academic strength and raise the results on the standardized assessments (VanTassel-Baska, Bracken, Feng, & Brown (2009); McCollister & Sayler (2010). By using activities to increase critical thinking, students are better capable to recognize why something has happened instead of what has happened (Snodgrass (2011); Tsai, P., Chen, S., Chang, H., & Chang, W. (2013). This more profound recognition permits the students to better analyze the situations inclosing the happening and varying perspectives about the happening (Tsai et al., 2013).

Critical thinking can be inspired in lessons throughout all behaviors by using meaningful questioning and evaluation of both information and sources (McCollister & Sayler, 2010). Also, looking at the data as a function instead of simply memorizing the data aids the students evolve skills of recognition and anticipation. Evaluating data and sources support students to learn

accurate processes for finding and employing reliable data, as well as learning suitable and proper methods to make careful judgment (McCollister & Sayler, 2010). These skills will support with reading comprehension and problem-solving skills, both of which play a vital role in standardized assessments (VanTassel-Baska, Bracken, Feng, & Brown (2009); McCollister & Sayler, 2010; Tsai et al., 2013).

Furthermore, a number of researchers have discovered that collaborative learning approaches trigger critical thinking (Bonk & Smith, 1998; Thayer-Bacon, 2000; Heyman, 2008). Proponents of collaborative learning emphasize that critical thinking skills allow learners to analyze arguments and make decisions (Paul, R. W., 1992). It is also argued that students with critical thinking skills contribute widely in group tasks (Bailin et al., 1999). To illustrate, critical thinkers who are inquisitive, attentive to opportunities, self-confident in their own abilities and demonstrate other characteristics of critical thinkers are the most likely people to contribute in tasks that require teamwork.

Moreover, collaborative language learning has considerable advantages in many aspects for the development of language development, such as the development and teaching of the English language. Traditional techniques emphasize the acquisition of knowledge by learners. For that reason, no negotiation of interaction and meaning takes place. Therefore, it is important to note that the development of communicative competence depends on interaction. Advocating this idea, (Jia, 2003) states that maximizing learners' communication demands through interaction and collaboration leads to effective language learning. Moreover, interaction encourages learners to negotiate for more input and produce comprehensible output (Crandall, 1999). As learners endeavor to communicate with each other in group settings, they will be provided opportunities to improve their listening comprehension and oral practice. According to (Mart, 2018), it is noteworthy to mention that communicative competence is necessary for language learning.

As mentioned above, these sorts of practices could be useful into the regular instructional time or extra timing by simply using things such as online discussion boards, classroom discussions, or optional samples of test in classroom environment (Snodgrass, 2011). It is also essential that any modification into the curriculum must be met with practicing new activities using them to their entire effectiveness. The creation of professional learning communities grants educators to think critically about the ways they are utilizing to teach, and setting good starting points for

suggestions about involving critical thinking abilities in the classroom (Smith & Szymanski, 2013).

2.2.4. The Educator's Role in Developing Critical Thinking Skills

Schools in the United Arab Emirates have focused on training their students to become rational thinkers and good problem solvers as part of their educational goal as well as including problem-solving activities of each school's curricula. Traditionally, rules and principles are first taught to students by the end of each lesson in most textbooks followed by their application to well-structured problems types. Yet, problem-solving skills may not be linked to real-life problems if they are often complex and ill structured, therefore, they need different skills for successful solutions (Hong, 1998). Consequently, there is a movement toward the use of real problem situations that are necessary acquisition of knowledge that one requires to solve problems and make learning meaningful (Brown et al., 1989). A study by Graham Parton and Richard Bailey (2008) discovers epistemology as a beginning point for investigating the theoretical underpinnings of problem-based learning as a learning method. Therefore, the study concludes by critically examining the strains and contradictions of problem-based learning of Popper's epistemological theory of critical rationalism. It is debated that a critical rationalist point of view has educational advantages for students as it builds an environment full of critical thinking, reading and writing and values disconnection and challenge.

It is vital for educators to comprehend that the part they play in evolving critical thinking is distinctive than the role they are mainly acting. Educators require to behave as facilitators to allow students to engage in critical thinking for discussion and motivate them for a free thinking procedure, as well as to motivate their realization that thinking critically does not always complete with an accurate answer, but instead completes in more questions or varied assessments of the subject (Halx & Reybold, 2005; Arend, 2009). In addition, the educator's part as facilitator also motivates peer assessment procedure, even in youngsters as it supports students to learn proper answers to opposing assessments and point of views (Henderson-Hurley & Hurley, 2013; Tsai et al., 2013).

Additionally, writing essays and using questions activities that devoted to Bloom's Taxonomy higher order thinking are samples of methods to involve students in critical thinking in the classroom (Smith & Szymanski, 2013). Further, using wikis in education is a helpful choice for an activity that supports encouraging critical thinking. This activity can be used by students in producing a wiki about the subject content they are studying or analyzing the information available in wikis (Snodgrass, 2011). It also appeals to education by improving student's skills in using technology. It is preferred to have a holistic effort in order to have more critical thinking which would need cooperation among varied sections, sectors, and classes (Henderson-Hurley & Hurley 2013). The evolvement of critical thinking skills is not only appropriate to core subjects such as English, math or science.

2.2.4.1 Results of Increased Critical Thinking

Improving critical thinking in students has proved some promising outcomes for both students and teachers. Kokkidou (2013) recorded the growth in innovativeness, performance, and literacy within the limits of music, as well as increasing the awareness of the musical environment in which students and educators live. She found that by challenging students to think critically, educators found themselves thinking more critically about their experience of the subject.

On the other hand, Arend's (2009) results were very effective of the utilize of online discussion boards to improve and increase critical thinking, as well as enabling students to have better comprehension of the new data and content demonstrated to them in class. Therefore, looking at the data as a procedure instead of simply memorizing the data supports the students improve their skills of recognition and anticipation.

Tsai, Chen, Chang, & Chang (2013) suggested that increasing critical thinking among students in science classes aided the students to better realize the scientific function plus motivating them to become more experienced in various aspects of the sciences. VanTassel-Baska, Bracken, Feng, & Brown (2009) recorded an increase in reading comprehension and reading assessment results' that portend effectively for the employ of programs at schools.

Choy and Cheah (2009) and Rowles, Morgan, Burns, and Merchant (2013) all discovered that educators sense that while teaching critical thinking skills, their teaching can be developed by having a more standard concept of what critical thinking includes which would grant educators at all stages to improve their existing curriculum with lessons and activities that to increase critical thinking among students and educators. Henderson-Hurley & Hurley (2013) discovered that improving critical thinking among students which is seen to be very traditional in one place countered challenges that were unseen in other places, however, critical thinking could still be achieved.

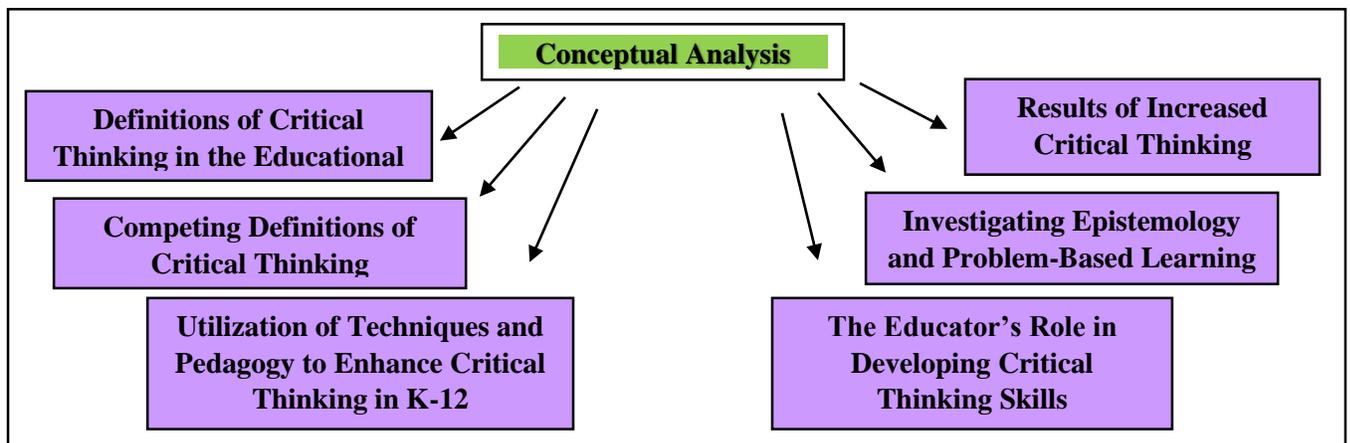


Figure 2.1: Demonstration of the conceptual analysis in the thesis

2.2.5. The Importance of Collaborative Learning

Collaborative learning is an approach in which two or more students attempt to learn something by working together (Dillenbourg, P., 1999), and it has become an increasingly important aspect of education. In other words, it is an extremely effective method that has a myriad of positive outcomes on individuals, and its importance has grown even more with the expansion of the internet. In a collaborative experience, the teacher serves as a facilitator to develop a sense of community while also allowing students to participate in a situation that makes productive use of their differences. This method of learning enables each student to

venture into a unique type of academic partnership, and its significance has grown as the internet and computer-mediated education have increased in popularity at the end of the last century. Therefore, it should be utilized more often in classrooms because it enhances students' critical thinking skills, in addition to other skills such as creativity, and hence leads to better academic performance.

The distinctions Kenneth Bruffee (1993) posits between foundational and non-foundational knowledge serve as the philosophical framework within which he builds his argument on collaborative learning. Because it presupposes that there is a basis, an idea, a theory, a structure, a framework, or a foundation underlying or behind knowledge, the cognitive conception of knowledge is fundamental. On the other hand, a non-foundational view of knowing assumes that knowledge has neither external or internal grounds. People create knowledge by combining the numerous languages available to them. As a result, knowledge is neither universal nor absolute. It is unique to the area and has changed throughout time. It is built up in layers by constructing and reconstructing it over and over again. Therefore, most scientists would agree with Bruffee's assertion that our data interpretations are cognitive constructions that scholars agree on. His repudiation of all knowledge, all facts, as something individuals make by discussing together and coming to an agreement is where the largest disagreement exists.

Collaborative learning is another skill within the 21st century skills that has proven to be beneficial in everyday life. This skill helps individuals to work effectively and respectfully in diverse scenarios, be adaptable to accomplish a common objective and value each team member's individual contributions. To illustrate, the importance of collaboration, (Steve Jobs, 2008) believed that great things in business are never done by one person, they are done by a team of people. Also, (Webb, N. M., 1993) gave seventh graders mathematical problems and compared group and individual performance. The results showed that students in cooperative groups performed at higher levels.

Collaborative learning has piqued people's curiosity for a long time because of its benefits to social communication and education. Learners become a part of a community while working together, leaving independence and passivity behind. By means of lending support to each other and learning from others, they will become effective participants and enhance their experiences

(Heyman, G. D., 2008). Because of its broad outcomes, collaborative learning is considered a beneficial way to manifest critical thinking in English language.

In language learning, the creation of a relaxed learning setting holds a significant place as anxiety may hinder learning. Collaborative language learning has the potential to mitigate stress and anxiety and offers a relaxed learning atmosphere. Such an environment provides opportunities to build social skills and strategies that help students succeed (Weimer, M., 2009). Learners interact with their peers feeling comfortable and confident. In other words, face-to-face interaction with each other reduces their pressure and encourages them for better achievement.

Moreover, technology has become a significant factor in collaborative learning. Over the last decade, the internet has provided a shared space for people to communicate and learn together. Virtual worlds have been critical to allowing people to converse online but still feel as if they are together and part of a group. (Stacy, Elizabeth, 1999) looked at how computer-mediated communication helped a group of postgraduate students learn together. Even though they were not present on the university campus, many of these students were nevertheless able to learn remotely, which demonstrates how effective collaborative learning through computer-mediated communication can be.

Compared with individualistic learning, collaborative learning provides higher achievement level for students. It creates a learning environment which motivates learners to try to make sense of what they are learning (Mart, C.T., 2011). Also, in addition to teacher's explanations or presentations, learners attempt to achieve a common objective through working in groups. As a result of working together to achieve their goal, learners exchange ideas and elaborate their knowledge, and try to arrive at shared understanding by providing meaningful conversations about the problem and elaborated explanations.

Noticeably, the UAE had its focus on developing students' English language through different teaching methods and initiatives. For example, MADARES AL GHAD was a new initiative created by the Ministry of Education (Schools of Tomorrow) in 2007 that generated graduates who are fluent in both Arabic and English, and included youngsters of all skills and interests who are prepared for direct entry into higher education institutions worldwide, satisfying careers, parenthood, and productive citizenship in a global society, knowledgeable about their rich heritage and culture, skilled in the use of information and communications technology, well-

grounded in mathematics and science to become the Middle East's world-class example for establishing a Knowledge Society via public education.

Finally, collaborative learning is an effective approach to implement in educational settings. It can be used effectively to manifest critical thinking in language learning, including the English language. Therefore, it is substantial to use collaborative learning as learners in a stress-free learning environment stand a better chance of developing their language proficiency. In addition, the 21st century skills have a variety of outcomes that help people in practically every aspect of life. As a result, people should be motivated to use collaborative learning, creativity, critical thinking, independent thinking, quality learning, socio-emotional learning and other skills within the 21st century skills framework because these skills will undoubtedly have positive effects on their lives.

2.3. Theoretical Framework

The theoretical framework of this study will be discussed in this section. It is divided into eight main sections, starting from the critical rationalism until the different phases of cognitive theories that belong to various researchers. The first section will elaborate the critical rationalism of learning and the linked topics below that. Then the cognitive development theories will be discussed after in addition to the connection that each might underpin to critical thinking and collaborative work.

2.3.1. Critical Rationalism

The philosopher Karl Popper (1972) argued first that both reason and experience in learning and the growth of knowledge are important. Secondly, neither empiricism nor rationalism provides a wholly satisfactory explanation. According to Popper's view of knowledge as 'provisional and permanently so', it highlights its relevance for problem-based learning where can be best understood. Therefore, there are practical implications for a method of problem based learning that is rooted in a critical rationalist philosophy. Critical thinking has been shown to be one of

the main challenges developed by problem-based learning but it is suggested that with a critical rationalist model, critical thinking, reading and debate need to have an even greater emphasis.

Karl Popper's critical rationalism epistemological theory is based on the idea that if a proposition cannot be logically inferred (from what is known), it may nonetheless be logically falsified. Critical rationalism's basic objective in each discipline is to replace supposedly justificatory approaches with critical ones. Popper rejected any extending inductive logic, that is, any logic that may yield more information than deductive logic. So, if we can't acquire it logically, we should at least try to disprove it logically, which is how Popper came up with his falsifiability criteria. To illustrate, he contrasted this viewpoint with "uncritical or comprehensive rationalism," the widely held belief that only what can be proven via reason and/or experience should be accepted. Comprehensive rationalism, according to Popper, is unable to explain how proof is possible and hence leads to contradictions.

Critical thinking should be promoted throughout the problem based learning program and educators need to be aware of the progressive levels found in critical thinking and methods to facilitate students' ability in this skill. Also, one essential tool in the development of critical thinking can be through assessments. Therefore, assessment should be seen not as a summative evaluation of the students' ability but a formative process, which will enable them to improve and refine critical skills that can then be transmitted to lifelong learning.

2.3.2. Piaget's Cognitive Development and Language Learning

Piaget's theory (1957), which is the main aspect of the cognitive approach and the fundamental in the theoretical foundation in the development of intelligence, illustrates student's language learning by using four stages of cognitive development. Human development and learning in a cognitive approach rely on mental or internal factors as opposed with environmental or external reasons. Piaget suggested that children think much differently from adults, and they learn by making things happen and trying to influence their environment. Such theory that confirms that people are builders of knowledge structures, has been related to constructivism (Pass, 2005; Wadsworth, 2004).

Therefore, students are completely responsible for their own learning when their teachers provide the learning atmosphere, value their thinking, prepare lessons that promote cooperative learning, offer chances for students to be involved in interdisciplinary curriculum, and facilitate students' understanding. According to (Schiamberg, 1985) thinking includes consecutive acclimation of observation and adaptation to an environment that creates mental schemata. Thus, the interaction of observation and adaptation in the process of gaining balance considers a cognitive evolvement from birth to death.

In addition, much of Piaget's work has supported educators in comprehending learner's cognitive development. His theories of the cognitive field have powerful impact on understanding of reasons in language learning. Different theories in language learning have been explored through a diverse point of views (Brown, 2000; Cook, 2007; Mitchell & Myles, 2004), for example, social cause, social-interaction, psychological components, cognitive development, age, gender, etc.

2.3.2.1. Piaget's Basic Concept

A. Schema

Piaget explained that the word schema is the cognitive or mental construction by which individuals acclimate to and regulate their surroundings. When a child is born, he or she has few schemata where he/she develops progressively, and then it becomes more familiar and differentiated (Wadsworth, 1996). However, those schemata do not have physical match and are not seeable, as they are existed as hypothetical constructs.

B. Adaptation

Absorption and accommodation are two sides of adaptation. Absorption and accommodation work like pendulum swings by developing our comprehension on the universe and our competency in them (Boeree, 2006). In other words, the absorption is the cognitive procedure by which a person merges novel conceptual information into existing schemata. Also, absorption theoretically does not lead in a change of schemata, but it affects on the growth of schemata and its expansion. On the other hand, the accommodation is the induction of novel schemata or the change of the former one. It's called the schema-building or schema-changing process to fit into a new object (Solso, 1995).

C. Process of Intellectual Organization

According to (Small, 1990), when a child understands the difference between novel and old schema, he/she loses balance because new notion presents in his/her schema. Halpern (2003; 2010b) believed that critical thinking includes both a learned collection of critical thinking skills and an arrangement of reasoning process. She defined critical thinking as the use of those cognitive skills that evolve the possibility of a desirable result. It is employed to depict thinking that is useful, reasoned, and aimed in solving problems, making conclusions and decisions effectively for a precise context and kind of thinking task. Also, critical thinking is not the same concept as intelligence or cognitive capability as the link between the two is simple. To illustrate, Stanovich and West (2008) carried out a group of studies that discovered the connection between cognitive capability and thinking skills. Scholastic Aptitude Test (SAT) scores were employed as an evaluation of cognitive capability and a big number of familiar biases as indicators of thinking skills. Many of critical thinking biases were unrelated to cognitive capability which shows most importantly that there is a simple connection between intelligence and critical thinking for some thinking biases.

2.3.3. Stages of Cognitive Development

Piaget's (1936) theory of cognitive development illustrates how a child builds his / her world through a rational sample. He believes that the concept of intelligence in the cognitive development process happens due to biological maturation and interaction with the environment unlike the idea that intelligence was a fixed trait. According to him the stages of cognitive development are:

A. Sensorimotor Stage (Birth-2 Years Old)

The infant in a sensorimotor stage employs senses and motor capabilities to realize the universe (Hughes, 2001). The infant's behavior is greatly reflexive and undistinguished. More complicated schema exists when allowing recognition (Huitt & Hummel, 2003). Also, a child starts the move between the sensorimotor stage of intelligence and depicting intelligence in the sensorimotor level (Kodat, 2002). According to (Wadsworth, 1996), depicting permits a child to discover objects that are hidden by unseen deposition. A child is plainly evolving the mental depicting that is the capability to keep an image in his/her mind. Two years after birth, the child is starting to talk, has obviously developed intellectual processes, and is starting to think.

B. Preoperational Stage (2-7 Years Old)

A child develops from a sensorimotor intelligence to a representational intelligence during preoperational development intelligence where the child is capable to employ language and symbols. There is an obvious comprehension of past and future. As in this level, impediments to reasonable thought are self-centeredness, changeable thinking, overturning, and communication (Taylor, 1996). Self-centeredness can be shaped differently at varied stages of evolvement, but is always described by a shortage of distinguishing in their ideas (Doran & Cowan, 1975). Also, a child's mentality is unable to think affluently about transformations (Brown, 2000).

C. Concrete Operations Stage (7-11 Years Old)

In this level, children can manage using symbols reasonably to solve problems. By the age of six or seven, most children evolve the capability to preserve number and volume. In other words, a quantity remains similar in spite of the modification in the semblance of objects. Also, a child learns categorization and seriation through this level (Hughes, 2001).

D. Formal Operations Stage (11 Years Old and above)

According to (Huitt & Hummel, 2003), a child in this level builds thoughts and reasons to solve all problems. Tangible functional children have challenges in thinking on complicated oral problems such as theories, assumed problems, or the future. On the other hand, conventional operations level is not achieved by all children (Kodak, 2002). For example, different studies have inferred that half the population of a country evolves all the potentials of formal operations (Kohlberg, 1981).

2.3.3.1. Why Is Piaget's Theory So Often Misrepresented and Unjustly Criticized?

First, because Piaget wrote an enormous number of books of a huge quantity of empirical data, and changed some of his core assumptions over time, the appearance of contradictory readings of his theory and research was almost unavoidable. Also, Piaget often disregarded precise communication of his findings as being too excited with the discovery of the unexpected. Second, the non-experimental nature of his research, his non-statistical style of data analysis, his concern with abstract constructs, his interest in scientific progress by means of integrative work explain why his theory is frequently deformed and misunderstood. Third, the contemporary tendency to see babies' minds in adult terms (Kaye, 1992) contradicts with Piaget's claim that children are logically different from adults. Specifically, the ever-growing disconnection between action and cognition leads to widespread misunderstandings of Piaget's thinking. Critics

think that developmental psychology is concerned with children, adolescents, and adults at specific ages rather than with how they develop over time; they insist on studying cognitive truth, not logical necessity.

2.3.3.2. Eight Basic Structures of Thinking

Eight basic structures are presented in all thinking objectives within a perspective based on presumptions leading to suggestions and results. According to Linda Elder & Richard Paul (2007), thinking purposes include: utilizing concepts, ideas and theories to explain information, facts, and experiences in order to answer questions, solve problems, and resolve issues of thinking, and then generating purposes, raising questions, using information, utilizing concepts, making inferences, making assumptions, generating implications, and embodying a point of view. Each of these structures has implications for each one of them. To elaborate, if a person's purpose has changed, it means that the questions and problems are changed as well. So if the questions and problems are changed, a person is forced to find new information to collect. This illustration shows the common denominator between all types of analysis because all types need thoughtful application and all thoughts presume the elements of thought. For instance, one cannot think analytically for no purpose or with no question in mind.

Overall, if someone would develop analytic mind, he / she requires guidance, instruction, and practice in controlling their thinking utilizing intellectual tools applicable to every practice. Learning to question purposefully, setting goals, defining problems, information, and concepts are necessary analytic steps to enable each skilled individual to understand and assess their analytic thinking. These analytic tools enable a person to get at the most significant logic of any behavior, problem, or issue and motivate him /her to get a deep insight of their learning in every situation analyzed, and to think of different intellectual domains.

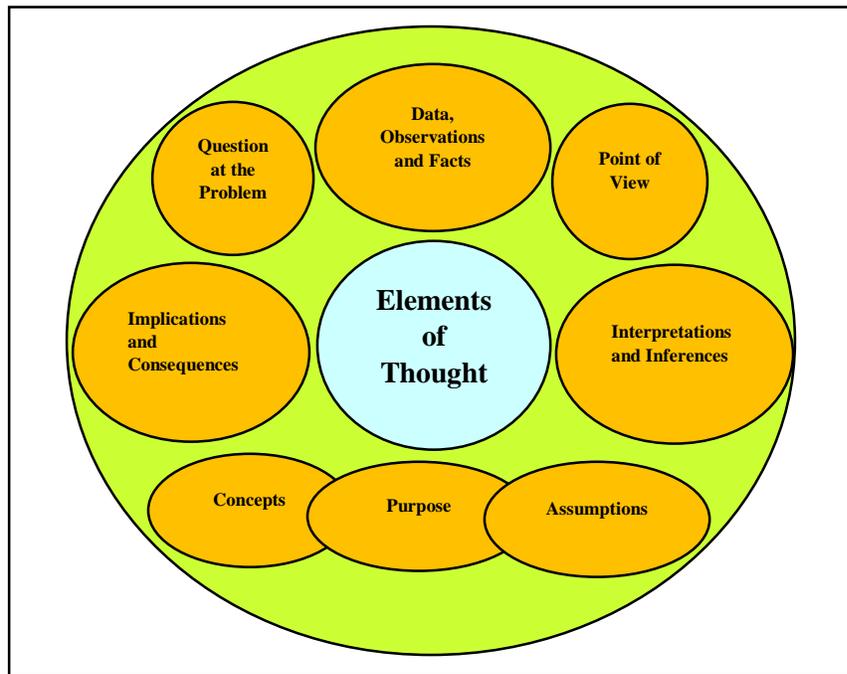


Figure 2.2: The eight elements of thought

2.3.4. Collaborative Learning and the Conversation of Mankind by Kenneth A. Bruffee

According to Kenneth A. Bruffee (1984), a member of the editorial board of *Liberal Education* and an English professor at Brooklyn College, there are some indications that English teachers are becoming more interested in collaborative learning. It is seen as a tool for teachers to engage students more thoroughly with the book as well as a means for them to interact with the professional community. Therefore, collaborative learning is explored as a pedagogical technique that "works" in teaching composition and literature as a process that creates disciplines of study.

Many instructors are unclear about how to employ collaborative learning, as well as when and when it should be utilized correctly. Many are also worried that when they attempt to employ collaborative learning in what appears to be successful and suitable methods, it

frequently fails as students were refusing help because the kind of help provided seemed to be merely an extension of the work. However, a study by John Bremer and Michael von Moschzisker (1971) explains the changes in primary and secondary education. In the first place, it appeared that typical classroom instruction had left these students unprepared. What they seemed to want was assistance that was not an extension of, but rather a substitute for, traditional classroom instruction.

Recent philosophical advancements appear to give a conceptual basis for collaborative learning that produces some unexpected educational findings. A new understanding of the nature of knowledge gives the direction that educators lacked previously as they fumbled their way through, attempting to tackle practical issues in practical ways. It appears that the better to comprehend this conceptual reasoning, the more effective collaborative learning practice becomes.

Additionally, Kenneth argued that according to Michael Oakeshott (1962), human conversation occurs both within and among us, and that dialogue as it occurs within us is referred to as reflective cognition. He bases his argument on the assumption that dialogue and reflective cognition are causally and functionally interconnected. He presupposes what Lev Vygotsky and others have proven, that reflective cognition is public or social discussion is internalized, as Lev Vygotsky and others have demonstrated. In the external arena of direct social interchange with other people, we first experience and develop the skill and cooperation of discourse. Only then do we learn to displace that skill and partnership by silently acting out the parts of all the conversation participants in our imagination. On the other hand, limitations imposed by ethnocentrism, inexperience, personal worry, economic concerns, and paradigmatic inflexibility can both confine a person's thought and discourse. If a person communicates in a restricted, shallow, prejudiced, and behaves in a cliché manner, a person is inclined to think in the same way.

2.3.4.1. Collaborative Learning in English Classroom

Peer tutoring, as well as analogous techniques like peer critique and classroom group work, might be logically classed as collaborative learning. In practice, the phrase referred to a type of indirect teaching in which the instructor introduces the issue and arranges pupils to solve it together. Peer critique (also known as peer assessment) is one sort of collaborative learning in which students learn to explain the organizational structure of a peer's paper, paraphrase it, and remark on both what appears well done and what the author could do to better the work. The essay and critical answer are then evaluated by the teacher.

Furthermore, students in small groups work toward a consensus in response to a task assigned by the teacher, such as a question about a play, a poem, or another student's paper, in a different sort of collaborative learning called classroom group work. What set collaborative learning apart from standard classroom practice in each of its forms was that it appeared to have no effect on what individuals learned. When students received help from peers, their work tended to improve; in addition, peers providing assistance learnt from the students they assisted as well as from the process of assisting itself. It appeared that collaborative learning harnessed the immense instructive potential of peer influence, which had been—and mostly still is—ignored and squandered by traditional systems of instruction.

Moreover, the line of reasoning Bruffee has been following has significant consequences for educators, particularly those who teach English literature and writing. If cognition is internalized public and social discourse, then all writing is internalized public and social discourse that is rendered public and social again. For instance, writing is internalized dialogue re-externalized, if thought is internalized dialogue, writing, like cognition, is tied to dialogue in terms of both time and function. Therefore, writing is a mode of communication that has been rendered obsolete by technological advancements. We

move the "talent and cooperation" of speech onto the printed page when we write, having previously assimilated it. However, because thinking is already one step removed from speech, the relationship between writing and communication is more complicated than the one between thinking and communication.

The conclusion that writing teachers should draw from this line of reasoning is that their task as writing teachers must include engaging students in conversation among themselves at as many points as possible during both the writing and reading processes, and that they should devise ways to ensure that students' conversations about what they read and write are similar in as many ways as possible to the way they would like them to eventually talk about what they read and write. Organizing students for these goals is, in the broadest sense, organizing collaborative learning. Collaborative learning creates a social environment in which students may learn about and practice the kind of conversations that college professors respect. Further, peer tutoring conversations with their tutees, for example, can be emotionally charged, academically and substantively oriented, and personal in nature. Similarly, collaborative classroom group work directed by a thoughtfully organized assignment teaches students that writing, like the idea that creates it, is a social artifact.

Finally, collaborative learning is not a new concept. Regardless matter how much a person ponders its theoretical implications, he / she must realize that individuals have always learnt from their peers and will continue to do so whether or not professional instructors and educators are involved. Collaborative learning isn't just a superior pedagogy; it's also a more effective technique of bringing new people into existing knowledge communities. Also, it means that collaborative learning as a classroom practice exemplifies more than just how information is created and retained. On the long-term, collaborative learning models how knowledge is created, changed, and grown.

2.3.5. Gardner's Theory of Multiple Intelligences

People are not born with all of the intellect they will ever have, according to Howard Gardner's (1983) hypothesis of multiple intelligences. This hypothesis questioned the conventional wisdom that there is only one sort of intelligence, also referred to as "g" for general intelligence, which is solely concerned with cognitive ability. While examining each "candidate" intellect, Gardner devised a set of eight inclusion criteria based on a range of scientific areas. He argued that though we all have these intelligences, our unique profiles of these intelligences may differ according to genetics or experience. Gardner describes intelligence as a "bio-psychological capability to process information that may be triggered in a cultural situation to solve problems or generate culturally valuable products" (Gardner, 2000, p.28).

Linguistic, Logical/Mathematical, Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Intrapersonal, and Naturalist intelligences were proposed by Gardner to widen this concept of intelligence. The verbal and logical-mathematical modalities, according to Gardner, are the most prized in school and society. Gardner also proposes that there may be other "candidate" intelligences, such as spiritual, existential, and moral intelligence, but that they do not fit his initial inclusion requirements (Gardner, 2011). For example, linguistic intelligence is a component of Howard Gardner's multiple intelligence hypothesis that deals with sensitivity to spoken and written language, language learning ability, and the ability to utilize language to achieve certain goals. Linguistic intelligence refers to the capacity to evaluate data and produce spoken and written language products such as speeches, novels, and memoranda.

On the other hand, the ability to examine problems rationally, perform mathematical operations, and research difficulties scientifically is referred to as logical-mathematical intelligence. Logical-mathematical intelligence refers to the capacity to create equations and proofs, do computations, and solve abstract issues. In contrast, the ability to perceive and manage patterns in large space as well as patterns in more constrained regions, such as those important to sculptors, surgeons, chess players, graphic designers, or architects, is referred to as spatial intelligence. People with spatial intelligence can distinguish between large-scale and fine-grained spatial pictures and alter them.

In addition, the ability to use one's full body or sections of the body (such as the hand or the mouth) to solve issues or fashion items is known as bodily kinesthetic intelligence. Through mind–body union, people with bodily-kinesthetic intelligence are able to produce goods, execute tasks, and solve issues using their own bodies. Also, musical intelligence is the ability to recognize, play, compose, and appreciate musical patterns. Musical intelligence is the capacity to identify and generate pitch, rhythm, timbre, and tone in music. Further, Intrapersonal intelligence is the ability to comprehend oneself, to have an effective working model of oneself (including one's own wants, anxieties, and talents), and to utilize that information to regulate one's own life. Intrapersonal intelligence refers to the capacity to detect and comprehend one's own emotions, goals, motives, and goals. This intelligence can assist a person in determining which life objectives are most essential and how to attain them. Last but not least, naturalistic intelligence entails an understanding of the flora and fauna of one's surroundings, as well as the ability to recognize and classify them. Naturalistic intelligence is the capacity to recognize and discriminate between various sorts of plants, animals, and weather forms in the natural world.



Figure 2.3: The Chart of Multiple Intelligences (MI) by Howard Gardner

2.3.5.1. Gardner's Theory of Multiple Intelligences in Relation to Collaborative Learning in English Classroom

Collaborative learning is a teaching and learning strategy in which students work together to investigate a relevant subject or complete a project, such as a research paper. A group of students discussing a topic or collaborating on a common assignment in English classroom. In other words, cooperative learning is a type of collaborative learning in which two or more people work together to achieve a common goal. Small groups of students' work face to face as a team on an organized task with clearly stated objectives in cooperative learning. Though the group's work is evaluated as a whole, each member is responsible for their own effort. It tries to improve interpersonal skills by allowing students to discuss their strengths while simultaneously working on their weaknesses.

Collaborative learning activities can be designed with a variety of educational principles in mind, ranging from mastery of basic skills to higher-order thinking, and thus can be linked with a variety of educational principles depending on the specific learning objective that the teacher wishes to achieve. These may include the following:

- ✓ Students may share their skills in English language and use group activities to build a range of intelligences that are linked with the notion of multiple intelligences.
- ✓ Constructivism concepts are naturally applied to activities that require the building of new concepts based on personal and shared experiences and understandings such in grammar or vocabulary in English classroom.
- ✓ Learners study serious, real-world problems using an inquiry-based method, which includes debate and questions in reading comprehension lessons.

Moreover, the students will investigate and comprehend the nature of the topic by drawing on their prior knowledge and experiences, as well as finding connections with the new information they are learning through cognition and conversation. Consequently, collaborative learning leads to enhanced material knowledge, greater overall grade accomplishment, enhanced self-esteem, and more desire to stay on target. It encourages students to participate actively and constructively in material, to take responsibility for their own learning, to settle group issues, and to enhance collaboration skills. As a result, collaborative learning redefines a teacher's conventional

function as a disseminator of knowledge to a facilitator of learning. Students benefit from collaborative learning activities in a variety of ways, including:

- ❖ Become engaged, inquisitive students.
- ❖ Use their cognitive abilities to read and comprehend difficult materials and concepts.
- ❖ Improve your language and cognitive abilities.
- ❖ Interact with their peers in a constructive manner
- ❖ Relate the curriculum to their own cultural and language experiences, as well as their understanding of the world.
- ❖ Learn to collaborate with individuals of various backgrounds, therefore promoting diversity.
- ❖ Individual attention is provided because the instructor recognizes and accommodates individual variances in her instructional preparations.

On the other hand, researchers argue over how to make up a group, especially whether to divide students into groups based on ability or mix them up so that stronger students may help lesser students learn while themselves learning by tutoring. Therefore, some scholars, such as Mills and Durden (1992), believe that when bright individuals are paired with lesser ones, they are held back. However, more studies favor variety in small groups. According to Radencich and McKay (1995), grouping by ability does not always increase total success and might lead to disparities. Most teachers make decisions based on their objectives, despite the fact that there are compelling reasons on both sides.

They sometimes put students in groups based on their talents or interests, and other times they change it up so that students may learn to work with a variety of people. The effective size of a group is also a point of contention, with consensus ranging from couples to 4-5 persons per group. The size of the group, on the other hand, can be decided by the activities scheduled and the anticipated result. As they work together in groups, students learn to relate to their classmates, strengthening their interpersonal abilities, which may be especially beneficial for students who struggle with social skills.

The activities are neither designed to replace teacher-led learning with resource-based learning, nor are they designed to leave students completely on their own. Instead, they improve the learning process by allowing students to analyze, discuss, and share their ideas in small groups. Various groupings can be utilized depending on the subject and activity, however heterogeneous or mixed groups decided by the instructor based on students' talents and capabilities typically seems to function better than self-selected friendship groups.

Although Gardner's hypothesis has been criticized by both psychologists and educators by saying that his concept of intelligence is too wide, and that his eight "intelligences" are nothing more than a collection of talents, personality traits, and abilities, many teachers incorporate Gardner's theory into their teaching philosophies and try to integrate it into the classroom. Therefore, learning more about the various intelligences can aid in a better understanding of one's own abilities.

2.3.5.2. Critical Perspectives of Collaborative Learning

Despite the numerous advantages of collaborative learning, skeptics are sometimes suspicious of its effectiveness. The following are some of the criticisms leveled about collaborative learning:

- ❖ Group learning is frequently symptomatic of hazy goals and low responsibility expectations.
- ❖ Overuse of group work helps the instructor to avoid genuine instruction and so evade accountability, to the cost of pupils who gain more from studying alone.
- ❖ Making group members responsible for each other's learning might put too much pressure on certain pupils. In mixed-ability groups, stronger students are frequently left to instruct lesser pupils and undertake the majority of the work.
- ❖ In mixed groups, gender imbalances might be a source of worry.
- ❖ Group learning promotes primarily lower-level thinking while disregarding the methods required for critical and higher-order thinking.

- ❖ Time management is a problem in group work since there is only enough time to focus on the activity at its most basic level. Individual contributions and learning are also difficult to measure.

2.3.6. The Importance of the Social Context to Learning

Psychologists have believed since long time that one's cognitive abilities are implemented in a social context. Lipman (1991) emphasized the importance of the social context to learning through the development of a community of enquiry which is significant for the evolvement of the critical thinking skills. There is an obvious connection between critical thinking, social interaction and deep learning. Further, group learning is a good method of promoting such social interaction, and has often been used to encourage deep learning. Therefore, the best educational activity offers techniques for having group work in large classes, peer and self-assessment, and individual and group learning. However, it is not obvious whether everyone is using deep learning to refer to behavior. Thus, there have been a number of scales built to measure deep learning. Nevertheless, Richardson (1994) has found that none of the three different student-learning measures is confirmed on individuals similar to whom it was originally developed. Nor have they been particularly created to assess group learning in a social context. Finally, successful group problem-solving procedures need critical thinking, leading to the critical understanding required for deep learning.

2.3.6.1. The Constructivism Theory in Learning

Constructivism plays a significant role in the relationship between how teachers teach and how students learn. Constructivism theory helps students to actively build their knowledge, rather than simply being passive learners (Fosnot, 2006; Larochelle, 2010). Constructivism shifts from understanding learning as information process to learning as an individual construction process (Tobias 2009). Particularly this is found in Bandura's theories on social learning and the work of Jean Piaget that were depicted as early and

cognitive forms of constructivism where individuals are constructors of their life through developing experience (Goodman 2008). Thus, it is presumed that learners have to construct their own knowledge individually and collectively depending on their skills to solve problems and creating new ideas. The role of the teacher is to pose challenges and offer support that will promote cognitive construction in students (Chaille, 2008). They also hold a great responsibility for guiding students in their work and modeling behavior that will transform student group discussions into effective communication about subject matter (Flynn, 2005).

Furthermore, it is important to create curricula that match and challenge students' understanding, boosting more growth and development of their minds (Baltes, 2007). In addition, collaborative learning help students to share and construct their ideas with others (Leitner, 2010). This cooperative effort offers the opportunity for students to reflect on their own ideas and those of their peers as well (Kincheloe, 2006). In this collaborative learning setting, students view their peers as resources rather than as competitors, the feeling of teamwork takes place. These procedures have led to significant development in students learning (Bulach, Lunenburg, & Potter, 2012).

2.3.7. Vygotsky's Theory of Cognitive Development

Vygotsky's theory (1962) of cognitive development is a theory that focuses on the role of culture in the development of higher mental functions. He suggested that adults in a society promote children's cognitive development by engaging them in challenging and useful activities which will be helpful in their growth. Vygotsky claimed we are born with four elementary mental functions which are attention, memory, sensation and perception. He believed that our social and cultural environment allows us to use these elementary skills to develop and gain higher mental functions, this development happens in the zone of proximal development. This zone is divided to three parts which are: firstly what can we do in our own, secondly what can we do with the help of an adult or technology, and thirdly what's beyond our reach.

Vygotsky's concentration on the sociocultural nature of human cognition and learning was in contrast to both behaviorist and later data-processing methods that took it for sure that an abstract individual is a natural power of learning. It would be agreeable that transmission of culture from generation to generation is one of the main goals of education, the existence of

culture in the classroom stayed almost invisible. Culture was showed as an informative content of the curriculum external to the procedure of learning. Educators finally investigate the ever-present phenomenon of culture in learning when multiculturalism became distinguished as an empirical reality of the European and American classrooms. After this discovery, Vygotsky's sociocultural method is not apparently limited to such clear multicultural problems as bilingual students, but goes deeper into such phenomena as a culture of scientific reasoning as varied from the culture of everyday cognition, and the difference of literacy which answer Vygotsky's theory.

On the theoretical domain, Vygotsky's educational insights remained disconnected as long as the predominant argument was between traditionalists who believed in the transmission model of education, and progressivists who emphasized on discovery learning. Vygotsky's stance differs in principle because he puts educational process as a source rather than a consequence of the development of cognitive and learning skills. In Vygotsky's model education does not coincide with development but is built to implement those psychological reflections that will be required for the next educational step. Moreover, some supporters to Vygotsky would argue that the apprenticeship type of learning just employs the cognitive capabilities that already exist in the child without promoting them more as stipulated by the conceptual learning approach.

Vygotsky's theory is effective because his theory is true in reality and it shows exactly how parents normally in society foster children and help their growth. Also Vygotsky states the steps associated in a child growth and development period which show how efficient and precise his theory is. However, some of the problems related to Vygotsky's theory is that his theory does not apply to all cultures and social groups. In other words, some social groups may not be equal with all learners in being capable to gain the same meaning from engagement. Further, some might argue that his theory is not compatible with modern times such as the twenties because of the new ways of learning, the new technology, and the new generation and their parents. Jean Piaget came with the same theory but he argued that the child was more independent and that development was guided by self-centered and focused activities. Vygotsky generally emphasized on how early development occurs through parental instruction and interaction with the social environments which is believed that his theory is effective and precise but still needs to be modified in order to be applied in today's time and society.

2.3.7.1. Vygotsky's Three Social Development Theorem (1962)

Social Interaction: Social interaction plays a significant role in the process of cognitive development. Vygotsky felt social learning precedes development, in contrast to Jean Piaget's explanation of child development who believed that social development necessarily precedes learning.

The More Knowledgeable (MKO): The term MKO refers to anyone who has a better idea or higher ability than the other person (which is considered the learner), as it may refer to a coach, teacher, or an expert in a certain thing or sport. An MKO doesn't necessarily need to be an adult, as it doesn't need an age to have a higher ability in something than someone else.

The Zone of Proximal Development (ZPD): The term ZPD is used to refer to the distance/difference between the student performing a task under an MKO guidance and a student performing a similar task unassisted. According to Vygotsky, humans utilize tools that produce from a culture, such as speech and writing, to arrange their social environments. To illustrate, collaborative learning is based on Vygotsky's idea of the zone of proximal development, which states that learning is inherently social. When a group of youngsters works together on a project, solves a problem, discusses a vital subject, gives a presentation, organizes an event, or just engages in play activities together, they are demonstrating collaborative learning. The goal of these exercises is to promote verbal or linguistic intelligence, which is the ability to use words to communicate ideas, convey feelings, and convince others.

2.3.7.2. The Effectiveness of Vygotsky's Theory

Lev Vygotsky is considered one of the twentieth-century theorists who had contributed significantly to critical thinking theory and education. His theory has become the foundation of much research in cognitive development over the past decades, especially of what is known as Social Development Theory. Therefore, there are several reasons to consider Vygotsky's social development theory effective:

- ❖ Firstly, it inscribes the way people interact with each other in their daily life. In other words, the theory considered more emphasis on social factors contributing to cognitive development.
- ❖ Secondly, it tells how people develop and how to measure the amount of progress. To illustrate, through interaction with the sociocultural environment, these are progressed into more advanced and helpful mental processes which is referred by higher mental functions. For example, young children's memory is restricted by biological reasons. Thus, culture decides the type of memory process that each individual progresses.
- ❖ Thirdly, using this theory in daily life may strengthen the bond that connects people to others. For instance, the influence of environmental context increases with task difficulty or efforts.
- ❖ Fourthly, it gives a good understanding of high abilities and why age doesn't matter when it comes to how high one's abilities are in a certain category. To elaborate, much important learning by the child happens through social interaction with a skillful mentor who models behaviors or offers verbal instructions for the child. This is called as cooperative or collaborative dialogue where the child gets to understand the actions done by the mentor (either the parent or the teacher) then internalizes the data, using it to follow in their own behavior.
- ❖ Finally, social interacting develops a person and improves the way he / she treats people in his / her daily life. In other meaning, the more interaction taken place with all kinds of people, the more a person evolves.

2.3.7.3. Limitations of Vygotsky's Theory

One limitation of Vygotsky's theory is that it mainly talks about children, or to be more accurate, it refers to children in certain ages (Winnicott, 1982, pp. 52-54). Another limitation is that Vygotsky's theory focused more upon the processes through which children develop rather than the characteristics of that children of particular ages are likely to demonstrate (Lee, B., 1985). According to Vygotsky, cognitive, social, and motivational factors were interconnected in

development. Nevertheless, Vygotsky's theory describes the way that each individual develops. It might not suit all ages, but it still represents something that humanity can never let go of, which is social interaction.

2.3.8. Anderson's Phases of the Practical Inquiry Model

The phases of the practical inquiry model of Anderson (2001) are the idealized logical sequence of the process of critical inquiry and, therefore, must not be seen as immutable.

- The first phase of the model reflects the initiation phase of critical inquiry and is considered the triggering event where a problem that emerges from experience is identified or recognized.
- The second phase of the process is exploration where participants shift between the private, reflective world of the individual and the social exploration of ideas that is, between critical reflection and discourse. Finally, students begin to be selective with what is relevant to the problem by brainstorming, questioning, and exchange of information.
- The third phase, integration, is described by building meaning from the ideas constructed in the exploratory phase where students will begin to assess the applicability of ideas in terms of how well they connect and describe the event under consideration. This phase is the most difficult to discover from a teaching or research perspective. It requires active teaching presence to diagnose misconceptions to ensure continuing cognitive development, and to model the critical thinking process.
- The fourth phase is a resolution of the problem by means of direct action. In an educational context, the concept is somehow difficult as it usually entails a direct test using thought experiments and consensus building within the community of inquiry. By the end of this phase, it may be required to move on to a new problem with the assumption that students have acquired useful knowledge.

In conclusion, the practical inquiry model reflects the critical thinking procedure and the means to establish cognitive existence. Cognitive presence reflects higher-order knowledge acquisition

and application and is most connected with the literature and research linked to critical thinking (Garrison, Anderson, and Archer 2000).

2.4. Review of Related Literature

The partakers of this study are both male and female Emirati and expatriate students, therefore, before discussing the focus of this study which is critical thinking in relation to collaborative work, it was important to highlight the history of education in the United Arab Emirates (UAE) to give a general thought about the UAE's achievements in this regard, as well as to shed the lights on the importance of critical thinking in teaching, assessing critical thinking outcomes and connecting it to collaborative work which is mainly the focus in this study.

2.4.1. The Importance of Critical Thinking

Thinking and reasoning are mental processes that are used every day. However, reasoning has stronger influence as it spots the lights on the inferences drawn by one's mind. It happens when the mind draws conclusions to make sense of things. . Yet the quality of people's life depends concisely on the quality of their thoughts (Paul, R. and Elder, L. (2007). Ball (1989) has recorded the appearance in recent years in OECD countries of policies, programs and projects planned to improve higher level abilities as well as defining them as those individual tendencies, abilities and qualifications linked to innovativeness, ambition, problem-solving, pliability, adjustment, holding responsibility and knowing how to learn and relearn. (Ball, 1989, p. 10)

Furthermore, The Finn Report (1991) suggested six Key Competence fields to support the curriculum framework for Australian education from school through the post-obligatory district. The suggested key higher stage competencies by Finn are:

- ❖ Language and communication
- ❖ Mathematics
- ❖ Scientific and technological understanding
- ❖ Cultural understanding
- ❖ Personal and interpersonal.
- ❖ Problem solving

After going in details through the key competency aspects, some less common thoughts came into view. For instance, learning different kinds of problem solving techniques has been a main trait of several courses, but it is not a proof for critical thinking and analysis, which Finn embraced under the key competence list of problem solving.

Further, there has been much discussion on the question of what is critical thinking (Kennedy et al., 1991, pp. 13-14, 26). Although there are still disparities about some details, thoughtful agreement has been accomplished that critical thinking is a combination of capabilities and tendencies. The most effective description of critical thinking is related to Ennis (1987). Accordingly, good thinking is crucial as it is logical and reflective that concentrates on deciding what to believe or do.

2.4.2. Model of Critical Thinking and Its Modification

This model suggests that there are four aspects of critical thinking and they are: affective, conative, behavior, and cognitive. It supports the definitions suggested by some scholars such as Mertes (1991), Scriven and Paul (2008a), Ennis (1996), and Lipman (1995). First, in case of an argument, there is an affective tendency to use critical thinking. As a result, a prior held belief is asserted or a novel belief is built. A component of declarative memory will be initiated. Also, there may be visualizations formed or remembered as part of the critical thinking process. Then, there is an affective tendency to participate in the activities of planning to be guided by critical thinking. On the other hand, the components of goal-setting and self-regulation in the conative aspect must be activate to develop an action plan (behavioral aspect) from the

feedback results that would increase in procedural knowledge. Finally, this new learning is then generated (cognitive aspect) based on beliefs that need additional critical thinking.

The most appropriate teaching methods might be different for each component. In other words, if a person is most interested in declarative knowledge (facts, concepts, or principles), the most suitable teaching method might be some type of direct instruction. However, if the concentration is on procedural knowledge, so it is likely that modeling experience would be more suitable teaching method. Attitudes might be affected most directly by socialization and the teaching method of cooperative learning. Therefore, learning the procedure of critical thinking might be best simplified by a mix of didactic instruction and experience in particular areas. Conation might best be conducted by goal-setting practices and action learning. Lastly, using positive and negative reinforcements are best achieved in explicit behavior and using feedback.

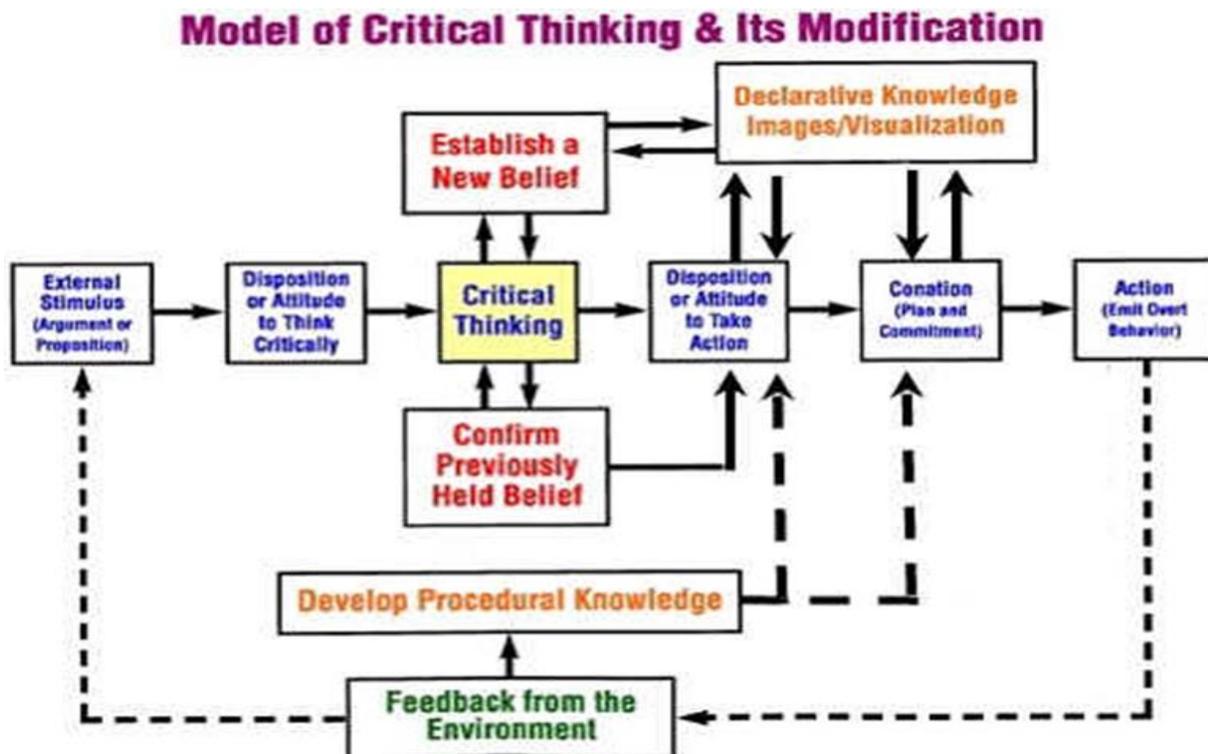


Figure 2.4: Model of critical thinking and its modification

2.4.3. Teaching for Critical Thinking

Although the proof is overpowering that students can be taught to be better thinkers, the above discussion would imply that there are several essential unanswered questions. So despite the fact that countless books and articles have been written on teaching for critical thinking, the remaining large mission is the cultivation of our realization of what areas of thinking can be learned and used. Aside from matters of subject specificity, more experimental study is required on which approaches of teaching critical thinking are most efficient. For instance, Ennis (1989) has detailed three models of subject-specificity and two teaching methods based on infusion and immersion. The infusion model gathers teaching of thinking in a specific subject with clear teaching of regular standards of critical thinking that follow in that subject area. Immersion focuses only on teaching of thinking within a specific subject. In other words, if the Finn Report was considered for real, these will become essential matters in Australian educational study.

2.4.4. Assessing Critical Thinking Outcomes

At present, two of the assessments most familiar employed to test critical thinking competency are the Watson Glaser (1980) Critical Thinking Appraisal, and the Cornell Critical Thinking Tests, Levels X and Z (Ennis, R.H., Millman, Tomko, T.N., 1985). In general, both assessments need respondents to tell whether there is enough proof or reasons to reach specific conclusions. In the Critical Thinking Appraisal, the inferences which respondents are questioned to test are driven from short statements representing mini-case studies which are called exercises. Relatively, the Cornell Critical Thinking Test, Level X, starts with an imaginative condition pursued by a sequence of optional inferences from which respondents must pick.

One of the challenges with testing critical thinking is that the success of respondents on these assessments may also be excessively relying on their complexity in language development and employ. On the contrary, low achievers on these assessments may be truly able of thinking critically and solving problems in different ways without the need to improve language skills.

However, one area, which assists itself to study, is a connection between language capability and critical thinking.

Kaye and Hager (1992) suggested that critical thinking is relatively linked with interpersonal communication ability, especially from a social cognition point of view. (Parks (1985); Berger and Bradac (1982); Roloff and Berger (1982); Delia, O'Keefe and O'Keefe (1982); de Charms (1968); Goffman (1959, 1967), the role of critical thinking in improving control over self and over one's environment seems to be hardily lawful. A relationship between critical thinking and one's capability to communicate, is relevant to impose methods other than by means of pencil-and-paper assessments, to test critical thinking capability. For example, observations by independent or skilled investigators would be one possibility.

Moreover, another method of distinguishing whether critical thinking happened in such conditions is to track the critical problem-solving session with some retroactive, built analysis. If such sessions were to be videotaped, there would be a chance to have participants remembering their thoughts at various stages of the problem-solving procedure. This type of strategy has been utilized by Kagan (1977) in his Interaction Process Recall (IPR) Approach, and by Noller and Callan (1989) who implemented a video-based strategy to tap into deeper information about individuals' considerations.

2.4.5. Promoting Critical Thinking in the UAE

Since the independence in 1971 and the oil discovery, the UAE has rapidly transformed its economy to become a modernized regional country. Now, the UAE is transforming its educational system to be competitive in the global knowledge-based economy. However, the UAE must overcome significant challenges to change to a knowledge society by changing from an autocratic culture of rote memorization into a creative and critical thinking culture. The UAE is accomplishing this by establishing an educational strategy that involves a comprehensive education policy and improved college readiness of secondary school graduates. Today, critical thinking is considered one of the most significant skills for career success and an important component of life (Wagie, David, Fox, Warren, 2005/2006). In the context of the UAE's national

agenda, it gets even more significant because it is fundamental to ensure that students are equipped with critical thinking skills who can achieve a competitive knowledge-based economy in future.

Critical thinking has been identified as a key skill to foster innovation (Paul, R. and Elder, L., 2009). Studies show that there is a correlation between critical thinking and creativity. Critical thinking practice has become common in the workplace to help improve the innovative skills of the employees. On the other hand, Subjects in each school's curriculum teach students how to think critically and solve problems skillfully so they can apply them throughout their life whenever they appear. On both accounts, critical thinking is the key to the fulfilment of the UAE's aspiration outlined in its goals and Vision of 2021. In this context, critical thinking becomes more than a skill; it's a mindset. Therefore, nurturing critical thinking from a young age at school is substantial for it to become a constructive, lifelong practice. All in all, students who grow up in the UAE and are empowered with the right education and values have the chance to become truly global citizens and role models all over the world.

2.5. Summary

In summary, this chapter concentrated on investigating the theory related to the research questions including the current experimental literature internationally and particularly to the UAE. It also discussed the importance of enhancing critical thinking skills of students in English classroom and involving them in the collaborative learning process for more effective constructive knowledge. Also, the intention was to utilize existing models of techniques and pedagogy in enhancing critical thinking as well as social development that were developed by pioneers in the education field, in order to help in the development of educational methods in the UAE. Overall, it is recommended that more concentration would be on involving students in collaborative learning in English classroom to enhance their critical thinking skills which became the main concern of the Ministry of Education in the UAE to foster critical thinking skills in English language in schools. Further, teachers are being trained to enhance their skills with much

efforts in order to enable them to prepare their students to meet the 21st century skills requirements.

Key Findings Table		
Scholar	Theory	Key Findings
-VanTassel-Baska, Bracken, Feng, & Brown (2009) -McCollister & Saylor (2010) -Snodgrass (2011) -Tsai, P., Chen, S., Chang, H., & Chang, W. (2013)	Utilizing Techniques and Pedagogy to Enhance Critical Thinking in K-12	<ul style="list-style-type: none"> - Can increase academic strength and raise the results on the standardized assessments. - Students are better capable to recognize why something has happened instead of what has happened.
-Milne and Noone (1996) -Graham Parton and Richard Bailey (2008)	Problem-Based Learning: A Critical Rationalist Perspective	<ul style="list-style-type: none"> - A critical rationalist point of view has educational advantages for students as it builds an environment full of critical thinking, reading and writing and values disconnection and challenge.
-Halx & Reybold (2005) -Arend (2009) -Smith & Szymanski (2013)	The Educator's Role in Developing Critical Thinking Skills	<ul style="list-style-type: none"> -Allow students to engage in critical thinking for discussion and motivate them for a free thinking procedure. -Motivate students' realization that thinking critically does not always complete with an accurate answer, but instead completes in more questions or varied assessments of the subject.
-Karl Popper (1972)	Critical Rationalism	<ul style="list-style-type: none"> -Reason and experience in learning and the growth of knowledge are important in increasing students' critical thinking skills.
-Piaget, J. (1957)	Piaget's Cognitive Development and Language Learning	<ul style="list-style-type: none"> - The cognitive field have powerful impact on understanding of reasons in language learning. - The interaction of observation and adaptation in the process of gaining balance considers a cognitive evolvement from birth to death. - Children think much differently from adults, and they learn by making things happen and trying to influence their environment. - People are builders of knowledge structures and that has been related to constructivism.
-Linda Elder & Richard Paul (2007)	The Eight Elements of Thought	<ul style="list-style-type: none"> -Learning to question purposefully, setting goals, defining problems, information, and concepts are necessary analytic steps to enable each skilled individual to understand and assess their analytic

		<p>thinking.</p> <ul style="list-style-type: none"> -These analytic tools enable a person to get at the most significant logic of any behavior, problem, or issue and motivate him /her to get a deep insight of their learning in every situation analyzed, and to think of different intellectual domains.
-Kenneth A. Bruffee	Collaborative Learning and the Conversation of Mankind	<ul style="list-style-type: none"> - The significance of this study that it links collaborative learning to English classroom. - Collaborative learning is explored as a pedagogical technique that "works" in teaching composition and literature as a process that creates disciplines of study.
-Howard Gardner (1983)	Multiple Intelligences	<ul style="list-style-type: none"> - The concentration is mainly on the multiple intelligences or unique profiles of these intelligences that may differ according to genetics or experience.
- Lipman (1991) - Richardson (1994)	The Importance of the Social Context to Learning	<ul style="list-style-type: none"> - The importance of the social context to learning through the development of a community of enquiry which is significant for the evolvement of the critical thinking skills. - Successful group problem-solving procedures need critical thinking, leading to the critical understanding required for deep learning.
-Lev Vygotsky (1962)	Vygotsky's Theory of Cognitive Development	<ul style="list-style-type: none"> - The theory considered more emphasis on social factors contributing to cognitive development. - It tells how people develop and how to measure the amount of progress. - It gives a good understanding of high abilities and why age doesn't matter when it comes to how high one's abilities are in a certain category. - Social interacting develops a person and improves the way he / she treats people in his / her daily life.
-Anderson (2001)	Anderson's Phases of the Practical Inquiry Model	<ul style="list-style-type: none"> - The practical inquiry model reflects the critical thinking procedure and the means to establish cognitive existence. -Cognitive presence reflects higher-order knowledge acquisition and application and is most connected with the literature and research linked to critical thinking

Table 2.1 Key findings table of the literature review of the thesis

CHAPTER 3: METHODOLOGY

3.1. Overview of the Chapter

As demonstrated in the previous chapters, this study aims to understand the impacts of collaborative learning in developing critical thinking in English classroom among high school students in two private schools in Abu Dhabi. The objective of this chapter is to offer the approach selected to answer the research questions, impact of the modification process, and research methodology procedure that explains the research design about the site, population, sampling, participant selection, data collection, instruments, and data analysis. It also illustrates reliability, validity and trustworthiness of this study as well as describe the scope of the study, ethical consideration and the researcher's role to avoid bias.

3.2. Research Approach

The researcher used for this research mixed method approach (quantitative and qualitative research methods) that is ultimately based on the pragmatic consumption of knowledge and which is suitable for this study as it answers the main research questions and increased the validity of the research (Creswell, 2003). Also, she used the pragmatic approach to better understand the mismatch between the evidence and what is actually being developed in practice (Saville AW, Albright K, Nowels C, et al, 2011) and to offer better traction and insight into a topic of interest than does the use of only one approach alone (Kempe A, Saville AW, Eisert S, et al, 2013). According to Creswell (2009, pp. 13 – 14), pragmatists concentrate on the practical domains of the research and they think that knowledge comes from cases, actions and outcomes rather than prior situations. Therefore, they give the preference to the research problem and employ many methods to best comprehend it. The case study of this research functions well with the mixed method approach that the researcher has selected.

There are other potential approaches of research that take place in critical thinking. For instance, a person could think of utilizing structured interviews in which interviewees would have raised to them challenges and arguments which would require to be checked for their validity and agreeability. It is clear that those who teach others to be critical thinkers are themselves well developed in critical thinking. As a vital part of the research, the field of occupational teacher education, the critical thinking capabilities of teacher educators should be tested. In an accidental discovery process, it may also be exciting to assess educators on their beliefs of the importance of critical thinking in education curricula. Kaye and Hager (1991) and Hager and Kaye (1991) discovered that critical thinking process had had no custom in traditional, mechanistically carried teacher education curricula.

Mixed method approach is a method to knowledge that honors the prudence and point of views of both qualitative and quantitative research and tries to provide a logical moderate settling for research problems (Johnson, Onwuegbuzie, and Turner, 2007). Mixing quantitative and qualitative research methods provides enough data (Creswell and Plano Clark 2011), uses various strategies to achieve high levels of validity (Tashakkori and Teddlie 2010), and leads to more precise outcomes in which the insufficiency of one method is balanced by the strengths of the other (Firestone 1987; Guba and Lincoln 1994). In other words, when qualitative and quantitative techniques were integrated in this study, the methodologies were frequently used in the order they were developed. Also, when designing a major epidemiological research, semi-structured interviews and observational data, they were utilized to investigate the hypotheses, resulting in improved sensitivity and accuracy of survey questions and statistical technique. Additionally, to get a better grasp of the meaning and consequences of the findings, qualitative investigations were added to quantitative ones in this research. For instance, in triangulation, a technique used by land surveyors to improve the validity of a map by combining measurements from several angles, more inventive combinations are observed. Therefore, the phenomenon's description can be enriched by a variety of observations.

Mix method approach is employed in this research mainly because most social events are sophisticated, multifaceted, and functional as supplementary is one of the main objectives used in the mixed method approach (Greene, 2007). It also leads into a holistic understanding of the research problem, which promotes and deepen the analysis and conclusions of the study (Greene,

2007). For instance, the main objective of the research is to show the impacts of collaborative learning in developing critical thinking among high school students. The researcher used explanatory sequential design where she begins gathering quantitative data (survey questionnaire) and then analyzing them; after that she collects qualitative data (lesson observation and interview) and analyzes it to explain the quantitative results (Creswell 2014). The figure below explains the way to carry out a sequential study in mixed methods approach.

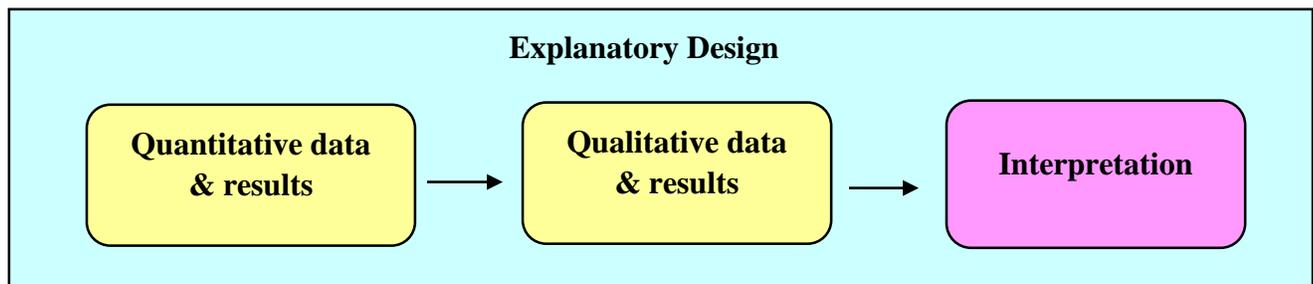


Figure 3.1: The process of conducting a Sequential Design

Furthermore, pragmatist paradigm was pursued because both quantitative (surveys) and qualitative (interviews and lesson observations) methods were employed, and it was not obvious yet which of the methods would give the most important information needed. Both quantitative and qualitative research approaches examine and investigate the distinctive needs of knowledge and learning. At the same time, both research methods give the researcher a chance to understand a phenomena (Fraenkel & Wallen, 2010), as figure 3.1 shows the phases of the proposed study's data collection and analysis.

A second objective for using mixed method approach in this study is to track the progress of to the consecutive use of collected data from each method to inform the implementation of the other (Greene, 2007). To illustrate, mixed method approaches were carried out sequentially, which was the case in this study where the analysis of the students' surveys informed the lesson observations and the results of the students' surveys informed the questions posed in the interviews with the teachers. The third objective for using mixed method approaches in this research was triangulation (Greene, 2007) which targeted to validate the research results,

increased the trust of inferences, and overcome research bias linked from the employ of a single method of research.

According to Isadore Newman and Carolyn R. Benz (1998), a quantitative research approach is used when an individual begins a hypothesis and tests the proof of it, as well as using it for a large sample in a research. In contrast, Creswell, J. W. (2007) suggests that using the qualitative research method holds the rhetorical consumption of the necessity of writing to be personal and precisely in type. In other words, a qualitative approach is employed to comprehend more complicated questions. On the other hand, both of them are not approved in their creation and both of them have limitations such as the consumption of more time, energy and money. But viewing it from a pragmatic principle offers a powerful philosophical domain for mixed methodologies (Cameron 2009).

The approach employed in this research can be depicted as both deductive and inductive spontaneously (Johnson and Christensen 2014). It is based on applying critical thinking skills in collaborative learning in English classroom, which would enhance students' ability to develop their level of thinking. The research studied how a theory was applied in a real situation, which was considered deductive (Johnson and Christensen 2008). Also, the inductive case study chosen for this study comprised gathering data that result in valuable descriptions (Meriam 2009). Again, the main research questions that were planned in the study are:

- ❖ What are the impacts of collaborative learning in developing critical thinking among high school students (in existing literature)?
- ❖ How do high school students (in two private schools in Abu Dhabi) perceive the role of collaborative learning in developing critical thinking (explored through survey)?
- ❖ What are the perceptions of the English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students (explored through semi-structured interview)?
- ❖ How are teachers and students in English lessons (in two private schools in Abu Dhabi) experience the impacts of collaborative learning in developing critical thinking (explored through observation)?

Finally, it may be worth suggesting on the carried research, the question of whether assumptions and recommendations made in complicated created documents like the Finn Report were discovered on proof that is scientifically braced as well as politically aided. For instance, the Finn Report, as advised before, suggests that critical thinking is part of the problem-solving key competence aspect. Thus, policy statements of this type took less consideration on recommendations and assumptions made in them. To illustrate, if McPeck's (1981) suggestion was taken seriously in consideration, critical thinking is not a capability which is transferred from condition to condition. Following this claim could not agree with the reasoning implied in the Finn Report. One potential conclusion, therefore, is that committees of this type may be affected by thinking strongly by distinguished practitioner groups rather than by scholars and existed social scientists.

In conclusion, the observation of the study can be justified for the research of the relationship and place of critical thinking in teacher's occupation. The research questions in some situations need an ideal transfer in thinking as it must be the passionate wish of current researchers in this domain to have enough vision to understand possible opportunities to implement a workforce of more critical thinkers.

3.3. Data Collection Plan

This section describes the site, population, sampling, participant selection, data collection, instruments, data analysis, ethical consideration, researcher role, trustworthiness, and validity and reliability. As seen below in Table 3.1, the research conducted in this study was the mixed method approach which linked each research question to the method followed as well as the instruments and the number of participants.

Question	Approach	Instruments	Participants
❖ What are the impacts of collaborative learning in developing critical thinking among high school students	Quantitative	Survey	240 Students
	Qualitative	Interviews	8 Teachers
		Lesson	8 Lesson Observations

(in existing literature)?		Observation	
❖ How do high school students (in two private schools in Abu Dhabi) perceive the role of collaborative learning in developing critical thinking (explored through survey)?	Quantitative	Survey	240 Students
❖ What are the perceptions of the English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students (explored through semi-structured interview)?	Qualitative	Interviews	8 Teachers
❖ How are teachers and students in English lessons (in two private schools in Abu Dhabi) experience the impacts of collaborative learning in developing critical thinking (explored through observation)?	Qualitative	Lesson Observation	8 Lesson Observations

Table 3.1: The phases of the proposed study's data collection plan

The research questions listed in Table 3.1 show that mixed method approach is recognized as a distinct study which has developed as a response to the opposite tendencies of quantitative and qualitative research methods (Collins & O'Cathain, 2009). Quantitative method suggests the collection and analysis of numeric data (Fraenkel & Wallen, 2010) such as Likert scales. Qualitative method, on the other hand, suggests the collection and analysis of descriptive and characteristic data such as face-to-face interviews or written narratives (Merriam, 2009).

3.3.1. Site, Population, Sampling & Participant Selection

The researcher chose the context of the research to be in Abu Dhabi as it is the capital city of the United Arab of Emirates and where she lives. Another point, sampling is a significant move in conducting a research plan as it shows the quality of the analysis that the researcher has made from the implicit outcomes (Onwuegbuzie and Collins, 2007). They believe that quantitative researchers head for making “statistical” conclusions which involve generalizing results and deductions. On the other hand, many qualitative researchers head for making “analytic” conclusions which are used to broader theory on the foundation of how chosen studies suit with general structure (Onwuegbuzie and Collins, 2007, p.283).

In both quantitative and qualitative research methods, deciding the number of participants to select and deciding on how to choose those sample members is a critical step that the researcher needed to take in planning for the study. Based on a particular population, the choice of sampling scheme is distinct in qualitative research from quantitative research. According to Creswell (2012) for example, the sample in a qualitative research may involve a wider scope of partakers to test the research question and ensure whether overdrawn cases need selection. Onwuegbuzie and Collins (2007) stated that numerous researchers utilize the non-random sampling plan in the mixed method approach despite of the study purposes, objectives or research question. They propose, for instance, that the type of sampling plan should rely on the purpose of the research if the objective is to generalize the conclusions then “random” selection sounds suitable, however, the researcher should select a specific sampling plan to obtain utmost understanding of the research problem if he or she needs to study a specific phenomenon or event.

The research was held in Abu Dhabi, the capital city of the United Arab Emirates that is located in the far west and southwest of the UAE and the largest city of the UAE's seven emirates, in two private schools of different teaching systems and curricula (American, and Arabic) and different areas (The center of Abu Dhabi, and Khalifa City A). All of the schools follow ADEK's system (Abu Dhabi's department of education and knowledge) which plays a vital role in promoting a culture of creativity, sustainability and excellence in Abu Dhabi and Al-Ain in the UAE. One school has only female students whereas the other school has both male and female students. Having the research conducted on these two schools is enough for the following reasons:

1. The schools represent varied teaching systems and curricula that are mostly applied in Abu Dhabi and which are needed for the study purposes.
2. Both of the schools are moving toward applying critical thinking in learning in general and applying critical thinking in teaching different subjects including English in specific among high school students.

As this study followed a mixed method approach (a multilevel parallel connection between the samples (Johnson and Christensen 2008)), the teachers' sample for the quantitative and qualitative sections of the research was the same, and the information was gathered simultaneously. On the other hand, the students' sample was only comprised in the quantitative stage of the research (survey). Partakers were separated into two groups: students and teachers. The total population of the targeted grades of this study (Grade 10, Grade 11, and Grade 12) was 240 students (for the survey questionnaire) and 8 English teachers (for the interviews). When the researcher got a formal permission (See Appendices C & D), the access to students, teachers and documents was potential.

For the qualitative approach method, one type of sample was required: teachers, through lesson observations and semi-structured interviews. A survey questionnaire was given to all teachers (males and females) in the two schools (8 teachers) as part of the quantitative approach method. So, there was no specific criteria used to choose subjects for the study in order to appease sample selection biases.

3.3.2 Instruments

Methods of data collection in quantitative research involve the use of instruments, such as questionnaires, closed-ended questions, or any document that has numeric scores. On the other hand, methods of data collection in qualitative research included open-ended questions, policy documents and visual materials (Creswell, 2012). To ensure the validity of the data in both research methods as recommended by Glesne (2011) and Creswell (2014), the researcher used at least two strategies, including peer debriefing and triangulation. Firstly, peer debriefing was employed to reflect on the gathered data and how effective it was to answer the research questions in addition to the effectiveness of the supervisor consultation to disclose any personal bias. On the other hand, triangulation was employed to find consistency patterns across the qualitative and quantitative data in order to improve the validity of the outcomes, even though that mixed method approach was not always consistent because of the various kinds of answers given by the partakers. For example, quantitative data relies on facts that are not related to feelings, whereas qualitative data relies on facts that are linked to feelings. Therefore, triangulation showed contradiction between these two methods during collecting and analyzing the data. The subsections below will explain the discussion of each instrument in details, including each instrument's objective, and its connection to the main goal of the study, approach and data collection process.

3.3.2.1. Quantitative Instrument

The quantitative instrument involved the administration of a survey questionnaire to provide generalized information about the current study. The survey questionnaire helped to define the three factors that affect students' critical thinking during the collaborative learning class, which are: individual role, teacher role and group influence.

3.3.2.1.1. Surveys

The quantitative method had been one of the primary methods in social science research until the last twenty years (Morgan 2007). In this research, the quantitative part included survey questionnaires to provide generalized data about the study and to identify the three factors (individual factor, teacher factor, and group factor) involved in students' responses. In order to produce an empirical data, the researcher used survey questionnaire as part of a quantitative research method and as an aspect of the mixed method approach to elicit views and perceptions of students (See Appendix E). Surveys are quite flexible and can give a large amount of information in a short time, as well as including many participants that it is more likely than some other methods to get information on a representative sample, and hence can be generalized to a population (Creswell, J. W., 2009). In other words, questionnaires are relatively low in costs, can offer data on a larger number of people in a reasonably brief and easy to gain, quantify, analyze and interpret. Therefore, the survey conducted in this study covers the main research question with its sub questions where it is divided into 40 questions that illustrate the research questions. To illustrate, questions 1 to 16, 21, 24, and 25 triggered collaborative learning in English classroom. The purpose of the questions is to have a clear vision on individual's perspectives towards collaborative learning. On the other hand, questions 17 to 20, 22, 23, and 26 to 40 targeted critical thinking while working collaboratively in English classroom. The goal was to understand to what extent the individuals are enhancing their critical thinking skills through collaborative learning in English classroom by the effect of the teacher's role and the group's role.

Taylor, Kermode and Roberts (1998) believe that questionnaires in regard of their anonymity promote explicit answers when compared to interviews where partakers might have to tell socially suitable answers to questions asked. Also, questionnaires can be easily tested for their reliability and validity. Another point, questionnaires are planned after employing a comprehensive literature review of studies to research the problem. Then the analysis of the questionnaire guides in the preparation of the semi-structured interview. In short, questionnaires are a useful approach to collect primary research but they should be obvious and easy for the entrants to comprehend. The survey questionnaire that was employed in this study used a 5-level

of agreement Likert-scale to answer the main research questions that contain 40 set of questions about the students' experiences with collaborative learning in English classroom that help in understanding how it would enhance critical thinking among learners (see Appendix E). In order to build descriptive outcomes of the survey questionnaire with the students, the survey questionnaire was statistically analyzed and performed using SPSS 240 data entry and analysis, the frequencies and percentages were computed for the demographical variables, and the means and standard deviations of partakers' perception scores towards the items and the themes of the questionnaire were computed as well.

According to Creswell (2011), locating and instrument to use has three possibilities: the researcher can develop, locate and modify it, or locate one and employ it in its wholeness. In addition, Creswell (2011) believes that modifying instrument is locating an existing instrument, getting consent to modify it, and making alterations in it to fit the researcher's needs. The researcher of this study used Modify to serve the purpose of the context nature. Finally, in the quantitative stage, the researcher conducted a survey instrument, which is a paper-based questionnaire adapted from Collaborative Education Lab guidelines for assessing collaborative learning in the classroom by Luis Valente, 2016. Noticeably, Collaborative Education Lab is an innovative Erasmus+ initiative financed by the European Commission that aims to make collaborative teaching and learning a reality in the classroom by following effectively the 21st-century skills needed as practitioners and policymakers require a committed place and time to experiment with collaborative teaching and learning in order to better grasp what it entails in terms of policy and practice.

High school students were selected in both schools for the sampling of the survey. The surveys were handed out to two hundred and forty students; one hundred twenty from each school. The gathered data were systematized and analyzed using SPSS, and demonstrated in the form of graphs and diagrams. The researcher delivered the surveys to the school administration, and then they were sent to the secondary supervisor, to deliver them to all students. The researcher placed a box in the supervisor's office to collect all the surveys after they were conducted. A cover letter was attached with every survey explaining the objective of the study and the importance of completing the survey.

Students were asked to complete the survey, and then return it to their supervisor. As the study employs the same questionnaire of Luis Valente’s (2016), it was not needed to pilot it. The researcher used both descriptive and inferential statistical analysis. The outcomes observed from the survey questionnaire data were utilized to explore more understanding in the interview stage. The quantitative data from the survey questionnaires was analyzed using Statistical Package of the Social Sciences (SPSS) to find the relationship between many demographic characteristics, and the impact of collaborative learning in enhancing students’ critical thinking. Descriptive statistics was employed to calculate the distribution and frequency of the nominal and ordinal data gathered from the survey questionnaires. Also, means and standard deviations were calculated to find the average scores and dispersion of the ordinal and interval/ratio data. All in all, the gathered data were presented in graphs and diagrams forms.

Sample Profile

A total of 240 high school students in two private schools in Abu Dhabi were hired to answer the applied questionnaire questions, divided equally as 50% Emiratis and 50% Expatriates. Females represented the larger proportion with 58.33% of the sample, and males represented 41.67%, see *Table .*

Table 3.2. Sample Demographics (N = 240)

	Count	Percent		Count	Percent
Gender			Nationality		
Female	140	58.33%	Emirati	120	50.00%
Male	100	41.67%	Expatriate	120	50.00%

3.3.2.2. Qualitative Instruments

“Preliminary study to define the specific nature of the problem to be solved” is what exploratory research in the view of the qualitative research is (Knowles, J. Gary and Andra Cole ,2008). It was used in this study to guarantee that more research is considered throughout an experiment, as well as to determine research goals, collect data, and focus on certain issues that would be difficult to notice without exploratory research. To illustrate, when a topic has to be thoroughly understood, especially if it hasn't been done previously, exploratory research is used. Therefore, the purpose of study is to investigate the impacts of collaborative learning in enhancing critical thinking skills in English classroom among high school students in two private schools in Abu Dhabi which will allow the researcher to lay a solid basis for investigating her ideas by selecting the mixed research design, and identifying variables that are genuinely relevant to the study. As the research proceeds, the researcher has a lot of freedom and can adjust to changes. It is frequently inexpensive and it aids in the establishment of a research foundation, which can lead to more research. Additionally, it allows the researcher to determine whether the issue is worth investing time and resources in and pursuing at an early stage. Also, it can aid other researchers in identifying potential causes for the problem, which may then be investigated further to determine which is the most likely source.

Data triangulation was used in the research by gathering information from three varied sources. The three varied sources comprised of three diverse instruments which are survey, interviews, and lesson observations. For example, in lesson observation instrument was employed to identify teacher-student, and student-student interactions. Further, the document analysis was utilized to identify students' reflections. Finally, the teachers' interview instrument was utilized to specify their perspectives regarding empowering students' thinking level by employing critical thinking activities in collaborative learning in English classroom that would improve students' critical thinking capabilities (Meriam 2009). Moreover, the results are said to be deep, rich, and meaningful. The approach of the qualitative instrument seeks to describe and analyze the behavior of the humans and their groups. (Dilanthi Amaratunga, David Baldry, Marjan Sarshar, and Rita Newton, 2002).

3.3.2.2.1. Interviews

An interview tool as a qualitative research method is an instrument used to describe the major topic of the content and to acquire more precise information from participants. The highest crucial objective in an interview is to realize the definition of what the interviewee assume. (Kvale, 1996).

Further, interview has several pros. It is applicable and useful to any person, child, adult, literate, illiterate, or handicapped, that allow to explore the extent of the study that the researcher considers suitable (Denzin, & Lincoln, 2011a). Therefore, interview attempts to involve both a real and an important stage. An interview is efficient for carrying on the details of an interviewee's reflection. The researcher can get into depth in getting the data about the topic and it may be further supportive compared to questionnaires for more investigation of the partakers' responses. (McNamara, 1999).

Semi-structured Interviews with 8 English teachers were conducted in two private schools in Abu Dhabi after validating the questions of the semi-structured interview by the researcher's director of studies Professor Solomon David. This method was carried out to grant more in-depth, accurate, and detailed data from the participants and to capture their own experiences, point of views and interpretations of collaborative learning among high school students. Through this process, the researcher can illustrate the objective of the research and clearly determine the needed data, and ensure better responses in case of misinterpretation of the question in addition to influence the success of the research. In order to provide a check on the accuracy of the partakers' answers, interview offers similar data in different ways at different levels (Kvale & Brinkmann, 2009).

The semi-structured interview questions (see Appendix F) cover the main research questions and they are divided overall into 20 questions that reflect on the interviewees' perceptions and that would help the researcher later in transcribing and analyzing their answers. Actually, there are various kinds of research approaches that can be employed in qualitative research methods to address the research plan. Therefore, the diversity of these processes have recognized the effects on the research. The researcher thinks that a qualitative study approach is mostly helpful in this

research to depict the impact of applying critical thinking skills in debating and working collaboratively in activities in English classroom particularly at high school that would enhance students' thinking level and abilities.

The researcher planned the semi-structured interview questions based on the surveys' data analysis. Purposive technique was employed in the semi-structured interview questions to select eight partakers. They have been suggested as powerful qualitative method to obtain the lived experience of the subjects studied. According to Kvale & Brinkmann (2009), interview is an exchangeable process of opinions between two or more people on a topic of similar interest for knowledge production, and confirmation of social relateness of research information. On the other hand, McMillan (2004) think that interview is sometimes referred to a purposeful or judgmental population sample that the researcher chooses specifically to represent or inform about the study.

The researcher communicated with the principals of both schools to arrange for the interviews in their schools of their day preference and time convenience. Four English teachers in each of the two schools were chosen purposefully according to their active participation in having collaborative learning classes. As the qualitative data collection instrument "the semi-structured interview questions" were development by the researcher, it was required to validate the instrument. The researcher validated the semi-structured interview questions through an expert view by sending the draft of the semi-structured interview questions to her director of studies Professor Solomon David whose recommendations were relevant to improve and finalize the interview questions.

Finally, the researcher's notes of the partakers were transcribed. The transcripts were read carefully to look for emerging themes, which were used for deeper analysis. Then interviews were analysed by checking similar and different answers among the interviewees. The interview analysis was conducted following the Kvale's (2009) six steps in analysis:

1. Interviewee explain their lived world during the interview
2. Interviewee themselves explore novel relationship during the interview
3. Interviewer defines and explains the meaning during the interview

4. Transcribed interview is described by the interviewer (three parts: structuring, clarifying and analysing, five approaches: condensation (defining the main theme), categorization (explain main and sub-categories), narrative structuring (analysis in the form of narration), interpretation (researcher's point of view), and ad hoc approaches (diverse approaches for general meaning)

5. Re-interview

6. Involve action by creating an overall opinion and acquiring integrated material for more analysis.

3.3.2.2.2. Lesson Observations

Lesson observation is a data collection instrument used by the researcher to explore and identify students-students' or students-teachers' interaction in class (Fraenkel and Wallen 2006). Lesson observations' goal is studying the interaction between students and teachers in the classroom, and answering questions linked to students' reflections and experiences. Also, it explains to what extent students develop their critical thinking level and which teaching activities can be utilized to promote students to employ their skills and improve their critical thinking capabilities. To complete the objective of this plan, the researcher's role was only an observer, which means that the researcher observed objectively without interacting with the students, or the teacher in the classroom (See Appendix H).

The researcher used the notes on an observation form, which involves a checklist to record clear points linked to critical thinking in the English classroom, as well as to the comments that the observer implied about the discussions, unprepared practices and nonverbal communications that happened and were helpful to interpret other outcomes of the study (Meriam 2009). So, to be efficient facilitators of teaching, teachers need structured chances to engage in conversation with one another and in shared professional development practices (Henk & Moore, 1992). Half of the observed lessons (4 lessons) were following the Arabic teaching system in Abu Dhabi and the other half were following the American system (4 lessons). All students in both schools showed good rapport with their teachers. Everyone seemed enjoying collaborative learning especially when teachers allowed debatable topics and each student seemed learning from others'

experiences. Again, the lesson observation check list covered the main research questions and it was divided into 25 check list statements that helped the researcher later in transcribing and analyzing the outcomes after each lesson observation was conducted.

3.4. Pilot Study

Prior to data collection, early piloting interviews and lesson observations for particular goals were conducted with two participants (for the interview) and two classes (for the lesson observations) in order to modify and fill in the gaps in the interview and lesson observation guide designs that would support in generating rich data in the study that needs more attention. At first, the pilot was carried out in the settings (at one of the schools) that was chosen by partakers based on their interest to participate and share their experiences. The pilot study offered the researcher an opportunity to further improve her interview questions by dividing some questions into sub-questions, and to gain more experience in interviewing partakers, as well as developing the checklist of her lesson observation form. It also helped the researcher to practice illustrating some questions in case they were unclear to the participants and encourage them to be more open to reflect on more work-related situations that might be sensitive in some cases. Mainly the interviews lasted between 50 to 70 minutes. The partakers were granted the choice of being audio recorded, but they refused and preferred that the researcher would take notes instead. On the other hand, each lesson observation class lasted between 40 to 50 minutes. The researcher also asked the partakers to sign a consent form before starting the pilot interview who seemed pleased to do so.

The main data analysis method in this study followed Newell and Burnard (2011) approach which based on the thematic content analysis, as it is a useful method to direct the process of analysis for the desired outcomes. The process involves: writing interview notes, writing general themes from transcripts, rereading and constructing open coding, higher stage headings, and then building another higher order codes and lastly reporting all arranged information. Interpretive procedure was also employed to build deep levels of understanding (Miles, M. B., Huberman, A. M., & Saldana, J., 2014).

Finally, the draft of the questionnaire was verified, evaluated and approved by the researcher's director of studies Professor Solomon David who has long academic experience and was familiar with the higher education policies. In addition, a preliminary random sample of students from the two participating schools was surveyed, to use their responses in validating the questionnaire by measuring its internal consistency. The questionnaire overall reliability was measured by Cronbach's alpha coefficient (Cronbach, 1951), which was equal to 0.931, indicating excellent reliability, while Individual Role (IR) factor had a Cronbach's alpha of 0.881, Teacher Role (TR) Cronbach's alpha was equal to 0.8, and Group Influence (GI) had a Cronbach's alpha of 0.819, which indicated that all survey dimensions were highly reliable. Descriptive and reliability statistics are presented in Table . The reported statistics suggest that the researcher may proceed to collect more data and investigate the main research questions.

Table 3.3. Descriptive Statistics and Reliability Coefficients of Questionnaire Factors - Pilot Study

Factors	No. of items	Mean	SD	Cronbach's α
Individual Role	15	4.13	.519	.881
Teacher Role	10	4.08	.509	.800
Group Influence	15	4.12	.422	.819
Overall Questionnaire	40	4.11	.437	.931

3.5. Data Analysis Plan

As it's mentioned in the thesis title, theoretical framework, and research questions, the study adopted approaches and methodologies in both quantitative (surveys) and qualitative research (interviews and lesson observation). In each method the data analysis was performed separately. Primary data was collected using a survey which was given to 240 students in two private schools in Abu Dhabi. Descriptive, inferential, and conclusive statistical analysis was used in SPSS procedure in order to answer the research questions toward finding whether collaborative learning has impacts in developing critical thinking in English classroom or not. To illustrate, the study instrument (survey questionnaire) is validated using two statistical techniques: exploratory

factor analysis (performed in IBM SPSS v.26) and confirmatory data analysis (performed in AMOS 24). The validated questionnaire then was used in inferential analysis and the results were used in answering the research questions. The main statistical techniques used to analyze students' responses include: independent-samples t tests, and one-sample t tests, with the significance level set at $\alpha = 0.05$.

On the other hand, data analysis for interviews and lesson observations pursued a thematic analysis method (Glesne, C., 2011). In addition, the analysis of teachers' response to the interviews were investigated to support presenting the quantitative research data. As an interview is a flexible and strong instrument which can open up several novel areas for the research (Nicky Britten, 1995). Further, surveys, interviews' transcriptions and observation check list notes were carefully read and analysed to define codes, categories and themes. The outcomes that were concluded from both analysis were united to show how both research methods support the results of the study (Creswell 2009). At the end of the thesis, findings, recommendations, and identified limitations were discussed.

3.6. Scope of the Study

The delimitation of the study is described as follows: The population of the proposed study was selected from two well-known private schools, one school follows an American curriculum and the other school follows an Arabic curriculum, from within the city of Abu Dhabi in the United Arab of Emirates. Eventually, this may limit the suggested sample to a specific type of school and program rather than collecting information from a broader spectrum of K-12 educational settings and other regions of the country. Additionally, the outcomes of this study are not necessary generalized to private schools in the United Arab of Emirates or even to other schools in other countries. Thus, general challenges would be shared with regional or international schools having similar contexts in which they function. On the other hand, the outcomes may not be applicable to primary or middle schools as it concentrates on high school students.

Furthermore, the population for suggested research included students who have behavioral or emotional challenges at school. Therefore, one type of delimitation is that the study may

accidentally trigger a population that is defined by its respective school site as youth who have showed a history of truculence, academic deficits, and or inadequate skill development. Moreover, the proposed study group were from both gender, however, current literature in this part of gender sexuality suggested that females, specifically of teen-age, generally showed more empathic reasoning and actions than do their same-age male peer groups (O'Brien, Konrath, Gruhn, & Hagen, 2013). Any relation of empathy in female youth, therefore, was not directly relevant to this research.

3.7. Ethical Considerations

As suggested by (Berg (1995); Holloway and Wheeler (2002)), People may have various point of views of what they believe to be ethical and, hence, continuous negotiation with partakers is very important. Therefore, ethical considerations were undertaken at all levels of the research, following the British University in Dubai's guidelines. Each entrant's right was protected by granting his or her consent and by keeping each identity confidential, as well as offering a consent letter form to be signed by each partaker to assure their right's protection (Glesne, 2006). Every participant was informed about the objectives of the study and each had a free choice to participate in the research or withdraw (See Appendix A & B). Moreover, when interviews took place pseudonyms were employed to protect partakers' anonymity. Transcribed data was saved using password-secured computer folders. In addition, all raw data and materials were destroyed after publishing the study in order to abide by the ethical measures in this research and maximize positive results and minimize any capability of doing anything wrong or causing harm to anyone (Sieber, 1993).

3.8. Researcher Role

Being a teacher for 10 years at one of the schools intended to conduct the research in as a backyard study is quite challenging, therefore, the researcher acted as a neutral researcher in

gathering the data to ensure objectivity, provide good quality information, avoid bias and prevent having any effects on the interviewees responds. To illustrate, the researcher as an insider conducted the credibility of her study by being aware of the potential effects of perceived bias on data collection and analysis, respecting the ethical issues surrounding the organization's and individual participants' anonymity, and considering and addressing the issues surrounding her role influencing coercion, as well as being compliance to access to required confidential information at every level of her research (Smyth & Holian, 2008).

Moreover, the researcher gathered data as an insider participant observer because one of the research settings was where she worked. Insider participant observation is regarded as the most essential and difficult tool in qualitative research (Herrmann, 1989). However, the researcher lacked power and control over the personnel, which might severely impact the data gathering process (Smyth & Holian, 2008). On the other hand, there are many advantages of being an insider researcher. For example, the research process was supported by speaking the same insider language, understanding local beliefs, knowledge, and taboos, recognizing the official and informal power structure, and gaining authorization to do research, interview, and gain access to records and documents (Tedlock, 2000). In addition, in gathering data, the researcher made excellent use of these benefits. She was able to collect study data at any time of day, something an outsider would not have been able to do as readily. This ensured that the study data was collected in a consistent manner. The consistency of data gathering allowed for the acquisition of more thorough and flexible, and hence more reliable, study data.

Furthermore, various steps were followed in advance to try to reduce the level of bias. The researcher explained before conducting the research and gathering information the nature of the study, the objectives, sample and methods of data collection. Subsequently, she got the approval from The British University in Dubai (BUiD) ethical committee after elaborating that this is a low risk research and there will be no harm or violations to the partakers during the conduct of this study. Each partaker understood through the consent form that his / her participation is voluntary and he / she can withdraw without consequences at any time during the study, as well as, protecting his / her anonymity and confidentiality.

After receiving the approval from the research committee in BUiD, the researcher contacted the two targeted private schools to fill their consent letters, which took them around one week, to

allow her to start her research. Later, the researcher agreed with both schools on the date, time, sample and methods of the conducted research. Each school informed their involved teachers and students about the researcher's purpose to carry out the study, and they were assured that their participation is completely voluntary and their identities will remain anonymous and confidential. Few teachers and students chose to not participate in either the interview or filling the survey as their participation was totally optional and free of strains (Elias 2009).

3.9. Trustworthiness

In order to establish trustworthiness in this study and present rigorous quality of collected data, the researcher validated and made the instruments used in gathering data be reliable by including mix method approaches: quantitative (survey questionnaire) and qualitative research tools (interview and lesson observation). The questions of the interview were various in having open ended and closed ended questions to avoid boredom by the partakers' side. Closed ended questions promote short, limited answers while open ended questions promote larger and more complex answers and encourage more interaction and effective negotiation (Behnam & Pouriran, 2009; Maftoon & Rezaie, 2013). There are no any indicators or names that could be related back to the participants to ensure their anonymity. Consequently, partakers were encouraged to answer as truthfully and straightforward as possible. The analysis was done of the results of the interview questions to establish validity, reliability and trustworthiness. As for the quantitative statistics, factor analysis was carried out to give validity and reliability to the instrument, and then correlations were utilized to test the hypothesis of the study.

In qualitative research, triangulation refers to the use of various methodologies or data sources to build a thorough knowledge of phenomena (Patton, 1999). Triangulation has been seen as a qualitative research approach for determining validity by combining data from several sources (Denzin,1978 and Patton,1999). It's employed for three major reasons: to improve validity, to paint a more detailed image of a research topic, and to investigate multiple perspectives on a research subject. Therefore, it was used in the research to build validity, reliability and trustworthiness, this is visibly found in the use of mixed methods. Both quantitative and

qualitative research methods were utilized in the study by using surveys, interviews and observing lessons. Random sample size also supports the trustworthiness of the information and prevent bias.

3.9.1. Reliability and Validity

In order to raise the quality of this study, it was essential to confirm the reliability and validity of the research. Reliability refers to the extent to which the study presents the same outcome when increased (Bell, 1999). He implies a test-retest to check reliability when using tests. In fact, as a researcher of this study, it is difficult to confirm that the information collected from quantitative research tool as in a survey is reliable because the study depends greatly on the respondents and the honest information they provide in each answered question. Therefore, qualitative research tools (interview and lesson observation) were used for the research to get similar results as much as it is possible.

Validity on the other hand is another significant, yet complicated system to be examined in educational research (Bell 1999). It attempts to check if the item applied in the research measures what it is intends to measure. Moreover, Mills (2003) believes that when researchers are having interviews, asking questions, or engaging participants in discussions about the problem being studied, they must carefully control the rate of listening to talking. Within this research, validity was endured by the careful choice of research tool. Based on the data that would be gained during the study, the researcher will apply the following:

1. Coding data would consider theory or outcome of similar studies as a guide for starting analysis (Hsieh & Shannon 2005) and clustered information would be coded under related themes by NVivo.
2. Analyzing the result of semi-structured interview and the lesson observations by using content analysis.
3. Analyzing the results of survey questionnaire by using the SPSS program.

4. In a nutshell, all of the above steps were followed by the researcher to eliminate bias and to make this study a low-risk research. The following chapter will discuss the results, findings and analysis of this study.

3.9.1.1. Questionnaire Validation: Factor Analysis

The psychometric quality of the current data should be evaluated and considered when interpreting results. Reliability and validity are critical in understanding statistical results. Reliability is the precision of scores – the degree to which scores accurately reflect some psychological variable in a given sample. Validity, then is concerned with the “some variable” reflected by those scores – explicitly, validity is the degree to which scores can be interpreted in terms of a specific psychological construct (Furr, 2011). In the current study, the purpose of the survey validation was to examine the constructs and items validity of the impacts of CL in developing critical thinking so that they could be used to measure students’ perceptions of the impacts of CL in developing their critical thinking skills. Factor analysis was used to validate the study instrument; i.e., the survey. The survey was validated using two types of factor analysis: (1) Exploratory Factor Analysis (EFA), and (2) Confirmatory Factor Analysis (CFA).

3.9.1.2. Exploratory Factor Analysis (EFA)

The researcher used EFA to explore and discover the main constructs or dimensions of the 40-items survey. EFA is one of the oldest structural models, having been developed by Spearman in 1904, to discover the main constructs or dimensions (Olkin, 2001). It is a means of determining to what degree individual items are measuring a something in common, such as a factor (Naomi et al., 2018). The EFA was performed using Statistical Product and Service Solutions (SPSS v.26) software, with a Principal Component Analysis (PCA) extraction method and Varimax rotation.

Before running the EFA, the following assumptions were tested: sample size, correlation between pairs of survey variables (questions), and data sampling adequacy to factor analysis.

3.9.1.2.1. Sample Size

There are varying opinions and several guiding rules of thumb that can be used to determine if the sample size is suitable for the factor analysis. At least 300 cases are needed for factor analysis (Tabachnick, 2007). Hair et al (1995) suggested that sample size should be at least 100 cases. Guadagnoli and Velicer (1988) proposed that if the dataset has several high factor loading scores (> 0.80), then a smaller sample size ($n > 150$) should be sufficient. One requirement for small sample size is that variables communalities have to be high enough (> 0.5) after extraction, according to Field (2005). From another point of view, sample size can be determined using the sample to variable ratio, denoted as $N:p$, where N refers to the number of participants and p refers to the number of variables (Hogarty et al., 2005). That is, rules of thumb suggest ratios such as 3:1, 6:1, 10:1, 15:1, or 20:1, based on several studies. Hogarty et al. (2005) and MacCallum et al. (1999) have conducted studies to test these guides, and Hogarty et al. (2005) noted that their results showed that there was not a minimum level of N or $N:p$ ratio to achieve good factor solution.

In the study at hand, a total of 240 participants exists, which meets the minimum requirement by Hair et al (1995). Moreover, the $N:p$ ratio is 240:40, which meets the 6:1 ratio rule of thumb, indicating that sample size is sufficient to run the factor analysis.

3.9.1.2.2. Correlation Analysis

A correlation matrix is used in EFA process displaying the associations between pairs of individual variables of the survey, with correlation coefficients above 0.3 (Tabachnick and Fidell, 2007). The correlation matrix is attached to Appendix H, displayed in two tables to fit the

3.9.1.2.3. EFA Assumptions

a) Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy

Prior to proceeding with the factor analysis results, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, and Bartlett's Test of Sphericity were checked. According to the results presented in Table 1.4, the KMO is equal to 0.942, which exceeds the minimum threshold of 0.5 (Hair et al., 1995; and Tabachnick et al., 2007). Moreover, the Bartlett's Test of Sphericity is significant ($p < 0.001$) (Hair et al., 1995; and Tabachnick et al., 2007). Therefore, factor analysis is suitable for the data at hand.

Table 1.4: Kaiser-Meyer-Olkin Measure of Sampling Adequacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.942
Bartlett's Test of Sphericity	Approx. Chi-Square	4109.934
	df	780
	Sig.	.000

b) Anti-image Correlation Matrix

The Measures of Sampling Adequacy (MSA) for individual variables are printed as the diagonal elements of the Anti-image Correlation matrix in the "Anti-image Matrices" table of the Factor output. The diagonals of the anti-image correlation matrix, presented in Table , were all over 0.5, so all items may reasonably be retained for the EFA.

c) Communalities

The communality is the variance in the observed variables which are accounted for by a common factor or common variance (Child, 2006). The communalities, reported in 3.5 were all above 0.3, except the four items:11, 14, 16, and 17, with communalities below 0.3 but above 0.2, so they

can be retained in the analysis based on what Child (2006) stated: “Often times variables with low communalities (less than .20 so that 80% is unique variance) are eliminated from the analysis since the aim of factor analysis is to try and explain the variance through the common factors”. This further confirms that each item shared some common variance with other items.

Table 3.5: Extraction Communalities and Measures of Sampling Adequacy (MSA)

Questionnaire Items	Extraction MSA	
1. I understand the importance of working in groups.	.474	.953
2. I get along with other team members in my group.	.545	.931
3. I respect / accept every team member in my group who is from different culture and background.	.601	.936
4. I respect / accept every team member in my group who has different ability and learning style.	.572	.937
5. I respect / accept different opinions in my group.	.471	.961
6. I question the way other team members in my group do and try to think of a better way.	.559	.958
7. I feel that my ideas and suggestions are important to others.	.628	.945
8. I feel excited and satisfied to work with my group.	.582	.941
9. I like to help my team members in my group.	.453	.903
10. I like to think differently in doing activities in my group.	.383	.953
11. I like to share ideas and suggestions in my group.	.247	.896
12. I really enjoy working collaboratively with other students.	.442	.922
13. I prefer to have a leadership role in my group.	.490	.969
14. I am an important member in my group.	.242	.931
15. I work hard and effectively in my group.	.385	.938
16. My teacher encourages us to work collaboratively in class.	.272	.939
17. My teacher encourages us to discuss topics in class.	.295	.945
18. My teacher encourages us to think critically and solve problems.	.474	.940
19. My teacher encourages us to be independent and creative.	.330	.944
20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	.329	.946

Questionnaire Items	Extraction MSA	
21. My teacher monitors / controls students' interaction in class.	.332	.943
22. My teacher asks useful questions to deepen the study and link to previous topics.	.574	.954
23. My teacher uses differentiated questions that fit students' abilities and learning style.	.463	.901
24. My teacher shares information that was collected from the group.	.575	.937
25. My teacher treats us fairly and equally.	.557	.954
26. Working collaboratively with my group improves the content and the structure of my writing.	.501	.936
27. Working collaboratively with my group makes me think differently.	.523	.940
28. Working collaboratively with my group makes me think critically.	.489	.957
29. Working collaboratively with my group makes me more creative.	.383	.917
30. Working collaboratively with my group makes me learn new ideas.	.489	.948
31. Working collaboratively with my group makes me solve problems faster.	.528	.946
32. Working collaboratively with my group makes me learn values and new concepts.	.436	.938
33. Working collaboratively with my group makes me learn and grow from other differences.	.497	.958
34. Working collaboratively with my group changes the way I look at myself.	.552	.916
35. Working collaboratively with my group makes me feel better student.	.501	.941
36. Working collaboratively with my group increases my desire to learn.	.565	.948
37. Working collaboratively with my group is better than working individually.	.435	.967
38. Working collaboratively with my group makes my communication skills better.	.408	.938
39. Working collaboratively with my group encourages me to be more responsible.	.535	.945
40. Working collaboratively with my group creates better opportunity for my learning.	.366	.947

Given those overall indicators, factor analysis was deemed to be factorable with all 40 questionnaire items.

3.9.1.3. Confirmatory Factor Analysis (CFA)

Although EFA is a useful statistical procedure for questionnaire validation, it does not have the power of Confirmatory Factor Analysis (CFA) (Milanovic and Weir, 2004). Hence, EFA was followed by CFA to confirm and validate the factor structure hypothesized by the researcher, and to measure the internal consistency of the questionnaire factors and items using AMOS 24.

The survey questionnaire consisted of 40 questions about the impacts of collaborative learning on developing critical thinking. A confirmatory factor analysis (CFA) model was used to assess the validity and reliability of the questionnaire, because the CFA model focuses on connections between factors and their measured variables, within the framework of SEM, representing what is called a measurement model (Pandey, 2016). SEM is also referred to as causal modeling, causal analysis, simultaneous equation modeling, analysis of covariance structures, path analysis, or confirmatory factor analysis (CFA) (Ullman & Bentler, 2013). Before evaluating the model fit, psychometric (validity and reliability) checks of the instrument using the measurement model are tested.

3.9.1.3.1. The Measurement Model Validity and Reliability

The measurement model explains relations between the observed and unobserved (latent) variables. CFA represents how the measured variables come together to represent constructs which are used for validation and reliability checks. In this study, the observed variables are the questionnaire items, and the unobserved (latent) variables are the three constructs: Individual Role (IR), Teacher Role (TR), and Group Influence (GI).

A Confirmatory Factor Analysis (CFA) was conducted using AMOS 24. Measurement model validity requires establishing acceptable levels of goodness-of-fit for the measurement model and finding specific evidence of construct validity. The concept of validity was formulated by Kelly (1927) who stated that a test is valid if it measures what it claims to measure. To satisfy the validity procedure, the following validity and reliability checks were carried out: Content Validity, Convergent Validity, Composite Reliability, and Construct Reliability.

a) Content Validity

Content validity involves the extent to which items represent the content domain (Domino & Domino, 2006). In the current study, the researcher has tried to ensure content validity by using measures which are taken from theory and assessed by experts in the field, with the aim of ensuring that the content of the measure is consistent with the concept being studied. Content validity was, therefore, tested statistically by measuring inter-item correlation. Pearson’s r correlation coefficients were calculated using SPSS between all pairs of questionnaire items.

b) Convergent Validity

Convergent validity was stated by an item factor loading ≥ 0.5 (Hair, Black, Babin, & Anderson, 2009), average variance extracted (AVE) ≥ 0.5 , and composite reliability (CR) ≥ 0.7 (Fornell & Larcker, 1981). AVE and CR values were calculated (using MS Excel) according to the following equations illustrated by Fornell and Larcker (1981):

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{\sum_{i=1}^n \lambda_i^2 + \sum_{i=1}^n e_i} \quad , \quad CR = \frac{(\sum_{i=1}^n \lambda_i)^2}{(\sum_{i=1}^n \lambda_i)^2 + \sum_{i=1}^n e_i} \quad ,$$

where λ_i is the factor loading for item i under a particular construct, and e_i is the error variance for the item. As a minimum requirement, the estimates of Factor Loadings (given as Regression Weights in AMOS) should be statistically significant to support Convergent Validity. Hair et al. (2006) recommend that the standardized Regression Weights should be 0.5 or higher, ideally 0.7 or higher.

3.9.1.4. Reliability Analysis

The researcher used Cronbach's alpha coefficient (Cronbach, 1951), also known as Cronbach's alpha or Cronbach's α , as a measure of reliability, specifically internal consistency reliability or item interrelatedness, of a scale or test (e.g., questionnaire) (Andrew, Pedersen and McEvoy, 2011). Andrew, Pedersen and McEvoy (2011) also stated that Cronbach's alpha measures how well a set of variables or items measures a single, unidimensional latent construct. It is a correlation between the item scores in the questionnaire; assuming the statistic is directed toward a group of items intended to measure the same construct, Cronbach's alpha values will be high when the correlations between the respective questionnaire items are high. The researcher computed Cronbach's alpha for the four factors extracted from the EFA, and for the three factors she hypothesized. All Cronbach's α values exceeded the desirable cutoff of 0.70 (Nunnally & Bernstein, 1994), indicating reliable factors.

3.10. Statistical Limitation of the Study

In the current study, there were some statistical limitations that the study lacks due to the nature of the data collection instruments designs used in the study. The first limitation was lack of more demographic characteristics of students that could be used to run more statistical techniques in order to make more inferences about their perceptions and find significant differences among students. Another limitation was the lack of open-ended questions in the questionnaire to let students provide more perceptions freely without being limited by the closed-ended questions. A third limitation was the administration of questionnaire; that is, it would be more informative to administer the same questionnaire to students and their teachers and compare their responses. Moreover, it is more beneficial to formulate statistical hypotheses to be tested, which would limit the thorough and redundant statistical tests that might be done with no need.

CHAPTER 4: RESULTS, ANALYSIS AND DISCUSSION

4.1. Overview of the Chapter

This chapter presents the findings of the data analysis procedures performed using the three research instruments: the survey, the semi-structured interview, and the observations checklist, in order to answer the four research questions. Therefore, this chapter starts with presenting the findings of the quantitative data analysis; that is, the results of the survey data analysis performed in SPSS used to answer the related research question: “How do high school students (in two private schools in Abu Dhabi) perceive the role of collaborative learning in developing critical thinking?”. The survey included 40 questions measuring three dimensions: Individual Role (IR), Teacher Role (TR), and Group Influence (GI) in terms of Collaborative Learning in Relation to Critical Thinking. The second section presents the qualitative analysis findings of the semi-structured interviews, which answer the third research question: “What are the perceptions of the English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students?”. The third section sets out the results of analyzing the observation checklist, which are used to answer the fourth research questions: “How are teachers and students in English lessons (in two private schools in Abu Dhabi) experience the impacts of collaborative learning in developing critical thinking?”.

4.2. Analysis of the Quantitative Data (Survey)

In the section of the chapter, the findings and results of the quantitative data analysis are presented and interpreted. The quantitative data includes data obtained via conducting the survey. The analysis was conducted in Statistical Product and Service Solution software (SPSS v.26). First, the survey is validated by running Exploratory Factor Analysis (EFA), followed by

inferential analysis to explore the high school students (in two private schools in Abu Dhabi) views on the role of collaborative learning in developing critical thinking through survey.

4.3. Questionnaire Validity and Reliability

4.3.1. Exploratory Factor Analysis

Principal components analysis was used because the primary purpose was to identify and compute composite scores for the factors underlying the questionnaire adapted from Collaborative Education Lab guidelines for assessing collaborative learning in the classroom by Luis Valente (2016). Initially, eight factors with Eigenvalues greater than one were extracted, see Figure 4.1. A series of factor analyses were conducted, indicating that four factors gave the most interpretable solution. A varimax rotation was performed since there was no priori assumption of whether factors were expected to be correlated or not. The obtained rotated component matrix is displayed in Table 4.1. Only factor loadings above 0.3 are shown. Internal consistency for each of the extracted factors was examined using Cronbach's alpha. Factor analysis of the questionnaire items used in the present study revealed four factors were sufficient to the explain the underlying structure of the impacts of collaborative learning on developing critical thinking.

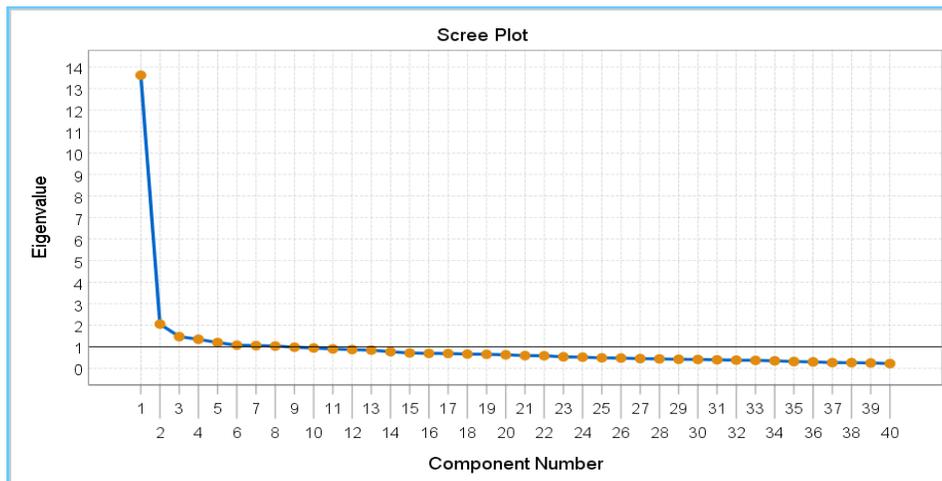


Figure 4.1: Scree Plot

Table 4.1. Rotated Component Matrix

Questionnaire Items	Componenta			
	1	2	3	4
1. I understand the importance of working in groups.	.438	.354		.395
2. I get along with other team members in my group.	.643			
3. I respect / accept every team member in my group who is from different culture and background.	.702			
4. I respect / accept every team member in my group who has different ability and learning style.	.715			
5. I respect / accept different opinions in my group.	.565		.300	
6. I question the way other team members in my group do and try to think of a better way.	.624			.327
7. I feel that my ideas and suggestions are important to others.	.652			.395
8. I feel excited and satisfied to work with my group.	.631		.403	
9. I like to help my team members in my group.	.565		.313	
10. I like to think differently in doing activities in my group.	.434	.301		.304
13. I prefer to have a leadership role in my group.	.462	.396		
11. I like to share ideas and suggestions in my group.		.305		
12. I really enjoy working collaboratively with other students.		.647		
14. I am an important member in my group.		.329		
16. My teacher encourages us to work collaboratively in class.		.354		
21. My teacher monitors / controls students' interaction in class.	.329	.417		
26. Working collaboratively with my group improves the content and the structure of my writing.		.452		.450
29. Working collaboratively with my group makes me more creative.		.521		
31. Working collaboratively with my group makes me solve problems faster.		.497	.414	
32. Working collaboratively with my group makes me learn values and new concepts.		.560		
33. Working collaboratively with my group makes me learn and grow from other differences.		.536	.369	
34. Working collaboratively with my group changes the way I look at myself.		.540		.448
35. Working collaboratively with my group makes me feel better student.		.577	.313	
38. Working collaboratively with my group makes my communication skills better.		.438	.395	
40. Working collaboratively with my group creates better opportunity for my learning.		.484		
18. My teacher encourages us to think critically and solve problems.			.649	
19. My teacher encourages us to be independent and creative.		.306	.456	

Questionnaire Items	Componenta			
	1	2	3	4
24. My teacher shares information that was collected from the group.			.602	.385
27. Working collaboratively with my group makes me think differently.			.588	.312
28. Working collaboratively with my group makes me think critically.			.580	
30. Working collaboratively with my group makes me learn new ideas.		.389	.480	
36. Working collaboratively with my group increases my desire to learn.			.636	.331
37. Working collaboratively with my group is better than working individually.		.408	.444	
39. Working collaboratively with my group encourages me to be more responsible.		.343	.605	
15. I work hard and effectively in my group.				.560
17. My teacher encourages us to discuss topics in class.				.405
20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.				.445
22. My teacher asks useful questions to deepen the study and link to previous topics.	.315		.306	.607
23. My teacher uses differentiated questions that fit students' abilities and learning style.				.623
25. My teacher treats us fairly and equally.			.381	.577
Percentage of Variance	12.64	12.18	11.72	9.65
Eigenvalue	13.62	2.05	1.47	1.34
Cronbach's alpha	.890	.872	.863	.746

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 9 iterations. Note: Factor loadings < .3 are suppressed.

The rotated component matrix in Table 4.1 shows that the first factor was robust, with a high eigenvalue of 13.62, and it accounted for 12.64% of the variance in the data. Factor 2 had an eigenvalue of 2.05 and accounted for a further 12.18% of the variance. The eigenvalues for factors 3 and 4 were 1.47 and 1.34, respectively; together accounting for a further 21.38% of the total variance. Factor 1 consists of 11 items. This factor can be labeled “Individual Role” and demonstrated a high internal consistency (Cronbach’s $\alpha = 0.89$). The second factor consisted of 14 items including nine items related to “Group Influence”, three items related to “Individual Role”, and two items related to “Teacher Role”. This factor was identified as “Positive Impact of Working Collaboratively on Students”, and reflected a high internal consistency (Cronbach’s $\alpha = 0.872$). Factor 3 consisted of six items related to “Group Influence” and three items related to “Teacher Role”, so it was labeled “Encouragement and Motivation”, and it had also a high

internal consistency (Cronbach’s $\alpha = 0.863$). The fourth factor was called “Teacher Role”, and was considered sufficiently reliable (Cronbach’s $\alpha = 0.746$). For the four factors, no substantial increases in alpha for any of the factors could have been achieved by eliminating more items.

Overall, the factor analysis of the adapted CEL questionnaire items revealed that all items loaded on at least one factor. To conclude, the four factors found were “Individual Role”, “Positive Impact of Working Collaboratively on Students”, “Encouragement and Motivation”, and “Teacher Role”; which were considered subscales of the “Impact of Collaborative Learning in Relation to Critical Thinking”.

4.3.1.1. Descriptive Analysis of the EFA Extracted Four Factors of the “Impacts of Collaborative Learning in Developing Critical Thinking” Scale

Composite scores were created for each of the four factors, using the mean of the items which had their primary loadings on each factor. Higher scores indicated greater agreement with the impact of collaborative learning on critical thinking. Encouragement was the main factor of collaborative learning that students reported being influenced by the most, with a negatively skewed distribution (skewness = -1.761). Descriptive statistics are presented in Table 4.2. The skewness and kurtosis were within the reference of substantial departure from normality proposed by West et al. (1996). The proposed reference is an absolute skew value > 2 , and an absolute kurtosis value > 7 . Examination of histograms indicated some departure from normality. However, in large samples, a test of normality is more likely to be significant (Field, 2013). Although a varimax rotation was used, strong correlations between each of the composite scores existed, as shown in Table 4.3.

Table 4.2. Descriptive Statistics for the Four Factors of the “Impact of Collaborative Learning in Relation to Critical Thinking” Scale

Factors	Mean	Std. Deviation	Skewness	Kurtosis	Minimum	Maximum
Individual Role	4.10	.591	-1.081	.400	2.27	4.91
Positive Impact	4.12	.519	-1.481	1.976	2.29	4.86

Encouragement	4.15	.583	-1.761	3.210	1.67	5.00
Teacher Role	4.08	.565	-1.285	1.726	2.00	5.00

Table 4.3. Correlation of Composite Scores

	Individual Role	Positive Impact	Encouragement	Teacher Role
Individual Role	1			
Positive Impact	.718**	1		
Encouragement	.638**	.771**	1	
Teacher Role	.664**	.656**	.656**	1

***. Correlation is significant at the 0.01 level (2-tailed).*

Overall, these analyses indicated that four distinct factors were underlying students' responses to the adapted CEL questionnaire items and that these factors were highly internally consistent. However, the original factor structure proposed by the researcher was retained. An approximately normal distribution was evident for the composite scores in the current study; thus the data were well suited for parametric statistical analyses.

4.3.2. Confirmatory Factor Analysis (CFA)

4.3.2.1. Measurement Model Psychometric Evaluation

Content validity was tested statistically by measuring inter-item correlation. Pearson's r correlation coefficients were calculated using SPSS between all pairs of questionnaire items, and the correlation matrix. The correlation analysis results show that all the inter-item correlation values were positive and 98.97% of the values were statistically significant, p -value < 0.05 , suggesting that the measures have good content validity.

Convergent validity was established by checking item factor loading, which are standardized regression weights generated by AMOS in the CFA procedure. The results are reported in **Table**

4.4, which list the 40 items of the questionnaire, and the latent variables they belong to, with corresponding factor loadings, reliability coefficients, average variance explained (AVE), and composite reliability (CR). The results show that all loadings of the estimated model were significant (p-values < 0.001) while 31 out of 40 items considered had standardized Regression Weights above the 0.5 cutoff, including four items with standardized Regression Weights above 0.7, with only 9 items (i.e., q.11, q.12, q.14, q.15, q.16, q.17, q.19, q.20, and q.23) were having standardized loadings slightly below 0.5.

The Scale Reliability Test was carried out using the SPSS v.26. The values of Cronbach α were greater than the commonly accepted level of 0.7 (Churchill, 1979; Hair et al., 1998), see **Table 4.4**. The AVE should be higher than the minimum threshold of 0.5. However, according to Fornell and Larcker (1981), even if AVE is less than 0.5, but composite reliability is higher than 0.6, the convergent validity of the construct is still adequate. In our study, the obtained AVE for IR, TR, and GI were 0.359, 0.294, and 0.393, respectively. When taken together with the values of composite reliability (which were higher than 0.6 for each construct), we can declare that convergent validity was established. The calculated CR values were 0.89, 0.802, and 0.906, for IR, TR, and GI, respectively, indicating adequate internal consistency.

Table 4.4. CFA AMOS output: Standardized Factor Loadings (λ) of Construct Items with Calculated Convergent Validity Measures: Cronbach's Alpha (α), CR, and AVE

Overall: $\alpha = .950$, CR = .956, AVE = .878

Construct Item	λ
Individual Role ($\alpha = .889$, CR = .890, AVE = .359)	.859
q.01. I understand the importance of working in groups.	.620
q.02. I get along with other team members in my group.	.663
q.03. I respect / accept every team member in my group who is from different culture and background.	.686
q.04. I respect / accept every team member in my group who has different ability and learning style.	.632
q.05. I respect / accept different opinions in my group.	.632
q.06. I question the way other team members in my group do and try to think of a better way.	.710

Construct Item	λ
q.07. I feel that my ideas and suggestions are important to others.	.730
q.08. I feel excited and satisfied to work with my group.	.668
q.09. I like to help my team members in my group.	.528
q.10. I like to think differently in doing activities in my group.	.577
q.11. I like to share ideas and suggestions in my group.	.406
q.12. I really enjoy working collaboratively with other students.	.393
q.13. I prefer to have a leadership role in my group.	.677
q.14. I am an important member in my group.	.455
q.15. I work hard and effectively in my group.	.454
<u>Teacher Role ($\alpha = .799$, CR = .802, AVE = .294)</u>	<u>1.000</u>
q.16. My teacher encourages us to work collaboratively in class.	.459
q.17. My teacher encourages us to discuss topics in class.	.460
q.18. My teacher encourages us to think critically and solve problems.	.509
q.19. My teacher encourages us to be independent and creative.	.497
q.20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	.497
q.21. My teacher monitors / controls students' interaction in class.	.514
q.22. My teacher asks useful questions to deepen the study and link to previous topics.	.662
q.23. My teacher uses differentiated questions that fit students' abilities and learning style.	.422
q.24. My teacher shares information that was collected from the group.	.657
q.25. My teacher treats us fairly and equally.	.670
<u>Group Influence ($\alpha = .906$, CR = .906, AVE = .393)</u>	<u>.936</u>
q.26. Working collaboratively with my group improves the content and the structure of my writing.	.654
q.27. Working collaboratively with my group makes me think differently.	.654

Construct Item	λ
q.28. Working collaboratively with my group makes me think critically.	.610
q.29. Working collaboratively with my group makes me more creative.	.541
q.30. Working collaboratively with my group makes me learn new ideas.	.683
q.31. Working collaboratively with my group makes me solve problems faster.	.704
q.32. Working collaboratively with my group makes me learn values and new concepts.	.575
q.33. Working collaboratively with my group makes me learn and grow from other differences.	.667
q.34. Working collaboratively with my group changes the way I look at myself.	.672
q.35. Working collaborative with my group makes me feel better student.	.594
q.36. Working collaboratively with my group increases my desire to learn.	.659
q.37. Working collaboratively with my group is better than working individually.	.626
q.38. Working collaboratively with my group makes my communication skills better.	.537
q.39. Working collaboratively with my group encourages me to be more responsible.	.641
q.40. Working collaboratively with my group creates better opportunity for my learning.	.550

Therefore, the results presented above indicated that we have evidence of convergent validity and reliability for the proposed 40 questions.

4.3.2.2. The Measurement Model: CFA Model Fit

After validating the measurement instrument, the outcomes of the CFA generated by AMOS 24 were used to evaluate the model fit of the measurement model to confirm the hypothesized structure. Two models were created to evaluate the measurement model. As shown in **Figure 4**. The first order model is composed of the three factors (unobserved/latent variables): Individual Role (IR), Teacher Role (TR), and Group Influence (GI), measured by 15, 10, and 15 observed variables, respectively; which are regressed into their respective factors. The second order model was composed of the three factors, attached to the main latent variable (Collaborative Learning).

Estimation of the model plots the standardized regression weights on the diagram, in addition to correlation coefficients that measures inter-correlation between the three factors.

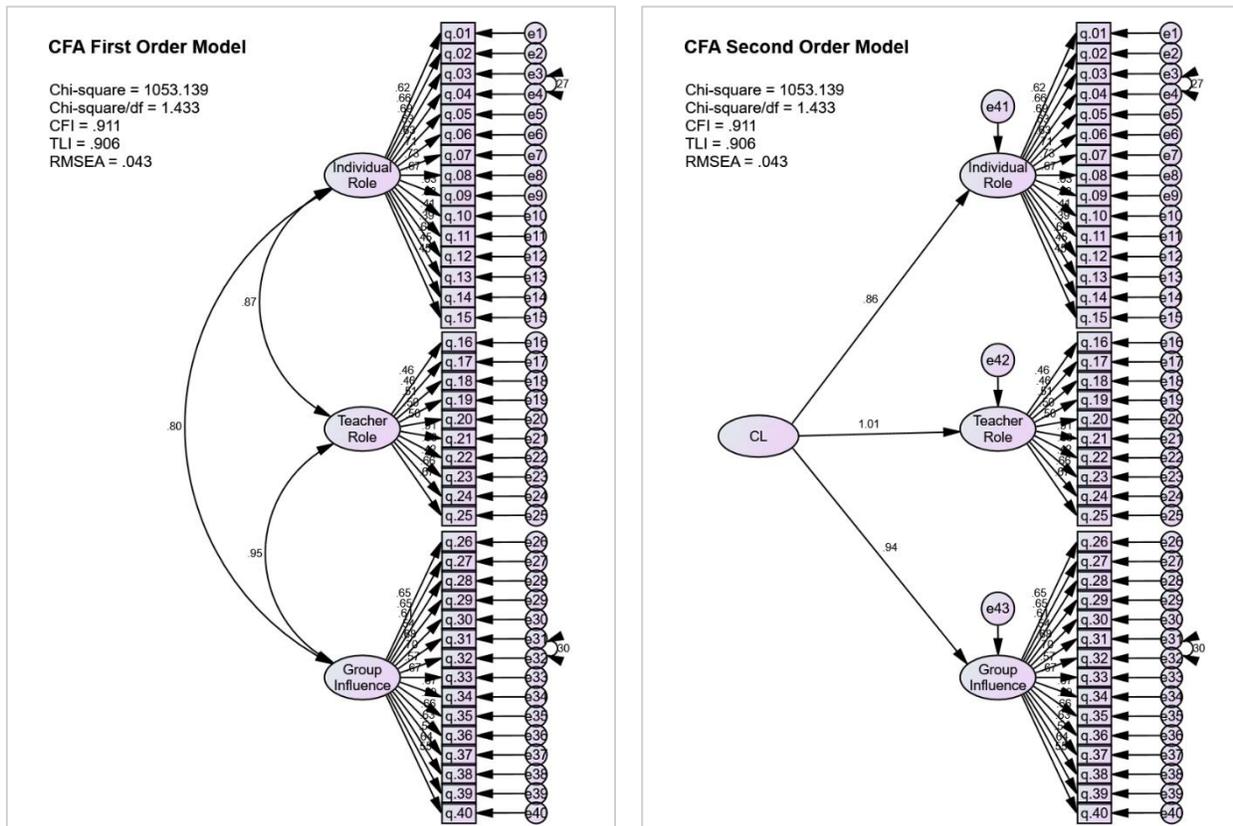


Figure 4.2. CFA Measurement Model

Model Fit Indices

For CFA using Maximum Likelihood Estimation (MLE) on AMOS, the minimum recommended sample size is 150 (Hair et al., 1998), which is achieved as our sample size is 240. The results are shown in **Table 4.5**. The summary of goodness-of-fit measures obtained highlights that the overall model χ^2 is 1053.139 with 735 degrees of freedom (df). The probability value associated with this result is 0.000 and the model is significant at $\alpha = 0.001$. Also, the ratio of χ^2/df was 1.433 (i.e., 1053.139/735), which was below the accepted cut-off value of < 2.00 . An analysis of the other selected goodness-of-fit measures shows reliable model fit, see **Table 4.**

Inspection of model fit revealed indices that were well meet the acceptable thresholds (Doll et al., 1998; Hair Jr. et al., 1998). The CFI and TLI values are above 0.9 indicating a good fit. Finally, RMSEA and RMR are lower than 0.05. The results indicate that the measurement model is specified appropriately

Table 4.5. Measurement Model Fit Indices

Index	Acceptable Level	Observed	Result
Chi-square (χ^2)		1053.139	-
p-value (Sig.)	Insignificant	< .001	OK to be significant if N > 200
CMIN/df (χ^2/df) Ratio	< 2 (Ullman, 2001)	1.433	Reasonably Good fit
CFI	Close to .95 (Brown, 2006)	.911	Reasonably good fit (Kline, 2005)
TLI	Close to .95 (Brown, 2006)	.906	Reasonably good fit (Kline, 2005)
SRMR	< .05 (Brown, 2006)	.054	Reasonably Goof fit
RMSEA	< .05 (Brown, 2006)	.043	Close approximate fit (Kline, 2005)

The confirmatory factor analysis showed an acceptable overall model fit and hence, the theorized model fit well with the observed data. It can be concluded that the hypothesized three factor CFA model fits the sample data very well, and hence, the measurement model is reliable and valid, and can be used in further analysis, i.e., to answer research questions.

4.3.2.3. Descriptive Statistics of Questionnaire Factors Proposed by the Researcher

Composite scores were created in SPSS using mean of items for each factor of the CEL adapted questionnaire, based on the structure hypothesized by the research. Descriptive statistics for the three factors are presented in Table 4.6. Using skewness and kurtosis measures, along with histograms (see Appendix J), the three factors and the grand mean score of the three factors looked negatively skewed; indicating that the majority of students' responses are tending to the right side of the scale, which means higher scores and higher agreement levels. However, the skewness and kurtosis measures are still within the proposed reference (West et al., 1996), and hence the factors have no substantial departure from normality, and parametric tests can be

confidently applied. In addition, the three factors showed high reliability measures, Cronbach's alpha ranged from 0.799 to 0.906, indicated highly reliable scales. The correlation coefficients reported in

Table 4.7 showed strong positive relationships between each of the three factors, indicating that the three factors are at the same level of agreement for students as impacts of collaborative learning in developing their critical thinking skills.

Table 4.6. Descriptive Statistics for the Adapted CEL Questionnaire Factors

Factors	No. of Items	M	SD	Sku	Kurt	Min	Max	Cronbach's α
Individual Role	15	4.12	.524	-1.150	.581	2.47	4.87	.889
Teacher Role	10	4.09	.505	-1.558	2.263	2.40	4.80	.799
Group Influence	15	4.12	.567	-1.820	3.111	2.07	4.87	.906
Grand Mean Score	40	4.11	.490	-1.705	2.555	2.39	4.68	.950

Table 4.7. Correlation of Adapted CEL Questionnaire Factors

	Individual Role	Teacher Role	Teacher Role
Individual Role	1		
Teacher Role	.751**	1	
Group Influence	.746**	.814**	1

***. Correlation is significant at the 0.01 level (2-tailed).*

4.4. Answering Research Question II

The second research question of the current study was: “how do high school students (in two private schools in Abu Dhabi) perceive the role of collaborative learning in developing critical thinking?” However, the researcher is also interested in studying students’ perceptions across the different students’ groups: male and female, and Emirati and expatriate. Therefore, the first step to analyze students’ responses was to perform independent-samples t tests to find significant differences between males and females and between Emiratis and expatriates.

4.4.1. Independent-samples t Test: Gender

A two-independent samples t test was performed to find significant difference between males and females, and between Emiratis and expatriates. The test results are presented in Table 4.88, indicating no significance differences between males and females in any of the factors or items.

Table 4.8. Results of Independent-Samples t Tests, Categorical Variable: Gender

Factor/Item	Group Statistics				Independent Samples Test	
	Female		Male		t	Sig.
	(n=140)		(n=100)			
M	SD	M	SD			
<u>Individual Role</u>	<u>4.14</u>	<u>.528</u>	<u>4.10</u>	<u>.521</u>	<u>.597</u>	<u>.551</u>
1. I understand the importance of working in groups.	4.24	.792	4.35	.716	-1.146	.253
2. I get along with other team members in my group.	4.09	.869	4.06	.802	.233	.816
3. I respect / accept every team member in my group who is from different culture and background.	4.11	.805	4.17	.792	-.532	.595
4. I respect / accept every team member in my group who has different ability and learning style.	4.09	.847	4.08	.884	.114	.909
5. I respect / accept different opinions in my group.	4.16	.819	3.98	.853	1.689	.092
6. I question the way other team members in my group do and try to think of a better way.	4.10	.851	4.05	.783	.464	.643

Factor/Item	Group Statistics				Independent Samples Test	
	Female		Male		t	Sig.
	(n=140)		(n=100)			
	M	SD	M	SD		
7. I feel that my ideas and suggestions are important to others.	3.98	1.000	3.86	.964	.919	.359
8. I feel excited and satisfied to work with my group.	4.26	.834	4.13	.774	1.199	.232
9. I like to help my team members in my group.	4.20	.841	4.13	.906	.615	.539
10. I like to think differently in doing activities in my group.	4.09	.861	4.08	.918	.049	.961
11. I like to share ideas and suggestions in my group.	4.12	.844	4.19	.787	-.638	.524
12. I really enjoy working collaboratively with other students.	4.15	.804	4.10	.870	.459	.647
13. I prefer to have a leadership role in my group.	4.01	.917	3.97	.915	.310	.757
14. I am an important member in my group.	4.26	.851	4.18	.730	.753	.452
15. I work hard and effectively in my group.	4.29	.692	4.19	.748	1.021	.308
<u>Teacher Role</u>	<u>4.10</u>	<u>.509</u>	<u>4.08</u>	<u>.502</u>	<u>.311</u>	<u>.756</u>
16. My teacher encourages us to work collaboratively in class.	4.31	.700	4.19	.706	1.351	.178
17. My teacher encourages us to discuss topics in class.	4.01	.852	4.13	.787	-1.136	.257
18. My teacher encourages us to think critically and solve problems.	4.11	.857	4.14	.697	-.256	.789
19. My teacher encourages us to be independent and creative.	4.02	.818	4.01	.882	.103	.918
20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	4.06	.841	4.02	.816	.407	.684
21. My teacher monitors / controls students' interaction in class.	4.17	.831	4.06	.802	1.040	.300
22. My teacher asks useful questions to deepen the study and link to previous topics.	4.01	.993	3.96	.984	.364	.716
23. My teacher uses differentiated questions that fit students' abilities and learning style.	4.09	.813	4.16	.762	-.648	.518
24. My teacher shares information that was collected from	4.21	.871	4.07	.935	1.227	.221

Factor/Item	Group Statistics				Independent Samples Test	
	Female		Male		t	Sig.
	(n=140)		(n=100)			
	M	SD	M	SD		
the group.						
25. My teacher treats us fairly and equally.	3.98	.971	4.04	.887	-.501	.617
<u>Group Influence</u>	<u>4.104</u>	<u>.577</u>	<u>4.15</u>	<u>.554</u>	<u>-.561</u>	<u>.575</u>
26. Working collaboratively with my group improves the content and the structure of my writing.	3.78	1.025	3.92	.939	-1.091	.277
27. Working collaboratively with my group makes me think differently.	4.05	.916	4.01	.927	.332	.740
28. Working collaboratively with my group makes me think critically.	4.07	.819	4.09	.877	-.168	.867
29. Working collaboratively with my group makes me more creative.	4.18	.742	4.19	.861	-.110	.913
30. Working collaboratively with my group makes me learn new ideas.	4.26	.836	4.36	.718	-.926	.355
31. Working collaboratively with my group makes me solve problems faster.	4.02	1.000	4.11	.984	-.681	.496
32. Working collaboratively with my group makes me learn values and new concepts.	4.10	.816	4.23	.802	-1.225	.222
33. Working collaboratively with my group makes me learn and grow from other differences.	3.96	.893	4.03	.969	-.542	.588
34. Working collaboratively with my group changes the way I look at myself.	3.92	.953	4.06	.919	-1.127	.261
35. Working collaboratively with my group makes me feel better student.	4.11	.849	4.17	.792	-.515	.607
36. Working collaboratively with my group increases my desire to learn.	4.16	.771	4.19	.861	-.310	.757
37. Working collaboratively with my group is better than working individually.	4.26	.755	4.20	.865	.612	.541
38. Working collaboratively with my group makes my communication skills better.	4.26	.783	4.18	.702	.874	.383
39. Working collaboratively with my group encourages me	4.20	.841	4.20	.974	.000	1.000

Factor/Item	Group Statistics				Independent Samples Test	
	Female		Male		t	Sig.
	(n=140)		(n=100)			
M	SD	M	SD			
to be more responsible.						
40. Working collaboratively with my group creates better opportunity for my learning.	4.21	.820	4.25	.770	-.341	.733

4.4.2. Independent-samples t Test: Nationality

A two-independent samples t test was performed to find significant difference between males and females, and between Emiratis and expatriates. The test results presented in Table 4.9, indicated only two significant differences in the mean scores of “22. My teacher asks useful questions to deepen the study and link to previous topics”, and “34. Working collaboratively with my group changes the way I look at myself” between Emiratis and expatriates. Emirati students had higher mean score (M = 4.12, SD = .909) of “My teacher asks useful questions to deepen the study and link to previous topics” than expatriates (M = 3.86, SD = 1.048). Similarly, Emirati students had higher mean score (M = 4.11, SD = .797) of “Working collaboratively with my group changes the way I look at myself.” than expatriates (M = 3.85, SD = 1.050).

Table 4.9. Results of Independent-Samples t Tests, Categorical Variable: Nationality

Factor/Item	Group Statistics				Independent-samples t test	
	Emirati		Expatriate		t	Sig.
	(n=120)		(n=120)			
M	SD	M	SD			
<u>Individual Role</u>	<u>4.11</u>	<u>.486</u>	<u>4.14</u>	<u>.562</u>	<u>-.319</u>	<u>.750</u>
1. I understand the importance of working in groups.	4.28	.724	4.28	.801	.000	1.000
2. I get along with other team members in my group.	4.04	.782	4.11	.896	-.614	.540
3. I respect / accept every team member in my group who is	4.16	.767	4.12	.832	.403	.687

Factor/Item	Group Statistics				Independent-samples t test	
	Emirati		Expatriate		t	Sig.
	(n=120)		(n=120)			
	M	SD	M	SD		
from different culture and background.						
4. I respect / accept every team member in my group who has different ability and learning style.	4.08	.846	4.09	.879	-.075	.940
5. I respect / accept different opinions in my group.	4.13	.885	4.05	.787	.694	.488
6. I question the way other team members in my group do and try to think of a better way.	4.08	.769	4.08	.875	-.078	.938
7. I feel that my ideas and suggestions are important to others.	3.92	.940	3.94	1.031	-.196	.845
8. I feel excited and satisfied to work with my group.	4.20	.795	4.21	.829	-.079	.937
9. I like to help my team members in my group.	4.18	.837	4.17	.901	.074	.941
10. I like to think differently in doing activities in my group.	4.03	.888	4.13	.879	-.877	.381
11. I like to share ideas and suggestions in my group.	4.14	.813	4.16	.830	-.157	.875
12. I really enjoy working collaboratively with other students.	4.09	.810	4.17	.853	-.698	.486
13. I prefer to have a leadership role in my group.	3.93	.896	4.05	.934	-.988	.324
14. I am an important member in my group.	4.19	.802	4.26	.804	-.643	.521
15. I work hard and effectively in my group.	4.27	.753	4.22	.679	.450	.653
<u>Teacher Role</u>	<u>4.11</u>	<u>.442</u>	<u>4.07</u>	<u>.562</u>	<u>.536</u>	<u>.592</u>
16. My teacher encourages us to work collaboratively in class.	4.25	.689	4.28	.721	-.275	.784
17. My teacher encourages us to discuss topics in class.	4.00	.789	4.12	.862	-1.094	.275
18. My teacher encourages us to think critically and solve problems.	4.13	.697	4.12	.881	.162	.871
19. My teacher encourages us to be independent and creative.	4.04	.844	3.99	.845	.459	.647
20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	4.09	.889	4.00	.767	.855	.393

Factor/Item	Group Statistics				Independent-samples t test	
	Emirati		Expatriate		t	Sig.
	(n=120)	(n=120)	(n=120)	(n=120)		
M	SD	M	SD			
21. My teacher monitors / controls students' interaction in class.	4.08	.773	4.17	.863	-.788	.432
22. My teacher asks useful questions to deepen the study and link to previous topics.	4.12	.909	3.86	1.048	2.040	.042*
23. My teacher uses differentiated questions that fit students' abilities and learning style.	4.13	.762	4.12	.822	.081	.935
24. My teacher shares information that was collected from the group.	4.21	.766	4.10	1.016	.933	.352
25. My teacher treats us fairly and equally.	4.03	.814	3.98	1.045	.345	.731
<u>Group Influence</u>	<u>4.13</u>	<u>.454</u>	<u>4.11</u>	<u>.663</u>	<u>.348</u>	<u>.728</u>
26. Working collaboratively with my group improves the content and the structure of my writing.	3.89	.868	3.78	1.101	.846	.398
27. Working collaboratively with my group makes me think differently.	4.11	.807	3.96	1.016	1.266	.207
28. Working collaboratively with my group makes me think critically.	4.04	.814	4.12	.871	-.689	.491
29. Working collaboratively with my group makes me more creative.	4.11	.742	4.26	.835	-1.471	.143
30. Working collaboratively with my group makes me learn new ideas.	4.34	.642	4.27	.914	.736	.463
31. Working collaboratively with my group makes me solve problems faster.	4.08	.846	4.03	1.122	.390	.697
32. Working collaboratively with my group makes me learn values and new concepts.	4.13	.744	4.18	.876	-.397	.692
33. Working collaboratively with my group makes me learn and grow from other differences.	4.07	.817	3.92	1.017	1.259	.209
34. Working collaboratively with my group changes the way I look at myself.	4.11	.797	3.85	1.050	2.146	.033*
35. Working collaboratively with my group makes me feel better student.	4.10	.793	4.18	.857	-.704	.482

Factor/Item	Group Statistics				Independent-samples t test	
	Emirati		Expatriate		t	Sig.
	(n=120)		(n=120)			
	M	SD	M	SD		
36. Working collaboratively with my group increases my desire to learn.	4.22	.747	4.13	.865	.878	.381
37. Working collaboratively with my group is better than working individually.	4.27	.632	4.21	.943	.563	.574
38. Working collaboratively with my group makes my communication skills better.	4.22	.769	4.24	.733	-.258	.797
39. Working collaboratively with my group encourages me to be more responsible.	4.16	.870	4.24	.926	-.719	.473
40. Working collaboratively with my group creates better opportunity for my learning.	4.18	.837	4.28	.758	-1.051	.294

*. Significant at 0.05.

4.4.3. One-sample t Tests

The researcher conducted a one-sample t test to examine whether the mean scores provided by the participating students are statistically different from the grand mean score of 4.11. The results of the t tests are presented in Table 4.10, included the mean (M), standard deviation (SD), the mean difference between the factor/item mean score and the grand mean score (MD), test statistic (t), the p-value (Sig.), and the relative agreement percent (RA%), which revealed the following interesting findings.

Overall, IR, TR, and GI mean scores didn't significantly differ from the grand mean score of 4.11, $p > 0.05$. Under each factor, there were some significant differences between the mean scores of some of the related items and the grand mean score. IR had a relative agreement of 82.4%, which did not significantly differ from the grand RA of 82.2%. A significant majority of students (85.6%), which is above average, indicated that they understand the importance of learning in groups. Another significant majority of 85.0% of students, which is above average,

indicated that they worked hard and effectively in their groups. With RA of 84.4% students believed that they were important members in their groups. On the other hand, a significant majority that is below average, indicated that they felt that their ideas and suggestions were important (RA = 78.6%), and they preferred to have leadership roles in their groups (RA = 79.8%).

TR had an RA of 81.8%, which did not significantly differ from the grand RA. Under TR, students significantly believed their teacher encouraged them to learn collaboratively in class, with RA of 85.2%, which is significantly above average. GI had RA of 82.4%, which did not significantly differ from the grand RA. Under GI, some items significantly had higher RA and others had significantly lower RA. That is, with a significant RA of 86.0%. students believed that CL makes them learn new ideas. With RA of 84.8%, students significantly believed that learning collaboratively is better than learning individually. Also, with RA of 84.6%, students significantly believed that CL made their communication skills better, and created better opportunity for their learning. With a significant RA below average, 76.8%, students believed that CL improved the content and the structure of their writing. Similarly, at 79.6% RA, students significantly indicated that CL changed the way they looked at themselves. Finally, at RA of 79.8%, students significantly indicated that CL made them learn and grow from other differences.

Table 4.10. Results of One-Sample t Tests

Factor/Item	Statistics		Test Value = 4.11			RA % ^a (82.2)
	M	SD	MD	t	Sig. (2-tailed)	
<u>Individual Role</u>	<u>4.12</u>	<u>.524</u>	<u>.015</u>	<u>.451</u>	<u>.652</u>	<u>82.4</u>
1. I understand the importance of working in groups.	4.28	.762	.173	3.524	.001**	85.6
2. I get along with other team members in my group.	4.08	.840	-.035	-.645	.519	81.6
3. I respect / accept every team member in my group who is from different culture and background.	4.14	.799	.027	.533	.594	82.8
4. I respect / accept every team member in my group who has different ability and learning style.	4.09	.861	-.022	-.405	.686	81.8

Factor/Item	Statistics		Test Value = 4.11			RA % ^a
	M	SD	MD	t	Sig. (2-tailed)	(82.2)
5. I respect / accept different opinions in my group.	4.09	.836	-.022	-.417	.677	81.8
6. I question the way other team members in my group do and try to think of a better way.	4.08	.822	-.031	-.581	.562	81.6
7. I feel that my ideas and suggestions are important to others.	3.93	.985	-.181	-2.845	.005**	78.6
8. I feel excited and satisfied to work with my group.	4.20	.810	.094	1.800	.073	84.0
9. I like to help my team members in my group.	4.17	.868	.061	1.086	.279	83.4
10. I like to think differently in doing activities in my group.	4.08	.883	-.027	-.468	.640	81.6
11. I like to share ideas and suggestions in my group.	4.15	.820	.040	.756	.450	83.0
12. I really enjoy working collaboratively with other students.	4.13	.831	.019	.357	.721	82.6
13. I prefer to have a leadership role in my group.	3.99	.915	-.118	-2.004	.046*	79.8
14. I am an important member in my group.	4.22	.802	.115	2.221	.027*	84.4
15. I work hard and effectively in my group.	4.25	.716	.136	2.939	.004**	85.0
<u>Teacher Role</u>	<u>4.09</u>	<u>.505</u>	<u>-.020</u>	<u>-.614</u>	<u>.540</u>	<u>81.8</u>
16. My teacher encourages us to work collaboratively in class.	4.26	.704	.152	3.356	.001**	85.2
17. My teacher encourages us to discuss topics in class.	4.06	.826	-.052	-.969	.334	81.2
18. My teacher encourages us to think critically and solve problems.	4.13	.793	.015	.293	.770	82.6
19. My teacher encourages us to be independent and creative.	4.02	.843	-.093	-1.715	.088	80.4
20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	4.05	.830	-.064	-1.198	.232	81.0
21. My teacher monitors / controls students' interaction in class.	4.13	.819	.015	.284	.777	82.6
22. My teacher asks useful questions to deepen the study	3.99	.987	-.123	-1.922	.056	79.8

Factor/Item	Statistics		Test Value = 4.11			RA % ^a (82.2)
	M	SD	MD	t	Sig. (2-tailed)	
and link to previous topics.						
23. My teacher uses differentiated questions that fit students' abilities and learning style.	4.12	.791	.011	.212	.832	82.4
24. My teacher shares information that was collected from the group.	4.15	.899	.044	.761	.448	83.0
25. My teacher treats us fairly and equally.	4.00	.935	-.106	-1.753	.081	80.0
<u>Group Influence</u>	<u>4.12</u>	<u>.567</u>	<u>.012</u>	<u>.319</u>	<u>.750</u>	<u>82.4</u>
26. Working collaboratively with my group improves the content and the structure of my writing.	3.84	.991	-.273	-4.260	<.001**	76.8
27. Working collaboratively with my group makes me think differently.	4.03	.919	-.077	-1.293	.197	80.6
28. Working collaboratively with my group makes me think critically.	4.08	.842	-.031	-.567	.571	81.6
29. Working collaboratively with my group makes me more creative.	4.18	.792	.073	1.434	.153	83.6
30. Working collaboratively with my group makes me learn new ideas.	4.30	.789	.194	3.812	<.001**	86.0
31. Working collaboratively with my group makes me solve problems faster.	4.06	.992	-.052	-.807	.421	81.2
32. Working collaboratively with my group makes me learn values and new concepts.	4.15	.811	.044	.843	.400	83.0
33. Working collaboratively with my group makes me learn and grow from other differences.	3.99	.924	-.118	-1.984	.048*	79.8
34. Working collaboratively with my group changes the way I look at myself.	3.98	.939	-.131	-2.158	.032*	79.6
35. Working collaboratively with my group makes me feel better student.	4.14	.824	.027	.517	.606	82.8
36. Working collaboratively with my group increases my desire to learn.	4.17	.808	.061	1.167	.245	83.4
37. Working collaboratively with my group is better than working individually.	4.24	.801	.127	2.465	.014*	84.8

Factor/Item	Statistics		Test Value = 4.11			RA% ^a (82.2)
	M	SD	MD	t	Sig. (2-tailed)	
38. Working collaboratively with my group makes my communication skills better.	4.23	.750	.119	2.462	.015*	84.6
39. Working collaboratively with my group encourages me to be more responsible.	4.20	.897	.090	1.554	.122	84.0
40. Working collaboratively with my group creates better opportunity for my learning.	4.23	.799	.119	2.312	.022*	84.6

*. Significant at 0.05.

**. Significant at 0.01.

a. RA% = (M/5)*100.

4.4.4. Group Differences in Students' Perceptions about the Role of Collaborative Learning in Developing their Critical Thinking Skills

As was mentioned in the methodology chapter, the main aim of the current study is to explore the students' perceptions of collaborative learning impacts on developing their critical thinking across the demographic groups of the participating students. therefore, the researcher performed the one-sample t tests again splitting the dataset by once by gender and once by nationality, to study the students' perceptions in male, female, Emirati, and expatriate groups.

4.4.4.1. Gender

When the researcher splitted the data by gender group, the results of the one-sample t tests changed, as shown in Table 4.11. The results showed that the three factors IR, TR, and GI mean scores didn't significantly differ from the gran mean score of 4.11, $p > 0.05$. Under IR, males significantly believed that they understand the importance of working in groups, more than average, $p < 0.05$. They also significantly felt that their ideas and suggestions were important to others, less than average, $p < 0.05$. On the other hand, females significantly felt excited and

satisfied to learn with their group, $p < 0.05$, and they significantly believed that they worked hard and effectively in their group, $p < 0.05$. For TR, female students significantly stated that their teacher encouraged them to learn collaboratively in class.

Under GI, there were some significant results. Female and male students significantly indicated that CL improved the content and the structure of their writing below average, $p < 0.001$ for females and $p < 0.05$ for males. Both groups also significantly showed that CL made them learn new ideas, $p < 0.05$ for both groups. Female students showed that CL significantly changed the way they looked at themselves, at below average level of agreement, $p < 0.05$. However, they indicated that CL significantly was better than learning individually, and made their communication skills better, at a higher level of agreement than average.

Table 4.11. Results of One-sample t Tests for Females and Males (test value = 4.11)

Factor/Item	Female (n=140)			Male (n=100)		
	M	SD	t(sig.)	M	SD	t(sig.)
<u>Individual Role</u>	<u>4.14</u>	<u>.528</u>	<u>.73(.47)</u>	<u>4.10</u>	<u>.521</u>	<u>-.17(.87)</u>
1. I understand the importance of working in groups.	4.24	.792	1.88(.06)	4.35	.716	3.35(<.05)*
2. I get along with other team members in my group.	4.09	.869	-.33(.74)	4.06	.802	-.62(.53)
3. I respect / accept every team member in my group who is from different culture and background.	4.11	.805	.06(.95)	4.17	.792	.76(.45)
4. I respect / accept every team member in my group who has different ability and learning style.	4.09	.847	-.24(.81)	4.08	.884	-.34(.73)
5. I respect / accept different opinions in my group.	4.16	.819	.78(.43)	3.98	.853	-1.52(.13)
6. I question the way other team members in my group do and try to think of a better way.	4.10	.851	-.14(.89)	4.05	.783	-.77(.45)
7. I feel that my ideas and suggestions are important to others.	3.98	1.000	-1.55(.12)	3.86	.964	-2.59(.01)*
8. I feel excited and satisfied to work with my	4.26	.834	2.09(.04)*	4.13	.774	.26(.80)

Factor/Item	Female (n=140)			Male (n=100)		
	M	SD	t(sig.)	M	SD	t(sig.)
group.						
9. I like to help my team members in my group.	4.20	.841	1.27(.21)	4.13	.906	.22(.83)
10. I like to think differently in doing activities in my group.	4.09	.861	-.33(.74)	4.08	.918	-.33(.74)
11. I like to share ideas and suggestions in my group.	4.12	.844	.16(.87)	4.19	.787	1.02(.31)
12. I really enjoy working collaboratively with other students.	4.15	.804	.59(.56)	4.10	.870	-.11(.91)
13. I prefer to have a leadership role in my group.	4.01	.917	-1.33(.19)	3.97	.915	-1.53(.13)
14. I am an important member in my group.	4.26	.851	2.04(.04)	4.18	.730	.96(.34)
15. I work hard and effectively in my group.	4.29	.692	3.00(<.05)*	4.19	.748	1.07(.29)
<u>Teacher Role</u>	<u>4.10</u>	<u>.509</u>	<u>-.27(.79)</u>	<u>4.08</u>	<u>.502</u>	<u>-.64(.52)</u>
16. My teacher encourages us to work collaboratively in class.	4.31	.700	3.45(<.05)*	4.19	.706	1.13(.26)
17. My teacher encourages us to discuss topics in class.	4.01	.852	-1.43(.16)	4.13	.787	.25(.80)
18. My teacher encourages us to think critically and solve problems.	4.11	.857	.06(.95)	4.14	.697	.43(.67)
19. My teacher encourages us to be independent and creative.	4.02	.818	-1.28(.20)	4.01	.882	-1.13(.26)
20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	4.06	.841	-.64(.52)	4.02	.816	-1.10(.27)
21. My teacher monitors / controls students' interaction in class.	4.17	.831	.87(.38)	4.06	.802	-.62(.53)
22. My teacher asks useful questions to deepen the study and link to previous topics.	4.01	.993	-1.23(.22)	3.96	.984	-1.52(.13)
23. My teacher uses differentiated questions that fit students' abilities and learning style.	4.09	.813	-.25(.80)	4.16	.762	.66(.51)
24. My teacher shares information that was collected from the group.	4.21	.871	1.42(.16)	4.07	.935	-.43(.67)

Factor/Item	Female (n=140)			Male (n=100)		
	M	SD	t(sig.)	M	SD	t(sig.)
25. My teacher treats us fairly and equally.	3.98	.971	-1.60(.11)	4.04	.887	-.79(.43)
<u>Group Influence</u>	<u>4.10</u>	<u>.577</u>	<u>-.12(.91)</u>	<u>4.15</u>	<u>.554</u>	<u>.65(.52)</u>
26. Working collaboratively with my group improves the content and the structure of my writing.	3.78	1.025	-3.82(<.001)**	3.92	.939	-2.02(.05)*
27. Working collaboratively with my group makes me think differently.	4.05	.916	-.77(.44)	4.01	.927	-1.08(.28)
28. Working collaboratively with my group makes me think critically.	4.07	.819	-.55(.58)	4.09	.877	-.23(.82)
29. Working collaboratively with my group makes me more creative.	4.18	.742	1.09(.28)	4.19	.861	.93(.35)
30. Working collaboratively with my group makes me learn new ideas.	4.26	.836	2.18(.03)*	4.36	.718	3.48(<.05)*
31. Working collaboratively with my group makes me solve problems faster.	4.02	1.000	-1.05(.30)	4.11	.984	.00(1.00)
32. Working collaboratively with my group makes me learn values and new concepts.	4.10	.816	-.14(.88)	4.23	.802	1.50(.14)
33. Working collaboratively with my group makes me learn and grow from other differences.	3.96	.893	-1.93(.06)	4.03	.969	-.83(.41)
34. Working collaboratively with my group changes the way I look at myself.	3.92	.953	-2.34(.02)*	4.06	.919	-.54(.59)
35. Working collaboratively with my group makes me feel better student.	4.11	.849	.06(.95)	4.17	.792	.76(.45)
36. Working collaboratively with my group increases my desire to learn.	4.16	.771	.72(.47)	4.19	.861	.93(.35)
37. Working collaboratively with my group is better than working individually.	4.26	.755	2.42(.02)*	4.20	.865	1.04(.30)
38. Working collaboratively with my group makes my communication skills better.	4.26	.783	2.33(.02)*	4.18	.702	1.00(.32)
39. Working collaboratively with my group encourages me to be more responsible.	4.20	.841	1.27(.21)	4.20	.974	.92(.36)
40. Working collaboratively with my group	4.21	.820	1.50(.13)	4.25	.770	1.82(.07)

Factor/Item	Female (n=140)			Male (n=100)		
	M	SD	t(sig.)	M	SD	t(sig.)
creates better opportunity for my learning.						

*. Significant at 0.05.

** . Significant at 0.01.

4.4.4.2. Nationality

Splitting the dataset by nationality group, the results of one-sample t tests revealed significant findings, presented in Table 4.12. The results showed that IR, TR, and GI mean scores of Emiratis and expatriates didn't significantly differ from the grand mean score of 4.11, $p > 0.05$. Under IR, the results showed that both Emirati and expatriate students indicated that they understand the importance of learning in groups, at a significantly higher agreement level than average, $p < 0.05$. Moreover, Emirati students indicated that they felt that their ideas and suggestions were important to others, at a significantly lower agreement level than average. At a significantly lower agreement level than average, Emirati students indicated that they prefer to have a leadership role in their group. Expatriate students significantly indicated that they believed they were important members in their groups, at a higher agreement level than average.

Under TR, both Emirati and expatriate students showed significantly higher agreement than average that their teacher encouraged them to learn collaboratively in the class, $p < 0.05$. Expatriates significantly indicated that their teacher asked useful questions to deepen the study and link to previous topics, at lower agreement level.

Under GI, both groups indicated that CL improved the content and the structure of their writing, at a significantly lower agreement level than average, $p < 0.05$ for Emiratis and $p < 0.01$ for Expatriates. Emirati students showed that CL made them learn new ideas, at a significantly higher agreement level, $p < 0.01$. Expatriate students showed that CL changed the way they looked at themselves, at a significantly lower agreement level than average, $p < 0.05$. At a

significantly higher level of agreement than average, Emirati students showed that CL was better than learning individually, $p < 0.01$

Table 4.12. Results of One-sample t Tests for Emirati and Expatriate Students (test value = 4.11)

Factor/Item	Emirati (n=120)			Expatriate (n=120)		
	M	SD	t(sig.)	M	SD	t(sig.)
<u>Individual Role</u>	<u>4.11</u>	<u>.486</u>	<u>.10(.92)</u>	<u>4.14</u>	<u>.562</u>	<u>.51(.61)</u>
1. I understand the importance of working in groups.	4.28	.724	2.62(.01)*	4.28	.801	2.37(.02)*
2. I get along with other team members in my group.	4.04	.782	-.96(.34)	4.11	.896	-.02(.98)
3. I respect / accept every team member in my group who is from different culture and background.	4.16	.767	.69(.49)	4.12	.832	.09(.93)
4. I respect / accept every team member in my group who has different ability and learning style.	4.08	.846	-.34(.73)	4.09	.879	-.23(.82)
5. I respect / accept different opinions in my group.	4.13	.885	.19(.85)	4.05	.787	-.83(.40)
6. I question the way other team members in my group do and try to think of a better way.	4.08	.769	-.50(.62)	4.08	.875	-.33(.74)
7. I feel that my ideas and suggestions are important to others.	3.92	.940	-2.25(.03)*	3.94	1.031	-1.79(.08)
8. I feel excited and satisfied to work with my group.	4.20	.795	1.24(.22)	4.21	.829	1.30(.20)
9. I like to help my team members in my group.	4.18	.837	.85(.40)	4.17	.901	.69(.49)
10. I like to think differently in doing activities in my group.	4.03	.888	-.95(.35)	4.13	.879	.29(.77)
11. I like to share ideas and suggestions in my group.	4.14	.813	.43(.67)	4.16	.830	.64(.52)
12. I really enjoy working collaboratively with other students.	4.09	.810	-.25(.80)	4.17	.853	.73(.47)
13. I prefer to have a leadership role in my group.	3.93	.896	-2.16(.03)*	4.05	.934	-.70(.48)
14. I am an important member in my group.	4.19	.802	1.11(.27)	4.26	.804	2.02(.05)*
15. I work hard and effectively in my group.	4.27	.753	2.28(.02)	4.22	.679	1.85(.07)
<u>Teacher Role</u>	<u>4.11</u>	<u>.442</u>	<u>-.06(.95)</u>	<u>4.07</u>	<u>.562</u>	<u>-.73(.47)</u>

Factor/Item	Emirati (n=120)			Expatriate (n=120)		
	M	SD	t(sig.)	M	SD	t(sig.)
16. My teacher encourages us to work collaboratively in class.	4.25	.689	2.23(.03)*	4.28	.721	2.51(.01)*
17. My teacher encourages us to discuss topics in class.	4.00	.789	-1.53(.13)	4.12	.862	.08(.93)
18. My teacher encourages us to think critically and solve problems.	4.13	.697	.37(.72)	4.12	.881	.08(.93)
19. My teacher encourages us to be independent and creative.	4.04	.844	-.89(.38)	3.99	.845	-1.53(.13)
20. My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	4.09	.889	-.23(.82)	4.00	.767	-1.57(.12)
21. My teacher monitors / controls students' interaction in class.	4.08	.773	-.38(.71)	4.17	.863	.72(.47)
22. My teacher asks useful questions to deepen the study and link to previous topics.	4.12	.909	.08(.94)	3.86	1.048	-2.63(.01)*
23. My teacher uses differentiated questions that fit students' abilities and learning style.	4.13	.762	.22(.83)	4.12	.822	.09(.93)
24. My teacher shares information that was collected from the group.	4.21	.766	1.41(.16)	4.10	1.016	-.11(.91)
25. My teacher treats us fairly and equally.	4.03	.814	-1.14(.26)	3.98	1.045	-1.33(.19)
Group Influence	4.13	.454	.59(.56)	4.11	.663	-.02(.98)
26. Working collaboratively with my group improves the content and the structure of my writing.	3.89	.868	-2.76(.01)*	3.78	1.101	-3.25(<.01)**
27. Working collaboratively with my group makes me think differently.	4.11	.807	-.02(.98)	3.96	1.016	-1.64(.10)
28. Working collaboratively with my group makes me think critically.	4.04	.814	-.92(.36)	4.12	.871	.08(.93)
29. Working collaboratively with my group makes me more creative.	4.11	.742	-.02(.98)	4.26	.835	1.95(.05)
30. Working collaboratively with my group makes me learn new ideas.	4.34	.642	3.96(<.01)**	4.27	.914	1.88(.06)
31. Working collaboratively with my group makes	4.08	.846	-.34(.73)	4.03	1.122	-.75(.46)

Factor/Item	Emirati (n=120)			Expatriate (n=120)		
	M	SD	t(sig.)	M	SD	t(sig.)
me solve problems faster.						
32. Working collaboratively with my group makes me learn values and new concepts.	4.13	.744	.34(.73)	4.18	.876	.81(.42)
33. Working collaboratively with my group makes me learn and grow from other differences.	4.07	.817	-.58(.56)	3.92	1.017	-2.08(.04)
34. Working collaboratively with my group changes the way I look at myself.	4.11	.797	-.02(.98)	3.85	1.050	-2.71(.01)**
35. Working collaboratively with my group makes me feel better student.	4.10	.793	-.14(.89)	4.18	.857	.83(.41)
36. Working collaboratively with my group increases my desire to learn.	4.22	.747	1.56(.12)	4.13	.865	.19(.85)
37. Working collaboratively with my group is better than working individually.	4.27	.632	2.72(.01)**	4.21	.943	1.14(.26)
38. Working collaboratively with my group makes my communication skills better.	4.22	.769	1.52(.13)	4.24	.733	1.97(.05)
39. Working collaboratively with my group encourages me to be more responsible.	4.16	.870	.61(.54)	4.24	.926	1.56(.12)
40. Working collaboratively with my group creates better opportunity for my learning.	4.18	.837	.85(.40)	4.28	.758	2.50(.01)

*. *Significant at 0.05.*

***. Significant at 0.01.*

4.5. Summary of Quantitative Data Analysis

The quantitative analysis section of this chapter has introduced and explored the major quantitative findings of the study, providing detailed descriptions of the results for each statistical test applied in addition to tabulated data, used to answer the second research question about how high school students in the two private schools in Abu Dhabi perceive the role of collaborative learning in developing their critical thinking skills.

Throughout this section, it has appeared that the participating students from the two high schools in Abu Dhabi highly perceived the role of CL in developing their critical thinking skills. CL was perceived as a significant impact on improving communication skills and creating better opportunity for learning. Overall, students prefer CL to individual learning at 82% of agreement, regardless of their gender or nationality. However, the researcher compared the different students' groups in terms of the CL factors and their items, and detected small significant differences based on the average perception of students.

4.6. Analysis of the Qualitative Data

In this section, the findings of the qualitative data analysis are presented. The qualitative data include data collected via semi-structured interviews and lesson observation checklists. The findings of the interviews' analysis were used to answer the research question: "what are the perceptions of the English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students?", while the lesson observations analysis findings were used to answer the research question: "how are teachers and students in English lessons (in two private schools in Abu Dhabi) experience the impacts of collaborative learning in developing critical thinking?"

4.6.1. Interview Analysis

The primary purpose of this study was to investigate the impacts of collaborative learning (CL) in developing critical thinking (CT) among high school students in two private schools in Abu Dhabi. The other purposes of the study were to identify the perceptions of teachers regarding collaborative learning in developing critical thinking among high school students, how collaborative learning develops critical thinking, and why collaborative learning develops critical thinking. Therefore, the researcher used semi-structured interviews to explore English teachers' perceptions on impacts of collaborative learning in developing critical thinking among high school students. It was ensured that the interview questions were flexible and open-ended to allow the participants to talk about the CT skills and report their practices freely.

Participants' views and feedback added insights to the research questions posed in this study. By listening to and analyzing the experiences and perceptions of these teachers, valuable information was obtained about the relationship between collaborative learning and critical thinking. In this section, the research questions are addressed with supporting evidence, including both quotations and feedback from the participants. Two research objectives guided this study:

- ❖ To account the perceptions of English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students through semi-structured interview.
- ❖ To record the experiences of teachers and students (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students through lesson observation.

4.6.1.1. Participants

Abu Dhabi was chosen as the context of the research as it is the capital city of the United Arab of Emirates and where the researcher lives. The research was conducted in two private schools of different teaching systems and curricula (American, and Arabic) and different areas (The center of Abu Dhabi, and Khalifa City A). All of the schools follow ADEK's system (Abu Dhabi's department of education and knowledge). One school has only female students whereas the other school has both male and female students. The schools represent varied teaching systems and curricula that are mostly applied in Abu Dhabi and which are needed for the study purposes. Also, both of the schools are moving toward applying critical thinking in learning in general and applying critical thinking in teaching different subjects including English in specific among high school students. As this study follows a mixed method approach, the teachers' sample for the quantitative and qualitative sections of the research will be the same, and the information will be gathered simultaneously. On the other hand, the students' sample will only be comprised in the quantitative stage of the research (survey). Partakers will be separated into two groups: students

and teachers. The total population of the targeted grades of this study (Grade 10, Grade 11, and Grade 12) is expected to be 240 students and 8 English teachers.

All of the participants have at least 10 years of experience in the education field. Six participants have at least 20 years of total experience and a minimum of 10 years of teaching experience in the UAE. One participant has 11 years of total experience and seven years is only in the UAE. The eighth participant has 10 years of teaching experience but only three years is in the UAE. All of the participants have teaching diploma in addition to their Bachelor degree in English but only one has a Master degree in education. The youngest participant was 38 years old and the oldest was 57 years old. Each one of them was chosen to be interviewed upon their requests and strong desire to participate after being asked by the researcher whether they are interested or not to participate in the study. Each participant was given a specific timing to be interviewed after checking their schedules and their availability with the supervisors of their school.

4.6.1.2. Interviews Data Analysis Strategy

A qualitative approach of thematic analysis was chosen to analyze interviewees responses to the semi-structured interviews conducted. Generally, thematic analysis is the most widely used qualitative approach to analyzing interviews. According to Braun & Clarke (2006), thematic analysis is a method for identifying, analyzing, summarizing, and reporting themes found within a data set. The main reason thematic analysis was chosen to analyze the interviews is that it provides a highly flexible approach that can be adjusted for the needs of many studies, providing a rich and detailed, yet comprehensive report of data (Braun & Clarke, 2006; King, 2004). Braun & Clarke (2006) urged that a firm thematic analysis can yield trustworthy and insightful findings. Moreover, thematic analysis is a useful method for examining the perspectives of different research participants, highlighting similarities and differences, and generating unanticipated insights (Braun and Clarke, 2006; King, 2004). The thematic analysis approach follows a six-iterative phases process (Braun and Clarke, 2006), that develops over time and involves a constant moving back and forward between phases in order to achieve the study objectives. That is, the six phases presented in Figure 1.3 overlap and interact, which makes

thematic analysis a flexible and rigorous method of data analysis. NVivo12® was used to aid for organizing and coding of interview responses throughout the different phases of the analysis.

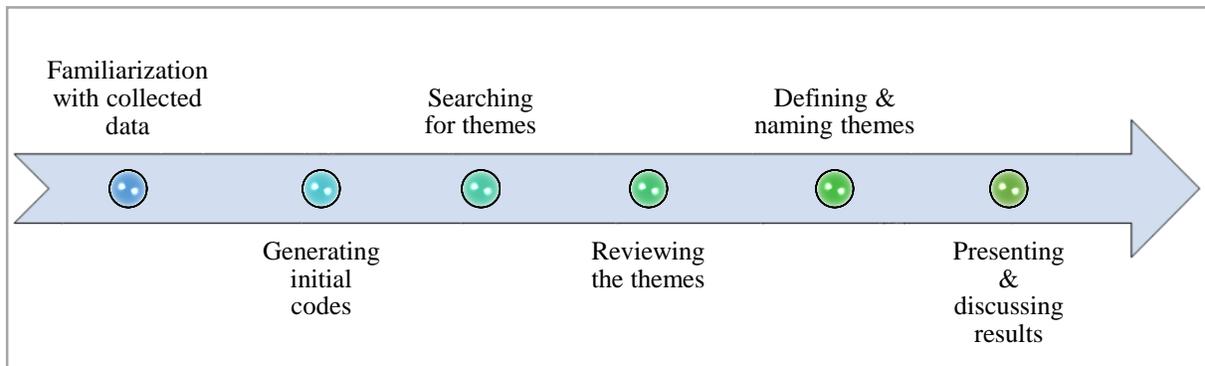


Figure 1.3 *Six Iterative Phases of Thematic Analysis (Braun and Clarke, 2006)*

4.6.1.3. The Interview Data Thematic Analysis Process

Applying thematic analysis approach to analyze the interview data with the aid of NVivo12®, I conducted interview data analysis and visualization. During the first phase, I transcribed the interviews into Microsoft Word documents and read them thoroughly in attempt to get familiar with collected data. In the second phase, I began to obtain initial codes from the data and developed a codebook using NVivo by sorting, organizing, and filter data; i.e., getting most frequent words and expressions, see Figure 4.. Moving into the third phase, I used initial codes to search for themes, which are sequences of words grouped based on common meanings or patterns (Oscar L., 2019). During phase 3 and 4, themes are formulated and revised by reviewing the coded data extracts to identify themes and sub-themes. In phase 5, I organized the process of naming and labeling themes. As shown in Figure 4., a screenshot of the nodes used in NVivo to code interview data is presented.



Figure 4.4. *Sample Word Cloud of Collaborative Working, generated by NVivo*

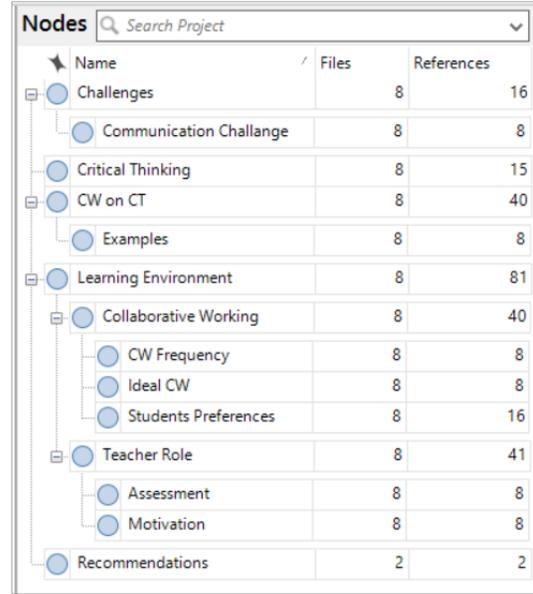


Figure 4.5. *Screenshot of Initial Coding Nodes in NVivo*

4.6.1.4. Findings and Results of Interview Thematic Analysis

Findings of the thematic analysis are summarized and described in different themes that emerged with the help of coding, analyzing, and organizing initial codes using NVivo. Themes and sub-themes are explained in details with snippets from interviewees’ perceptions and opinions, as follows.

4.6.1.4.1. Theme 1: Perception of the Concept of Critical Thinking

The interviewed teachers were asked to describe and explain CT from their point of view. All teachers showed awareness of the concept of CT as they defined it as the ability to think out of the box, evaluate, analyze, question, and judge wisely and differently. Most of teachers described CT as an intellectual skill that needs to be learned and improved. Some teachers believe CT helps students to be able to tackle situations outside school, think deeply, and seek evidence to support assumptions. Others believe that CT is knowledge sharing and self-expression.

“...Critical thinking is a skill that helps students to think, wonder and analyze the information. It also helps the students to link what they learnt to their real life and community...” (Teacher 2).

Similarly, another teacher stated that CT is not only taking ideas as written. From his/her point of view, the text is a voice out and a subjective opinion of the writer, and students have to rethink and question these ideas. It was perceived as having the ability to think, make inferences about new ideas they get, analyze and evaluate information. A participant described it in the following words: ...answers might vary. Some will say it's evaluating statements and arguments; others will say it's the process of seeking evidence to support assumptions. Many will say it's an intellectual skill that must be learned and approved. Students in particular will say its Blooms. Logically speaking, it's a combination of all.... (Teacher 8).

Therefore, all teachers provided very similar definitions of the CT concept and provided the importance of learning CT as a skill and improving it.

4.6.1.4.2. Theme 2: Perception of the Concept of Collaborative Learning

The interviewees were asked about their perceptions of CL, and they provided comprehensive definitions. All teachers defined it as working in a group (team) to accomplish certain objectives or tasks, helping each other. Most of them believe that in collaborative learning, students share ideas and knowledge, caring about and support each other. “... It is collaborative work among team members where students share, create, and construct learning...” (Teacher 6).

The interviewed teachers were asked about if they engage their students in collaborative working, and how often. All teachers stated that they had engaged their students in CL, and most of them said that they do it two to four times a week. Few of them said they do it almost every class, and only one participating teacher said: “... Yes, but not that often. Sometimes once or twice a week...” (Teacher 7).

When asked about what an ideal collaborative learning activity is, most of teacher participants believed that it is an exercise where tasks are well prepared for all levels of students, so that all students will participate and succeed in achieving the task required to be done. Teachers believe

it is an exercise that let students communicate efficiently with each other, as high achievers will help low achievers, and hence all students will benefit mentally and emotionally.

... I think that collaboration is not only teamwork but also an ideal collaboration will benefit the students mentally and emotionally. Mentally by enhancing their critical thinking skills and emotionally is achieved through developing a sense of belonging. ... (Teacher 8).

Another teacher showed that the ideal collaborative learning activity is an exercise, where the teacher has set all roles clearly and shared the rubric with students.

... Students are challenged to achieve a certain goal. The instructions should be made clear. The rubric must be shared with students. Students are aware of the teacher's expectations. The outcome is assessed accordingly... (Teacher 5).

From teachers' perceptions, we can say that CL is an essential learning method for improving student's performance and benefiting students mentally and emotionally.

4.6.1.4.3. Theme 3: Learning Environment

In this theme, teachers explain their roles in collaborative working to make it run effectively and efficiently, their students' preferences and communication, which represent three sub-themes, described as follows.

4.6.1.4.3.1. Sub-theme 3.1: Teacher Role

The interviewees were asked about their roles during the collaborative learning activities. All teachers stated that they facilitate everything to students by explaining what to do, make each group role clear, give examples, and encourage them.

... I try to make things easier by explaining to them what to do. Each group needs to do its task. I also encourage them to work if some of them seemed lazy to work or felt that the work is difficult... (Teacher 1).

When asked about the type of support they would give to a student who is not doing his/her task, most teachers prefer to motivate and encourage those students to do their part of the task. Some teachers would give support by explaining the task and show how important the teamwork is. Another teacher suggested that if the tasks are prepared for all levels of students, there will be no problems. "... Differentiation tasks are supposed to overcome these difficulties..." (Teacher 3).

Most teachers believe that students working in teams need their teacher guidance, encouragement, and emotional support. Some teachers believe that students need to be monitored and given enough time to accomplish their tasks. They need to be given the chance to express themselves freely. A teacher said: "...They need to be encouraged by offering the environment they want (prefer). They need good relation with the teacher..." (Teacher 4).

Teachers also assess their students' learning through collaborative working based on team performance. Few teachers assess each member individually. A teacher said: "... Sometimes I assess individually each member in the team or by following a specific rubric for group work such as group evaluation form..." (Teacher 7).

Teachers use different strategies to motivate their students during collaborative learning like presentations done by students, using crosswords, discussing different topics that may help them in their practical lives, bonus marks, choosing their own team, etc. a teacher said: "... 1. Giving bonus marks to the best group. 2. If you promise this group to participate in a cross-curricular activity. (The students respond to that) ..." (Teacher 4).

To conclude, teacher's role is very important in executing collaborative work, as they apply different strategies in order to motivate and encourage students to engage in teamwork.

4.6.1.4.3.2. Sub-theme 3.2: Students Preferences

Most of the interviewed teachers stated that their students prefer working in teams rather than working individually. Some teachers said that not all students prefer the collaborative work as high achievers prefer working individually. A teacher said:

... High achievers prefer alone because they believe that average and low achievers hinder their process of learning. However, average and low achievers prefer working in groups as they believe that they are getting the support from high achievers... (Teacher 4).

Some teachers said students like collaborative work to share and discuss ideas, give their opinions and feedbacks, and make inferences about a topic. They said that students feel it is fun. Average and low achievers like working in teams because they receive support from their high achiever peers. "... They always prefer working in a team instead of working alone. It is more fun and easier..." (Teacher 8).

It seems that there is a kind of issue here that high achievers need to be motivated to work collaboratively so that other students who maybe average or low achievers may benefit.

4.6.1.4.3.3. Sub-theme 3.3: Students Communication

Some teachers stated that some low achievers struggle to communicate with their peers from high achievers. A teacher said: "... Yes, sometimes they struggle especially low achievers who might be alone listening..." (Teacher 8). This teacher believes that the teacher can help by giving each student a question to answer by the end of the activity, and questions should be leveled and the answer requires attention during the activity. This indicates that some teachers do not make the tasks based on students' academic level. A teacher also said: "... Yes, sometimes, especially with the low ability group, only when we put them in mixed groups..." (Teacher 1).

This confirms what was mentioned in sub-theme 3.2 (students' preferences). As high achievers prefer working alone, low achievers find difficulty in communicating with them.

4.6.1.4.4. Theme 4: Impact of Collaborative Working on Developing Critical Thinking

The interviewees were asked about their students' and their perceptions about the impact of collaborative working on developing critical thinking among high school students. They acknowledged CW vital role in developing CT in different aspects like improving ability to express one's opinion and share ideas, learning to listen to others' opinions, progression academic level, ability to debate and discuss, and responsibility. One teacher explained it as follows: "... It helps in developing higher level thinking, oral communication, self – management and leadership skills. It also develops self – esteem and responsibility..." (Teacher 6).

Another teacher said: "... It's essential to high school students as they will help them prepare for their undergraduate study. This skill is vital to high school students..." (Teacher 5).

Teachers also described how students perceive the impact of CW on developing CT. that is, some teachers said that students believe that collaborative learning can help them think better. They enjoy it because they can listen to different opinions from their peers, they can share information and new ideas. Some teachers mentioned that some students are not team players and just prefer working alone because it is time consuming. "... High achievers prefer working alone. Average and low achievers prefer to work in groups. I got to know that from experience..." (Teacher 4). Another teacher said:

... Some students prefer collaborative work because they can benefit listening to others to aid their understanding. Also, they can think about any topic from different perspectives and they can ask questions if they don't understand. On the other hand, some prefer individual work because alone they can work faster instead of explaining to others which is time consuming. Also, some are not team players... (Teacher 8).

In general, all teachers believe that CW is beneficial to all students, as it helps them obtain and improve their thinking ability because of the exchange of ideas and opinions. It also develops personal skills; i.e. a teacher said: "... I believe that collaborative learning benefits all

the involved parties in different aspects, it encourages competition to express one's self opinion reaching self-confidence and critical thinking..." (Teacher 7).

Most teachers gave examples of CW activities that they believe they enhanced students critical thinking. The examples included activities like discussion and debating among students, and sharing ideas and opinions. A teacher said:

... It was when a student recalled a quote from a famous book, and another student of the same group disagreed by saying that these ideas can be true only for a specific society in a certain era. It should not then be considered as the 'one truth'... (Teacher 3).

So, all teachers stated that CW contributed in a way or another in helping students engage and improve their skills.

4.6.1.4.5. Theme 5: Collaborative Learning Challenges

Although applying collaborative learning is important and beneficial, it is accompanied with some challenges, from the point of view of teachers. They stated that sometimes the task given is hard and not appropriate for some of the students who are academically lower than their peers. Moreover, they feel embarrassed because they cannot pace with high achievers. On the other hand, higher achievers would work faster if worked on their own. Others don't prefer teamwork. "... On the other hand, some prefer individual work because alone they can work faster instead of explaining to others which is time consuming. Also, some are not team players..." (Teacher 8). Some teachers said that some students do not accept different opinions. A teacher said:

... Accepting others differences is a major challenge in collaborative learning. Some students claim that they have no prior studies related to the current topic. Sometimes low achievers seem not interested to work or some students seem not interested with the given topic... (Teacher 5).

The challenges provided by teachers confirm what was discussed above in terms of students' preferences theme. It can be felt that the problem solution is also given within problem

statement. Teachers mentioned that some tasks are hard for low achievers. So, there is a kind of misdistribution of tasks.

4.6.1.4.6. Theme 6: Recommendations to Improve Collaborative Learning

Participating teachers provided some recommendations for the support they need to improve the applicability of collaborative learning in order to effectively develop critical thinking. A teacher said that collaborative learning should be applied in the younger age so students can get used to it. Another teacher said that teachers need more resources and real advisors to help them in doing collaborative work with students.

...Most workshops don't answer the question of certain strategies. Workshops are theoretical and not practical. Coordinators are even unable to show this to their teachers. They are unable to answer enquiries. There is no fixed standard (A teacher loses his / her job by changing schools if they are not satisfied with the school's teaching system). We need real advisors to help us learn strategies to be applied in group working. Working at this school is professional thing but it needs time... (Teacher 4).

This shows that CW needs to be improved in order to help teachers apply it effectively and efficiently so that students get the maximum benefit of it.

4.6.2. Analysis of Lesson Observation Data

CL was assessed by an observation checklist (Ruth Levine, 2008; Patrick Griffin & Michael Francis, 2018) for eight classes. The observation checklist included 25 statements about classroom collaborative learning in English classroom. The analysis of the observation checklists for the eight classes reveals that, on average, CL is achieved by 90.5% with a standard deviation of 5.21%. However, as shown in *Figure 4.*, only one class (class 3) achieved 100% of CL activities; i.e., the 25 observations. Class 5 achieved 96% (24 out of 25), class 6 achieved 92%

(23 out of 25), class 1, 2, 4, and 7 achieved 88% (22 out of 25), while class 8 achieved 84% (21 out of 25) of collaborative learning.

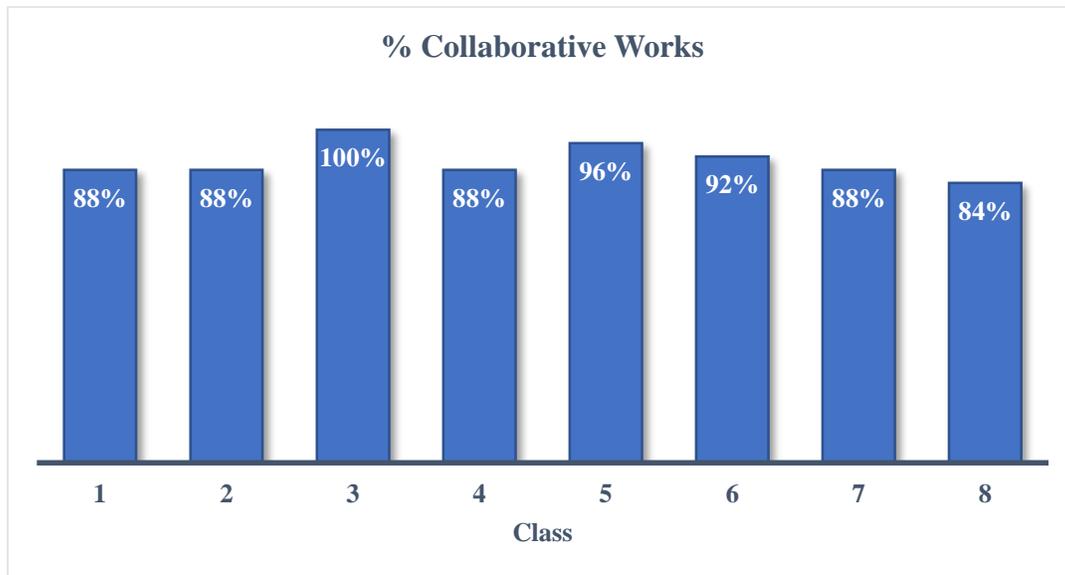


Figure 4.6. *Percentage of Collaborative Learning across Classes*

From the previous figure, we can say that at least 84% of CL observations were achieved, i.e., 21 out of 25. This indicates that CL is applied in all classes. Furthermore, this shows that the basis of CL is constructivism in where knowledge is constructed, and transformed by students (Melinda Dooly, 2008). Also, the learning process must be comprehended by either activating existent cognitive structures or by constructing novel cognitive structures that fit new input. In this process, learners do not passively receive knowledge from the teacher, on the other hand, teaching becomes a transaction between all the stakeholders in the learning process.

4.6.2.1. Findings of Observation Checklist Analysis

All observations as well as observer notes and reflections were entered into MS Excel sheet, manipulated, and analyzed. In **Figure 4.**, the percentage of achievement is shown for the 25 observations of the checklist. From **Figure 4.** and analysis of the Excel datasheet, the following can be concluded:

All classes had all group members actively contributed to the end of the lesson. The observer noted that, in all classes, all group members were working in groups and doing their tasks until the end of the lesson. Seven classes had group members gave each other support and constructive feedback. In five classes of them, the observed noted that every member was trying to give useful suggestions and support; while in the other two classes, everyone seemed supportive and each member was constructing their feedback critically. In the class that did not have group members gave each other support and constructive feedback, the observer noted that some members were just observing their peers instead of giving them the support they need. Other members were criticizing their peers for making mistakes or giving wrong answers.

In four classes, when the group was having trouble, other groups spontaneously helped. In one of those classes, the observer noted that each group tried to help everyone including other members in the other group; while in the other three classes, each group was helping its group members and other group member as well. On the other hand, in the other four classes, when the group was having trouble, other groups did not help. In one of those classes, the observer noted that each group acted as if the other groups were their rivals and they should not support them at all. In another class, each group was busy working on its own task only. In the other two classes, each group was helping its group members only.

In all eight classes, each group promotes critical thinking and problem solving, the observer noted that the group members were encouraged to think critically and solve the problem of the given task. In all classes, everyone seems thinking critically when he/she works in group, the observer noted that everyone was trying to think, analyze, and share the outcomes. In all classes, group members exchanged and negotiated between them their ideas, strategies, tools and/or resources to carry out the activity; the observer noted that group members were sharing their ideas, the most appropriate steps to follow, and solutions. In six classes, the group provided constructive feedback, where the observer noted that when the teacher asked each group to give their feedback, it seemed constructive and helpful to others. In the other two classes, where the group did not provide constructive feedback, in one class, the researcher had not noticed any given feedback by the students to their own work or to their peers, while in the other class have not noticed any constructive feedback by most of the groups. One group out of six gave a helpful feedback. She noticed that most students were criticizing each other.

In five classes, the group accepted critical comments from other groups. In two classes, the researcher noted that every group was listening attentively and respectfully to others comments and suggestions, while every group was opened to other groups' comments and suggestions in the other three classes. One other hand, in three classes, the group did not accept critical comments from other groups. In one class, some groups refused critical comments from other groups and referred their comments to be criticizing instead of being critique. In another class, some groups refused critical comments from other groups by arguing with them and claiming that they are wrong. In the third class, the researcher had not noticed any critical comments were given by any group members.

In all classes, every member in the team was focused during team activities. The researcher noted that everyone was focusing on doing his part even the ones who are less working. In all classes, every member demonstrated good self-control to balance active listening and participation. The researcher noted that everyone was listening to the teacher and to other members as well as participating in doing their given tasks. In all classes, every member thought over what he/she has been doing and consider alternative ways of doing it. The researcher noted that everyone including low achievers were trying to find ways to solve the given task.

In all classes, everyone questioned the way others do something and tries to think of a better way. The researcher noted that everyone was trying to give better solutions during the activity. In all classes, every member listened attentively and understands what others say. The researcher noted that everyone was listening carefully to others answers. In all classes, every member assessed own and others' performance with objectivity and accuracy. The researcher noted that students were able to give their feedback about themselves and others in objectivity and precisely. In seven classes, the teacher facilitated teacher-student interaction. In five classes, the researcher noted that the teacher worked hard to make sure that every step in the instruction is clear to everyone, while in another two classes, the teacher was doing her best to facilitate her interaction with her students. In the other class, the teacher did not facilitate teacher-student interaction. The researcher had not noticed that during the lesson observation class.

In seven classes, the teacher promoted class discussion. In five classes, the researcher noted that the teacher was encouraging students to participate in the discussion, while in another two classes, the teacher was trying to encourage students to give their opinions critically during class

discussion. In the other class, the teacher did not promote class discussion. The researcher had not sensed that during the lesson observation lesson. In all classes, the teacher asked useful questions to deepen the study. The researcher noted that the teacher was asking helpful questions that facilitate the lesson. In six classes, the teacher shared information that he / she collected. The researcher noted that the teacher shared students work at the end of the task. In the other two classes, the teacher did not share information that he / she collected, and the researcher noted that the teacher did not share students work at the end of the task. In seven classes, the teacher demonstrated deep enough knowledge on the various topics. In six classes, the researcher noted that the teacher was knowledgeable with the content of the subject, while in one class the teacher connected the current topic to the previous topics and showed a knowledgeable background. In another class, the teacher did not demonstrate deep enough knowledge on the various topics; i.e. the teacher did not link the current topic to the previous topics.

In seven classes, the teacher gave helpful feedback to others. In one class of the seven, the researcher noted that teacher's feedback was not helpful enough. The students were looking at others to understand what were said to them, while in the other six classes, teacher's feedback was rigorous and constructive. In another class, the teacher did not give helpful feedback to others. In all classes, everyone learned values and new concepts through collaborative learning. The researcher noted that students seemed to learn a lot by the end of the lesson. In all classes, everyone developed their critical thinking skills through collaborative learning. The researcher noted that everyone learned different ideas by the end of the lesson. In all classes, everyone solved problems through collaborative learning. The researcher noted that new solutions were demonstrated to every member in each group. In all classes, everyone is encouraged to be creative through collaborative learning. The researcher noted that the teacher mainly played a vital role in encouraging everyone to be creative with their work.

In five classes, everyone preferred collaborative learning on individual learning. In three of them, the researcher noted that everyone seemed satisfied during the collaborative learning activity, while in two classes she noted that everyone seemed enjoying doing their tasks through collaborative work. In three classes, not everyone preferred collaborative learning on individual learning. The researcher noted that few low and average achievers seemed bored and suggested to get their help from their teacher instead of the high achievers in one class, few students

especially low achievers seemed bored and disturbed during the collaborative learning activity in another class, and some high achievers seemed disturbed to help low achievers during the collaborative learning activity and they were claiming that it is better to work alone instead in the third class.

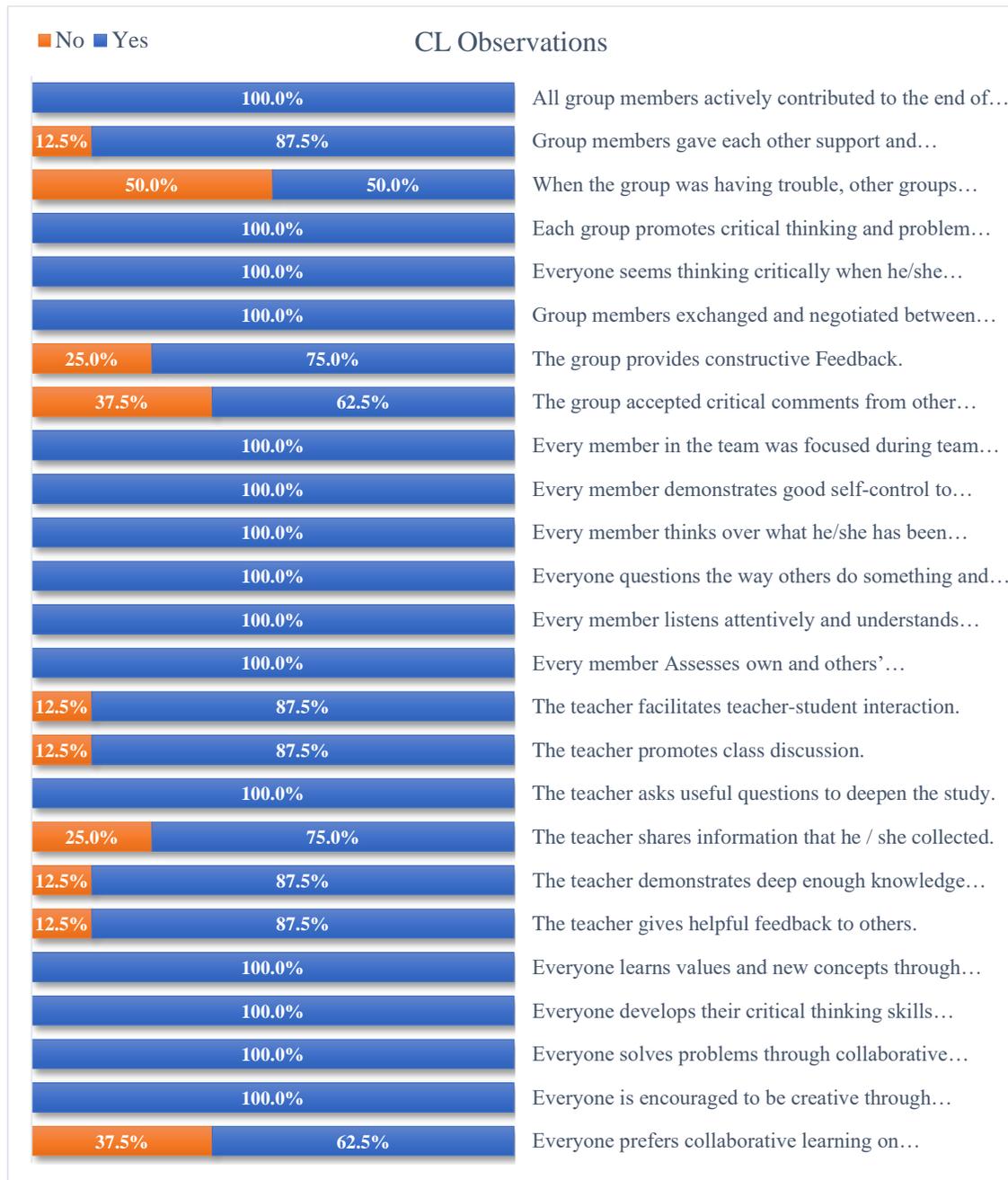


Figure 4.7. Collaborative Work Observations Achievement

4.6.2.2. Observer Reflections

The observer added her reflections for the eight classes, listed in (X) attached to the appendix. Observer reflections and notes were categorized and summarized, as shown in **Table 4.2**. The table shows the key reflections of the observer classified in categories and the number of classes that the observer reflections were noted.

Table 4.2. *Summary of Observer Reflections*

Observer Reflection for Teachers	No. of Classes		Observer Reflection for Students	No. of Classes	
	No	Yes		No	Yes
Facilitation	2	6	<u>High Achievers</u>		
Differentiation	4	1	Judgmental/ Critical Thinker		5
Encouragement	1		Willing to Support Low Achievers	1	
Share Collected Data	2		<u>Low Achievers</u>		
Link Current Topic to Previous	1	1	Struggling		3
			Supported from High Achievers		6
			Rely on High Achievers		1
			<u>All Students</u>		
			Accepted Feedback	3	5
			Collaborative/ Respectful	1	7

From the results reported in **Table 4.23**, it can be noted that majority of teachers (in 6 classes out of 8) did their best to facilitate everything for the students. Only one teacher was observed to distribute differentiated tasks according to students' levels. Four teachers did not apply the differentiation strategy on the given tasks. One teacher did not encourage students for any types of discussion. Two teachers did not share the collected data with students. Only one teacher linked the current topic to the previous given topics, which showed strong knowledge of the subject.

Observer reflections on students showed that most high achiever students were judgmental/critical thinkers, however in one class they had no willing to support low achiever students. In three classes, low achiever students were struggling to do the tasks given to them. In most classes, low achiever students were supported from high achiever students. It was noted that in one class, low achiever student relied on high achiever students.

In general, the observer noted that all students were collaborative and respectful, except in one of the classes. The majority of students accepted peer feedback; however, in three classes, students refused peer feedback and suggested that feedback should be given by the teacher privately to each student.

A deeper analysis of the observer reflections is summarized in **Table 4.14**, which shows observer reflections categorized across the eight classes under study. From the table, we can see that low achiever students who struggled during doing their tasks were in the classes where the teacher did not apply differentiation strategy in assigning tasks to students based on their levels, although these teachers did their best to facilitate the tasks. This indicates that differentiation is a major factor in helping low achiever students in doing their tasks.

Table 4.14. *Observer Reflections across Classes*

Observer Reflections	Class	1	2	3	4	5	6	7	8	Total
<u>Teachers</u>										
Facilitate	No						1	1		2
	Yes	1	1	1	1	1			1	6
Differentiation	No	1	1		1		1			4
	Yes					1				1
Encouragement	No						1			1
	Yes									0
Share Collected Data	No							1	1	2
	Yes									0
Link Current Topic to Previous	No							1		1
	Yes								1	1
<u>High Achievers</u>										
Judgmental/ Critical Thinker	No	1								1
	Yes		1	1	1	1				4
Willing to Support Low Achievers	No					1				1

	Yes								0
<u>Low Achievers</u>									
Struggling	No								0
	Yes	1	1		1				3
Supported from High Achievers	No								0
	Yes	1	1		1	1	1	1	6
Rely on High Achievers	No								0
	Yes				1				1
<u>All students</u>									
Accepted Feedback	No	1	1		1				3
	Yes			1	1	1	1	1	5
Collaborative/ Respectful	No				1				1
	Yes	1	1	1		1	1	1	7

4.6.3. Analysis Summary

In this section, summary of interview analysis results is presented, followed by summary of observation data analysis results, and triangulation of both. Finally, triangulation of quantitative and qualitative data analysis is presented.

4.6.3.1. Summary of Interview Data Analysis

Using thematic analysis approach with the help of NVivo12® to analyze the responses of teachers for the interview questions, the analysis resulted in the emergence of six major themes, which are: Perception of the Concept of Critical Thinking, Perception of the Concept of Collaborative Working, Learning Environment, Impact of Collaborative Working on Developing Critical Thinking, Collaborative Learning Challenges, and Recommendations to Improve Collaborative Learning. Learning Environment included three sub-themes, which are: Teacher Role, Students Preferences, and Students Communication.

Under the first theme “Perception of the Concept of Critical Thinking”, all teachers provided very similar definitions of the CT concept and provided the importance of learning CT as a skill and improving it. Teachers defined CT as the ability to think out of the box, evaluate, analyze,

question, and judge wisely and differently. Most of teachers described CT as an intellectual skill that needs to be learned and improved.

For the second theme “Perception of the Concept of Collaborative Working”, teachers defined CW as an essential learning method for improving student’s performance and benefiting students mentally and emotionally.

The third theme “Learning Environment” presented teachers explanation of their roles in collaborative working to make it run effectively and efficiently, their students’ preferences and communication. Teachers indicated that their main role is to facilitate everything to students, encourage them, and support them emotionally. They also apply different strategies like differentiation in applying tasks among students based on their levels, encouraging them into team work, and assessing their performance. In terms of the second sub-theme “student preferences”, the majority of students preferred to work collaboratively. However, some high achiever students did not prefer working in groups because they feel low achiever students hinder their learning process. The third sub-theme “students communication” covered the fact that low achiever students struggle during accomplishing the tasks given to them as they find difficulties in communication with higher achiever students.

The fourth theme “Impact of Collaborative Working on Developing Critical Thinking” discussed perceptions of teachers and students about the impact of collaborative working on developing critical thinking among high school students. They acknowledged CW vital role in developing CT in different aspects like improving ability to express one’s opinion and share ideas, learning to listen to others’ opinions, progression academic level, ability to debate and discuss, and responsibility.

Under the fifth theme “Collaborative Learning Challenges”, teachers mentioned the challenges associated with the application of collaborative learning. These challenges included the misdistribution of tasks based on student academic levels. Another challenge was students’ acceptance of others’ differences.

Last theme “Recommendations to Improve Collaborative Learning” included teachers’ recommendations to make collaborative learning process more effective. Teachers recommended

applying collaborative working in younger ages. They also mentioned that they need more resources and more guidance.

4.6.3.2. Summary of Observation Data Analysis

All in all, the eight observed classes achieved the majority of collaborative work tasks. It was found that percentage of achievement ranged between %84 to 100% across classes. This indicates that collaborative work is greatly applied in classes. The observations analysis results showed that in all classes, all group members actively contributed to the end of the lesson, promoting critical thinking and problem solving. Group members exchanged and negotiated between them their ideas, strategies, tools and/or resources to carry out the activity. Members were focused, demonstrated self-control to balance active listening and participation. Every member thought over what he/she had been doing and considered alternative ways of doing it. Everyone questioned the way others did something and tried to think of a better way. Every member listened attentively and understood what others said. Every member assessed own and others' performance with objectivity and accuracy. The teacher asked useful questions to deepen the study. Everyone learned values and new concepts through collaborative learning. In 87.5% (7 classes), group members gave each other support and constructive feedback. The teacher facilitated teacher-student interaction. The teacher promoted class discussion. The teacher demonstrated deep enough knowledge on the various topics. In 75% (6 classes), the group provided constructive Feedback. The group accepted critical comments from other groups. The teacher shared information that he/ she collected. The teacher gave helpful feedback to others. In 62.5% (5 classes), everyone preferred collaborative learning on individual learning. In 50% (4 classes), when the group was having trouble, other groups spontaneously helped.

The researcher also added observer reflections about classes, which indicated that the majority of students who were judgmental/ critical thinker were only high achievers. The majority of below average achievers got support from higher achievers. Most students were collaborative and respectful. Some low achiever students were struggling during tasks and some relied totally on higher achievers to help them. Majority of teachers tried their best to facilitate everything to

students. However, there seem to be a misdistribution of tasks among students based on their academic levels. Most teachers were not knowledgeable, as they did not share data collected or link current topic with previous ones.

4.7. Triangulation of Findings

The present study aimed to study the CL impacts on students CT skills in two private high schools in Abu Dhabi. The researcher applied two methods to collect qualitative data: semi-structured interviews (n=8 English teachers) and observation lists (n=8 classes), and one method to collect quantitative data, which is the questionnaire (n=240 students) to explore a range of experiences and perceptions. The researcher followed Denzin's multiple triangulation approach, which encourages several methods to collect data (Denzin, 1970).

The first stage of the study focused on understanding the perceptions of students about CL impacts on developing CT skills, and included questionnaire data collection with students from two private high schools in Abu Dhabi, with a collection of their demographics: gender and nationality. The second stage involved semi-structured interviews, followed by a lesson observation checklist with English teachers to share their perceptions and practices in CL in their classes.

Questionnaire data were analyzed using IBM SPSS software, interviews data were coded and thematically analyzed using Nvivo, while lesson observation checklist data were analyzed using MS Excel. The questionnaire data explored students' perceptions about CL impacts in the form of their individual role, teacher role, and group influence on developing their CT skills. The questionnaire data were supplemented by the interviews and lesson observation checklist data. Each research method exposed a distinct reality. This mixed-method research was insightful. It permitted cross-validation, and facilitated exploration of the different perceptions and practices of students and their teachers.

Questionnaire analysis findings revealed that CL was preferred by the majority of students. That is, students believed that it improved their communication skills and created better opportunities

for their learning. The results were similar for all students' groups; i.e., whether males and females or Emiratis and expatriates.

Results of analyzing qualitative data show high level of consistency between interview and observation checklist data analysis results. Both methods showed that CL is similarly perceived by teachers and students, and greatly applied in the classes. They all know its importance and the necessity of effectively applying it in classes in order to improve students' critical thinking. This is supported by the questionnaire findings.

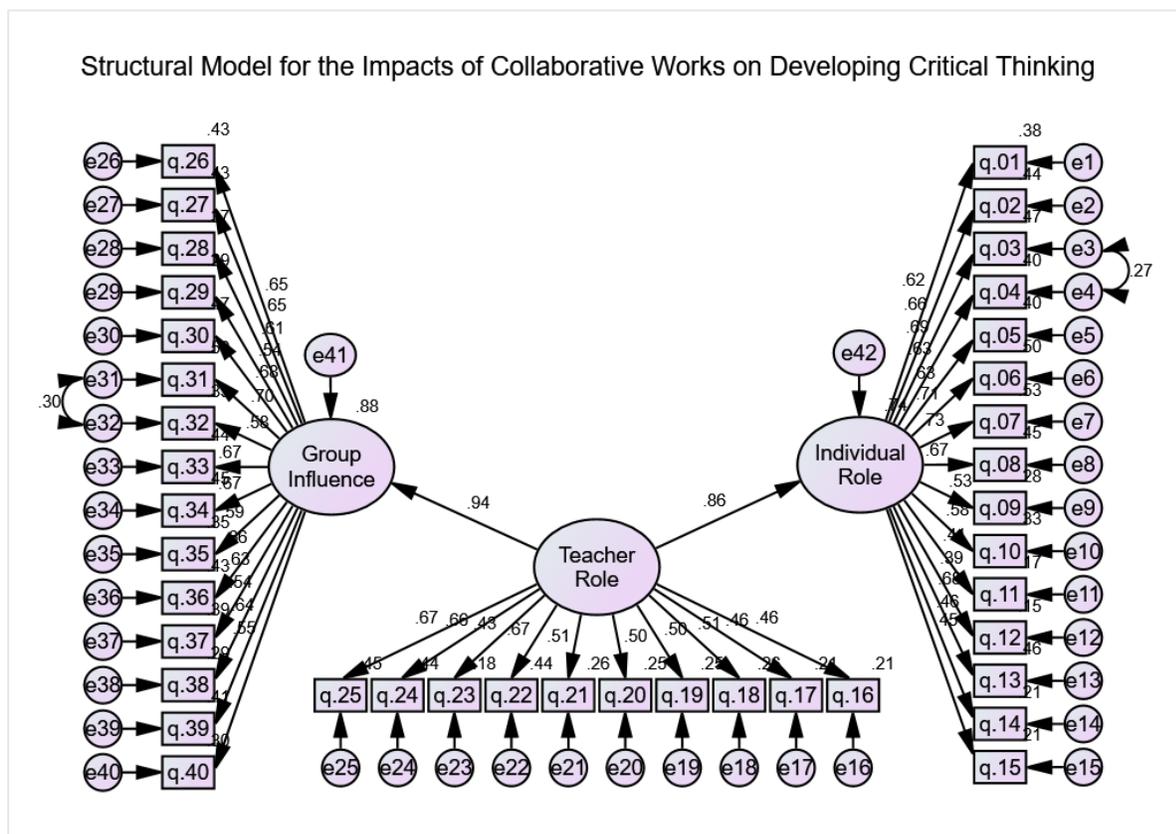


Figure 4.8: Structural model for the impacts of CL on developing CT

CHAPTER 5: CONCLUSION

5.1. Overview of the Chapter

This chapter presents the outcomes and conclusions drawn from the analysis of the gathered data using quantitative method through survey questionnaire and qualitative methods through interviews and lesson observations. The researcher tries in this chapter to concentrate on the outcomes drawn from the findings of the survey questionnaires that show students' perspectives and the findings of the interviews with teachers and lesson observations in relation to the impact of collaborative learning on enhancing critical thinking skills that was addressed in both quantitative and qualitative methods of the study, by referring back to the research questions of the thesis stated in chapter one by linking the concepts of collaborative learning and critical thinking that are found in the theoretical framework. The research questions include remarkable topics that concern educators in the UAE and worldwide.

5.2. Summary of the Study

A self-administered 40-item questionnaire was designed and administered to 240 students from two private high schools in Abu Dhabi. A total of eight teachers of eight classes participated in the study to answer the interview questions, and to be observed by the researcher for the lesson observations checklist, used in the current study to collect the qualitative data.

As the current research aims to understand and interpret the impact of collaborative learning in developing students critical thinking i through teachers' and students' perspectives, the study followed a mixed methods design which used both quantitative and qualitative approaches. Three different data collection methods were employed for the data collection: structured quantitative questionnaire, structured, open-ended interviews, and lesson observation checklist.

The aim was to collect information from different sources that complement and support each other.

The quantitative and qualitative data analysis stressed on the importance of collaborative learning in enhancing students' critical thinking. With a thorough research of the study, it was found that collaborative learning has reported significantly high scores in promoting critical thinking among high school students. This suggests the importance of collaborative learning in class in enhancing students' critical thinking skills.

Several studies showed the importance of collaborative learning in enhancing critical thinking skills. Critical thinking is a notion that should be used in many other conditions than learning that involve information processing, problem solving, decision making and learning, as it permits to make a distance from some beliefs and prejudices and to recognize logical conclusions of what is done (Bjelanovic Dijanic, 2011). Collaborative learning, on the other hand, should have a group goal and individual responsibility to be useful (Slavin, R, 2014). This study tries to investigate the impact of collaborative learning in enhancing critical thinking skills among high school students in Abu Dhabi. The outcomes direct to plausible answers to the main research question which is framed by the purpose of the study and the five sub questions connected to it.

As mentioned in the above studies, being a critical thinker is hard but the outcomes are worth the effort. There is a difference between success and failure while being a critical thinker. Thus, it is not about finding cracks in other's argument. Critical thinkers are capable of making better strategic and more useful decisions based on proves and not by presumptions are made. In fact, being a critical thinker can distinguish a person from others as he/she seeks out both sides of every argument which would surely widen out a research to include other's perspectives.

This capability helps a person slow down before fully being committed with a question. It supports a person to create novel approaches, to anticipate what might occur in the future, to infer better decisions. As a skill, critical thinking can be learned and if a person is already a critical thinker, then he/she can always become better.

It is also obvious that previous studies focused on varied techniques in critical thinking skills as critical thinking is more than just a notion. It is a real-life example upon which can be constructed successfully and effectively in problem solving skills that are highly vital in the

workplace. The application of reasoning enable better decision-making by improving how a person elucidate point of views and problem solving practices.

Critical Thinking is a principle that is often misjudged as criticism where it actually concentrates on the ability to pursue reasonable steps and come at a proper inference. Through Critical Thinking, the awareness of different methods to a problem is one of the essential learning evolvments beside the ability to test those methods critically instead of depending on norms, and defining other valuable ways to inevitably raise a person's success.

Furthermore, critical thinking teaches a person how to prioritize his/her time and goals by analyzing what is vital to the procedure. It also enables a person to see beyond, not criticize, cultural standards and learn how to comprehend other factors that can impact on decision-making and create effective teamwork and leadership.

Moreover, critical thinking can make a person more useful communicator by transforming discussed ideas consistently and relevantly to support points easier. In addition, a person will become more reasoned and balanced problem solver, as he/she will learn the two types of reasoning – inductive and deductive – which is more appropriate in making effective and logical decisions instead of emotions or instinct.

The outcomes of these theories are supportive for this study to illustrate how varied methods of critical thinking skills in English language classroom affect learner's performance and learning improvement, and to what level learners are involved in these methods. All in all, it is predicted that this research would examine the implied methods applied on the existing critical thinking skills.

In summary, to offer a better understanding of the impact of collaborative learning on the development of critical thinking among high school students in Abu Dhabi in specific and the UAE in general, more research should be done at the early stages of the students' lives examining their childhood experiences and early experiences of collaborative learning involvement. This would help to explore the impact on students' critical thinking development through collaborative learning. Also, more studies focusing on exploring a student's critical thinking through collaborative learning in public schools should be conducted.

Teachers play a vital role in facilitating all the tasks to students. Students prefer working in teams rather than working individually but some low achievers struggle to communicate with their peers from high achievers. Collaborative learning is viewed by teachers to be effective to all students, as it helps to enhance students' thinking ability because of the exchange of ideas and opinions even though it is accompanied with some challenges such as hard and inappropriate tasks for some low achievers. On the other hand, higher achievers would work faster if worked on their own and this shows the importance of differentiation within the collaborative learning activity. Finally, it is recommended to support teachers' need to improve the applicability of collaborative learning to effectively develop critical thinking, and offer more resources and real advisors to teachers to help them in doing collaborative work with students.

5.3. Key Findings

The main purpose of the research study is to investigate and explore the impact of collaborative learning on developing critical thinking of high school students, specifically in Abu Dhabi in UAE. The guiding question for this study was: What are the impacts of collaborative learning in developing critical thinking among high school students in Abu Dhabi? which is investigated and explored by answering the following sub-questions:

- ❖ **RQ1:** What are the impacts of collaborative learning in developing critical thinking among high school students (in existing literature)?
- ❖ **RQ2:** How do high school students (in two private schools in Abu Dhabi) perceive the role of collaborative learning in developing critical thinking (explored through survey)?
- ❖ **RQ3:** What are the perceptions of the English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students (explored through semi-structured interview)?
- ❖ **RQ4:** How are teachers and students in English lessons (in two private schools in Abu Dhabi) experience the impacts of collaborative learning in developing critical thinking (explored through observation)?

This chapter presents the outcomes and conclusions drawn from the analysis of the gathered data using quantitative method through survey questionnaire and qualitative methods through interviews and lesson observations. The researcher tries in this chapter to concentrate on the outcomes drawn from the findings of the survey questionnaires that show students' perspectives and the findings of the interviews with teachers and lesson observations in relation to the impact of collaborative learning on enhancing critical thinking skills that was addressed in both quantitative and qualitative methods of the study, by referring back to the research questions of the thesis stated in chapter one by linking the concepts of collaborative learning and critical thinking that are found in the theoretical framework. The research questions include remarkable topics that concern educators in the UAE and worldwide.

The findings, presented in the chapter four, will be discussed in this chapter and will be linked to the literature. Based on that, a set of recommendations will be presented. This chapter is divided into three sections: discussion, recommendations, and conclusion.

5.4. Discussion of Key Findings

This section draws on the data collected from the different instruments to foreground the critical findings of the study. It discusses aspects of the findings of the research in relation to the literature, and offers possible interpretations. The presentation of the discussion will be divided into four sections based on the four research questions.

5.4.1. Research Question 1

What are the impacts of collaborative learning in developing critical thinking among high school students (in existing literature)?

A number of studies have found that collaborative learning activities induced critical thinking (Bonk & Smith, 1998; Thayer-Bacon, 2000; Heyman, 2008). Paul, R. W. (1992) argued that collaborative learning help develop critical thinking skills that allow learners to analyze arguments and make decisions. Also, Bailin et al. (1999) stated that students with critical thinking skills contribute widely in group tasks. It was found that critical thinkers who are inquisitive, attentive to opportunities, self-confident in their own abilities and demonstrate other characteristics of critical thinkers are the most likely people to contribute in tasks that require teamwork. Collaborative language learning has considerable advantages in many aspects for the development of language development, such as the development and teaching of the English language. Jia (2003) states that maximizing learners' communication demands through interaction and collaboration leads to effective language learning. Moreover, interaction encourages learners to negotiate for more input and produce comprehensible output (Crandall, 1999). As learners endeavor to communicate with each other in group settings, they will be provided opportunities to improve their listening comprehension and oral practice. According to (Mart, 2018), it is noteworthy to mention that communicative competence is necessary for language learning.

5.4.2. Research Question 2

How do high school students (in two private schools in Abu Dhabi) perceive the role of collaborative learning in developing critical thinking (explored through survey)?

The survey results revealed that the majority of students in the two private high schools in Abu Dhabi perceive collaborative learning in three dimensions: individual role, teacher role, and group influence. They believe that they have an important role in collaborative learning in order to be effective in developing their critical thinking skills. They understand the importance of collaborative learning and they apply its practices including working in groups, respecting and accepting all group members, question and think about the way other group members think, and they work effectively in the group. This goes on the same direction with what was mentioned in chapter two about utilization of techniques and pedagogy to enhance critical thinking in k-12.

That is, in a study by Andreas Schleicher (2010), children aged 3 to 10 have utilized critical thinking skills to express needs and emotions, solve problems by demonstrating curiosity, approach and respond to people beyond primary caregivers, interact with objects in the environment, demonstrate positive view of self, participate in group activities using interaction skills, demonstrate understanding of others' emotions and viewpoints, identify where help is required and so forth.

According to Halx & Reybold (2005) and Arend (2009), educators are required to behave as facilitators to allow students to engage in critical thinking for discussion and motivate them for a free thinking procedure, as well as to motivate their realization that thinking critically does not always complete with an accurate answer, but instead completes in more questions or varied assessments of the subject. From the perspectives of students, their teachers engage in collaborative learning by encouraging them to work collaboratively, to discuss topics in class, to think critically and solve problems, to be independent and creative, to reflect on students' actions to see whether they could improve on what they did. Students also showed that their teachers monitor/control students' interaction in class, ask useful questions to deepen the study and link to previous topics, use differentiated questions that fit students' abilities and learning style, share information that was collected from the group, and treat students fairly and equally. This indicates that the educator role is not only to facilitate students' engagement in critical thinking activities, but also to motivate them through asking questions, sharing information, and fair treatment to students which makes them like to and prefer the collaborative learning method.

Finally, students showed the importance of collaborative learning and its significant impact in developing their critical thinking skills. The survey analysis findings showed that learning collaboratively with the group improved the content and the structure of students' writing, made them think differently/think critically, more creative, learn new ideas, solve problems faster, learn values and new concepts, and learn and grow from other differences. Students' responses also revealed that collaborative learning changed the way they looked at themselves, made them feel better student, increased their desire to learn, made their communication skills better, encouraged them to be more responsible, and created better opportunities for learning. So, the impact of collaborative learning is not only on critical thinking, rather it adds more personal values and improves students' mentality and psychological state. As pointed out in chapter two,

Crandall (1999) stated that interaction encourages learners to negotiate for more input and produce comprehensible output. As learners endeavor to communicate with each other in group settings, they will be provided opportunities to improve their listening comprehension and oral practice. According to (Mart, 2018), it is noteworthy to mention that communicative competence is necessary for language learning.

5.4.3. Research Question 3

What are the perceptions of the English teachers (in two private schools in Abu Dhabi) on the impacts of collaborative learning in developing critical thinking among high school students (explored through semi-structured interview)?

This research question was answered by using the findings of the semi-structured interviews responses analysis, which revealed six main themes in interviews responses from eight English teachers. The main themes included: (1) teachers' perceptions on critical thinking, (2) teachers' perceptions on collaborative learning, (3) learning environment, (4) impact of collaborative learning on developing critical thinking, (5) collaborative learning challenges, and (6) recommendations to improve collaborative learning.

5.4.3.1. Teachers' Perceptions on Critical Thinking

The concept of critical thinking has been defined by many researchers. According to Paul, R., Elder, L., & Bartell, T. (1997), critical thinking is not a novel practice or notion. Elder (2007) stated that people who think regularly try to live reasonably. Schafersman (1991: p.3) suggests that critical thinking means right deliberating in the search of linked and credible knowledge about the universe. Raymond S. Nickerson (1987) offered a holistic list of capabilities and behaviors which describe critical thinkers. They are individuals who:

- ❖ Arrange ideas and express them precisely and consistently

- ❖ Expel verdicts if there's no adequate prove to upkeep a decision
- ❖ Can learn alone and have continuous curiosity in doing so
- ❖ Try to predict the possible outcomes of optional behaviors
- ❖ Enforce problem-solving procedures in autonomy

In the current study, the participating English teachers provided several definitions of critical thinking. A general definition was: “it is the ability to think out of the box, evaluate, analyze, question, and judge wisely and differently.” Most teachers described it as: “an intellectual skill that needs to be learned and improved.” They also believed that a critical thinker is able to tackle situations outside school, think deeply, and seek evidence to support assumptions. Another definition was that “it is knowledge sharing and self-expression.” Some teachers defined it as “having the ability to think, make inferences about new ideas they get, analyze and evaluate information.”

5.4.3.2. Teachers’ Perceptions on Collaborative Learning

As illustrated in chapter two, Collaborative learning is an approach in which two or more students attempt to learn something by working together (Dillenbourg, P., 1999). In this study interview, teachers defined it as working in a group (team) to accomplish certain objectives or tasks, helping each other. Most of them believe that in collaborative learning, students share ideas and knowledge, caring about and support each other. Another definition stated that “it is an exercise that let students communicate efficiently with each other, as high achievers will help low achievers, and hence all students will benefit mentally and emotionally.” In chapter two, collaborative learning was defined as another skill within the 21st century skills that has proven to be beneficial in everyday life. This skill helps individuals to work effectively and respectfully in diverse scenarios, be adaptable to accomplish a common objective and value each team member’s individual contributions. To illustrate, the importance of collaboration, (Steve Jobs, 2008) believed that great things in business are never done by one person, they are done by a team of people.

5.4.3.3. Learning Environment

This theme included other three sub-themes related to the teacher role, student preference, and students' communication. Teacher role included facilitating everything to students by explaining what to do, making each group role clear, giving examples, and encouraging/motivating them. Teachers use different strategies to motivate their students; i.e., presentations, crosswords, discussions, bonus marks, letting students choose their preferred team, etc. This confirms what was mentioned in the literature, the educator's part as facilitator also motivates peer assessment procedure, even in youngsters as it supports students to learn proper answers to opposing assessments and point of views (Henderson-Hurley & Hurley, 2013; Tsai et al., 2013).

The second sub-theme was related to students' preferences; teachers stated that the majority of students prefer working in teams rather than individually. However, some high achievers' students prefer to work individually because they believe that low and average achievers hinder their learning. As mentioned in the literature, letting students work in a comfortable environment improves their desire to learn. In language learning, the creation of a relaxed learning setting holds a significant place as anxiety may hinder learning. Collaborative language learning has the potential to mitigate stress and anxiety and offers a relaxed learning atmosphere. Such an environment provides opportunities to build social skills and strategies that help students succeed (Weimer, M., 2009). Learners interact with their peers feeling comfortable and confident. In other words, face-to-face interaction with each other reduces their pressure and encourages them for better achievement.

The third sub-theme is related to students' communication. Teachers mentioned that low achiever students struggle to communicate, which indicate that teachers need to pay more attention to students' mental ability. This confirms the educators' role discussed in the literature.

5.4.3.4. Impact of Collaborative Learning on Developing Critical Thinking

The fourth theme concerns the CL contribution to helping students engage and improve their skills. Teachers elaborated that CL has a vital role in developing their CT different aspects like improving ability to express one's opinion and share ideas, learning to listen to others' opinions, progression academic level, ability to debate and discuss, and responsibility. With regard to the literature, collaborative learning provides higher achievement level for students. It creates a learning environment which motivates learners to try to make sense of what they are learning (Mart, C.T., 2011). Also, in addition to teacher's explanations or presentations, learners attempt to achieve a common objective through working in groups. As a result of working together to achieve their goal, learners exchange ideas and elaborate their knowledge, and try to arrive at shared understanding by providing meaningful conversations about the problem and elaborated explanations.

5.4.3.5. Collaborative Learning Challenges

From the point of view of teachers, although applying CL is important and beneficial, it is accompanied with some challenges; mainly, it is the misdistribution of tasks based on their abilities and academic acquisition ability. This seems to be correlated with what has been mentioned in chapter two about critical perspectives of CL. That is, some of the criticisms leveled about collaborative learning include:

- ❖ Making group members responsible for each other's learning might put too much pressure on certain pupils. In mixed-ability groups, stronger students are frequently left to instruct lesser pupils and undertake the majority of the work.
- ❖ In mixed groups, gender imbalances might be a source of worry.
- ❖ Group learning promotes primarily lower-level thinking while disregarding the methods required for critical and higher-order thinking.

5.4.3.6. Recommendations to Improve Collaborative Learning

From the responses of participating teachers in the interview, there were some recommendations that teachers provided to improve the CL methods in the UAE schools. They recommended to apply CL in the younger age so students can get used to it, and providing more resources and real advisors for teachers to help them apply CL with students effectively. Smith & Szymanski (2013) stated that the creation of professional learning communities grants educators to think critically about the ways they are utilizing to teach, and setting good starting points for suggestions about involving critical thinking abilities in the classroom. Kokkidou (2013) recorded the growth in innovativeness, performance, and literacy within the limits of music, as well as increasing the awareness of the musical environment in which students and educators live. She found that by challenging students to think critically, educators found themselves thinking more critically about their experience of the subject. Choy and Cheah (2009) and Rowles, Morgan, Burns, and Merchant (2013) all discovered that educators' sense that while teaching critical thinking skills, their teaching can be developed by having a more standard concept of what critical thinking includes which would grant educators at all stages to improve their existing curriculum with lessons and activities that to increase critical thinking among students and educators. Therefore, it is recommended to improve the existing curriculums for students and teachers to apply CL efficiently and effectively.

5.4.4. Research Question 4

How are teachers and students in English lessons (in two private schools in Abu Dhabi) experience the impacts of collaborative learning in developing critical thinking (explored through observation)?

The analysis of the lesson observation checklist revealed that between 84% and 100% of CL activities were achieved in the eight participating classes, indicating that CL is applied in classes to a great extent. Moreover, the results of the lesson observation checklist confirmed the results

of the questionnaire and interview analyses. The large majority of students in the English lesson were respectful and accepted other members in their teams, they helped their team members, and shared information nicely. This was also a significant result in questionnaire analysis. Another result from the lesson observation checklist analysis was that students participated in discussions and questioned other students' ideas.

Also, teachers performed their roles effectively; they facilitated everything, asked useful questions, linked between the new lesson and the old lessons, etc. however, some teachers did not demonstrate enough knowledge of the subject. Also, some drawbacks were observed, including the fact that some students did not like the collaborative learning due to the difficulty of their tasks. In other words, some students were low achievers and struggled to perform their tasks and some of them only relied on high achievers. This indicates the need to modify the tasks to allow all levels of students to participate. In addition, teachers need more training and guidance on how to apply CL more effectively. As mentioned in chapter two, it is recommended that more concentration would be on involving students in collaborative learning in English classroom to enhance their critical thinking skills which became the main concern of the Ministry of Education in the UAE to foster critical thinking skills in English language in schools. Further, teachers are being trained to enhance their skills with much efforts in order to enable them to prepare their students to meet the 21st century skills requirements.

5.5. Recommendations

Based on the discussion of the findings of the current research study, the researcher presents several recommendations. First, more research should be done at different levels of education including early stages of their educational life studying their childhood experiences and early experiences of collaborative learning. Second, more research that aims to explore student characteristics (ability, race, ethnicity, gender and socioeconomic status) should be done in the UAE in more schools. This would help to discover the impact on student critical thinking development through collaborative learning. Third, a greater understanding of students critical thinking development could be achieved by carrying out some types of testing with scores given

to students in different time points to be able to measure the effect of collaborative learning on the development of students' critical thinking.

Moreover, more attention should be given to teachers' recommendations provided in the interviews. They recommended that collaborative learning should be applied in all schools of the UAE, at early stages of education, such that more research can be done on all educational levels. Also, teachers need to be supported by real advisors with real solutions to their problems in applying collaborative learning. This was discussed in Chapter 1, as stated by Smith & Szymanski (2013), K-12 educators and administrators are forced to teach and follow the requirements as commanded by the standardized assessments in to follow up with other countries, and consequently, many students are leaving the K-12 education system missing the critical thinking skills that are essential to succeed in higher education or at the workplace. Moreover, students who move to higher education and the workforce are missing intellectual and practical skills and comprehending of what the notion is (Rowles et al., 2013; Choy & Cheah, 2009; Henderson Hurley & Hurley, 2013). Most of the time, critical thinking has been ignored at the elementary, middle, and high school stages where students are taught how to learn and how to analyse data. Also, a study reported that a deep concentration on improving critical thinking skills in K-12 can increase academic strength and raise the results on the standardized assessments (VanTassel-Baska, Bracken, Feng, & Brown (2009); McCollister & Saylor (2010).

5.6. Implications

Based on the findings of this research study, the researcher provides the following implications to be made for following studies.

- In terms of lack of empirical studies on impacts of collaborative working on developing critical thinking in schools of UAE in general, the research was conducted on an exploratory basis as it investigated the perceptions of teachers and students to obtain understanding of the topic. However, further research to study the effectiveness of

collaborative learning implementation could follow to add to the literature. In addition, testing the impact of collaborative learning on student critical thinking development in the UAE schools would be of a significant role.

- Findings of qualitative data analysis showed some discrepancy between lesson observations and researcher reflections with regard to differentiating tasks based on students' capabilities. Therefore, further qualitative research could be helpful to specify areas of discrepancy.
- It would be valuable to investigate the impact of different variables including gender, age, location and qualifications on collaborative learning applications in different schools.
- The current study did not focus on specific skills, rather only on critical thinking as a comprehensive intellectual skill. The study could be repeated with a focus on specific skills such as: reading, writing, listening, and speaking.
-

5.7. Limitations

The study will conduct suitable procedures throughout the research, but it will encounter few limitations that might affect its results. First of all, the study covers two private schools in Abu Dhabi in the UAE; therefore, it could not be generalized to all schools in the UAE of different sectors. Secondly, the instruments used in the research and their validation might be limited to the study. Furthermore, the survey which will be conducted as part of the quantitative research method in the study might offer an effective insight in teaching critical thinking in English language through collaborative working, but some changes may happen in the point of views of the partakers over time. Moreover, the accurate given data that will be granted by the entrants in the qualitative section of the research will be specific to Abu Dhabi and can't be applied to other entrants in the other emirates. In addition, the outcomes of this research might be limited to the purposes of this study and might not precisely reflect the problem being investigated if the partakers of the study fail to answer the questions with sincerity. Also, the position of the researcher as a teacher could be a challenge for the study; hence, she would challenge herself during the lesson observations and interviews to act as a neutral learner to avoid any effects on the partakers' willingness to share their experiences.

5.8. Scope for Further Study

In terms of exploring the impact of collaborative learning on developing critical thinking, there seem to be lack of researches that have been done in the UAE; so, the current research study only focused on teacher and student roles. Further research on the impact of collaborative learning on developing critical thinking and a consideration of parents is needed as it would surely add to the findings if the current study. Perceptions of parents about the impacts of collaborative learning on aspects of critical thinking development they can notice on their children would be of a great addition to the study findings.

5.9. Concluding Note

As noted, learning strategies have been developing in the UAE; yet, there is still long way to develop higher quality strategies. Evaluation and investigation based on research that provide evidence is vital for the development process. The current study identified the key problems teachers face in implementing collaborative learning strategies; i.e., lack of guidance and support to teachers and real solutions to the challenges they face in implementing collaborative learning strategies.

This study helped to implant the first bases of investigating the impact of implementing collaborative learning on developing critical thinking. This gives a green light to researchers to add further investigate the topic. As a final thought, “the function of education is to teach one to think intensively and to think critically. Intelligence plus character – that is the goal of true education” (Martin Luther King, Jr.).

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Appendix

Appendix A

Consent Letter (Students)

Dear Student,

Thank you very much for agreeing to take part in this study. The purpose of this study is to understand the impacts of collaborative works in developing critical thinking among high school students in two private schools in Abu Dhabi.

All information collected will be anonymous and totally confidential. Your name is not required, neither any other distinguishing factor will be identifiable or referred to. By the end of the study, the original data will be destroyed.

Your participation in the study is completely voluntary, so you may discontinue your participation in it at any time. If you have any inquiry about the study, please direct it to my email address 20170351@student.buid.ac.ae or contact my Director of Study Dr. Solomon David at his email address: Solomon.david@buid.ac.ae. You also have a right to be informed of the completed results of the study and to be acquainted of final publications. If this would be of interest to you please sign this form.

Signature: _____ Date: _____

Thank you again, your time and information are much appreciated.

Maryana AlRabadi

Appendix B
Consent Letter (Teachers)

Dear Teacher,

Thank you very much for agreeing to take part in this study. The purpose of this study is to understand the impacts of collaborative works in developing critical thinking among high school students in two private schools in Abu Dhabi.

All information collected will be anonymous and totally confidential. Your name is not required, neither any other distinguishing factor will be identifiable or referred to. By the end of the study, the original data will be destroyed.

Your participation in the study is completely voluntary, so you may discontinue your participation in it at any time. If you have any inquiry about the study, please direct it to my email address 20170351@student.buid.ac.ae or contact my Director of Study Dr. Solomon David at his email address: Solomon.david@buid.ac.ae. You also have a right to be informed of the completed results of the study and to be acquainted of final publications. If this would be of interest to you please sign this form.

Signature: _____ Date: _____

Thank you again, your time and information are much appreciated.

Maryana AlRabadi

Appendix C

Permission to Conduct a Study

05 / 9 / 2019

RE: Permission to Conduct a Research Study

Dear Mrs. Fadia AlKulla:

I am writing to request permission to conduct a research study at your school. I am currently enrolled in the Doctor of Education program at The British University In Dubai University in Dubai, UAE, and I am in the process of writing my Doctor's Thesis " The Impacts of Collaborative Works on Developing Critical Thinking: A Study among High School Students in Selected Private Schools in Abu Dhabi".

I hope that the school administration will allow me to recruit 120 students, boys and girls of grades 10 to 12 from the school to anonymously complete a 2-page questionnaire (copy enclosed). Due to the nature of the study as well, I hope to recruit 4 English teachers for an interview (copy enclosed). In addition, I need to attend 3 lessons of each level (10 – 11 – 12) for classroom observation for the purpose of the study. Interested students, who volunteer to participate, will be given a consent form to be signed by them (copy enclosed) and returned to the primary researcher at the beginning of the survey process. Teachers who volunteer to participate will also be given consent forms to be signed and returned to the primary researcher (copy enclosed).

If approval is granted, student participants will complete the survey in their classroom during the school time. The survey process should take no longer than 20 minutes. Also, the interview questions for the English teachers should take no longer than 20 minutes for each participant. The survey and interview results will be pooled for the thesis project and individual results of this study will remain absolutely confidential and anonymous. Should this study be published, only pooled results will be documented. No costs will be incurred by either your school or the individual participants.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call next week and would be happy to answer any questions or concerns that you may have at that time. You may contact me at my email address: 20170351@student.buid.ac.ae, or contact my Director of Study Dr. Solomon David at his email address: Solomon.david@buid.ac.ae

If you agree, kindly sign below and return the signed form in the enclosed self-addressed envelope. Alternatively, kindly submit a signed letter of permission on your school's letterhead acknowledging your consent and permission for me to conduct this study at your school.

Sincerely,

Maryana Ghazi AlRabadi

Approved by:

Fadia Jibneel

Signature



Date

10/9/2019

Appendix D

Permission to Conduct a Study

05 / 9 / 2019

RE: Permission to Conduct a Research Study

Dear Ms. Stephanie Halaseh:

I am writing to request permission to conduct a research study at your school. I am currently enrolled in the Doctor of Education program at The British University In Dubai University in Dubai, UAE, and I am in the process of writing my Doctor's Thesis " The Impacts of Collaborative Works on Developing Critical Thinking: A Study among High School Students in Selected Private Schools in Abu Dhabi".

I hope that the school administration will allow me to recruit 120 students, girls of grades 10 to 12 from the school to anonymously complete a 2-page questionnaire (copy enclosed). Due to the nature of the study as well, I hope to recruit 4 English teachers for an interview (copy enclosed). In addition, I need to attend 3 lessons of each level (10 – 11 – 12) for classroom observation for the purpose of the study. Interested students, who volunteer to participate, will be given a consent form to be signed by them (copy enclosed) and returned to the primary researcher at the beginning of the survey process. Teachers who volunteer to participate will also be given consent forms to be signed and returned to the primary researcher (copy enclosed).

If approval is granted, student participants will complete the survey in their classroom during the school time. The survey process should take no longer than 20 minutes. Also, the interview questions for the English teachers should take no longer than 20 minutes for each participant. The survey and interview results will be pooled for the thesis project and individual results of this study will remain absolutely confidential and anonymous. Should this study be published, only pooled results will be documented. No costs will be incurred by either your school or the individual participants.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call next week and would be happy to answer any questions or concerns that you may have at that time. You may contact me at my email address: 20170351@student.buid.ac.ae, or contact my Director of Study Dr. Solomon David at his email address: Solomon.david@buid.ac.ae

If you agree, kindly sign below and return the signed form in the enclosed self-addressed envelope. Alternatively, kindly submit a signed letter of permission on your school's letterhead acknowledging your consent and permission for me to conduct this study at your school.

Sincerely,

Maryana Ghazi AlRabadi

Approved by:

Sister Stephanie Halasek

Signature

Sister

Date

12/9/2019



Appendix E

Survey Questionnaire

Survey on the Impacts of Collaborative work on Developing Critical Thinking

Dear student,

The objective of this study is to determine how collaborative working in English classroom affect students' critical thinking skills. The information acquired for the purpose will be kept confidential and used for data analysis purposes only. The findings will be used to create awareness on how collaborative working in English classroom influences students' critical thinking skills which will help English teachers to determine how they will manage, act, and form strategies based on this concept. Therefore, I will gladly appreciate your co-operation to make this study successful.

Section 1: Demographic Information

Gender Male Female

Nationality Emirati Expatriate

Section 2: Indicate the extent to which you agree or disagree with the following statements.

Factors	Collaborative Working in Relation to Critical Thinking		Strongly Disagree ← → Strongly Agree				
			1	2	3	4	5
Individual Role	1	I understand the importance of working in groups.	1	2	3	4	5
	2	I get along with other team members in my group.	1	2	3	4	5
	3	I respect / accept every team member in my group who is from different culture and background.	1	2	3	4	5
	4	I respect / accept every team member in my group who has different ability and learning style.	1	2	3	4	5
	5	I respect / accept different opinions in my group.	1	2	3	4	5
	6	I question the way other team members in my group do and try to think of a better way.	1	2	3	4	5
	7	I feel that my ideas and suggestions are important to others.	1	2	3	4	5

	8	I feel excited and satisfied to work with my group.	1	2	3	4	5
	9	I like to help my team members in my group.	1	2	3	4	5
	10	I like to think differently in doing activities in my group.	1	2	3	4	5
	11	I like to share ideas and suggestions in my group.	1	2	3	4	5
	12	I really enjoy working collaboratively with other students.	1	2	3	4	5
	13	I prefer to have a leadership role in my group.	1	2	3	4	5
	14	I am an important member in my group.	1	2	3	4	5
	15	I work hard and effectively in my group.	1	2	3	4	5
Teacher Role	16	My teacher encourages us to work collaboratively in class.	1	2	3	4	5
	17	My teacher encourages us to discuss topics in class.	1	2	3	4	5
	18	My teacher encourages us to think critically and solve problems.	1	2	3	4	5
	19	My teacher encourages us to be independent and creative.	1	2	3	4	5
	20	My teacher encourages us to reflect on our actions to see whether we could improve on what we did.	1	2	3	4	5
	21	My teacher monitors / controls students' interaction in class.	1	2	3	4	5
	22	My teacher asks useful questions to deepen the study and link to previous topics.	1	2	3	4	5
	23	My teacher uses differentiated questions that fit students' abilities and learning style.	1	2	3	4	5
	24	My teacher shares information that was collected from the group.	1	2	3	4	5
	25	My teacher treats us fairly and equally.	1	2	3	4	5
	26	Working collaboratively with my group improves the content and the structure of my writing.	1	2	3	4	5
	27	Working collaboratively with my group makes me think differently.	1	2	3	4	5
	28	Working collaboratively with my group makes me think critically.	1	2	3	4	5
	29	Working collaboratively with my group makes me more creative.	1	2	3	4	5

Group Influence	30	Working collaboratively with my group makes me learn new ideas.	1	2	3	4	5
	31	Working collaboratively with my group makes me solve problems faster.	1	2	3	4	5
	32	Working collaboratively with my group makes me learn values and new concepts.	1	2	3	4	5
	33	Working collaboratively with my group makes me learn and grow from other differences.	1	2	3	4	5
	34	Working collaboratively with my group changes the way I look at myself.	1	2	3	4	5
	35	Working collaborative with my group makes me feel better student.	1	2	3	4	5
	36	Working collaboratively with my group increases my desire to learn.	1	2	3	4	5
	37	Working collaboratively with my group is better than working individually.	1	2	3	4	5
	38	Working collaboratively with my group makes my communication skills better.	1	2	3	4	5
	39	Working collaboratively with my group encourages me to be more responsible.	1	2	3	4	5
40	Working collaboratively with my group creates better opportunity for my learning.	1	2	3	4	5	

Appendix F

Interview Questions

Semi-Structure Interview Questions

1. What does the term critical thinking mean to you?

I think it is a systematic way of thinking where an individual is capable of making good evaluation.

2. What is critical thinking from the point of view of high school students and teachers?

To think out of the box. Use ability to evaluate and judge taking into consideration several elements.

3. What do you think is collaborative working?

Participating, sharing, and coordinating in one team for one certain objective.

4. Have you engaged students in collaborative working? How often?

Yes. About two to three times a week.

5. What is your idea of an ideal collaborative learning activity?

Students are challenged to achieve a certain goal. The instructions should be made clear. The rubric must be shared with students. Students are aware of the teacher's expectations. The outcome is assessed accordingly.

6. What do you do during the collaborative learning activity? Explain your role during the activity?

I act as a facilitator mainly. I simplify the instructions to make the task easy for the students.

7. Can you share an example of a situation in which teamwork enhanced students' critical thinking skills?

In one example, when analyzing Martin Luther King's famous speech students had to analyze one passage excerpt from the speech, below-level students were helped from the above level students to make judgments and evaluation.

8. Do you think that your students prefer working on their own or as a team? Why or Why not?

They do like collaborative learning more than individual learning.

9. What do your students like most about collaborative learning?

Participating and working together. Sharing ideas and discussions. Receiving support.

10. Have your students struggled to communicate with their peers while working together? Explain.

Yes but not very often. This is because of lack of motivation few students have.

11. How would you handle it if there was a problem with a member of your team not doing his / her fair share or work in class?

1. I would ask him / her to do the work.

2. I would tell the leader.

3. I would help if he / she needs help.

12. What type of support does a team of students need to function as efficiently as possible in class and in school?

They need teachers' support.

13. How is collaborative learning helping high school students to develop critical thinking?

Students depend on each other. They all share the responsibility towards achieving a goal.

14. What are your students' views towards collaborative learning in developing critical thinking?

Most students prefer working in groups as it's much easier for them. I guess students would appreciate what group work does with them. Share ideas and eventually listen / respect / judge other's ideas.

15. What do you think are teachers' perspectives on collaborative learning in developing critical thinking among high school students?

It's essential to high school students as they will help them prepare for their undergraduate study.

This skill is vital to high school students.

16. How can you assess your students' learning through collaborative working?

Following group work rubric.

17. What are the challenges that you may find in students' collaborative learning?

Sometimes low achievers seem not interested to work or some students seem not interested with the given topic.

18. What strategies would you use to motivate your students to work as a team?

Bonus credits. Have students choose their own teams. Tell them about the benefits of group work.

19. What are the impacts of collaborative learning in developing critical thinking among high school students from your point of view?

Students take responsibility of their own learning and are engaged in discussions to perform a certain task. Thus, they depend on each other's success.

20. Do you have any other information you like to share related to this study?

Are there any negative effects of group work?

Appendix G

Lesson Observation Checklist

Checklist for classroom observation of students' collaborative works in English classroom: checklist is inspired by the proposals of Ruth Levine (2008) and Patrick Griffin and Michael Francis (2018).

	Date: 17 / 10 / 2019		
	Time: 1:00 PM		
	Grade: 12		
Statement	Field Notes Box	Yes	No
1. All group members actively contributed to the end of the lesson.	All group members were working in groups and doing their tasks until the end of the lesson.	√	
2. Group members gave each other support and constructive feedback.	Every member was trying to give useful suggestions and support.	√	
3. When the group was having trouble, other groups spontaneously helped.	Each group was helping its group members and other group member as well.	√	
4. Each group promotes critical thinking and problem solving.	The group members were encouraged to think critically and solve the problem of the given task.	√	
5. Everyone seems thinking critically when he/she works in group.	Everyone was trying to think, analyze, and share the outcomes.	√	
6. Group members exchanged and negotiated between them their ideas, strategies, tools and/or resources to carry out the activity.	Group members were sharing their ideas, the most appropriate steps to follow, and solutions.	√	
7. The group provides constructive Feedback	When the teacher asked each group to give their feedback, it seemed constructive and helpful to others.	√	
8. The group accepted critical comments from other groups.	Every group was opened to other groups' comments and suggestions.	√	
9. Every member in the team was focused during team activities.	Everyone was focusing on doing his part even the ones who are less working.		

		√	
10. Every member demonstrates good self-control to balance active listening and participation.	Everyone was listening to the teacher and to other members as well as participating in doing their given tasks.	√	
11. Every member thinks over what he/she has been doing and consider alternative ways of doing it.	Everyone including low achievers were trying to find ways to solve the given task.	√	
12. Everyone questions the way others do something and tries to think of a better way.	Everyone was trying to give better solutions during the activity.	√	
13. Every member listens attentively and understands what others say.	Everyone was listening carefully to others answers.	√	
14. Every member Assesses own and others' performance with objectivity and accuracy.	Students were able to give their feedback about themselves and others in objectivity and precisely.	√	
15. The teacher facilitates teacher-student interaction.	The teacher worked hard to make sure that every step in the instruction is clear to everyone.	√	
16. The teacher promotes class discussion.	The teacher was encouraging students to participate in the discussion.	√	
17. The teacher asks useful questions to deepen the study.	The teacher was asking helpful questions that facilitate the lesson.	√	
18. The teacher shares information that he / she collected.	The teacher shared students work at the end of the task.	√	
19. The teacher demonstrates deep enough knowledge on the various topics.	The teacher is knowledgeable with the content of the subject.	√	
20. The teacher gives helpful feedback to others.	Teacher's feedback was rigorous and constructive.	√	
21. Everyone learns values and new concepts through collaborative learning.	Students seemed to learn a lot by the end of the lesson.		

		√	
22. Everyone develops their critical thinking skills through collaborative learning.	Everyone learned different ideas by the end of the lesson.	√	
23. Everyone solves problems through collaborative learning.	New solutions were demonstrated to every member in each group.	√	
24. Everyone is encouraged to be creative through collaborative learning.	The teacher mainly played a vital role in encouraging everyone to be creative with their work.	√	
25. Everyone prefers collaborative learning on individual learning.	Some high achievers seemed disturbed to help low achievers during the collaborative learning activity and they were claiming that it is better to work alone instead.		√

Observer's reflection

- ✓ The teacher was doing her best to facilitate everything for the students. She distributed differentiated tasks according to students' levels.
- ✓ Some students proved to be critical thinkers especially the high achievers but the researcher has not noticed the willingness to support low achievers.
- ✓ Low achievers were somehow struggling doing their tasks during the activity. Much of their support come from the high achievers, and it seems that they rely on them for help.
- ✓ Everyone accepted others feedback (peer feedback).
- ✓ All in all, students were collaborative and respectful.

Appendix H

Correlations

Correlations (Part 1)

Pearson Correlation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	.352**	.458**	.358**	.361**	.438**	.545**	.353**	.256**	.388**	.213**	.246**	.436**	.224**	.347**	.313**	.319**	.239**	.260**	.304**
2	.352**	1	.583**	.488**	.396**	.488**	.512**	.401**	.447**	.398**	.160**	.202**	.409**	.285**	.248**	.313**	.259**	.218**	.199**	.247**
3	.458**	.583**	1	.585**	.464**	.461**	.497**	.461**	.370**	.393**	.224**	.276**	.454**	.291**	.248**	.300**	.254**	.217**	.282**	.300**
4	.358**	.488**	.585**	1	.472**	.516**	.456**	.430**	.355**	.343**	.248**	.218**	.405**	.226**	.236**	.238**	.246**	.211**	.240**	.270**
5	.361**	.396**	.464**	.472**	1	.465**	.434**	.492**	.319**	.268**	.243**	.231**	.433**	.289**	.299**	.274**	.277**	.312**	.235**	.241**
6	.438**	.488**	.461**	.516**	.465**	1	.555**	.535**	.339**	.360**	.305**	.206**	.479**	.284**	.273**	.318**	.357**	.216**	.227**	.326**
7	.545**	.512**	.497**	.456**	.434**	.555**	1	.511**	.381**	.454**	.231**	.185**	.459**	.375**	.405**	.292**	.314**	.199**	.268**	.306**
8	.353**	.401**	.461**	.430**	.492**	.535**	.511**	1	.402**	.391**	.275**	.203**	.431**	.251**	.266**	.243**	.276**	.331**	.222**	.260**
9	.256**	.447**	.370**	.355**	.319**	.339**	.381**	.402**	1	.342**	.287**	.196**	.329**	.299**	.148**	.180**	.173**	.261**	.265**	.082**
10	.388**	.398**	.393**	.343**	.268**	.360**	.454**	.391**	.342**	1	.266**	.253**	.358**	.210**	.305**	.234**	.303**	.176**	.245**	.195**
11	.213**	.160**	.224**	.248**	.243**	.305**	.231**	.275**	.287**	.266**	1	.322**	.314**	.203**	.137**	.142**	.179**	.196**	.172**	.205**
12	.246**	.202**	.276**	.218**	.231**	.206**	.185**	.203**	.196**	.253**	.322**	1	.332**	.232**	.193**	.228**	.263**	.160**	.224**	.271**
13	.436**	.409**	.454**	.405**	.433**	.479**	.459**	.431**	.329**	.358**	.314**	.332**	1	.328**	.278**	.406**	.327**	.238**	.326**	.331**
14	.224**	.285**	.291**	.226**	.289**	.284**	.375**	.251**	.299**	.210**	.203**	.232**	.328**	1	.275**	.273**	.233**	.159**	.310**	.217**
15	.347**	.248**	.248**	.236**	.299**	.273**	.405**	.266**	.148**	.305**	.137**	.193**	.278**	.275**	1	.137**	.202**	.145**	.160**	.263**
16	.313**	.313**	.300**	.238**	.274**	.318**	.292**	.243**	.180**	.234**	.142**	.228**	.406**	.273**	.137**	1	.319**	0.113	.183**	.194**
17	.319**	.259**	.254**	.246**	.277**	.357**	.314**	.276**	.173**	.303**	.179**	.263**	.327**	.233**	.202**	.319**	1	.187**	.209**	.252**
18	.239**	.218**	.217**	.211**	.312**	.216**	.199**	.331**	.261**	.176**	.196**	.160**	.238**	.159**	.145**	.113	.187**	1	.316**	.169**
19	.260**	.199**	.282**	.240**	.235**	.227**	.268**	.222**	.265**	.245**	.172**	.224**	.326**	.310**	.160**	.183**	.209**	.316**	1	.214**
20	.304**	.247**	.300**	.270**	.241**	.326**	.306**	.260**	.082**	.195**	.205**	.271**	.331**	.217**	.263**	.194**	.252**	.169**	.214**	1
21	.332**	.382**	.357**	.352**	.253**	.290**	.343**	.296**	.235**	.327**	.165**	.302**	.398**	.295**	.276**	.277**	.156**	.208**	.185**	.256**
22	.427**	.415**	.336**	.370**	.386**	.450**	.451**	.359**	.237**	.404**	.214**	.206**	.426**	.278**	.389**	.276**	.293**	.333**	.282**	.323**
23	.207**	.251**	.239**	.206**	.269**	.249**	.253**	.242**	.171**	.243**	.107**	.110**	.262**	.175**	.302**	.191**	.303**	.123**	.198**	.291**
24	.272**	.372**	.320**	.328**	.355**	.408**	.353**	.376**	.234**	.332**	.286**	.192**	.398**	.184**	.279**	.260**	.230**	.378**	.317**	.299**
25	.368**	.383**	.352**	.306**	.347**	.391**	.423**	.297**	.308**	.375**	.299**	.236**	.450**	.255**	.330**	.265**	.314**	.327**	.292**	.366**
26	.405**	.407**	.361**	.375**	.386**	.386**	.387**	.312**	.208**	.384**	.324**	.244**	.377**	.299**	.298**	.337**	.349**	.319**	.319**	.330**
27	.267**	.306**	.353**	.303**	.301**	.373**	.280**	.468**	.292**	.337**	.293**	.203**	.379**	.285**	.248**	.355**	.312**	.368**	.318**	.311**
28	.278**	.258**	.351**	.360**	.335**	.311**	.279**	.418**	.302**	.351**	.298**	.326**	.376**	.277**	.197**	.226**	.246**	.342**	.434**	.294**
29	.267**	.243**	.311**	.259**	.285**	.248**	.312**	.306**	.283**	.349**	.228**	.339**	.424**	.165**	.245**	.213**	.195**	.283**	.334**	.331**
30	.364**	.300**	.338**	.275**	.372**	.395**	.383**	.400**	.297**	.384**	.324**	.233**	.340**	.328**	.267**	.240**	.300**	.427**	.326**	.279**
31	.360**	.366**	.354**	.308**	.347**	.379**	.317**	.365**	.285**	.329**	.231**	.356**	.420**	.299**	.233**	.290**	.287**	.390**	.339**	.266**
32	.328**	.357**	.316**	.190**	.270**	.352**	.307**	.327**	.266**	.397**	.236**	.355**	.363**	.242**	.223**	.193**	.255**	.367**	.259**	.244**
33	.277**	.367**	.342**	.269**	.283**	.342**	.266**	.298**	.341**	.293**	.217**	.339**	.401**	.285**	.244**	.286**	.308**	.327**	.376**	.312**
34	.412**	.426**	.377**	.292**	.327**	.409**	.396**	.286**	.220**	.340**	.205**	.309**	.384**	.284**	.344**	.337**	.287**	.307**	.302**	.302**
35	.317**	.311**	.378**	.325**	.322**	.336**	.280**	.384**	.213**	.283**	.347**	.389**	.440**	.206**	.184**	.312**	.277**	.351**	.310**	.290**
36	.322**	.252**	.340**	.315**	.405**	.320**	.273**	.400**	.263**	.244**	.201**	.254**	.359**	.231**	.253**	.281**	.211**	.411**	.340**	.363**
37	.355**	.309**	.302**	.261**	.269**	.333**	.313**	.324**	.266**	.315**	.239**	.281**	.368**	.268**	.270**	.290**	.251**	.375**	.409**	.330**
38	.303**	.278**	.366**	.202**	.301**	.269**	.271**	.363**	.280**	.217**	.209**	.241**	.320**	.234**	.206**	.274**	.228**	.353**	.305**	.239**
39	.223**	.241**	.224**	.237**	.311**	.307**	.243**	.329**	.305**	.232**	.329**	.352**	.379**	.315**	.268**	.301**	.233**	.388**	.361**	.370**
40	.305**	.292**	.232**	.178**	.264**	.285**	.340**	.296**	.263**	.240**	.286**	.271**	.300**	.298**	.296**	.213**	.183**	.285**	.255**	.268**

** Correlation is significant at the 0.01 level (2-tailed).

Correlations (Part 2)

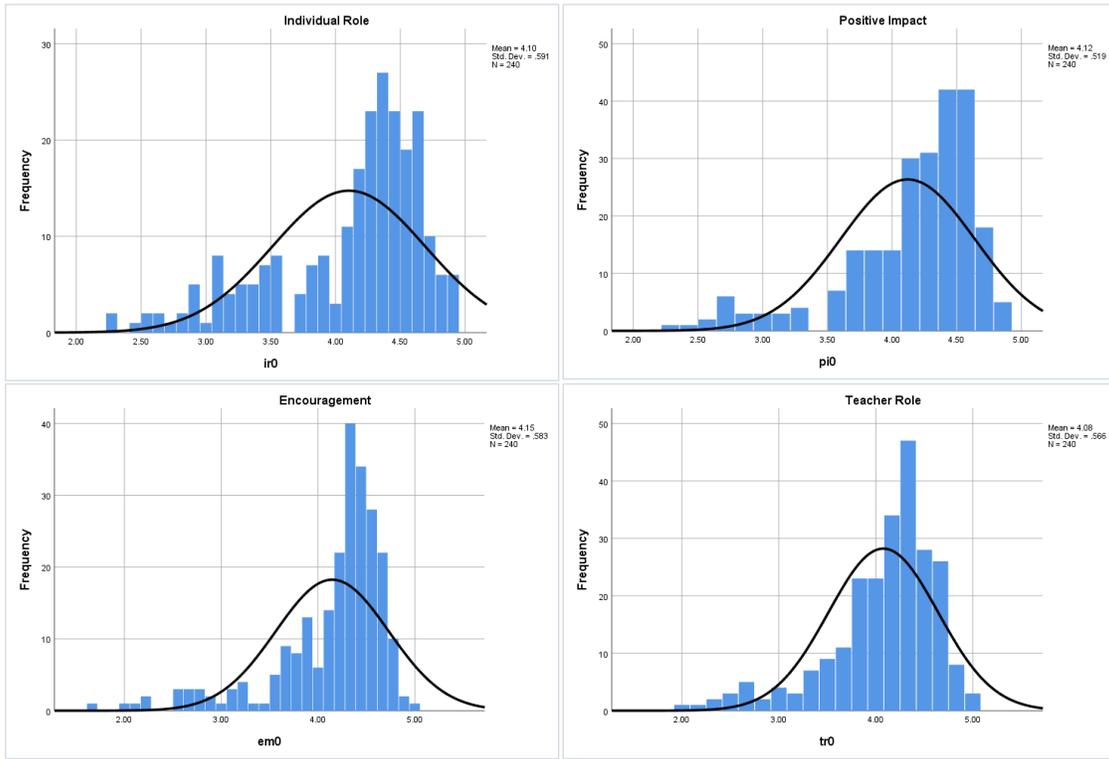
Pearson Correlation

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	.332**	.427**	.207**	.272**	.368**	.405**	.267**	.278**	.267**	.364**	.360**	.328**	.277**	.412**	.317**	.322**	.355**	.303**	.223**	.305**
2	.382**	.415**	.251**	.372**	.383**	.407**	.306**	.258**	.243**	.300**	.366**	.357**	.367**	.426**	.311**	.252**	.309**	.278**	.241**	.292**
3	.357**	.336**	.239**	.320**	.352**	.361**	.353**	.351**	.311**	.338**	.354**	.316**	.342**	.377**	.378**	.340**	.302**	.366**	.224**	.232**
4	.352**	.370**	.206**	.328**	.306**	.375**	.303**	.360**	.259**	.275**	.308**	.190**	.269**	.292**	.325**	.315**	.261**	.202**	.237**	.178**
5	.253**	.386**	.269**	.355**	.347**	.386**	.301**	.335**	.285**	.372**	.347**	.270**	.283**	.327**	.322**	.405**	.269**	.301**	.311**	.264**
6	.290**	.450**	.249**	.408**	.391**	.386**	.373**	.311**	.248**	.395**	.379**	.352**	.342**	.409**	.336**	.320**	.333**	.269**	.307**	.285**
7	.343**	.451**	.253**	.353**	.423**	.387**	.280**	.279**	.312**	.383**	.317**	.307**	.266**	.396**	.280**	.273**	.313**	.271**	.243**	.340**
8	.296**	.359**	.242**	.376**	.297**	.312**	.468**	.418**	.306**	.400**	.365**	.327**	.298**	.286**	.384**	.400**	.324**	.363**	.329**	.296**
9	.235**	.237**	.171**	.234**	.308**	.208**	.292**	.302**	.283**	.297**	.285**	.266**	.341**	.220**	.213**	.263**	.266**	.280**	.305**	.263**
10	.327**	.404**	.243**	.332**	.375**	.384**	.337**	.351**	.349**	.384**	.329**	.397**	.293**	.340**	.283**	.244**	.315**	.217**	.232**	.240**
11	.165**	.214**	.107**	.286**	.299**	.324**	.293**	.298**	.228**	.324**	.231**	.236**	.217**	.205**	.347**	.201**	.239**	.209**	.329**	.286**
12	.302**	.206**	.110**	.192**	.236**	.244**	.203**	.326**	.339**	.233**	.356**	.355**	.339**	.309**	.389**	.254**	.281**	.241**	.352**	.271**
13	.398**	.426**	.262**	.398**	.450**	.377**	.379**	.376**	.424**	.340**	.420**	.363**	.401**	.384**	.440**	.359**	.368**	.320**	.379**	.300**
14	.295**	.278**	.175**	.184**	.255**	.299**	.285**	.277**	.165**	.328**	.299**	.242**	.285**	.284**	.206**	.231**	.268**	.234**	.315**	.298**
15	.276**	.389**	.302**	.279**	.330**	.298**	.248**	.197**	.245**	.267**	.233**	.223**	.244**	.344**	.184**	.253**	.270**	.206**	.268**	.296**
16	.277**	.276**	.191**	.260**	.265**	.337**	.355**	.226**	.213**	.240**	.290**	.193**	.286**	.337**	.312**	.281**	.290**	.274**	.301**	.213**
17	.156**	.293**	.303**	.230**	.314**	.349**	.312**	.246**	.195**	.300**	.287**	.255**	.308**	.287**	.277**	.211**	.251**	.228**	.233**	.183**
18	.208**	.333**	.123**	.378**	.327**	.319**	.368**	.342**	.283**	.427**	.390**	.367**	.327**	.307**	.351**	.411**	.375**	.353**	.388**	.285**
19	.185**	.282**	.198**	.317**	.292**	.319**	.318**	.434**	.334**	.326**	.339**	.259**	.376**	.302**	.310**	.340**	.409**	.305**	.361**	.255**
20	.256**	.323**	.291**	.299**	.366**	.330**	.311**	.294**	.331**	.279**	.266**	.244**	.312**	.302**	.290**	.363**	.330**	.239**	.370**	.268**
21	1	.354**	.119	.349**	.245**	.355**	.295**	.338**	.248**	.329**	.388**	.305**	.339**	.324**	.340**	.277**	.312**	.280**	.353**	.244**
22	.354**	1	.350**	.539**	.508**	.434**	.443**	.364**	.281**	.343**	.424**	.305**	.335**	.469**	.280**	.417**	.332**	.241**	.310**	.285**
23	.119	.350**	1	.291**	.407**	.255**	.265**	.231**	.165**	.243**	.258**	.206**	.213**	.195**	.096	.288**	.192**	.101	.308**	.194**
24	.349**	.539**	.291**	1	.482**	.319**	.495**	.481**	.318**	.394**	.412**	.288**	.374**	.360**	.304**	.511**	.384**	.282**	.449**	.347**
25	.245**	.508**	.407**	.482**	1	.479**	.482**	.329**	.321**	.435**	.451**	.347**	.421**	.424**	.303**	.459**	.334**	.267**	.388**	.307**
26	.355**	.434**	.255**	.319**	.479**	1	.420**	.316**	.401**	.443**	.444**	.401**	.414**	.558**	.365**	.385**	.433**	.304**	.361**	.322**
27	.295**	.443**	.265**	.495**	.482**	.420**	1	.391**	.342**	.419**	.452**	.307**	.454**	.321**	.381**	.494**	.438**	.323**	.459**	.286**
28	.338**	.364**	.231**	.481**	.329**	.316**	.391**	1	.317**	.448**	.400**	.343**	.388**	.341**	.376**	.454**	.412**	.349**	.422**	.284**
29	.248**	.281**	.165**	.318**	.321**	.401**	.342**	.317**	1	.238**	.343**	.366**	.397**	.343**	.467**	.324**	.373**	.295**	.290**	.377**
30	.329**	.343**	.243**	.394**	.435**	.443**	.419**	.448**	.238**	1	.603**	.502**	.457**	.471**	.328**	.404**	.435**	.419**	.469**	.367**
31	.388**	.424**	.258**	.412**	.451**	.444**	.452**	.400**	.343**	.603**	1	.581**	.480**	.536**	.384**	.468**	.409**	.409**	.396**	.363**
32	.305**	.305**	.206**	.288**	.347**	.401**	.307**	.343**	.366**	.502**	.581**	1	.432**	.400**	.306**	.260**	.375**	.347**	.343**	.313**
33	.339**	.335**	.213**	.374**	.421**	.414**	.454**	.388**	.397**	.457**	.480**	.432**	1	.545**	.408**	.378**	.421**	.335**	.436**	.371**
34	.324**	.469**	.195**	.360**	.424**	.558**	.321**	.341**	.343**	.471**	.536**	.400**	.545**	1	.436**	.468**	.351**	.262**	.348**	.436**
35	.340**	.280**	.096**	.304**	.303**	.365**	.381**	.376**	.467**	.328**	.384**	.306**	.408**	.436**	1	.379**	.318**	.402**	.410**	.384**
36	.277**	.417**	.288**	.511**	.459**	.385**	.494**	.454**	.324**	.404**	.468**	.260**	.378**	.468**	.379**	1	.409**	.329**	.495**	.348**
37	.312**	.332**	.192**	.384**	.334**	.433**	.438**	.412**	.373**	.435**	.409**	.375**	.421**	.351**	.318**	.409**	1	.348**	.440**	.366**
38	.280**	.241**	.101**	.282**	.267**	.304**	.323**	.349**	.295**	.419**	.409**	.347**	.335**	.262**	.402**	.329**	.348**	1	.367**	.401**
39	.353**	.310**	.308**	.449**	.388**	.361**	.459**	.422**	.290**	.469**	.396**	.343**	.436**	.348**	.410**	.495**	.440**	.367**	1	.368**
40	.244**	.285**	.194**	.347**	.307**	.322**	.286**	.284**	.377**	.367**	.363**	.313**	.371**	.436**	.384**	.348**	.366**	.401**	.368**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Appendix I

Histograms of EFA Four Factors



Appendix J

Histograms of CEL adapted Questionnaire Factors

