EFFECTS OF BLENDED LEARNING ON READING COMPREHENSION
AND CRITICAL THINKING SKILLS OF UNDERGRADUATE ESL
STUDENTS

SAEIDEH BOLANDIFAR

FPP 2017 6
EFFECTS OF BLENDED LEARNING ON READING COMPREHENSION
AND CRITICAL THINKING SKILLS OF UNDERGRADUATE ESL
STUDENTS

By

SAEIDEH BOLANDIFAR

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirement for the Degree of Doctor of Philosophy

May 2017
All material contained within the thesis, including without limitation text, logos, icons, photographs and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia
DEDICATION

This dissertation is specially dedicated to my dearest and beloved:

Parents, Asghar  Zahra
Spouse, Mohammad
Brothers, Ehsan  Kamran
Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

EFFECTS OF BLENDED LEARNING ON READING COMPREHENSION AND CRITICAL THINKING SKILLS OF UNDERGRADUATE ESL STUDENTS

By

SAEIDEH BOLANDIFAR

May 2017

Chair: Nooreen Noordin, PhD
Faculty: Educational Studies

Blended learning, as a combination of face-to-face instruction and computer-mediated instruction, has achieved an unprecedented popularity in higher education today. This is due to the fact that blended learning attempts to take advantage of the strengths of both learning environments. The present study therefore aimed to investigate the effects of blended learning instruction on Malaysian undergraduate ESL students’ reading comprehension and critical thinking skills.

The study adopted a quasi-experimental design featuring a nonrandomized control group, pretest–posttest design which included a mid-test as well. A total of 42 undergraduate ESL students were assigned to two groups, namely the blended learning (experimental) group and the traditional face-to-face learning (control) group. The blended learning method of instruction using the course management system, Moodle was conducted as the research treatment for the blended learning group while the face-to-face instruction was conducted for the traditional face-to-face learning group. Both quantitative and qualitative methods were applied to collect and analyze data. The TOEFL reading comprehension test, the Cornell Critical Thinking Test (CCTT, Level X), and the blended learning perception questionnaire were utilized to assess students’ reading comprehension, critical thinking skills, and the perception of blended learning implementation respectively. A content analysis method utilizing Newman, Webb, and Cochrane's (1995) critical thinking model was employed to analyze the students’ discussion transcripts. In addition, semi-structured interviews were also conducted.

The Repeated Measures ANOVA, Analysis of Covariance (ANCOVA), Independent Sample t-test, and chi-square test were used to analyze the data. The findings of the study revealed that both the blended learning group and the traditional face-to-face
learning group improved greatly in their reading comprehension and critical thinking skills across the three testing periods of pre-tests, mid-tests, and post-tests. However, a statistically significant difference was found in reading comprehension and critical thinking skills between the blended learning and the traditional face-to-face learning groups. Findings from the blended learning perception questionnaire revealed highly positive attitudes toward the implementation of blended learning. The content analysis of the discussion transcripts indicated that the depth of critical thinking ratios of the blended learning group and the traditional face-to-face learning group improved significantly in which there was a significant difference between the depths of critical thinking ratios of the two groups. Qualitatively, the results showed that the students found blended learning as a new, effective, useful, and interesting method of instruction in improving their reading comprehension and critical thinking skills.

These findings demonstrated that the proposed blended learning method of instruction was more effective in improving reading comprehension and critical thinking skills of undergraduate ESL students than the traditional face-to-face instruction. This method of instruction offers an alternative teaching and learning approach with an effective use of Moodle-supported strategy instruction which supports the constructivist theory of learning in order to enhance the reading comprehension and critical thinking skills of students.
Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KESAN PEMBELAJARAN TERADUN KE ATAS KEMAHIRAN KEFAHAMAN MEMBACA DAN KEMAHIRAN BERFIKR SECARA KRITIS PELAJAR PRASISWAZAH BAHASA INGGERIS SEBAGAI BAHASA KEDUA (ESL)

Oleh

SAEIDEH BOLANDIFAR

Mei 2017

Pengerusi: Nooreen Noordin, PhD
Fakulti: Pengajian Pendidikan

Pembelajaran teradun sebagai gabungan arahan bersemuka dan arahan melalui komputer telah mencapai populariti dalam pendidikan tinggi hari ini. Ini kerana pembelajaran teradun cuba mengambil kesempatan di atas kekuatan kedua-dua persekitaran pembelajaran. Oleh itu, kajian ini bertujuan untuk mengkaji kesan arahan pembelajaran teradun ke atas kemahiran kefahaman membaca dan kemahiran berfikir secara kritis pelajar.


iii

Dapatan menunjukkan bahawa kaedah pembelajaran teradun yang disarankan adalah lebih efektif dalam memperbaiki kefahaman membaca dan kemahiran berfikir secara kritis pelajar pra-siswa ESL dari pembelajaran tradisional bersemuka. Kaedah pengajaran ini menawarkan satu pendekatan pengajaran dan pembelajaran alternatif dengan satu penggunaan efektif arahan strategi yang disokong oleh Moodle yang menyokong teori pembelajaran konstruktivis untuk meningkatkan lagi kefahaman membaca dan kemahiran berfikir secara kritis para pelajar.
ACKNOWLEDGEMENTS

In the Name of Allah, the Most Compassionate, the Most Merciful.

First, I would like to express my thanks and deepest gratitude to my supervisor, Dr. Nooreen Noordin for her invaluable help, guidance, supervision, and constant encouragement throughout my dissertation.

A special thanks to my co-supervisors, Assoc. Prof. Dr. Ahmad Fauzi Mohd Ayub and Prof. Dr. Shameem Rafik-Galea, for their ongoing support, academic guidance, and suggestions during this research. Additionally, I would like to thank the panel of experts for their invaluable time given to validate the research instruments.

I wish to extend my sincere gratitude to all students who participated in this study for their cooperation in the completion of this project. I would like to acknowledge that this research study is partially supported by the Graduate Putra Grant awarded by the Research Management Centre, Universiti Putra Malaysia.

Finally, I am indebted to my lovely parents, husband, and brothers for their constant support, encouragement, and advice during my candidature. Without their support this accomplishment would have been impossible.
I certify that a Thesis Examination Committee has met on 16 May 2017 to conduct the final examination of Saeideh Bolandifar on her thesis entitled "Effects of Blended Learning on Reading Comprehension and Critical Thinking Skills of Undergraduate ESL Students" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

Members of the Thesis Examination Committee were as follows:

Nur Surayyah Madhubala Abdullah, PhD
Senior Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Chairman)

Arshad bin Abd Samad, PhD
Associate Professor
Faculty of Educational Studies
Universiti Putra Malaysia
(Internal Examiner)

Ain Nadzimah binti Abdullah, PhD
Associate Professor
Faculty of Modern Languages and Communication
Universiti Putra Malaysia
(Internal Examiner)

Bronwyn T. Williams, PhD
Professor
University of Louisville
United States
(External Examiner)

NOR AINI AB. SHUKOR, PhD
Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 6 July 2017
This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Nooreen Noordin, PhD
Senior Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Chairman)

Ahmad Fauzi Mohd Ayub, PhD
Associate Professor
Faculty of Educational Studies
Universiti Putra Malaysia
(Member)

Shameem Rafik-Galea, PhD
Professor
Faculty of Modern Languages and Communication
Universiti Putra Malaysia
(Member)

ROBIAH BINTI YUNUS, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia
Date:
Declaration by graduate student

I hereby confirm that:

- this thesis is my original work;
- quotations, illustrations and citations have been duly referenced;
- this thesis has not been submitted previously or concurrently for any other degree at any other institutions;
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- written permission must be obtained from supervisor and the office of Deputy Vice-Chancellor (Research and Innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software.

Signature: .............................. Date: ..............................

Name and Matric No.: Saeideh Bolandifar, GS34114
Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

Signature: ______________________
Name of Chairman of Supervisory Committee: ________________

Signature: ______________________
Name of Member of Supervisory Committee: ________________

Signature: ______________________
Name of Member of Supervisory Committee: ________________
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>i</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>v</td>
</tr>
<tr>
<td>APPROVAL</td>
<td>vi</td>
</tr>
<tr>
<td>DECLARATION</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xiv</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xvi</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xviii</td>
</tr>
</tbody>
</table>

## CHAPTER

### 1 INTRODUCTION

1.1 Background of the study | 1
1.2 Statement of the Problem | 5
1.3 Objectives of the Study | 7
1.4 Research Questions and Hypotheses | 8
1.5 Significance of the Study | 9
1.6 Scope and Limitations | 10
1.7 Definition of Terms | 11
  1.7.1 Blended Learning | 11
  1.7.2 Moodle | 12
  1.7.3 Traditional Face-to-Face Learning | 12
  1.7.4 Reading Comprehension | 12
  1.7.5 Critical Thinking Skills | 13

### 2 LITERATURE REVIEW

2.1 Introduction | 14
2.2 Blended Learning | 14
2.3 Advantages of Blended Learning | 17
2.4 Blended Learning in Higher Education in Malaysia | 21
2.5 Blended Learning in Second Language Acquisition | 22
2.6 The Course Management System, Moodle | 24
2.7 FL/L2 Reading Process Models | 26
  2.7.1 Bottom-up Model | 26
  2.7.2 Top-Down Model | 27
  2.7.3 Interactive Model | 28
2.8 Reading comprehension | 28
2.9 Reading Comprehension in the Context of Malaysia | 29
2.10 Strategies for Teaching Reading Comprehension | 30
2.10.1 Cognitive, Metacognitive, and Social/Affective Strategies 31
2.10.2 Scaffolding 32
2.10.3 Cooperative Learning 33
2.10.4 Questioning 33

2.11 Critical Thinking 34
2.12 Critical Thinking in Malaysian Educational System 37
2.13 Strategies for Teaching Critical Thinking 38
  2.13.1 Socratic Questioning 38
  2.13.2 Group Discussion and Collaborative Learning 39
  2.13.3 Active Learning 39
  2.13.4 Reading 40
  2.14 Reading Comprehension and Critical thinking Skills 40
  2.15 Implementation of Blended Learning on Reading Comprehension and Critical Thinking Skills 41
  2.16 Theories Related to the Study 43
    2.16.1 Constructivism Theory of Learning 43
    2.16.2 Connectivism theory of Learning 45
    2.16.3 Schema Theory 46
  2.17 Conceptual Framework of the Study 48
  2.18 Summary 49

3 METHODOLOGY 50
  3.1 Introduction 50
  3.2 Research Design 50
  3.3 Sampling 53
  3.4 Duration of the Study 54
  3.5 Instrumentation 54
    3.5.1 Demographic Profile 54
    3.5.2 Test of English as a Foreign Language (TOEFL) 55
    3.5.3 Cornell Critical Thinking Test (Level X) 55
    3.5.4 The Blended Learning Perception Questionnaire 57
    3.5.5 Content Analysis Method 58
    3.5.6 Interview 60
  3.6 Pilot Study 62
    3.6.1 Creating the Moodle Website 62
    3.6.2 Moodle Design 62
    3.6.3 Piloting Procedures 63
3.7 Validity and Reliability of the Instruments
   3.7.1 Validity 65
   3.7.2 Reliability 67
3.8 Data Collection Procedure 68
3.9 Validity of the Design
   3.9.1 Internal Validity 74
   3.9.2 External Validity 76
3.10 Data Analysis 77
3.11 Summary 80

4 RESULTS AND DISCUSSION
4.1 Introduction 81
4.2 Data Screening 81
   4.2.1 Assessing Normality 81
   4.2.2 Skewness and Kurtosis 100
4.3 Demographic Characteristics of Participants 100
4.4 The Effect of Blended Learning on Reading Comprehension 105
4.5 The Effect of Blended Learning on Critical Thinking Skills 117
4.6 The Extent of Critical Thinking in Discussions 129
4.7 Participants’ Perception of Blended Learning 136
4.8 Interview Findings
   4.8.1 The Benefits of Engaging in the Blended Learning and/or Traditional Face-to-Face Learning 142
      4.8.1.1 Interesting, Motivating, flexible, and Convenient 142
      4.8.1.2 The Opportunity to Express Ideas without Being Stressful 144
      4.8.1.3 Easy Access to Information 144
      4.8.1.4 Continuous Learning Environment 145
      4.8.1.5 Expanding Knowledge 145
      4.8.1.6 Developing Independent Learning 146
      4.8.1.7 Teacher, Peer, and/or System Feedback 146
      4.8.1.8 Teacher’s Presence in the Class 147
      4.8.1.9 Interaction 148
   4.8.2 The Shortcoming of the Blended learning and/or Traditional Face-to-Face Learning 149
      4.8.2.1 Internet Connection Problems 149
      4.8.2.2 Time Limitation 149
      4.8.2.3 Limited Social Interaction 150
4.8.2.4 Dependent Students 150

4.8.3 The Improvement of Reading Comprehension after Engaging in the Blended Learning and/or Traditional Face-to-Face Learning 150

4.8.3.1 Better Understanding of Different Types of Texts 151

4.8.3.2 Using Reading Comprehension Strategies 152

4.8.3.3 Further Practice after Instruction 152

4.8.4 The Improvement of Critical Thinking Skills after Engaging in the Blended Learning and/or Traditional Face-to-Face Learning 153

4.8.4.1 Thinking Critically/In-depth thinking 153

4.8.4.2 Asking the Right Questions 154

4.9 Discussion of the Findings 155

4.9.1 Research Question 1 155

4.9.2 Research Question 2 157

4.9.3 Research Question 3 160

4.9.4 Research Question 4 164

4.9.5 Research Question 5 167

4.10 Summary 171

5 SUMMARY, IMPLICATIONS, CONCLUSION, AND RECOMMENDATIONS 172

5.1 Introduction 172

5.2 Summary of the Findings 172

5.3 Implications of the Study 176

5.4 Recommendations for the Future Research 179

5.5 Conclusion 180

REFERENCES 181

APPENDICES 214

BIODATA OF STUDENT 232

LIST OF PUBLICATIONS 233
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Nonrandomized Control Group, Pretest–Posttest Design</td>
<td>51</td>
</tr>
<tr>
<td>3.2</td>
<td>Critical Thinking Content Analysis Rubric (Newman et al., 1995)</td>
<td>59</td>
</tr>
<tr>
<td>3.3</td>
<td>Research Procedure</td>
<td>69</td>
</tr>
<tr>
<td>3.4</td>
<td>Statistical Analysis by Research Questions and Hypotheses</td>
<td>78</td>
</tr>
<tr>
<td>4.1</td>
<td>Test of Normality</td>
<td>82</td>
</tr>
<tr>
<td>4.2</td>
<td>Test of Normality</td>
<td>83</td>
</tr>
<tr>
<td>4.3</td>
<td>Skewness and Kurtosis Values</td>
<td>100</td>
</tr>
<tr>
<td>4.4</td>
<td>Personal Information of Participants</td>
<td>101</td>
</tr>
<tr>
<td>4.5</td>
<td>Background Computer and Internet Usage</td>
<td>102</td>
</tr>
<tr>
<td>4.6</td>
<td>Internet Access and Familiarity</td>
<td>103</td>
</tr>
<tr>
<td>4.7</td>
<td>Independent Sample T-Test Results for the Mean Pre-test Scores of Reading Comprehension</td>
<td>104</td>
</tr>
<tr>
<td>4.8</td>
<td>Independent Sample T-Test Results for the Mean Pre-test Scores of Critical Thinking Skills</td>
<td>104</td>
</tr>
<tr>
<td>4.9</td>
<td>Descriptive Statistics for Pre-test, Mid-test, and Post-test of Reading Comprehension</td>
<td>105</td>
</tr>
<tr>
<td>4.10</td>
<td>Mauchly’s Test of Sphericity of Reading Comprehension Pre-test, and Mid-test, and Post-test</td>
<td>106</td>
</tr>
<tr>
<td>4.11</td>
<td>Tests of Within-Subjects Effects of Reading Comprehension Pre-test, Mid-test, and Post-test</td>
<td>107</td>
</tr>
<tr>
<td>4.12</td>
<td>Pairwise Comparisons of Reading Comprehension Pre-test, Mid-test, and Post-test</td>
<td>108</td>
</tr>
<tr>
<td>4.13</td>
<td>Mauchly’s Test of Sphericity of Reading Comprehension Pre-test, Mid-test, and Post-test</td>
<td>109</td>
</tr>
<tr>
<td>4.14</td>
<td>Tests of Within-Subjects Effects of Reading Comprehension Pre-test, Mid-test, and Post-test</td>
<td>109</td>
</tr>
<tr>
<td>4.15</td>
<td>Pairwise Comparisons of Reading Comprehension Pre-test, Mid-test, and Post-test</td>
<td>110</td>
</tr>
<tr>
<td>4.16</td>
<td>Test of Homogeneity of Regression Slopes for Reading Comprehension Mid-test</td>
<td>112</td>
</tr>
<tr>
<td>4.17</td>
<td>Descriptive Statistics of Reading Comprehension Pre-test and Mid-test</td>
<td>113</td>
</tr>
<tr>
<td>4.18</td>
<td>Levene’s Test of Equality of Error Variances for Reading Comprehension Mid-test</td>
<td>113</td>
</tr>
<tr>
<td>4.19</td>
<td>Tests of Between-Subjects Effects of Reading Comprehension Mid-test</td>
<td>113</td>
</tr>
<tr>
<td>4.20</td>
<td>Test of Homogeneity of Regression Slopes for Reading Comprehension Post-test</td>
<td>114</td>
</tr>
<tr>
<td>4.21</td>
<td>Descriptive Statistics of Reading Comprehension Pre-test and Post-test</td>
<td>115</td>
</tr>
<tr>
<td>4.22</td>
<td>Levene’s Test of Equality of Error Variances for Reading Comprehension Post-test</td>
<td>116</td>
</tr>
<tr>
<td>4.23</td>
<td>Tests of Between-Subjects Effects of Reading Comprehension Post-test</td>
<td>116</td>
</tr>
<tr>
<td>4.24</td>
<td>Descriptive Statistics for Pre-test, Mid-test, and Post-test of Critical Thinking Skills</td>
<td>117</td>
</tr>
</tbody>
</table>

xiv
4.25 Mauchly’s Test of Sphericity of Critical Thinking Skills Pre-test, Mid-test, and Post-test 118
4.26 Tests of Within-Subjects Effects of Critical Thinking Skills Pre-test, Mid-test, and Post-test 119
4.27 Pairwise Comparisons of Critical Thinking Skills Pre-test, Mid-test, and Post-test 120
4.28 Mauchly’s Test of Sphericity of Critical Thinking skills Pre-test, Mid-test, and Post-test 121
4.29 Tests of Within-Subjects Effects of Critical Thinking Skills Pre-test, Mid-test, and Post-test 122
4.30 Pairwise Comparisons of Critical Thinking Skills Pre-test, Mid-test, and Post- Post-test 123
4.31 Test of Homogeneity of Regression Slopes for Critical Thinking Mid-test 125
4.32 Descriptive Statistics of Critical Thinking Pre-test and Mid-test 125
4.33 Levene’s Test of Equality of Error Variances for Critical Thinking Mid-test 125
4.34 Tests of Between-Subjects Effects of Critical Thinking Mid-test 126
4.35 Test of Homogeneity of Regression Slopes for Critical Thinking Post-test 127
4.36 Descriptive Statistics of Critical Thinking Pre-test and Post-test 128
4.37 Levene’s Test of Equality of Error Variances for Critical Thinking Post-test 128
4.38 Tests of Between-Subjects Effects of Critical Thinking Post-test 129
4.39 The Number of Codes and the Depth of Critical Thinking Ratios for the First Discussions at the Beginning of the Experiment 131
4.40 The Number of Codes and the Depth of Critical Thinking Ratios for the Fourth Discussions in the Middle of the Experiment 132
4.41 The Number of Codes and the Depth of Critical Thinking Ratios for the Eighth Discussions at the End of the Experiment 134
4.42 Mean and Standard Deviation of Ease of Use for Web Environment 136
4.43 The Mean Range for the Blended Learning Survey 137
4.44 Mean and Standard Deviation of Online Environment 137
4.45 Mean and Standard Deviation of Content 138
4.46 Mean and Standard Deviation of Face-to-Face Sessions 139
4.47 Mean and Standard Deviation of Assessment 140
4.48 Mean and Standard Deviation of Learners’ Views on Blended Learning in General 140
4.49 Overall Mean, Standard Deviation, Range of the Scale 141
4.50 Comparison of the Depth of Critical Thinking by Indicators in Discussions of the Blended Learning Group and the Traditional Face-to-Face Learning Group 161
5.1 Summary of the Findings 175
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>A Continuum of E-learning</td>
<td>15</td>
</tr>
<tr>
<td>2.2</td>
<td>Three Types of Blended Learning Environments (Adapted from Osguthorpe &amp; Graham, 2003)</td>
<td>16</td>
</tr>
<tr>
<td>2.3</td>
<td>The ADDIE Model (Adapted from Hodell, 2005)</td>
<td>25</td>
</tr>
<tr>
<td>2.4</td>
<td>Bottom-up Model (Adapted from Zakaluk, 1996, p. 3)</td>
<td>27</td>
</tr>
<tr>
<td>2.5</td>
<td>Top-down Model (Adapted from Zakaluk, 1996, p. 4)</td>
<td>28</td>
</tr>
<tr>
<td>2.6</td>
<td>Theoretical Framework of the Study</td>
<td>47</td>
</tr>
<tr>
<td>2.7</td>
<td>Conceptual Framework of the Study</td>
<td>48</td>
</tr>
<tr>
<td>3.1</td>
<td>Research Flowchart</td>
<td>52</td>
</tr>
<tr>
<td>4.1</td>
<td>Histogram with Frequency Curve of TOEFL Pre-test for the Blended Learning Group</td>
<td>83</td>
</tr>
<tr>
<td>4.2</td>
<td>Histogram with Frequency Curve of TOEFL Pre-test for the Traditional Face-to-Face Learning Group</td>
<td>84</td>
</tr>
<tr>
<td>4.3</td>
<td>Normal Q-Q Plot of TOEFL Pre-test for the Blended Learning Group</td>
<td>84</td>
</tr>
<tr>
<td>4.4</td>
<td>Normal Q-Q Plot of TOEFL Pre-test for the Traditional Face-to-Face Learning Group</td>
<td>85</td>
</tr>
<tr>
<td>4.5</td>
<td>Boxplot of TOEFL Pre-test</td>
<td>85</td>
</tr>
<tr>
<td>4.6</td>
<td>Histogram with Frequency Curve of TOEFL Mid-test for the Blended Learning Group</td>
<td>86</td>
</tr>
<tr>
<td>4.7</td>
<td>Histogram with Frequency Curve of TOEFL Mid-test for the Traditional Face-to-Face Learning Group</td>
<td>86</td>
</tr>
<tr>
<td>4.8</td>
<td>Normal Q-Q Plot of TOEFL Mid-test for the Blended Learning Group</td>
<td>87</td>
</tr>
<tr>
<td>4.9</td>
<td>Normal Q-Q Plot of TOEFL Mid-test for the Traditional Face-to-Face Learning Group</td>
<td>87</td>
</tr>
<tr>
<td>4.10</td>
<td>Boxplot of TOEFL Mid-test</td>
<td>88</td>
</tr>
<tr>
<td>4.11</td>
<td>Histogram with Frequency Curve of TOEFL Post-test for the Blended Learning Group</td>
<td>88</td>
</tr>
<tr>
<td>4.12</td>
<td>Histogram with Frequency Curve of TOEFL Post-test for the Traditional Face-to-Face Learning Group</td>
<td>89</td>
</tr>
<tr>
<td>4.13</td>
<td>Normal Q-Q Plot of TOEFL Post-test for the Blended Learning Group</td>
<td>89</td>
</tr>
<tr>
<td>4.14</td>
<td>Normal Q-Q Plot of TOEFL Post-test for the Traditional Face-to-Face Learning Group</td>
<td>90</td>
</tr>
<tr>
<td>4.15</td>
<td>Boxplot of TOEFL Post-test</td>
<td>90</td>
</tr>
<tr>
<td>4.16</td>
<td>Histogram with Frequency Curve of CCTT-X Pre-test for the Blended Learning Group</td>
<td>91</td>
</tr>
<tr>
<td>4.17</td>
<td>Histogram with Frequency Curve of CCTT-X Pre-test for the Traditional Face-to-Face Learning Group</td>
<td>91</td>
</tr>
<tr>
<td>4.18</td>
<td>Normal Q-Q Plot of CCTT-X Pre-test for the Blended Learning Group</td>
<td>92</td>
</tr>
<tr>
<td>4.19</td>
<td>Normal Q-Q Plot of CCTT-X Pre-test for the Traditional Face-to-Face Learning Group</td>
<td>92</td>
</tr>
<tr>
<td>4.20</td>
<td>Boxplot of CCTT-X Pre-test</td>
<td>93</td>
</tr>
<tr>
<td>4.21</td>
<td>Histogram with Frequency Curve of CCTT-X Mid-test for the Blended Learning Group</td>
<td>93</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>4.22</td>
<td>Histogram with Frequency Curve of CCTT-X Mid-test for the Traditional Face-to-Face Learning Group</td>
<td>94</td>
</tr>
<tr>
<td>4.23</td>
<td>Normal Q-Q Plot of CCTT-X Mid-test for the Blended Learning Group</td>
<td>94</td>
</tr>
<tr>
<td>4.24</td>
<td>Normal Q-Q Plot of CCTT-X Mid-test for the Traditional Face-to-Face Learning Group</td>
<td>95</td>
</tr>
<tr>
<td>4.25</td>
<td>Boxplot of CCTT-X Mid-test</td>
<td>95</td>
</tr>
<tr>
<td>4.26</td>
<td>Histogram with Frequency Curve of CCTT-X Post-test for the Blended Learning Group</td>
<td>96</td>
</tr>
<tr>
<td>4.27</td>
<td>Histogram with Frequency Curve of CCTT-X Post-test for the Traditional Face-to-Face Learning Group</td>
<td>96</td>
</tr>
<tr>
<td>4.28</td>
<td>Normal Q-Q Plot of CCTT-X Post-test for the Blended Learning Group</td>
<td>97</td>
</tr>
<tr>
<td>4.29</td>
<td>Normal Q-Q Plot of CCTT-X Post-test for the Traditional Face-to-Face Learning Group</td>
<td>97</td>
</tr>
<tr>
<td>4.30</td>
<td>Boxplot of CCTT-X Post-test</td>
<td>98</td>
</tr>
<tr>
<td>4.31</td>
<td>Histogram with Frequency Curve of Blended Learning Perception Questionnaire for the Blended Learning Group</td>
<td>98</td>
</tr>
<tr>
<td>4.32</td>
<td>Normal Q-Q Plot of Blended Learning Perception Questionnaire for the Blended Learning Group</td>
<td>99</td>
</tr>
<tr>
<td>4.33</td>
<td>Boxplot of Blended Learning</td>
<td>99</td>
</tr>
<tr>
<td>4.34</td>
<td>Estimated Marginal Means of Reading Comprehension Pre-test, Mid-test, and Post-test for the Blended Learning Group</td>
<td>108</td>
</tr>
<tr>
<td>4.35</td>
<td>Estimated Marginal Means of Reading Comprehension Pre-test, Mid-test, and Post-test for the Traditional Face-to-Face Learning Group</td>
<td>111</td>
</tr>
<tr>
<td>4.36</td>
<td>The Linearity of Reading Comprehension Pre-test and Mid-test</td>
<td>112</td>
</tr>
<tr>
<td>4.37</td>
<td>The Linearity of Reading Comprehension Pre-test and Post-test</td>
<td>115</td>
</tr>
<tr>
<td>4.38</td>
<td>Estimated Marginal Means of Critical Thinking Skills Pre-test, Mid-test, and Post-test for the Blended Learning Group</td>
<td>120</td>
</tr>
<tr>
<td>4.39</td>
<td>Estimated Marginal Means of Critical Thinking Skills Pre-test, Mid-test, and Post-test for the Traditional Face-to-Face Learning Group</td>
<td>123</td>
</tr>
<tr>
<td>4.40</td>
<td>The Linearity of Critical thinking Pre-test and Mid-test</td>
<td>124</td>
</tr>
<tr>
<td>4.41</td>
<td>The Linearity of Critical Thinking Pre-test and Post-test</td>
<td>127</td>
</tr>
<tr>
<td>4.42</td>
<td>Comparison of the Critical Thinking Ratios in Discussions of the Blended Learning Group and the Traditional Face-to-Face Learning Group at the Beginning, in the Middle, and at the End of the Treatment</td>
<td>135</td>
</tr>
<tr>
<td>5.1</td>
<td>The Proposed Blended Learning Method of Instruction</td>
<td>177</td>
</tr>
</tbody>
</table>
LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Ambiguities</td>
</tr>
<tr>
<td>ADDIE</td>
<td>Analysis. Design, Development, Implementation, Evaluation</td>
</tr>
<tr>
<td>BL</td>
<td>Blended learning</td>
</tr>
<tr>
<td>C</td>
<td>Critical assessment</td>
</tr>
<tr>
<td>CALL</td>
<td>Computer-assisted Language Learning</td>
</tr>
<tr>
<td>CCTT</td>
<td>Cornell Critical Thinking Test</td>
</tr>
<tr>
<td>CCTT-X</td>
<td>Cornell Critical Thinking Test-Level X</td>
</tr>
<tr>
<td>CMC</td>
<td>Computer-mediated communication</td>
</tr>
<tr>
<td>CMS</td>
<td>Course management system</td>
</tr>
<tr>
<td>CT</td>
<td>Critical thinking</td>
</tr>
<tr>
<td>EFL</td>
<td>English as a Foreign Language</td>
</tr>
<tr>
<td>ESL</td>
<td>English as a Second Language</td>
</tr>
<tr>
<td>ETS</td>
<td>Educational Testing Service</td>
</tr>
<tr>
<td>FL</td>
<td>Foreign language</td>
</tr>
<tr>
<td>F2F</td>
<td>Face-to-face</td>
</tr>
<tr>
<td>HEIs</td>
<td>Higher Education Institutions</td>
</tr>
<tr>
<td>I</td>
<td>Importance</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>J</td>
<td>Justification</td>
</tr>
<tr>
<td>L</td>
<td>Linking ideas, interpretation</td>
</tr>
<tr>
<td>LMS</td>
<td>Learning management system</td>
</tr>
<tr>
<td>L2</td>
<td>Second language</td>
</tr>
<tr>
<td>M</td>
<td>Mean</td>
</tr>
<tr>
<td>MLE</td>
<td>Managed learning environment</td>
</tr>
<tr>
<td>MOHE</td>
<td>Ministry of Higher Education</td>
</tr>
<tr>
<td>Moodle</td>
<td>Modular Object-Oriented Dynamic Learning Environment</td>
</tr>
<tr>
<td>MUET</td>
<td>Malaysian University English Test</td>
</tr>
<tr>
<td>N</td>
<td>Novelty</td>
</tr>
<tr>
<td>NLE</td>
<td>Networked learning environment</td>
</tr>
<tr>
<td>O</td>
<td>Outside knowledge</td>
</tr>
<tr>
<td>P</td>
<td>Practical utility</td>
</tr>
<tr>
<td>R</td>
<td>Relevance</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>SPM</td>
<td>Sijil Pelajaran Malaysia (Malaysian Certificate of Education)</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Science</td>
</tr>
<tr>
<td>TELL</td>
<td>Technology-enhanced language learning</td>
</tr>
<tr>
<td>TF2FL</td>
<td>Traditional Face-to-Face Learning</td>
</tr>
<tr>
<td>TOEFL</td>
<td>Test of English as a Foreign Language</td>
</tr>
<tr>
<td>VLE</td>
<td>Virtual learning environment</td>
</tr>
<tr>
<td>W</td>
<td>Width of understanding</td>
</tr>
<tr>
<td>WLE</td>
<td>Web learning environment</td>
</tr>
<tr>
<td>ZPD</td>
<td>Zone of Proximal Development</td>
</tr>
</tbody>
</table>
CHAPTER ONE

INTRODUCTION

This chapter outlines the background of the study. It presents the statement of the problem, the objectives of the study, the research questions and hypotheses, the significance of the study, the scope and limitations of the study, and the operational definitions of the key terms used in the current study.

1.1 Background of the study

As one of the most important languages around the world these days, the English language is regarded as a world language. The English language has become internationally accepted particularly for daily communication, science and technology, business, diplomacy, and broadcasting. According to Burns (2004), the English language is considered a competitive language skill on the road to globalization and internationalization among the non-English speaking countries. Since the English language has been widely used in Malaysia for many years, it has become the second language of the country. The English language was formally presented as the second language in Malaysia when the National Language policy was executed in 1970. The importance of the English language as a second language has led to the teaching of English as a compulsory subject in every Malaysian school from the first year of the primary education level (Ali, Hamid, Moni, 2011). All the four main skills (i.e., listening, speaking, reading, and writing) are taught to students. At the end of the primary level of education, all students should take part in the Primary School Assessment (Ujian Penilaian Sekolah Rendah), which is a national assessment in English and aims to measure the achievement of students in English and four other subjects. At the secondary level of education, students are required to learn mathematics, biology, chemistry, and physics in English for five years besides learning English as a subject. At the end of the secondary school, students should take the Sijil Pelajaran Malaysia (SPM), or the Malaysian Certificate of Education which is required to enter the tertiary level of education. In this exam, among other compulsory subjects, the English language subject which includes reading comprehension and writing should be also assessed. The diploma and pre-university students should sit for the test of English language proficiency which is called the Malaysian University English Test (MUET) to get the admission in public and private colleges and universities. In addition, higher educational institutions have used the English language as a medium of instruction. With regard to the importance of English language in education, enabling individuals to become good language learners and seeking for ways to facilitate learning have always occupied the minds of administrators.

The principal purpose of language education is to make learners proficient in the four main skills: reading, writing, speaking, and listening. Reading is an essential skill fundamental to the academic success in any discipline of study (ACT as cited in
Johnson, Archibald, & Tenenbaum, 2010). In the same vein, Lynch and Hudson (1991) believe that out of the four main skills, reading is one of the most prominent skills which is necessary for academic success. Carrell, Devine, and Eskey (1988) describe reading as the most salient language skill in learning English as a Second Language (ESL) or English as a Foreign Language (EFL). They claim that second language learners themselves consider reading to be the most significant skill among the four language skills. Reid and Lienemann (2006) declare that reading refers to a complicated process which encompasses the ability of the students to read words separately or in context with comprehension. It requires the capability to perceive the texts of various content areas. Richards, Platt, and Platt (1992) define reading as perceiving a written text in order to understand its contents (p. 306). It is the most effective means of information which enhances individuals’ comprehension and thinking skills. As reading is related to comprehending a text, students should be informed of the procedures that take place during the reading process. It means that some specific reading skills and strategies should be taught to students to cope with different texts. Although reading is a basic skill in the scholastic success, many college students are incapable of implementing it efficiently (Archibald, 2010).

Besides reading comprehension skills, the ability to think critically is also significant for college success (Nikoopour, Amini Farsani, & Nasiri, 2011; Archibald, 2010). In line with the Malaysian National Education Philosophy which intends to develop well-balanced individuals, the modern English language teaching in Malaysia calls for higher order thinking skills that aim to expand the cognitive feature of the individuals (Ismail & Hassan, 2009). According to Rashid and Hashim (2008), in Malaysia, the superiority of the English language and critical thinking skills become the significant consequences of university education. Brown (2004) declares that a good academic English program entails not only linguistic factors in its curriculum objectives, but also developing the mastery of critical thinking. Thus, the development of students’ critical thinking skills is considered as an essential educational priority by educators, administrators, and policy makers. In order to obtain the required information from scientific texts, students should read texts critically and interpret them. Cook (1991) considers reading as a thinking process and emphasizes the importance of involving the students in speaking about the text they have read when utilizing reading strategies. Thus, learners are required to think critically in order to understand the texts. Some studies such as Fahim, Bagher kazemi, and Alemi (2010) verify the relationship between critical thinking and language learning, particularly with reading comprehension. Like Fahim et al. (2010), Langer (1985) too agrees that reading comprehension is directly related to some of the critical thinking skills of learners. Hence, in order to address the needs of students in reading comprehension and critical thinking skills, effective instructional approaches are required to improve these two fundamental skills (Archibald, 2010).

Nowadays, the development of Information and Communication Technology (ICT) in all aspects of human lives, especially in language education has led to the designing and implementing of new methods in the teaching and learning process. These days, adopting the pure forms of face-to-face learning or lecturing is not highly advocated in higher education. Traditional face-to-face classes are being improved by implementing some level of computer-mediated instruction. The
potentiality of computer technology in teaching makes computer-assisted language learning (CALL) a trend in the second/foreign language teaching and learning. Integrating face-to-face classes with online computer-mediated activities in a planned manner are known as blended learning classrooms (Picciano, 2009). In the context of language education, blended learning provides a comfortable environment for the learners in order to learn the second language, both on site (in the classroom) and online (beyond the classroom).

Azizan (2010) states that Higher Education Institutions (HEIs) in Malaysia become interested in implementing Information and Communication Technology (ICT) in teaching and learning activities both inside and outside classrooms. In order to implement the computer and internet technology in educational settings, new instructional methods integrated with technological tools are provided. Therefore, the online teaching and learning environments become prevalent for pedagogical purposes which have obtained acceptance among students, teachers, and parents (Ronsisvalle & Watkins, 2005; Smith & Meyen, 2003). According to Allen, Mabry, Mattrey, Bourhis, Titsworth, and Burrell (2004), the possibilities of internet technology in educational settings have made distance education an effective model for teaching and learning. Nevertheless, Kilickaya (2007) and Marino (2000) argue that using just computers and internet technology for teaching courses instead of teachers and classrooms cannot be appropriate for all types of students. The lack of face-to-face interaction in e-learning has heightened the need for a new approach which compounds some features of the traditional face-to-face learning with e-learning (Alotaibi, 2013). Hence, blended learning as a more developed model of instruction has become established. Bunyarit (2006) points out that the public higher educational institutions in Malaysia are moving toward using blended learning as an alternative learning approach. In a three-round Delphi study by Parsons (2008), a panel of experts in Malaysia (including 12 academic experts who were employing online learning in five institutions of higher education in Malaysia) reached the consensus that in the current time, the blended learning approach involving face-to-face interactions and online learning was the most acceptable method of learning in Malaysian higher educational institutions. Among the Asian countries, as reported by the Economist Intelligence Unit, Malaysia ranked 25th out of 60 in its e-learning readiness to adopt blended learning (as cited in Karimi & Ahmad, 2013). However, Maulan and Ibrahim (2012) claim that blended learning is a relatively new term in the Malaysian tertiary education system.

According to Garrison and Kanuka (2004), blended learning as an acceptable teaching method can change higher education. It is seen as one of the most significant educational developments of this century (Thome, 2003). Blended learning provides environments where teachers and students can interact with each other both face-to-face and online. Graham (2006) defines blended learning as a combination of the traditional face-to-face instruction and computer-mediated instruction in which face-to-face learning is the synchronous model of learning and computer-mediated learning as an asynchronous form of learning. Hiltz and Turoff (2005) declare that the emergence of asynchronous learning environments to traditional face-to-face courses will be considered as a notable development in the learning process. Through the utilization of asynchronous online forums, educators
can provide students with a strategic resource to assist them in refraining from some of the face-to-face classroom frustrations (Alrushiedat, 2011).

Researchers (e.g., Rozgiene, Medvedeva, □ Strakova, 2008 □ Kern, 2006) recognized the importance of utilizing technology to expedite the language teaching and learning process. The use of technologies with ESL learners can help them to achieve the linguistic skills required for success in the age of information and communication technology. Some researchers such as LeLoup and Ponterio (2003), Egbert (2002), and Cheng and Liou (2000) claim that the integration of technology in language teaching and learning can develop the academic performance, motivation, and learning process of students. Due to the switch of language classrooms toward the blended learning environments, active learning which develops the learning process and quality of language learning experiences will flourish (Nimavat, 2013). Likewise, some studies by Leakey and Ranchoux (2006), Engelberg and Sjoberg (2004), and Linn, Clark, and Slotta (2003) demonstrated the usefulness of blended learning which combines the classroom and the internet-based learning environment, in the development of social skills and facilitation of language knowledge construction.

With regard to the importance of reading comprehension and critical thinking skills in tertiary education, specific strategies should be taught to students to strengthen these two indispensable skills. Blended learning helps students to extend the in-class reading by providing online activities after class without the limitation of time and place (Yang, 2010). Moreover, researchers such as Guiller, Durnell, and Ross (2008) claim that a combination of teaching approaches consisting of face-to-face meetings and online discussions can improve the critical thinking skills of students in higher education. This method of instruction can be executed using course management systems (CMSs)/learning management systems (LMSs). Gibbons (2005) believes that CMSs, which came into being in the 1990s, has been found in higher education settings in order to support online instruction. It helps not only instructors to manage their course materials, but also students to build a proper platform to study the course content (McGee, Carment, □ Jafari, 2005). Moodle as an online course management system has gained popularity in higher education these days. According to Cole and Foster (2007), the three characteristics of Moodle, open source, educational philosophy, and community □ have made it unique in the CMS space. The various features of Moodle make it an appropriate platform which supports the high-quality courses and creates an effective learning environment (Cole □ Foster, 2007).

Regardless of the aforementioned overview about the influence of blended learning on reading comprehension and critical thinking skills, the practical evidence of its effectiveness in an ESL context is still scarce. Therefore, this study aims to apply an empirical study using blended learning instruction to investigate its effect on reading comprehension and critical thinking skills of undergraduate ESL students.
1.2 Statement of the Problem

Having the ability to read efficiently and effectively is related to successful education. The ability to read in a second language is regarded as a necessary skill for academic students, because it paves the way for autonomous language learning (Carrell & Grabe, 2002). Reading comprehension ability permits students to understand and elaborate the concepts always incorporating the information obtained from lectures and texts. According to Freese (1997), as teachers, we always see students of different levels from seventh grade English to college level students who can read the paragraphs in the texts but are not capable of comprehending them completely. This problem might be due to the unfamiliarity of students with special skills and strategies which can assist them to understand the written text comprehensively (Dreyer & Nel, 2003; Van Wyk, 2001). Cabral and Tavares (2002) claimed that when asking lecturers about the skills proficiency of their students, they stated that students are incapable of reading analytically, recognizing between important and unimportant ideas, and adapting their reading to the various types of materials they are confronted with, and hence do not find themselves delighted in reading.

A great number of ESL learners look at reading as a challenging skill. In universities, as noted by researchers (e.g., Rahman, 2012; Zin, 2007; Ting, 1995), reading has been recognized as the most vital need of Malaysian undergraduate students which should be developed. Despite learning English language for 11 years in school, obtaining a competency level in English language has always been an impediment for the success of Malaysian students at the university level (Yamat, Fisher, & Rich, 2014). In the Malaysian context, although the importance of learning English language as a second language has been demonstrated in many studies, there are some studies which highlighted the university students’ problems in the reading comprehension of the texts. Namibiar (2007) points out that students at the university are not ready for the reading demands expected of them. She argues that many Malaysian tertiary students lack the comprehension of long sentences which causes obstacles in their comprehension skills. Having low reading strategy knowledge, low level of reading proficiency, and weak interest are among the factors that lead to tertiary students’ problems in reading (Majid, Jelas, & Azman, 2002; Ramaiah, 1997). According to Musa, Lie, and Azman (2012), the students’ problems in English language learning and specifically in reading English texts are related to the Malaysian education system that educates students who are too dependent on their teachers for their own learning. When the students enter the tertiary level, they confront problems in carrying out cognitive tasks like evaluating and critically thinking about the texts (Noor, 2006). Thus, much more attention is required to be paid to develop the reading comprehension of ESL learners.

Researchers such as Fishbein, Eckart, Lauver, Van Leeuwen, and Langmeyer (1990) claim that critical thinking has been recognized as an essential competency expected from students in the second language learning process. Reading comprehension is directly related to the critical thinking skills of individuals (Friedman & Rowls, 1980). The rapid development of technology and its influence on higher education
requires students who understand the texts with a critical view (Pescatore, 2007; Rosenblatt, 2004). Critical thinking assists individuals to make inference from what they read and understand and then demonstrate their inference through discussion (Alotaibi, 2013). Arons proclaimed that college students lack the skills to engage in deductive and inductive reasoning, the ability to infer, to identify assumptions, and determine conclusions (as cited in Fahim, Barjesteh, & Vaseghi, 2012).

The importance of critical thinking skills caused the Ministry of Higher Education (MOHE) in Malaysia to expedite the process of implementing critical thinking skills in higher education and listed these skills as one of the seven skills namely communication, critical and problem solving, life-long learning and information management, team work, entrepreneurship, ethics and professional moral, and leadership skills, which are required for students to improve during their tertiary education (MOHE, 2006). However, studies by some researchers (e.g., Lie, Fei, Ismail, 2012; Pandian, 2007; Koo, 2003) demonstrated that Malaysian undergraduate students lack the ability to think critically. Since the education system is exam-oriented, it produces students who are not critical thinkers and prefer to accept information the way it is presented by teachers (Lie et al., 2012). In a study by Rozaidi (2003) on 250 undergraduate students in Uitm, Malaysia, the findings showed that language learning strategies, which were related to students’ thinking skills, were the least employed by the students. Kaur (2013) and Kaur and Sidhu (2014) argue that in the Malaysian context, lack of consideration to the improvement of critical thinking abilities of tertiary students leads to some problems in their reading comprehension. The students face difficulties in comprehending the message of the author, understanding the main points, recognizing the facts from ideas, and making inferences. Thus, implementing instructional approaches that develop readers who are more critical is required to be included in the pedagogical program of undergraduates.

With the expansion of e-learning as a method of educational instruction, public universities in Malaysia become interested in the implementation of this learning system to their teaching and learning experiences (Azizan, 2010; Masrom, Zainon, & Rahimah, 2008). However, implementing e-learning for pedagogical purposes demonstrated some restrictions which cause lower levels of teaching and learning efficiency (Azizan, 2010). The lack of motivation, isolation, lack of face-to-face communication, and apprehensiveness of online communication are among the issues of online learning stated by Hanisch, Caroll, Combes, and Millington (2011). The shortcomings of traditional and e-learning methods and the efforts for making e-learning more efficient have led to the development of a new instructional method which mixes e-learning with the face-to-face traditional instruction method. Hence, blended learning as a new method of instruction has supplied the opportunity to combine the best advantages of face-to-face instruction with the best benefits of online learning (Tselios, Daskalakis, & Papadopoulou, 2011; Morgan, 2002). Although blended learning utilization is expanding considerably, it is a relatively new term in the higher education system of Malaysia (Maulan & Ibrahim, 2012).
Based on the aforementioned arguments, the first gap that is apparent with regard to the proposed study is the issue of reading comprehension of Malaysian undergraduate students. A few experimental studies have been conducted to investigate the effect of blended learning on reading comprehension of students (e.g., Tsai & Talley, 2014; Yang, 2012; Behjat, Yamini, & Bagheri, 2012) and none of those studies have been conducted in the context of Malaysia. Hence, there is a gap on the effective instruction of reading comprehension through the implementation of blended learning method of instruction especially in Malaysia.

The second gap that promotes this study is that regardless of the documented significance of critical thinking skills for individuals, there is a scarcity of experimental research that measures the attainment level of these skills utilizing the blended learning method of instruction (Alotaibi, 2013; Rodriguez, 2009; Svenningsen, 2009; Akyüz & Samsa, 2009). However, no specific studies have been conducted to explore the effect of blended learning on critical thinking skills of Malaysian students.

Despite the growing body of research on blended learning, hardly any study to date (to the knowledge of the researcher) has ever looked into the effect of blended learning as a method of instruction on the two connected variables, reading comprehension and critical thinking skills, in a single study. Since critical thinking skills are important in the process of reading comprehension, the present research might be one of the earliest studies especially in Malaysia which is designed to investigate the effect of blended learning on reading comprehension of students while working on their critical thinking skills at the same time.

An extensive review of literature regarding the use of blended learning in educational settings in Malaysia, demonstrated that most of those studies focused on the different perspectives of teachers and students toward the blended learning environment (Haron, Abbas, & Rahman, 2012; Azizan, 2010; Dzakiria, Mustafa, & Bakar, 2006) and hardly any study has been designed to focus on the empirical implementation of blended learning in educational settings, particularly, in the specialized area of reading comprehension and critical thinking skills. Therefore, this dissertation may make a contribution through studying the effectiveness of blended learning on the reading comprehension and critical thinking skills of undergraduate ESL students providing a good model of instruction for ESL/EFL teachers.

1.3 Objectives of the Study

The main goal of this study is to investigate the effects of blended learning on reading comprehension and critical thinking skills of Malaysian undergraduate ESL students. Hence, the study seeks to fulfill the following specific objectives:
1. To investigate the effect of blended learning on reading comprehension of undergraduate ESL students.
2. To investigate the effect of blended learning on critical thinking skills of undergraduate ESL students.
3. To investigate the extent of critical thinking in discussions of undergraduate ESL students during and after the implementation of blended learning.
4. To identify the perception of students regarding the implementation of the blended learning method of instruction.
5. To explore the effectiveness of using blended learning and traditional face-to-face learning in improving Malaysian undergraduates’ reading comprehension and critical thinking skills.

1.4 Research Questions and Hypotheses

Based on the aforementioned objectives, the present study attempts to achieve answers to the following research questions and their related hypotheses:

1. Do the blended learning and traditional face-to-face learning methods of instruction have any effect on undergraduate ESL students’ reading comprehension?
   $H_01$: There is no significant difference in the mean scores of students’ reading comprehension at pre-test, mid-test and post-test in the blended learning group.
   $H_02$: There is no significant difference in the mean scores of students’ reading comprehension at pre-test, mid-test and post-test in the traditional face-to-face learning group.
   $H_03$: There is no significant difference in the mean scores of students’ reading comprehension on the mid-test between the blended learning group and traditional face-to-face learning group while controlling for their scores at pre-test.
   $H_04$: There is no significant difference in the mean scores of students’ reading comprehension on the post-test between the blended learning group and traditional face-to-face learning group while controlling for their scores at pre-test.

2. Do the blended learning and traditional face-to-face learning methods of instruction have any effect on undergraduate ESL students’ critical thinking skills?
   $H_05$: There is no significant difference in the mean scores of students’ critical thinking skills at pre-test, mid-test and post-test in the blended learning group.
   $H_06$: There is no significant difference in the mean scores of students’ critical thinking skills at pre-test, mid-test and post-test in the traditional face-to-face learning group.
   $H_07$: There is no significant difference in the mean scores of students’ critical thinking skills on the mid-test between the blended learning group and traditional face-to-face learning group while controlling for their scores at pre-test.
\[ H_{0}\]: There is no significant difference in the mean scores of students’ critical thinking skills on the post-test between the blended learning group and traditional face-to-face learning group while controlling for their scores at pre-test.

3. What is the extent of undergraduate ESL students’ critical thinking as shown in their discussions at the beginning, in the middle, and at the end of the implementation of blended learning and traditional face-to-face learning?

\[ H_{0}\]: There is no significant difference in the extent of students’ critical thinking in their discussions at the beginning, in the middle, and at the end of the implementation of blended learning and traditional face-to-face learning.

4. What is the students’ perception regarding the implementation of blended learning method of instruction?

5. Do the Malaysian undergraduates find blended learning and traditional face-to-face learning effective in improving their reading comprehension and critical thinking skills?

1.5 Significance of the Study

The recent development of technology in language teaching and learning offers new instructional approaches in educational settings. The findings of the study are expected to make contributions to the fields of Computer-Assisted Language Learning (CALL), Teaching English as a Second Language (TESL), and the area of blended language learning.

This proposed method of instruction with a course management system – Moodle – will contribute to address the paucity of experimental studies in the area of blended language learning in higher education institutions especially in the context of Malaysia. The blended learning method of instruction can be an alternative to the traditional face-to-face teaching in English academic reading classes of Malaysian undergraduates. It highlights the constructivists’ views of learning in which students construct their own knowledge through the interactive communications and discussions with their peers.

Educators, especially English language teachers, are also likely to benefit from the results, which can make them aware of the blended method of instruction. Through the implementation of a blended learning method in their teaching process, they can help students to improve their skills in the reading comprehension and critical thinking as active learners. Critical thinking integrated instruction can be helpful for learners of all levels. Utilizing Moodle in the section of computer-mediated instruction of the current study provides more student-centered learning in which students can read, think, and discuss in a more convenient environment rather than the traditional face-to-face environment. The significance of applying this method is that it enables students to take control of their reading process as independent
learners and to manage the reading time by themselves. They have enough time to
discuss with other peers and generate questions whenever they encounter problems in
their reading to get their peers’ feedback. Meanwhile, they acquire to think critically
by creating new ideas and asking higher level of questions which will lead to the
development of their critical thinking skills. Interactive discussions in blended
learning environments promote high-level learning and critical thinking skills of
students (Garrison □ Kanuka, 2004). Moreover, teachers can monitor the progress of
learning of all students from the first step that they login to Moodle.

Moreover, if the blended learning method of instruction improves students’ reading
comprehension and critical thinking skills and also causes a positive view toward this
learning environment, the educators can implement it into many other courses they
teach. Specifically, they can benefit from the part of computer-mediated instruction
in which they can provide a comfortable environment for students to do activities and
take part in discussions without being stressful.

The knowledge attained in this study can provide useful information for instructional
designers and leaders of higher education to consider developing effective
instructional methodologies with greater certainty. It can be useful for educators,
administrators and the Ministry of Education in Malaysia (MOHE) by providing
them information about the effectiveness of blended learning methodologies in
educational settings which can promote the reading comprehension and critical
thinking skills of students.

Finally, by way of developing the critical thinking and language proficiency of
Malaysian students, the university authorities can help the country to have graduates
who will help Malaysia to achieve its goal which is to become a developed nation by
the year 2020.

1.6 Scope and Limitations

This study aims to investigate the effect of blended learning on improving reading
comprehension and critical thinking skills of Malaysian undergraduate ESL students.
Like most empirical studies, this study will face a number of limitations that need to
be addressed as follows:

The first limitation of the study is related to the generalizability of the findings. Since
the participants of the study were two intact groups of undergraduate ESL students
majoring in English language at a public university in Malaysia, the results are
restricted to be generalized to Malaysian undergraduate ESL students from other
universities in Malaysia.
The second limitation of this research pertains to its research design. For conducting this study, two intact classes of the university, including the ESL tertiary level students were assigned. Due to the regulations of the university, after arranging classes, the random assignment of learners to different classrooms was not feasible. According to Ary, Jacobs, Sorensen, and Walker (2014), in cases where the participants cannot be assigned randomly, a quasi-experimental research design will be utilized. In contrast to a true experimental design in which the respondents are selected randomly, there are some threats to the quasi-experimental design that should be controlled by the researcher.

The third limitation is the time constraint. The present study was conducted during one semester of study lasting for 15 weeks. To investigate students’ reading comprehension and critical thinking skills before, in the middle, and at the end of the experiment, a time interval of 5 and 7 weeks was considered respectively. However, increasing the time interval between these three testing periods might influence the students’ performance as well as increasing the test-retest reliability by decreasing the effect of pre-test for mid-test and mid-test for the post-test.

The last limitation of the study is related to the number of participants of the traditional face-to-face learning group. There were 16 participants in the traditional face-to-face learning group which was fewer than the participants of the blended learning group. Since the study offered an elective course for the students besides the university compulsory courses, the researcher could not control the number of participants.

1.7 Definition of Terms

There are some key terms in this study that need to be defined conceptually and operationally to understand how these terms are exerted throughout the study. The following is the definition of important terms:

1.7.1 Blended Learning

Blended learning specifies different definitions to itself. Osguthorpe and Graham (2003) define blended learning as an integration of face-to-face traditional learning and online learning. Blended learning provides the opportunity for instruction to happen both in the classroom and online in which the online learning is the extension of the traditional face-to-face classroom (El Mansour & Mupinga, 2007). Blended learning aims to utilize the benefits of two approaches -traditional classroom and online- in order to use the class time and also the web for what they do best (Osguthorpe & Graham, 2003).
In the context of this study, blended learning is a combination of traditional face-to-face instruction and computer-mediated instruction in which face-to-face learning is the synchronous model of learning and computer-mediated learning as an asynchronous form of learning. For applying the asynchronous form of learning (virtual learning classroom), the course management system (CMS), Moodle, has been used. Since the instruction was conducted in both learning environments, the students should attend both traditional face-to-face classes and the asynchronous virtual classes during the implementation of the course.

1.7.2 Moodle

Moodle is the acronym for “Modular Object-Oriented Dynamic Learning Environment”. It is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE) which is currently used by many lecturers, schools, colleges, and universities. Moodle is a free, open source delivery means for online learning and to supplement the traditional face-to-face learning. It is a comprehensive program for organizing the educational content electronically.

In the context of this study, the latest version of Moodle (2.7.2) was applied for the asynchronous learning format. Through implementing Moodle, the researcher provided reading comprehension activities, quizzes, and discussion forums for students.

1.7.3 Traditional Face-to-Face Learning

Traditional face-to-face learning happens in the classroom where students and the teacher meet each other at the same time and the instruction is mainly conducted by the teacher. The instructional activities and the interaction between student and student and student and teacher occur in the traditional classroom (Comey, 2009).

In the context of this study, the traditional face-to-face instruction has been held for both groups (blended learning group and traditional face-to-face learning group). The difference is that the traditional face-to-face learning group received all the instructions in the face-to-face classroom, but the blended learning group received half of the instruction in the face-to-face classroom and the rest of instruction in the asynchronous virtual classroom.

1.7.4 Reading Comprehension

Reading comprehension, as defined by Cunningham and Allington (2003), is the ability to think about what is being read in order to get meaning from the text.
According to Snow (2002), reading comprehension is \the process of simultaneously extracting and constructing meaning through interaction and involvement with written language\ (p.11). Extracting meaning refers to the comprehension of what the author implicitly or explicitly mentioned in the text. Constructing meaning refers to the interpretation of what has been written by the author based on the readers’ experiences and background knowledge.

In the context of this study, some reading comprehension strategies such as cognitive, metacognitive, and social/affective strategies have been taught to students. Then the reading comprehension of students was measured by administering the TOEFL reading comprehension tests as pre, mid, and post-tests. The results of the tests were analyzed to answer the research questions of the study.

1.7.5 Critical Thinking Skills

According to Ennis (1987), critical thinking is \reasonable and reflective thinking that is focused on deciding what to believe or do\ (p.10). Paul and Elder (2014) describe critical thinking as \the art of analyzing and evaluating thinking with a view to improving it\ (p. 4). Critical thinking is the process by which an individual thinks, recognizes the problems, seeks for relevant information, and makes decision to solve the problems (Bean, 2011). The Delphi panel of experts defined critical thinking as \purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based\ (Facione, 1990, p. 3).

In this study, critical thinking skills refer to the mental abilities of students to think critically about the texts, analyze multiple meanings in the text, ask meaningful questions, and express their own ideas with clarity. The general critical thinking skills of learners were represented by scores on the Cornell Critical Thinking Test, Level X (CCTT-X).
REFERENCES


Archibald, T. N. (2010). The effect of the integration of social annotation technology, first principles of instruction, and team-based learning on students’ reading comprehension, critical thinking, and meta-cognitive skills (Doctoral dissertation). Florida State University, Tallahassee, US.


Encyclopedia of Distance Learning (pp. 505-509). Hershey, PA: Information Science Reference.


188


Ekici, F., Kara, I., □ Ekici, E. (2012). The primary student teachers’ views about a blended learning application in a basic physics course. Turkish Online Journal of Distance Education, 13(2), 291-310.


190


Hsieh, P. C. (2009). The effects of computer-mediated communication by a course management system (Moodle) on EFL Taiwanese student’s English reading achievement and perceptions (Doctoral dissertation). La Sierra University, California, US.


Larsen, L. J. E. (2012). Teacher and student perspectives on a blended learning intensive English program writing course (Doctoral dissertation). Iowa State University, US.


198


199


Phelan, J. G. (2012). A teacher action research study: Enhancing student critical thinking knowledge, skills, dispositions, application and transfer in a higher education technology course (Doctoral dissertation), Capella University, Minnesota, US.


Quitadamo, I. J. (2002). Critical thinking in higher education: The influence of teaching styles and peer collaboration on science and math learning (Doctoral dissertation). Washington State University, US.


Rodriguez, E. L. (2009). The use of blended learning to facilitate critical thinking in entry level occupational therapy students (Doctoral dissertation). Capella University, Minnesota, US.

Roether, L. H. (2003). An analysis of the level of critical thinking skills of Korean ESL students compared to U.S. College students (Doctoral dissertation). Capella University, Minnesota, US.


Shin, S. R. (2002). The effects of a metacognitive art criticism teaching strategy that incorporates computer technology on critical thinking skill and art critiquing ability (Doctoral dissertation). The Florida State University, US.


Starkey, L. (2010). Teachers’ pedagogical reasoning and action in the digital age. Teachers and Teaching, 16(2), 233-244


