A BLENDED LEARNING MODEL IN HIGHER EDUCATION:
A COMPARATIVE STUDY OF BLENDED LEARNING
IN UK AND MALAYSIA

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requirements of the University of Glamorgan/Prifysgol Morgannwg
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Abstract

Blended learning, involves the combination of two fields of concern: technology and education; or two groups of people: technologists and educationists. However, current literature shows less consideration on the potential disciplinary gap in the blended learning experience, as a result there is a paucity of evidence from cross-country/institutional/disciplinary investigations. This study aimed to explore, analyse and compare the blended learning experience in higher education. The research is reflected in 3 questions: (1) What are the current blended learning experiences in the selected higher educational institutions? (2) How such experience varies in different disciplines? (3) What are the reflections on the comparative experiences in (1) and (2)? The qualitative case study with comparative methods was used to obtain in-depth findings for these research questions. I visited 4 universities in two countries and sampled 51 research participants’ voices from contrasting disciplines. With these voices, I thoroughly discussed individual case studies, followed by a cross-case and cross-discipline comparison. These findings enabled insights to be drawn on a major argument: blended learning did enable and enhance learning experiences in all case studies but disciplinary differences remain a major challenge. The analysis shows that academics from science-based disciplines have an advantage at the instrumental level of technological usage without transforming learning experience; social science-based academics, due to their disciplinary nature, have embedded technology in wider trans-technical aspects that would enhance and transform learning and teaching. In the context of blended learning, I would argue that learning has not been enhanced (1) if the technology is the sole focus; (2) if the research effort of “technology enhanced learning” does not gain ground in educational theories and (3) does not recognise the disciplinary differences. Arising out of these findings, I proposed a blended learning model that indicates the boundary of the current literature and research findings, and a blended learning definition - an educational-focused process to enhance and transform f2f learning with the blend of technology in a symbiotic relationship. It is necessary for educationists and technologists to establish such a symbiotic relationship and the inter-disciplinary integration and discourse, that may impact on the individuals’ practice beyond their own disciplinary territory.
Acknowledgements

Completing a PhD is truly a marathon event - restless weekends and sleepless nights but a valuable process (as I said in the closing notes that it has rocked me to my core!) I would not have been able to complete this journey without the support of countless people over the past three years.

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Candidate’s Declaration Form

Note: This form must be submitted to the University with the candidate’s thesis (10.5 of the Regulations refers)

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# 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>Acknowledgements</td>
<td>ii</td>
</tr>
<tr>
<td>Author’s Declaration</td>
<td>iii</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>iv</td>
</tr>
<tr>
<td>Lists of Figures</td>
<td>v</td>
</tr>
<tr>
<td>Lists of Tables</td>
<td>vi</td>
</tr>
<tr>
<td>PART I: THE INTRODUCTION AND CRITICAL REVIEW OF BLENDED LEARNING</td>
<td></td>
</tr>
<tr>
<td>Chapter 1: Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Behind the Scene: the Changes in Higher Education</td>
<td>1</td>
</tr>
<tr>
<td>1.2 The Background and Initial Problems of Blended Learning Research</td>
<td>2</td>
</tr>
<tr>
<td>1.3 Importance of the Study</td>
<td>5</td>
</tr>
<tr>
<td>1.4 Research Aims, Questions, Methods and Sample Selections</td>
<td>7</td>
</tr>
<tr>
<td>1.5 Research Timescale and Ethical Considerations</td>
<td>8</td>
</tr>
<tr>
<td>1.6 Organisation of the Thesis</td>
<td>9</td>
</tr>
<tr>
<td>Chapter 2: The Incubator: Development of the Idea of Blended Learning</td>
<td>11</td>
</tr>
<tr>
<td>2.1 The Dawn of Blended Learning</td>
<td>11</td>
</tr>
<tr>
<td>2.1.1 Revisiting Technology and Higher Education</td>
<td>12</td>
</tr>
<tr>
<td>2.1.2 The Emerging Term “Blended Learning”</td>
<td>20</td>
</tr>
<tr>
<td>2.2 The Scholarly Trends of the Development in Blended Learning</td>
<td>22</td>
</tr>
<tr>
<td>2.2.1 The Definitions and the Debates</td>
<td>22</td>
</tr>
<tr>
<td>2.2.2 Overviews of Current Outstanding Models</td>
<td>37</td>
</tr>
<tr>
<td>2.2.2.1 Salmon’s e-Moderation and e-tivities</td>
<td>38</td>
</tr>
<tr>
<td>2.2.2.2 Learning Mix for Open University of Malaysia</td>
<td>43</td>
</tr>
<tr>
<td>2.2.2.3 A Learning Ecology Model by Sun Microsoft System</td>
<td>45</td>
</tr>
<tr>
<td>2.2.2.4 Jones’s Blended Learning Continuum</td>
<td>47</td>
</tr>
<tr>
<td>2.2.2.5 Garrison’s and Vaughan’s Inquiry-based Framework</td>
<td>50</td>
</tr>
<tr>
<td>2.2.3 Opportunities, Trends and Problems of Blended Learning</td>
<td>54</td>
</tr>
<tr>
<td>2.3 The Research on Institutional Blended Learning Experience</td>
<td>60</td>
</tr>
<tr>
<td>2.4 Concluding Remarks</td>
<td>62</td>
</tr>
<tr>
<td>Chapter 3: In Love and War for Blended Learning</td>
<td>65</td>
</tr>
<tr>
<td>3.1 Simple and Complex: Perceptions for Blended Learning</td>
<td>65</td>
</tr>
<tr>
<td>3.1.1 The Simple: An Overview of Blended Learning in An Instrumental Perspective</td>
<td>67</td>
</tr>
<tr>
<td>3.1.1.1 Available Technology for Learning and Teaching</td>
<td>67</td>
</tr>
<tr>
<td>3.1.1.2 Available Blended Learning Activities and Design</td>
<td>69</td>
</tr>
<tr>
<td>3.1.2 The Complex: Learning and Educational Technology in Higher Education</td>
<td>75</td>
</tr>
<tr>
<td>3.1.2.1 The Debate and the Divergence of the Disciplinary Differences</td>
<td>76</td>
</tr>
<tr>
<td>3.1.2.2 The University of Google and Thinking through Technology</td>
<td>84</td>
</tr>
<tr>
<td>3.2 Consolidation of the Complexity: The Marriage Begins</td>
<td>88</td>
</tr>
<tr>
<td>3.2.1 The Relationship of Learning Theory and Educational Technology</td>
<td>91</td>
</tr>
<tr>
<td>3.2.2 Educational Theories and Educational Aims</td>
<td>98</td>
</tr>
<tr>
<td>3.2.3 Vygotsky and Blended Learning Initiatives</td>
<td>101</td>
</tr>
<tr>
<td>3.3 Concluding Remarks</td>
<td>104</td>
</tr>
</tbody>
</table>
PART II: THE RESEARCH DESIGN AND INSITUTIONAL INVESTIGATION

Chapter 4: Methodology

4.1 Overview of the Research Philosophy and Approach ........................................... 106
4.2 Research Strategy and Methods Used for Qualitative Research ............................. 111
4.3 Case Study with Comparative Methods ................................................................. 114
  4.3.1 Methods and Discussions ................................................................................. 115
  4.3.2 Preparation Phase: Pilot Study and Selected Cases in the UK and Malaysia ...... 120
  4.3.3 Collection Phase: Research Instruments Design and Implementation .......... 123
  4.3.4 Analysing Phase: Interpretation and Representation ....................................... 124
4.4 Research Design Measurements, Limitations and Further Considerations: Reliability and Validity ................................................................. 125

Chapter 5: The Blended Learning Experience in Four HEIs

5.1 Profile Analysis of the Case studies: Overall Context and Policy ............................ 128
  5.1.1 Higher Education in the UK and Malaysia .................................................... 128
  5.1.2 The Brief Background of the Four Higher Educational Institutions .......... 133
  5.1.3 Science-based versus Social Science-based Disciplines ............................... 135
  5.1.4 The Analysis of the Interviewees: Profile of the Participants ......................... 137
  5.1.5 The Presentation of Each Case Study ............................................................... 140
5.2 Case Study I: University of Leicester (UoL) ......................................................... 140
  5.2.1 Strategy and Practice ...................................................................................... 140
  5.2.2 Awareness and Perception of Blended Learning ............................................. 145
    5.2.2.1 Confusion over the Definition .................................................................... 145
    5.2.2.2 The Student Expectation (e.g. Blended Assessment Feedback) .............. 145
    5.2.2.3 From Blanket Approach to Tailored Approach – the Empowerment ...... 146
  5.2.3 The Academic Experience ............................................................................. 147
    5.2.3.1 The VLE: Blackboard .............................................................................. 147
    5.2.3.2 Confirming and Disconfirming Experience ............................................. 148
    5.2.3.3 Wish List Related to Blended Learning .................................................. 150
  5.2.4 The Student Experience ............................................................................... 151
    5.2.4.1 Private Space for Easily Accessible, Flexible and Repeatable Learning Experience .......................................................... 152
    5.2.4.2 Web 2.0 Technology Created Community of Enquiry that Motivates the Learning Experience .......................................... 154
    5.2.4.3 Independent Learning Experience for Employability ............................ 154
    5.2.4.4 Disconfirming Experience and Wish List ................................................ 155
  5.2.5 The Summary of the Practice and Experience in Case Study I ..................... 156
5.3 Case Study II: University of Glamorgan (UoG) .................................................... 158
  5.3.1 Strategy and Practice ...................................................................................... 158
  5.3.2 Awareness and Perception of Blended Learning ............................................. 161
    5.3.2.1 Clear VC’s vision and Blended learning Champions as Endorsement ........ 161
    5.3.2.2 Link between Scholarly Recognition and Teaching Excellence as Motivation ................................................................. 162
    5.3.2.3 Yet to Reach Out the “Unconverted” Group and Breakthrough the Impression of “Too Much Technology” ......................... 162
    5.3.2.4 ICT Competency and Supporting Resources Form the “Natural Reason” for Embedding Blended Learning ......................... 164
    5.3.2.5 Time Consuming ..................................................................................... 165
    5.3.2.6 Blended Learning Challenge and Transform Teaching Practices ........... 165
  5.3.3 The Academic Experience ............................................................................. 165
    5.3.3.1 The VLE: Blackboard .............................................................................. 165
    5.3.3.2 Confirming and Disconfirming Experience ............................................. 168
    5.3.3.3 Wish List Related to Blended Learning .................................................. 171
  5.3.4 The Student Experience ............................................................................... 172
### PART IV: References and Appendixes

References  
------------------------------------------------------------------------------------------------------------  242  
Appendixes:  
A – Publications Extracted from the Research (Self-Citations)  274  
B – Summary of Key Educational Theories  276  
C – Background of the Four Case Studies  277  
D – Interview Questions  284  
E – Matrix Tables for Cross-disciplinary and Cross-case Comparison  290  
F – Details of the Research Participants  292
# Lists of Figures

<table>
<thead>
<tr>
<th>No</th>
<th>Figures</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Figure 2.1: Pressures to Higher Education (Modified from Turban, 2002)</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Figure 2.2: The Landscape of Blended Learning (Allan, 2007)</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>Figure 2.3: Mediated Relationship at the Individual Level (Kuuti, 1995)</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Figure 2.4: E-moderation (Salmon, 1999, 2000)</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>Figure 2.5: Blended Learning Model (Kaur and Ahmed, 2006)</td>
<td>43</td>
</tr>
<tr>
<td>6</td>
<td>Figure 2.6: General Learning Modalities (Wenger and Ferguson, 2006)</td>
<td>45</td>
</tr>
<tr>
<td>7</td>
<td>Figure 2.7: Learning Modalities (Wenger and Ferguson, 2006)</td>
<td>45</td>
</tr>
<tr>
<td>8</td>
<td>Figure 2.8: Continuum of Blended Learning (Jones, 2006)</td>
<td>47</td>
</tr>
<tr>
<td>9</td>
<td>Figure 2.9: Indications for Blended Learning Continuum (Allen et al., 2007)</td>
<td>49</td>
</tr>
<tr>
<td>10</td>
<td>Figure 2.10: Community of Inquiry Framework (Garrison et al., 2008)</td>
<td>51</td>
</tr>
<tr>
<td>11</td>
<td>Figure 2.11: Program Outcomes for a Blended Faculty Col (Garrison et al., 2008)</td>
<td>53</td>
</tr>
<tr>
<td>12</td>
<td>Figure 3.1 TPCK Model for Blended Learning (Koehler et al., 2007)</td>
<td>71</td>
</tr>
<tr>
<td>13</td>
<td>Figure 3.2: Blended Learning Lesson Plan (Littlejohn and Pegler, 2007)</td>
<td>73</td>
</tr>
<tr>
<td>14</td>
<td>Figure 3.3: Blended Learning Design Sequence Map Documenting the Same</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>Scenario as in Figure 3.0 (Littlejohn and Pegler, 2007)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Figure 3.4: Email from a Student (Brabazon, 2007)</td>
<td>86</td>
</tr>
<tr>
<td>16</td>
<td>Figure 3.5: Continuum for the Attitudes of “Technology Enhanced Learning and Teaching”</td>
<td>90</td>
</tr>
<tr>
<td>17</td>
<td>Figure 3.6: “Sweet Spot” for Blended Learning (Carman, 2002)</td>
<td>96</td>
</tr>
<tr>
<td>18</td>
<td>Figure 3.7: Ingredients for Blended Learning (Carman, 2002)</td>
<td>96</td>
</tr>
<tr>
<td>19</td>
<td>Figure 3.8: Vygotsky’s ZPD (Leong and Bodrova, 2007)</td>
<td>102</td>
</tr>
<tr>
<td>20</td>
<td>Figure 4.1 Case Study Method (Modified from Whitelock, 2006)</td>
<td>119</td>
</tr>
<tr>
<td>21</td>
<td>Figure 5.1 Disciplinary and Gender Analysis of Interviewees: Academics</td>
<td>138</td>
</tr>
<tr>
<td>22</td>
<td>Figure 5.2 Disciplinary and Gender Analysis of Interviewees: Students</td>
<td>139</td>
</tr>
<tr>
<td>23</td>
<td>Figure 5.3 The E-learning &amp; Pedagogical Innovation Strategic Framework (UoL, 2005a)</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Figure 5.4 The E-learning &amp; Pedagogical Innovation Strategic Framework (Media Zoo, 2008)</td>
<td>141</td>
</tr>
<tr>
<td>25</td>
<td>Figure 6.1 Blended Learning Model</td>
<td>222</td>
</tr>
<tr>
<td>26</td>
<td>Figure 6.2 The Research Finding</td>
<td>223</td>
</tr>
<tr>
<td>27</td>
<td>Figure 6.3 The Proposed Principles</td>
<td>224</td>
</tr>
</tbody>
</table>
Lists of Tables

<table>
<thead>
<tr>
<th>No</th>
<th>Tables</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Table 1.1 Research Timescale</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>Table 2.1: Pedagogical Implication for Maslow's Hierarchy of Needs</td>
<td>39</td>
</tr>
<tr>
<td>3</td>
<td>Table 2.2: Community of Inquiry Categories and Indicators (adapted from Garrison and Vaughan, 2008)</td>
<td>52</td>
</tr>
<tr>
<td>4</td>
<td>Table 2.3: Criticisms and Problems for Blended Learning</td>
<td>63</td>
</tr>
<tr>
<td>5</td>
<td>Table 3.1: The Summary for Face-to-Face Settings and Technology in Blended Learning</td>
<td>68</td>
</tr>
<tr>
<td>6</td>
<td>Table 3.2. Technology in Education versus Education in Technology</td>
<td>78</td>
</tr>
<tr>
<td>7</td>
<td>Table 3.3: Three Ways of Being with Technology (Mitcham, 1994)</td>
<td>89</td>
</tr>
<tr>
<td>8</td>
<td>Table 3.4 Summary of Learning Theories with Examples (Hung, 2001)</td>
<td>92</td>
</tr>
<tr>
<td>9</td>
<td>Table 3.5 Summary of Instructional Learning Models (Koohang and Plessis, 2004)</td>
<td>92</td>
</tr>
<tr>
<td>10</td>
<td>Table 3.6: The Marriage of Learning Theories and Educational Technology By Demetria (2004)</td>
<td>94</td>
</tr>
<tr>
<td>11</td>
<td>Table 3.7: The Relationship between Learning Theories and Educational Technology by Hung (2001)</td>
<td>94</td>
</tr>
<tr>
<td>12</td>
<td>Table 4.1 Comparison of Quantitative and Qualitative Research</td>
<td>107</td>
</tr>
<tr>
<td>13</td>
<td>Table 4.2 Fundamental Differences between Quantitative and Qualitative Research</td>
<td>108</td>
</tr>
<tr>
<td>14</td>
<td>Table 4.3: Cases Selected</td>
<td>122</td>
</tr>
<tr>
<td>15</td>
<td>Table 5.1 Country Basic Information by UNESCO International Bureau of Education (Sources extracted from WDE, 2007)</td>
<td>128</td>
</tr>
<tr>
<td>16</td>
<td>Table 5.2 Number of UK HE Institutions (Universities UK, 2007; National Statistic, 2008)</td>
<td>130</td>
</tr>
<tr>
<td>17</td>
<td>Table 5.3 Number of HE Institutions in Malaysia (MoHE, 2008)</td>
<td>130</td>
</tr>
<tr>
<td>18</td>
<td>Table 5.4 The British HE Education: Government and Funding Bodies</td>
<td>131</td>
</tr>
<tr>
<td>19</td>
<td>Table 5.5 Facts and Figures of Students and Academics in the HEIs</td>
<td>132</td>
</tr>
<tr>
<td>20</td>
<td>Table 5.6 Similarities and Differences of HE in the UK and Malaysia</td>
<td>132</td>
</tr>
<tr>
<td>21</td>
<td>Table 5.7 Summary of Some Key Facts (UoL, 2008; UoG, 2007; UM, 2008)</td>
<td>134</td>
</tr>
<tr>
<td>22</td>
<td>Table 5.8 The World University Ranking by Times Higher Education (THES-QS, 2007)</td>
<td>134</td>
</tr>
<tr>
<td>23</td>
<td>Table 5.9 Details Scores of Times Good UK University Guide (2008)</td>
<td>135</td>
</tr>
<tr>
<td>24</td>
<td>Table 5.10 Faculties of Four Higher Educational Institutions</td>
<td>136</td>
</tr>
<tr>
<td>25</td>
<td>Table 5.11 Analysis of Interviewees I – Academics</td>
<td>138</td>
</tr>
<tr>
<td>26</td>
<td>Table 5.12 Analysis of Interviewees II – Students</td>
<td>138</td>
</tr>
<tr>
<td>27</td>
<td>Table 5.13 Summary of the Descriptive Statistics related to the Academics</td>
<td>139</td>
</tr>
<tr>
<td>28</td>
<td>Table 5.14 UoL-Examples of What and How Technology Enhanced Learning and Teaching</td>
<td>149</td>
</tr>
<tr>
<td>29</td>
<td>Table 5.15 The UoL’s Institutional Practice and Challenges</td>
<td>156</td>
</tr>
<tr>
<td>30</td>
<td>Table 5.16 The UoL’s Academic and Student Experience</td>
<td>157</td>
</tr>
<tr>
<td>31</td>
<td>Table 5.17 Wish List of the UoL’s Academics and Students</td>
<td>158</td>
</tr>
<tr>
<td>32</td>
<td>Table 5.18 The UoG’s Centralised Support Team related to Blended Learning (Jones, 2007)</td>
<td>160</td>
</tr>
<tr>
<td>33</td>
<td>Table 5.19 Disruption and Practice in the UoG’s Blended Learning Project (Jones et al., 2009)</td>
<td>161</td>
</tr>
<tr>
<td>34</td>
<td>Table 5.20 UoG-Examples of What and How Technology Enhanced Learning and Teaching</td>
<td>169</td>
</tr>
<tr>
<td>35</td>
<td>Table 5.21 The UoG’s Institutional Practice and Challenges</td>
<td>175</td>
</tr>
<tr>
<td>36</td>
<td>Table 5.22 The UoG’s Academic and Student Experience</td>
<td>176</td>
</tr>
<tr>
<td>37</td>
<td>Table 5.23 Wish List of the UoG’s Academics and Students</td>
<td>176</td>
</tr>
<tr>
<td>38</td>
<td>Table 5.24 UM - Examples of What and How Technology Enhanced Learning and Teaching</td>
<td>184</td>
</tr>
<tr>
<td>39</td>
<td>Table 5.25 The UM’s Institutional Practice and Challenges</td>
<td>192</td>
</tr>
<tr>
<td>Table No.</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>5.26</td>
<td>The UM’s Academics and Student Experience</td>
<td>193</td>
</tr>
<tr>
<td>5.27</td>
<td>Wish List of the UM’s Academics and Students</td>
<td>193</td>
</tr>
<tr>
<td>5.28</td>
<td>UTAR-Examples of What and How Technology Enhanced Learning and Teaching</td>
<td>198</td>
</tr>
<tr>
<td>5.29</td>
<td>The UTAR’s Institutional Practice and Challenges</td>
<td>205</td>
</tr>
<tr>
<td>5.30</td>
<td>Wish List of the UTAR’s Academics and Students</td>
<td>206</td>
</tr>
<tr>
<td>6.1</td>
<td>Cross Case Comparison – Strategy</td>
<td>207</td>
</tr>
<tr>
<td>6.2</td>
<td>Cross Case Comparison – The Blended Learning Awareness</td>
<td>208</td>
</tr>
<tr>
<td>6.3</td>
<td>Cross Case Comparison - Technologies and Highlight of Practice</td>
<td>209</td>
</tr>
<tr>
<td>6.4</td>
<td>Cross-case Comparison for the Confirming Experience</td>
<td>211</td>
</tr>
<tr>
<td>6.5</td>
<td>Cross-case Comparison for the Disconfirming Experience related to BL</td>
<td>212</td>
</tr>
<tr>
<td>6.6</td>
<td>List of Educational Technology used by Academic Research Participants</td>
<td>217</td>
</tr>
<tr>
<td>6.7</td>
<td>Disciplinary Comparison for the Confirming Experience</td>
<td>220</td>
</tr>
<tr>
<td>6.8</td>
<td>The Definitions and Perceptions of Blended Learning by Prominent Researchers</td>
<td>226</td>
</tr>
<tr>
<td>B1</td>
<td>Summary Table for Leading Educational Theories from Pre-18th Century to 19th Century</td>
<td>275</td>
</tr>
<tr>
<td>B2</td>
<td>Summary Table for Leading Theories in 20th Century</td>
<td>276</td>
</tr>
<tr>
<td>B3</td>
<td>Summary Table for Leading Theories in Contemporary Century</td>
<td>277</td>
</tr>
<tr>
<td>E1</td>
<td>Cross-disciplinary Experiences</td>
<td>289</td>
</tr>
<tr>
<td>E2</td>
<td>Cross Case Comparison – The Blended Learning Perception</td>
<td>290</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction

This chapter begins with a signpost of current trends in higher education and an introduction to blended learning research. The importance of the study, research aims, questions and timescale are presented, followed by the organisation of the thesis.

1.1 Behind the Scene: the Changes in Higher Education

The advancement in information communication technology (ICT) has changed how people communicate with each other in both society and the business world. In higher education (HE), it has changed how stakeholders such as students and academics gain access to information. Academics need not carry a pile of books to lecture or print out dozens of handouts; research students no longer need to attend the library to renew books or to find a journal article. Instead, the Virtual Learning Environment (VLE), digital library, online journal articles and a variety of educational ICT are pervasive. Technological innovations impact on the learning and teaching experience in higher educational institutions (HEIs). By opening communication and information access of the internet, modern higher education experience changes in daily practice. Many universities have spent much effort and resources in attempting to respond to such changes related to the digital culture.

HEIs today are disrupted by such digital culture. For instance, Carr-Chellma (2005) states that e-learning is “breaking down the elitist walls of the ivory tower” (p.1). A key part of the UK government’s mission is to use technology to bring education in life (Blair, 2006). As educators in the UK with a national commitment to technology enhanced learning and teaching, Loveless (2006) states that we live and work in interesting times, in which the cultural and political contexts of education raise challenges to many practice and beliefs. Buzzwords such as e-
learning, blended learning, technology enhanced learning, digital academe and
digital literacy have become common place in the educational world. In particular,
one of the most contested buzzwords is “blended learning” due to its provocative
nature of highlighting face-to-face (f2f) education mediated by technology that fits
into the common culture of HE. “The emerging technologies in higher education
have fostered the interest in blended learning” (Chew, 2008, p.344). Thorne
(2003) also claims that “blended learning could become one of the most
significant developments of the 21st century” (p.18). Recently there has been an
increasing number studies on blended learning, dealing with issues such as
access to resources and the effectiveness and innovative impact of the new
technologies in higher educational learning environment (Chew, in press). This
research adds to the growing number of studies by investigating the blended
learning experience in the context of higher education.

1.2 The Background and Initial Problems of Blended Learning Research
One of the challenges faced by modern HEIs is to find out how to construct and
deploy highly supportive learning environments which could be used to provide
f2f instructions, self-paced collaborating groups, and in a variety of locations and
over a distance as required (Alistair, 1995). This could be realised in a blended
learning setting. In the last decade, technology, such as online learning materials,
discussion boards and e-assessment systems, blended with the conventional f2f
education has been regarded as “blended learning”. The Cambridge Advanced
Learner’s Dictionary defines education as “the process of learning and teaching”;
and technology as “the practical, especially industrial, use of scientific
discoveries”. Technology may refer to scientific inventions such as washing
machines, cars and electric-light bulbs. The context of this research takes the
same position as Moller’s (2004) standpoint in which the technology refers to ICT.
Blended learning means the process of f2f learning and teaching events that are
mixed with practical use of technology or online activities. Ward and LaBranche
(2003) claim that blended learning is often labeled as “the best of both worlds”.
Chapter 1: Introduction

The term “blended learning” emerged from corporate training and has been widely adopted around the world (refer to section 2.1.2). The definition of blended learning, however, is controversial among researchers and practitioners (Whitelock, 2004; Oliver and Trigwell, 2005). Macdonald (2007) describes blended learning as a “hot topic nowadays but everyone has a different understanding of what it means” (p.2). Blended learning is a widely used term but some researchers criticise the term’s lack of validity which has gained ground with practitioners and not theorists (refer to section 2.2.1 and 2.4). Macdonald’s claim is possibly right due to the ambiguous meaning of blended learning. Therefore, the research is an attempt to explore academics’ views and possible educational theories which may enrich the definition and theoretical ground for blended learning.

The recent literature review exhibits two trends in blended learning definitions and research: (1) educational-focus and (2) technological-focus. For example, in an educational-focused manner Bliuc, Goodyear and Ellis (2007) define blended learning as “learning activities that involve a systematic combination of co-present (f2f) interactions and technologically-mediated interactions between students, teachers and learning resources” (p.234). In contrast, in a technological-focused manner Allan (2007) describes blended learning as “the use of different internet-based tools including chat rooms, discussion groups, Podcasts and self-assessment tools to support a traditional course” (p. 4). In the last decade, much of the blended learning research has been devoted to technological-centred design and development rather than taking an educational-focus (Alavi, 1994; Liu, Abdulkamateb and Georganas, 2003; Arriaga, Alami, and Arriaga, 2003; Barker, 2006; Amelung, Piotrowski and Rosner, 2007; Fong, Kwan and Wang, 2008). To use Brabazon’s (2007) term, “technology in education“ highlights technologies that were designed, developed and used in education - technology is the primary focal point in the research and practice (refer to section 3.1.2.2).
Blended learning studies based on pedagogical principles are few but have gradually increased (Mehrotra, Hollister and McGahey, 2001; Watson, 2001; Simonson, Smaldino, Albright and Zvacek, 2006; Chew and Jones, 2007). Their central concern is the process of learning and teaching rather than technology or how to use technology alone. In Brabazon’s (2007) term, these research or practices are labelled as “education in technology” (refer to section 3.1.2.2).

The different blended learning focus appears to be the results of disciplinary differences. Predictably, technologists show more interest in educational technology than professional educational theorists do (Bouras and Albe, 2008). The sociologist and educationist considers less the “what and how” state-of-the-art technology can aid education. Likewise, the technological scientist may not be concerned with the agenda which the sociologist and educationist focuses on. Less attention has been paid to the pedagogical considerations. The educational technology developed by the technologist, consequently, may not meet the academics’ or learners’ needs. Thus, the rationale for my research is to investigate the potential gap of the two contrasting disciplines (ICT-related discipline and non-ICT related discipline) from different institutions - by identifying, analysing and comparing the academics’ experiences and perceptions on blended learning.

Graham (2006) indicates that blended learning could enable access and flexibility, enhance learning and teaching practices, and transform the way the individual learns or teaches. Laurillard (2002) proposes the rethinking of learning and teaching at university mediated by educational technology. Vaughan and Garrison (2005) further interpret blended learning as a fundamental redesign approach to enhance learning and teaching by rethinking and revisiting current practice. These claims are explored further in the later four case studies of the thesis, especially whether or not and how the “blended learning enabled, enhanced and transformed” learning in various disciplines.
1.3 Importance of the Study

“...the aim of education is the knowledge not of facts but of values. Values are facts apprehended in their relation to each other, and to ourselves. The wise man is he who knows the relative values of things. In this knowledge, and in the use made of it, is summed up the whole conduct of life.” (Dewey, 1997, pp.6)

Bonk and Grahan (2006) claim that there has been a lot of hype around learning and teaching mediated by technology. There have been national studies concentrating on institutional e-learning or blended learning practices in both the UK and the US (JISC, 2005; Allen, Seaman and Garrett, 2007; Arabasz and Baker, 2003). Most of them focused on the study of environments or perspectives for e-learning or blended learning. They were all quantitative studies with a large sample size – country-wide HEIs (refer to section 2.3). Qualitative investigations on blended learning experience and research were conducted by a few researchers such as Sharpe, Benfield, Roberts and Francis (2006) and Arabasz and Baker (2003). Comparing these institutional investigations, this research differs in three ways. First, qualitative blended learning experience and smaller sample size (four HEIs) are investigated to provide an in-depth and qualitative case study exploration. Second, cross-country HEIs are selected for socio-culturally wider blended learning strategies, practice and experience investigation. Third, cross-disciplinary comparison is highlighted and reflected to inform disciplinary issues. The research is an attempt to bring attention to such dimension as institutional strategies, disciplinary gap and disconfirming experience which have been less focused on by previous research.

According to Becher and Trowler (2001) the ways in which academics engage with their disciplines are important factors in the formulation of disciplinary cultures and individual practice – “together they represent features that contribute coherence and relative permanence to academics’ social practices, values and attitudes” (p.23). Academics from the same discipline may hold similar epistemology and pride within their “tribe and territory”. Personally, too, I heard the following voice from an academic in ICT-based discipline, “I could not imagine and believe that questionnaires and interviews could constitute a PhD
research!” Conversely, a social scientist states that, “tables and graphs drawn from quantitative data are insignificant to me but descriptive text tells the story and is real evidence!” I believe that disciplinary differences are necessary and natural. However, it may also lead academics and researchers to a formulaic conception, stereotyped practices with possible constraints. It is, therefore, important to conduct a cross-disciplinary investigation to understand the differences of disciplines in the field of blended learning. Turner (2004) argues that there is much to be learned from the physical sciences which can be transferred to the social sciences and to the development of theory in the area of education studies. Borrowing his idea, in contrast, possibly there is also much to be learned from social sciences which can be transferred to sciences.

In this research, I explore current blended learning experience of four HEIs in the UK and Malaysia. Findings from the possible gap, confirming experience or disconfirming experience between contrasting disciplines lead to the development of a blended learning model. The outcomes of this study are analysed and justified to inform blended learning principles to enhance learning and teaching practice in the educational paradigm. The study is important because it seeks to understand the current problems and opportunities of blended learning strategies and experience in HE enabled by the technological as well as pedagogical drivers. The research is an attempt to explore the possible disciplinary gap and develop some cross-disciplinary principles in a blended learning context. It is also acts as a comparative research for the conventional blended learning environment in different dimensions - from different discipline to different HEI as well as different countries. In addition, the research offers a contribution to knowledge that leads to the establishment of an underlying blended learning model in the later stage of the thesis and for further exploitation at post-doctorate level. The research aims for a notable shift from the conventional technological framework towards an insight into the blended learning principles underpinned by educational theory.
1.4 Research Aims, Questions, Methods and Sample Selections

The key aim of my research is to explore, analyse and compare the blended learning experiences in four HEIs in the UK and Malaysia. This study is reflected in the research questions below:

1. What are the current blended learning experiences in the selected higher educational institutions in the UK and Malaysia?
2. How such experiences vary in different disciplines (social science-based academics and science-based academics)?
3. What are the reflections and the lessons learnt from the comparative experiences in (1) and (2)?

These research questions incorporate the convoluted impact of pedagogical and technological responses together. Research questions 1-2 above are made to identify and analyse the current blended learning practices in HE as well as its variation by disciplines. The findings from research question 3 meet the possible differences and the relationship between disciplinary factors, institutional factors or other factors. The similarities and differences of cross-case patterns are compared and reflected for possible formulation of blended learning principles or good practices. The case study with comparative study methodology (Yin, 2003; Bereday, 1964; Eisenhardt, 1989) is used to conduct this research. Data collection such as interviews, group interviews and observation are a few methods used to obtain the qualitative findings. The research sample comprises academics and students from four HEIs in the UK and Malaysia. The principal criteria in selecting HEIs were “which group of HEIs can provide a better understanding for the research questions (1) to (3)?” and “which group of HEIs reflect strong, both positive and constructive examples of the research interest?”

Thus, a diverse group of HEIs were selected which included traditional old universities and new universities; and the contrasting nature of disciplines related to technology such as Faculty of Computer Science and Faculty of Education, were investigated. This sampling is based on the nature of blended learning which is the integration of computing technology and educational theories. As a
result, I conducted 44 individual interviews and 3 group interviews (with 7 interviewees) - in total 51 interviewees from various faculties in four universities. These selections, however, are not representative of the country as a whole but provide a better understanding of current blended learning experience in different institutions and disciplines (refer to Chapter 5).

In summary, my research is to identify and analyse the current blended learning experience and its variation by discipline in a HE context. The similarities and differences of cross-case patterns are compared and analysed (refer to Chapter 6). This is one of the independent and original contributions. The new contribution to the knowledge is the reflection on the literature review (refer to Chapter 2 and 3) and the findings from the comparative study (Chapter 5 and 6). Such a contribution led to the development of a blended learning model and principles.

1.5 Research Timescale and Ethical Considerations

The research timescale is shown below:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>Finish</th>
<th>Duration (months)</th>
</tr>
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<tbody>
<tr>
<td>Proposal Writing</td>
<td>Feb 2006</td>
<td>April 2006</td>
<td>3</td>
</tr>
<tr>
<td>Literature Review</td>
<td>Feb 2006</td>
<td>Feb 2009</td>
<td>36</td>
</tr>
<tr>
<td>Ethical Approval</td>
<td>April 2006</td>
<td>May 2006</td>
<td>2</td>
</tr>
<tr>
<td>Interviewees Recruitment and Conducting Pilot Survey</td>
<td>Aug 2006</td>
<td>Sept 2006</td>
<td>2</td>
</tr>
<tr>
<td>Survey Methods Refining</td>
<td>Sept 2006</td>
<td>Oct 2006</td>
<td>2</td>
</tr>
<tr>
<td>MPhil/PhD Transfer Report Writing up</td>
<td>Jan 2007</td>
<td>Feb 2007</td>
<td>2</td>
</tr>
<tr>
<td>Conduct Interviews in four universities</td>
<td>Oct 2006</td>
<td>June 2007</td>
<td>9</td>
</tr>
<tr>
<td>Transcribe, Coding in Nvivo, Analysis and Data Interpretation</td>
<td>Jan 2007</td>
<td>Jan 2008</td>
<td>12</td>
</tr>
<tr>
<td>Data Refining (follow up interviewing) and BL Principles Design</td>
<td>Jan 2008</td>
<td>April 2008</td>
<td>4</td>
</tr>
<tr>
<td>Chapters and Papers Writing up</td>
<td>May 2006</td>
<td>Aug 2008</td>
<td>28</td>
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<tr>
<td>Thesis Writing up based on the chapters and papers</td>
<td>Sept 2007</td>
<td>Dec 2008</td>
<td>15</td>
</tr>
<tr>
<td>Thesis Editing, Refining and Proof Reading</td>
<td>Sept 2008</td>
<td>April 2009</td>
<td>8</td>
</tr>
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Table 1.1 Research Timescale
Along the way of this research, a number of ethical considerations were considered and practised: (1) the confidentiality of the information collected was addressed by ensuring individual responses are anonymous; (2) participants were free not to take part in this research and it was made clear to all participants that this research participation is voluntary. For student participants, it was made clear that this research in no way affects any academic judgment; (3) all participants were informed in advance of the objectives of the research; (4) the anonymous data was used only for the purposes of this research and in line with the Data Protection Act; and (5) all non-anonymous data was kept secure.

1.6 Organisation of the Thesis

This thesis consists of three parts with seven chapters. Part I (Chapters 1, 2 and 3) of the thesis concentrates on the introduction, history, definitions and critical review of the models in blended learning. Part II (Chapters 4 and 5) captures the research design and institutional investigation. Part III (Chapters 6 and 7) covers the cross-case and cross-disciplinary reflections of blended learning experience in greater detail to inform the blended learning model and the future research relating to blended learning. Finally Part IV presents the references and appendixes such as the 15 publications of the research and the matrix tables for cross-disciplinary and cross-case comparison.

In Chapter 2 and 3, I present an extensive literature review and reflection on definition, arguments, opportunities, problems and models of blended learning. The term blended learning is defended but two research gaps are found – (1) Five blended learning models are reviewed but there is no perfect model. All five models’ frameworks and current research are rather instrumental and trivial without being grounded in educational theory and the considerations of disciplinary differences; (2) can the quality of learning and teaching be enhanced or transformed by blended learning in different disciplines and how? A number of previous blended learning research projects are discussed but most of them have less focus on the disciplinary issues and the consideration of educational
theories. The recent literature review exhibits two focuses on blended learning definition and research: educational-focus or technological-focus. There are various dimensions of the complexity of the theoretical context for blended learning: contrasting focus, views and practice - “education in technology” or “technology in education”; engineering philosophy of technology and the humanities philosophy of technology - caused by disciplinary (epistemology) differences. I explore the relationship of educational technology with learning theories, specifically Vygotsky’s educational ideal. It is an initial attempt to wed blended learning to the educational theories.

In Chapter 4, I describe the qualitative methodology used in the research - case studies with comparative methods, the sample selecting criteria and the consideration of the research instruments and design. In Chapter 5, I discuss the background of the four case studies, and reports the investigations of the four institutional blended learning experiences. Finding of four single case explorations are analysed in five themes related to blended learning: (1) Strategy and Practice; (2) Awareness and Perception of Blended Learning; (3) The Academic Experience (confirming and disconfirming experience and their wish list); (4) The Student Experience (confirming and disconfirming experience and their wish list); and (5) The Summary of the Practice and Experience in the respective case study.

In Chapter 6, I reflect and propose the blended learning model based on evidence collected, to suggest a blended learning definition with two principles. Finally in Chapter 7, I conclude the research with the main findings responding to the research questions, contribution to the knowledge and future works.
Chapter 2
The Incubator: Development of the Idea of Blended Learning

This chapter presents an extensive literature review and critical reflection on the development of the idea of blended learning and its definitions, models, opportunities, trends, challenges and research in the context of HE. It also provides arguments against the criticism of the term “blended learning” and identifies the gap in the current blended learning research.

2.1 The Dawn of Blended Learning

Of all instructional methods in the modern day, the term “blended learning” is increasingly common among UK higher educational institutions (Chew, Jones and Turner, 2008b). In 2003, 86% of the UK HEIs are blending at least one VLE to support the f2f classroom, and this has increased to 95% in the following two years (JISC, 2005). Outside the UK, Bonk and Graham (2006) capture a vast amount of methods and applications of worldwide blended learning case studies in universities and commercial training and development units (Chew et al., 2008b). Other researchers such as Sharp et al. (2006), Littlejohn and Pegler (2007), Allan (2007), and Garrison and Vaughan (2008) also provide comprehensive resources related to blended learning models. The pervasiveness of blended learning has, however, increased the diversity and debates on its definitions (Chew et al., 2008b).

Blended learning involves the combination of two fields of concern in the context of my research: higher education and educational technology. To understand the richness of the term “blended learning” and the arguments about its scholarly recognition, it is necessary to revisit the research on both higher education and educational technology (Chew et al., 2008b).
2.1.1 Revisiting Higher Education and Technology

A general but superficial consensus today is that education or technology can improve the quality of life. For example, Hinton (2005) signifies that the value of HE is to “hold the promise of opportunity for improvements in the quality of life for people of all cultures” (p.74). Like Hinton, Moller (2004) affirms that technology breakthroughs have held the promise to improve life. Watson (2001) states that ICT is often seen as a “catalyst for change” that impacts on teaching style and learning approaches (Jones, Chew, Jones and Lau, 2009). Since both HE and technology held the promise for “life changing, impact and improvement”, I would like to pose the question at the beginning of this literature review: ICT innovations impact on learning and teaching experience in HE and are often perceived as a “catalyst for change”. However, has ICT enhanced the quality of learning and teaching? (What are the good practices or disruption for blending technology higher educational experience?) The response to this question leads to the development of the idea for blended learning, which is the subject of this research.

Enhancement, normally, implies the improvement from the current state to another agreeable or satisfied level. To what “quality” the learning and teaching shall be enhanced may be related to the learning outcomes of a particular course or, in a wider context, the aim or role of higher education (HE). Such an educational aim is complicated. University has always been a physical place for educators, researchers and students to come together, to interact (Noll, 2002) and to construct knowledge and skills. In the classic publication, *Universities*, by Abraham Flexner (1930), the role of higher education is both developing knowledge (research) and developing people (learning and teaching). He stresses that a university is an “autonomy organism” which is not simply influenced by the preference of society and culture. Jaspers (1960) agrees with Flexner’s (1930) view that the idea of higher education is an “autonomy organism” but he also highlights the fact that universities are not able to leave behind society. He argues that a HEI is an intellectual community within the
society, and ideally, it should play a major role in contributing to the community and society. In modern days, UNESCO advocates four educational roles:

(1) **Learning to know**: by combining a sufficiently broad and general knowledge with the opportunity to work in depth on a small number of subjects.

(2) **Learning to do**: in order to acquire not only occupational skill but also the competence to deal with many situation at work in teams. It also means learning to do in the context of young peoples’ various social and work experience which may be informal or formal.

(4) **Learning to live together**: by developing an understanding of other people and an appreciation of interdependence – carrying out joint projects and learning to manage conflicts in a spirit of respect for the values of mutual understanding.

(5) **Learning to be**: so as better to develop one’s personality and be able to act with ever greater autonomy, judgment and personal responsibility.

(Delors et al., 1996, p.37)

To paraphrase the above educational researchers’ views, generally, higher education is a process of learning, teaching and research for knowing, doing, working or living together - to play a major role in developing one’s personality and act in order to contribute to the community and society. The question now is: **how technology disrupts or enhances such a process?**

HEIs today are disrupted and pressurised by many forces, including digital culture and the emergence of the digital society. Since HEIs are intellectual communities which sit within the society, it is almost impossible to exist without technological aid. The digital culture has promoted the views of education as a potential market (Poster, 2005). Educational projects like “one laptop per child” and “online degree” in the UK and the US are prevalent (MTH, 2007; OLPC, 2008; OU, 2008). However, some of the massive e-learning projects failed due to several key reasons such as lack of considerations for pedagogy, different
cultures and complex educational environments (BBC, 2004; Meyer, 2006). The complexities of globalisation, educational and socio-cultural issues brought pressure to bear on modern higher education. To address these imperatives, a few major pressures based on Turban’s Three Pressures Model were identified (Turban et al., 2002):

The constant pressures illustrated in Figure 2.1 play a disruptive role that is continuously shaping educational aims and policies and moving the directions of higher education from what educational researchers claim it should be. Under the rapid demand from the market, globalisation and government policy, university has been transformed from an “autonomy organism” to a “knowledge industry” (Kerr, 1963) or “sausage factory” (Baty, 2006). Research may be conducted for publication purposes without actually “doing it” and for that reason academics may put less effort in learning and teaching. One might focus less on students’ development on knowledge, practical skills and personality (Delors et al., 1996) compared with research; alternately, one might place emphasis on “teaching-only
attitude” as that is the major “business” in the educational market. The role of the university may be weakened sociologically and epistemologically with such a paradigm shift. Pelletier (2005), for example, contends that higher education has been suffering from an identity crisis. Nowadays, HE is finding ways to respond to globalisation, market demand, government policy and the rapid innovation in technology. The role of a HEI has become much more complicated in the process of responding to these pressures. It is often necessary to revisit the role and the identity of a university as well as the educational aims. The greatest challenge of higher education today, as Bates and Poole (2003) assert, is the quality of learning and teaching, and the need to revisit the aims of learning and teaching. Again, can ICT help?

ICT employed in the university or in any educational context is called educational technology. In the past, educational technology was used by academics and students primarily for the purpose of communication, to convey messages and information. Educational technologies, especially the Internet and email, have an influential impact on the conventional setting of information and communication in higher education. The research and development of courseware packages (Pauleen, Marshall and Egort, 2004; Huffman, Goldberg and Michilin, 2003), online learning environment (Koehler, Mishra, Hershaev, Peruski, 2004; Combs, 2004; Willis and Tucker, 2003; Voithofer, 2001), and effective teaching with technology (Lee and Suliman, 2001; Bates and Poole, 2003) have flourished. These studies acknowledge that educational technologies enhanced learning and teaching in the traditional classroom. Sharpe et al. (2006) report that a f2f learning and teaching blend with web facilities is pervasive not only in the UK but also in other countries such as Australia and America. The Sloan Consortium survey by Allen et al. (2007) provides vast quantitative evidence which show that learning with technology has grown dramatically and influentially in North America. Both Sharpe et al. (2006) and Allen et al. (2007) demonstrate learning mediated by educational technology – blended learning is a major trend in
today’s higher education. They also provide evidence to show that most of the HEIs in the UK have at least one VLE employed.

A VLE consists of many facilities such as dissemination of learning materials, online discussion boards and video conferencing. Other than the pervasiveness of VLEs, there are studies on how educators embrace artificial intelligence (AI) in the educational context, for instance, to merge the powerful qualities of an expert system with the advantages of multimedia to create a variety of innovative learning and knowledge mediation (Gutl and Pivec, 2003; Arriaga, Alami and Arriaga, 2003). One of the pioneers of expert system technology, Professor Edward Feigenbaum of Stanford University, defines an expert system as an intelligent computer system equipped with expertise and inference procedures to solve problems (Giarratano and Riley, 1993). AI is a powerful and distinctive area in computer science involving two basic ideas: (1) studying the thought processes of humans (to understand what intelligence is); (2) representing those thought processes through ICT (Turban, 1995). Many learning and teaching mechanisms in the process of education have been substituted by AI (Arriaga et al., 2003; Eshach and Bitterman, 2003; Li, Zhang, Liz and Qiu, 2003; Shen, Han, Yang and Huang, 2003; Zhang, Fu and Shen, 2004; Chew, 2005). Simulation systems with virtual reality experience and problem solving systems with efficient and accurate responses (Han, Shen, Yang and Yang, 2003) are AI applications which are most commonly known in educational and training contexts. These studies have advanced the research of educational technology in terms of technical and operational enhancement.

Such rapidly growing research in educational technology, however, was primarily focused on a technological agenda. Although the advancement of technology has created a new era for the world and perhaps for modern education, the research on educational technology, nevertheless, was focused on a narrow range of technological and stereotypical issues such as the design and development of instructional systems (Clark, 1983). Less attention has been paid
to the educational aims or the educational theories. Academics may consider
certain pedagogical issues without strong recognition of their value and impact
(Vignare, 2007). Similarly, the educational technologies developed by
technologists, in general, may not fulfil the real needs of professional educators
and students. Even if they do, the issue of how to thoughtfully embrace them in
the process of learning, teaching and research for UNESCO’s four educational
roles - knowing, doing, working together and being would involve educational
theory and practice. Luppicini (2005) borrows Finn’s (1972) argument about the
research on educational technology, in which it needs to gain credibility with
professional educators to survive and to grow. He contends that educational
technology has struggled in defining itself because of its status as applied
science. In order to gain credibility with professional educators, it is necessary for
researchers to have considerable understanding of not only technology but
educational theory. At this point, inter-disciplinary understanding and skills
from both technology and education is necessary. The issue of disciplinary
tribes and territories highlighted by Becher and Trowler (2001), nevertheless,
appear to be a challenge for such inter-disciplinary understanding.

Educational technology consists of hardware (e.g. computer or LCD projector)
and software such as a single program or an integrated information system (i.e.
library system or VLE). A computer scientist, Turban (2002), defines an
information system as interrelated mechanisms that collect, store, analyse and
disseminate information using ICT for a specific purpose. Put into an educational
context, it collects information/knowledge from educators or students (input),
manipulates it, which involves the transformation of input to useful output
(process), and disseminates the information/knowledge (output), and provides a
feedback mechanism to meet a particular purpose, which is an educational aim
or learning outcomes. Within the boundaries of this “input, process and output”
mechanism, an educational information system consists of three important
elements: (1) technology (hardware, software and network), (2) procedures
and (3) people (Stair and Reynolds, 2001). Not only technology by itself, there
are “people” and “procedures” involved in an educational information system. I used to be a researcher in computer science who “naturally” prioritised technology over people, and was very comfortable with all sorts of mechanical terminology to interpret education such as “input, process and output” as defined above. Luppicini (2005), however, identifies that educational technology has crossed discipline to applied social science. It could be argued that educational technology research which merely focuses on technology and fixed-procedures may be sceptical from the perspectives of professional educators or social scientist.

Of all international conferences on educational technology I attended (refer to Appendix A), the research presented were mostly focused on the advancement made in the techniques and technology. Unfortunately much of the research was ideas and prototypes. Most often, research papers merely described a few lines of pedagogical considerations, and labelled them as “learning theories” for the purpose of “rhetorical decoration”. Turner (2007) contends that “I am becoming increasingly frustrated by conferences on education where paper after paper is presented, none of them addressing theory of learning at all. I think Vygotsky at least gives an indication of how these important connections could be drawn” (p.131-132). This idea will be further developed in the next chapter.

So far, only a small amount of educational technologies were implemented and evaluated in the real and vast education setting with empirical findings (Bond, Ingram and Ryan, 2008; Conole, Laat, Dillon and Darby, 2008; Luckin, 2008). Within this small amount of research, I would further query the responses of stakeholders from different disciplines. The feedback from these conference presenters was varied. One typical comment, normally, would be addressed: “the VLE may be useful to academics in X faculty but is too rigid and is minimal to Y faculty”; or “this educational technology may be very helpful for students in a computing department but it is too difficult or useless for students in an education department”.

PART I: THE INTRODUCTION AND CRITICAL REVIEW OF BLENDED LEARNING
With evidence from a pool of scholarly research papers, Kozma (2000) claims that educational technology is a field that is no longer in the backwater of educational research and is now one of the most original, creative and powerful studies in education today. However, I have reservations about the “powerfulness” of the educational technology and its impact to all stakeholders. It may be powerful and creative for a certain group of academics and students but certainly not to all disciplines and to all cultures. Sharpe et al. (2006) conducted a review on the undergraduate experience of blended learning in the UK. They indicate technology use has now become so prevalent in HE that decisions about whether to use technology or not no longer seem relevant. The key issues now are around how educators and researchers should use, and evaluate the use of, technology (p.74). HE improves the quality of life for people of all cultures according to Hinton (2005) but educational technology may or may not improve the quality of learning and teaching for people of all disciplines and cultures. It depends on how professional educators use, and evaluate the use, of educational technology with the consideration of educational aims.

In this sense, Kozma’s (2000) claim that educational technology is one of the “most powerful” studies in education is perhaps a dubious claim because the focus is not educational technology itself but how to combine (or blend) technology and education, how it would stimulate the revisit of learning and teaching, how to make use of it in different disciplines and how to convince educators from different disciplines about its “powerfulness” – and that leads to an emerging term - “blended learning”.

Laurillard (2002) proposes the rethinking of learning and teaching at university, as a conversation between educators and learners mediated by educational technology. Vaughan and Garrison (2005) further interpret blended learning as a fundamental redesign approach to enhance learning and teaching by rethinking and revisiting current practice. Macdonald (2008) also stresses that blended learning encourages academics to stop and think about the whole context of
learning and teaching, especially to recall the human element in lectures, tutorials or ad-hoc discussions in the corridors of the campus that any communication which technologies could intervene. Blended learning, in this case, appears as a suggestive solution in response to the pressures and to the quality of learning and teaching. However, this assumption needs to be further explored in the later investigation of the four case studies.

2.1.2 The Emerging Term “Blended Learning”

The emerging use of technology in higher education and the identity crisis for universities under the pressures of globalisation, technology and society have fostered my interest in blended learning. Interestingly, Garrison and Kanuka (2004) highlight this agenda:

“Blended Learning can begin the necessary process of redefining higher education institutions as being learning centered and facilitating a higher learning experience.” (p.104)

This clearly describes blended learning as an impetus to learning and teaching experience and to further redefine higher educational institutions. It provides an opportunity to address the complex educational and social phenomena issues raised by Flexner (1930), Jaspers (1960), Kerr (1963), and Pelletier (2005) as discussed in section 2.1.1. Blended learning seems to appear as the “salvation” or “total solution” to the issues discussed. However, where does the term “blended learning” come from, what does it mean to be a “total solution” and how?

Sharpe et al. (2006) conducted a study on the history and the emergence of the term “blended learning”. They claim that this term originated from commercial usage and has been used for more than 15 years but is constantly changing in meaning. Macdonald (2006) has the same view as Sharpe et al. (2006) that early references to blended learning came from work-based training and industry - one of the earliest uses was in the late 1980s by Ruskin College in Oxford, Workers Education Association (WEA) and the Open University in a collaboration project referred to as a blended learning programme for adults. At that time, this term
was used to signify a mix of f2f and distance learning at the Open University (Moore and Bryant, 1989).

To-date, blended learning has become all pervasive in the commercial and training industry and education sector in the UK. Earlier, companies which adopted blended learning were Consignia (The Post Office) and the Chartered Institute of Marketing (Reay, 2001). In higher education, Laurillard (1993) first provides a model for rethinking university teaching as a result of embedding technology. Later, Salmon (2000) introduces an e-moderating model for teaching and learning online. Both Laurillard’s (2002) and Salmon’s (2002) models flourished and were cited by many researchers. However, they did not directly use the term “blended learning” as its definition was vague at that time. Macdonald (2006) observed that the word ‘blend’ is usually used in a recipe book and is neither scientific nor academic. Regardless of these criticisms, Jones, et al. (2009) states that blended learning today has been widely adopted and has grown vastly around the world (Elsner, 2006; Johnson and Tang 2005; Julian and Boone, 2001; Jung and Suzuki 2006; Kaur and Ahmed 2006; Otte, 2005; Jones, 2006; Chew, Jones and Blackey, 2006a; Salmon and Lawless 2006; Ziegler, Paulus and Woodside, 2006; Allan, 2007; Garrison and Vaughan, 2008). These researchers claim that it represents a real opportunity to enhance learning experience in higher education with flexible time and in flexible place. Blended learning can be universal, crossing global boundaries and bringing groups of educators and students together from different time zones and geographical locations (Bonk and Graham, 2006).

I googled the exact term “Blended learning” on 11th January 2008 and was surprised the number has reached 806,000. The same search was carried out in the Google Scholar (http://scholar.google.co.uk) and it resulted 9,040 scholarly links. I did the same search on 3 March 2009 and the number has increased to 1,230,000 for Google and 16,300 for Google Scholar. Although many links occur more than once and not all references are considered as scholarly findings, such
an increasing figure for an emerging term in less than a decade is nevertheless astonishing.

The definition of blended learning, however, has been controversial since its first introduction (Hofmann, 2006; Graham, Allen and Ure, 2003; Whitelock and Jelfs, 2003; Oliver and Trigwell, 2005; Jones, 2006). The vast development of its interest in it has led to the debate discussed in the following sections.

2.2 The Scholarly Trends of the Development in Blended Learning

2.2.1 The Definitions and the Debates

"We are not sure which type of learning to use so we will use a lots and hope that the whole is greater than the sum of its parts…blended learning gave way to ‘blurred learning.’ “ (Morrison, 2003, p. 1)

I presented a paper entitled ‘Embedding Blended Learning across a Higher Education Institution’ in the first Blended Learning Conference in the UK (Chew et al., 2006a). The general consensus obtained from researchers and practitioners was that blended learning is currently embryonic in its development and many of the related concepts remain debatable. Built from the above work, I critically reviewed the definitions and debates on blended learning in the past.

The term “e-learning” is vastly known in both educational and commercial world. Most often, e-learning in higher education in the early days refers to web-based learning and teaching materials and e-tivities (Salmon, 2002). A large number of early adopters of e-learning failed to attract and retain sufficient students and there has been a significant move to redress the balance by combining the best traditional teaching and e-learning models to create “blended learning” (Jones, 2006, p.183-184). Simply, blended learning means a mixture of f2f learning and teaching with some online activities. Bielawski and Metcalf (2003) argue that this definition adds little new meaning to the term e-learning. Oliver and Trigwell (2005) echoed the criticisms of Bielawski and Metcalf (2003), and suggested that
the phrase “blended learning” is meaningless, and that it has gained considerable currency in both commercial and educational contexts because of its ambiguity.

Blended learning researchers and practitioners, however, argue that blended learning is distinctive from e-learning, and in some ways preferable to it. Jones (2006) admits that there are definitional complexities and ambiguities surrounding the term e-learning and blended learning. She further argues that the Department for Education and Skills in the UK defines e-learning as learning that uses ICT whereas the term blended learning tended to be used to describe “the linkage between traditional classroom teaching and e-learning. Most recently, blended learning programmes represents a more diverse combining of a variety of approaches.” (Jones, 2006, p. 185)

Graham et al. (2003) also hold a different view from Bielawski and Metcalf (2003) but is more aligned with Jones’ (2006) perception. Drawn from a wide search of researchers’ works in the past, they suggest that there are commonly three different definitions for blended learning: (1) combination of delivery media and tools employed (Singh and Reed, 2001; Orey, 2002); (2) combination of a few pedagogical approaches or instructional methods (Driscoll, 2002; Rossett, 2002); and (3) combination of f2f traditional learning with online instruction (Reay, 2001; Rooney, 2003; Ward and LaBranche, 2003). Graham (2006) further reviews that the first two positions above reasonably water down the definition of blended learning and do not clearly define what blended learning is. The first two definitions provide an amorphous presentation in which almost everything can be defined as blended learning. It would be difficult to find any learning system that did not involve more than one media and tools; similarly, it would be difficult to find any teaching and learning scenarios that did not embrace multiple pedagogies or multiple instructional approaches. He argues that the third stance more precisely speculates the meaning of blended learning. Littlejohn and Pegler (2007) further describe the “blend” which may refer either to the combination of
e-learning with other approaches such as f2f instruction, or the mixture within the e-learning mix of media. Bielawski’s and Metcalf’s (2003) critique is less convincing in the light of Graham’s (2006) and Littlejohn’s and Pegler’s arguments.

The definitions of blended learning that emerged from research workshops sponsored by the Sloan-Consortium are “(1) the integration of online with f2f instruction in a planned, pedagogically valuable manner” and (2) do not just combine but trade off f2f time with online activity (or vice versa)” (Vignare, 2007, p.38). Kim (2007), the keynote speaker at the International Conference and Workshop on Blended Learning 2007, further argues that the definition can, and needs to, be made more precise rather than “the combination of classroom and e-learning”. He suggests 3 dimensions to define blended learning: (1) physical class-based or virtual, (2) formal or informal, and (3) scheduled or self-paced. He claims that there are possibly 8 combinations from the above 3 dimensions, for example, the informal physical class-based; or scheduled informal virtual learning space. Furthermore, additional considerations will potentially result in 24 learning types. At one level the claim from Kim (2007) is both rigid and stereotypical due to his technological background. From the position of a professional educator, Kim’s claim is perhaps a shallow classification without further educational consideration. It appears that education is much more than 8 combinations and 24 learning types because education is much more complex than such classification.

Oliver and Trigwell (2005) address these views in a provocative way - they suggest that the phrase is meaningless and argue that it should be changed. Martin Oliver (2004) - perhaps the key “opposition” to blended learning - claims that:

1. The term lacks clarity with no indication of how new examples should be included or rejected. There are no principles underlying it (p.18).
2. Taking multiple positions on educational theories is not equivalent to ‘mixing’ them but rather being inconsistent (p.20).
3. As soon as a principled position is taken, the term ‘e-learning’ becomes problematic from an Activity Theoretical view. There is no particular reason for distinguishing between those with or without the ‘e’-prefix (p.19).

4. The blurred definition of a ‘traditional’ instruction method, which typically refers to f2f teaching, is meaningless to be labeled as ‘traditional’ since it has existed for well over a century. Sometimes, e-learning is the “tradition” to the academics who teach in Open University.

5. Most often, the focus of blended learning is on the design of teaching and instructional consideration. It is suggested that the word “learning” changes to “teaching” or “pedagogic”.

Sharpe et al. (2006) tried to avoid Oliver’s (2004) criticisms and overcome the difficulty of the lack of consensus over a definition of blended learning by proposing that the concept has a number of dimensions, and that a multi-dimensional concept can accommodate the various different definitions. Blended learning would thus involve mixtures along the following dimensions: (1) Delivery: different modes (f2f and distance education); (2) Technology: mixtures of (web based) technologies; (3) Chronology-synchronous and a-synchronous interventions (3) Locus: practice-based vs. class-room based learning; (4) Roles: multi-disciplinary or professional groupings; (5) Pedagogy: different pedagogical approaches; (6) Focus acknowledging different aims; (7) Direction instructor-directed vs. autonomous or learner-directed learning.

Figure 2.2: The Landscape of Blended Learning (Allan, 2007)
Allan (2007) adopts the same strategy as Sharpe et al. (2006). She recognises the amorphous nature of blended learning but by-passes the criticisms of Oliver and Trigwell (2005) by going straight into the study of the features of blended learning without further discussion or argument (Chew, in press). Built on the work of Sharpe et al. (2006), Allan refines those dimensions as the landscape of blended learning (refer to Figure 2.2).

Both Sharpe et al. (2006) and Allan (2007) have made a reasonable attempt to present a general account of blended learning. However, I disagree with their interpretation of the dimensions and landscape of blended learning and their response to Oliver’s (2004) criticisms. The dimensions and landscape of blended learning remain broad and complex in their claims. Such broad explanations are a safe attempt to crystallise blended learning but they still fall into Graham’s (2006) criticism of “almost everything can be defined as blended learning”. It would be difficult to find any learning system that did not involve more than one type of learning and pedagogy. One of the difficulties is that the dimensions are not orthogonal, and it can be argued that one dimension may embrace another. Even so, there may be some arguments about which dimensions subsume which. Some dimensions are overlapping and confusing as they again include almost everything in education as Graham (2006) argued. Littlejohn and Pegler (2007) offered a better attempt to simplify the confusing dimensions into four general areas as follows:

- The **space** blend: f2f or technology mediated communication
- The **time** blend: geographically and availability; synchronously or asynchronously)
- The **media** blend: tools, technologies and resources
- The **activity** blend: learning and teaching activities, individual or group

Littlejohn’s and Pegler’s (2007) efforts go some way to eliminate the confusions introduced by the mix of pedagogies and the style of learners which is well
known in the context of education. One can frequently be confused by the complexity of pedagogies and learning behaviours and this has the capacity to provoke endless debates. Such simplified schema may be more easily accepted and to put into practice. These definitions and dimensions provide a general setting and boundary to blended learning. More importantly, they present the idea of what blended learning is.

From an instrumental perspective, all arguments discussed above may be well founded and avoid the criticisms raised by Oliver and Trigwell (2005). And certainly the blended learning practitioners or technologists would continue to “enjoy” the blended learning practice within that boundary. However, it should be noted at this point that the definitions of blended learning that were presented above were focused on a technological viewpoint (except for Sharpe et al., 2006). The dimensions of space, time and media, at the very least, deal with technical issues ancillary to pedagogy. Even the dimension of teaching and learning activities, which may be informed by pedagogy, does not deal with pedagogy with any depth or sophistication. Educational theorists and philosophers may therefore be relatively uninterested in debates about blended learning, which appear to focus on what is being blended than on any concern over learning. They may continue to uphold their educational belief and persistently reject the term blended learning. It appears to be a dilemma where it is too complicated and broad to include pedagogical dimensions but at the same time there is a lack of educational grounding to support blended learning. Therefore, I discuss the educational ground for blended learning in the next chapter and make an attempt to respond to Oliver’s (2004) criticisms from an educational context:

Oliver’s (2004) criticism 1: The term blended learning lacks clarity with no indication of how new examples should be included or rejected. There are no principles underlying it.
Recent blended learning researchers, Littlejohn and Pegler (2007) assert that there is neither a perfect blend nor general blend for every particular context. Inevitably, they suggest that three factors must be taken into account in the setting of blended learning: (1) the purpose of the learning, (2) the context of the learning and (3) the approach to teaching and learning because this is a personal experience and every educator has a set of preferred values and teaching styles. I agree with Littlejohn’s and Pegler’s stance simply because, in reality, education is a complex process which requires neither absolute definition nor fixed phenomena. Based on different schools of literature review discussed above, I understand that: blended learning is part of education. There is neither a strictly defined standard nor constant styles of learning and teaching due to the diversity and complexity of the purposes and contexts in education (Chew et al., 2008b).

Blended learning practice is tailored by the different needs and requirements of an individual and context (Jones et al., 2009). There are many ways and weights of “blends” depending on the “blender” and the context (Chew et al., 2008b). In Graham’s (2006) perception, however, this again suffers from the problem of the breadth of definitions. Rather than offer another insufficient or arguable definition, Sharpe et al. (2006) suggests this poor definition may, conversely, be the strength and reason why the term has been adopted so astonishingly around the globe. The individual and institution may embed and embrace the term as “they see fit and develop ownership of it” (p. 18) regardless of others’ definitions.

I agree with Sharpe et al. (2006) in the sense that this is the current phenomena. However, I would reject the idea of “they see fit and develop ownership of the definitions and practice for blended learning” because this may water down the academic value and the growth of blended learning research given there are no boundaries. Having taken these views, it is time to return to ponder about what blended learning is and how this definition gains ground in educational research. To avoid the amorphous research, it is necessary to provide principles based on educational theories to enhance the educational ground for blended learning. General principles, tactics, continuum and guidelines were suggested by many
Chapter 2: The Incubator: Development of the Idea for Blended Learning

blended learning researchers and e-learning practitioners (Salmon, 2000; Bersin, 2004, Macdonald, 2006; Jones, 2006; Sharpe et al., 2006; Littlejohn and Pegler 2007; Allan, 2007; Garrison and Vaughan, 2008). I do not attempt to identify which model provides a clear and profound definition and principles to pin down the critiques from Oliver (2004). It is almost impossible to suggest an absolute model or stereotype principles for blended learning as it gains ground in education or social science rather than in natural science or computer science. However, a boundary of educational principles may underpin the concept of blended learning. This controversy makes this research exciting and challenging. There is an attempt to address this issue in the next few chapters.

Oliver’s (2004) criticism 2: Taking multiple positions on educational theories is not equivalent to ‘mixing’ them but rather being inconsistent.

As Oliver (2004) describes, switching or swapping theories or pedagogies are not equivalent to “blending” them because many educational theories are irreconcilable. I agree with this view at one level, for instance, pragmatic and progressive education from Dewey (1922) is contradicted by the concept of tabula rasa (enjoins parents and educators to instil the virtue and knowledge into learners’ who are in a blank state) by Locke (1995, 2001). They have opposed views on epistemology and both concepts are mutually exclusive. The attempt to mix them up is untenable. Certainly there are also educational theories which fall into similar classifications. Rousseau’s idea of education, which emphasises developmental education, thoroughly focuses on the growing of human nature and rejects the sole authority from educators (Cubberley, 2003). He has greatly influenced Dewey’s (1922), Freire’s (1970) and Piaget’s (Santrock, 2004) perceptions of education. The mixing of such theories is possibly acceptable but perhaps meaningless because they originate from the same epistemological root, but at the same time highlight certain aspects in a different manner. In this research, rather than mixing the educational theories, I would suggest that blended learning research should gain ground on one or few related and
prominent theories. The strength of each educational theory can be discussed in order to constitute a clearer implication for the development of blended learning. The educational theory may not directly relate to the definitions of blended learning but to enhance its theoretical model and practice to be scholarly recognised by educationists.

Oliver’s (2004) criticism 3: As soon as a principled position is taken, the term ‘e-learning’ becomes problematic from an Activity Theoretical view. There is no particular reason for distinguishing between those with or without the ‘e’-prefix.

Oliver (2004) claims that Activity Theoretic describes all activities involving a technology of some sort and thus there is no particular reason to discriminate between those with or without the ‘e’-prefix (p.18). Broadly defined, an activity in Activity Theory is undertaken by a subject (individual or subgroup) to reach or achieve an object (objective) using tools (Kuuti, 1995; Uden and Wills, 2001). It will transform such process into outcome as depicted in Figure 2.3. At this point, Oliver (2004) may categorise educational technology, e-learning and blended learning as “tools”; and educator and student as a subject or object in the context of Activity Theory.

Figure 2.3: Mediated Relationship at the Individual Level (Kuuti, 1995)

I agree with Oliver that educational technology is certainly a tool in activity Theory. However, Kuuti also clearly (1995) signifies that,

"An activity always contains various artifacts such as instruments, signs, procedures, machines, methods, laws, forms of work organization, An object can be a material thing, but it can also be less tangible (like a plan) or totally intangible (like a common idea) as long as it can be shared for manipulation and transformation by the participants of the activity." (p.24)
According to Kuuti (1995), an object in *Activity Theory* is not necessarily a person or a tangible thing. Hence, based on Kuuti’s view, blended learning is not categorised as a tool but a common idea, a plan to answer the “how” type of questions and an intangible object in an activity system for manipulating and transforming by the participants. E-learning is online learning and it may be a “tool” in *Activity Theory*. Having taken this brief diversion, Littlejohn and Pegler (2007) use a term, namely “blended e-learning” in their book about blended learning. The same term was used by Bielawski and Metcalf (2003) in the context of business management. If there is one point of criticism, it is the emphasis of the prefix “e”. This term is less convincing as it hardly distinguishes blended learning from e-learning with traditional learning. The current and future trend of blended learning is not only restricted to use of electronic devices but also includes the mixtures of other cutting edge technology. In the context of higher education, blended learning is the combination of different technologies and f2f activities and thereby the tag “e” might be removed with advantage. It is better to use the term “blended learning” to emphasise the “blend” of f2f with e-learning, to highlight a plan to answer the “how” type of questions and most of all, to remove the focus on “e” rather than pedagogies (Chew, 2008).

In this sense, “e-learning” will not become problematic as it remains defined as a “tool”, or online learning or learning with electronic devices. Less attention is paid to f2f instruction and how to blend the “tools”; whereas blended learning, in *Activity Theory*, is the idea and intangible object of blending f2f instruction mediated by educational technology, achieved by educators and students to transform the learning experience to a desired educational outcome.

*Oliver’s (2004) criticism 4: The blurred definition of a “traditional” instruction method, which typically refers to f2f teaching, is meaningless to be labeled as “traditional” since it has existed for well over a century. Sometimes, e-learning is the “tradition” to the academics who teach in Open University.*
The Cambridge Advanced Learner's Dictionary defines “traditional” as “following or belonging to the customs or ways of behaving that have continued in a group of people or society for a long time without changing”. This definition signifies the f2f classroom is a “traditional” instruction method because obviously it has existed well in past centuries. I would like to argue at this point - “traditional” is neither equal to “out-of-date” nor “old”. In blended learning context, f2f instruction is certainly not perceived as such a negative instructional method. Oliver (2004) contends that there is no reason to distinguish certain kinds of teaching as “traditional” and others as not, especially for those online tutors who start their professional career in an online environment. Learning mediated by technology would be “traditional” for them. It could be argued that this group of online tutors is not totally representative but rather a smaller group of educators. Such an education setting is less than a century old whereas f2f learning has been around for more than a hundred centuries. Isn’t it the latter which is more “traditional”? Personally I would assert that traditional f2f teaching is as essential as the rest of the blends with or without the word “traditional”. The term “traditional” or “conventional” is little more than a formal description to distinguish complete f2f instruction from the use of emerging technology in learning and teaching. Rather than in this century, Oliver’s claim may be valid in the next few centuries when everyone has embedded blended learning for a long time as a “tradition”.

Oliver’s (2004) criticism 5: Most often, the focus of blended learning is on the design of teaching and instructional consideration. It is suggested that the word “learning” changes to “teaching” or “pedagogic”.

From a learner’s perspective, blended learning is often about instructions and teaching rather than “learning”. Thus, Oliver and Trigwell (2005) state that the term “blended learning” should either be abandoned or radically reconceived due to its amorphous nature and the focus on “learning” rather than instruction, teaching or pedagogies. This is a provocative argument by Oliver (2004):
“This blending is not about learning per se; it is thus misleading to call it ‘blended learning’. Instead, if a term must be used, this should be abandoned in favour of ‘blended pedagogic’ or even ‘blended teaching’.” (p. 6-7)

However, it could be argued that in the history of education, learning and teaching were typically and naturally addressed in the same room. The process of learning and teaching should be symbiotic, inter-related and dependant on each other. From the history of educational philosophy, it is known that the paradigm of teacher-centered has apparently shifted to learner-centered. There are different types of learning in the current practices of education (refer to the reflective summary of the leading educational theories in Appendix B): full instructional learning that involves teaching and instilling activities based on Plato’s and Locke’s educational philosophies; guided learning in different stages or “zones” by Piaget’s and Vygotsky’s theories; learning by natural, cultural and social interactions in accordance to Rousseau’s and Bronfenbrenner’s concepts; experiential, pragmatic and reflective learning from Dewey’s view; and autonomous learning and pedagogy of the oppressed from Freire’s claims; and humanistic and holistic learning based on Maslow’s model. All these theories tend to perceive learning and teaching as a whole and focus on the word “learning” rather than “teaching”. It would be insignificant to distinguish learning and teaching or merely emphasise the latter. Based on the school of educational literature trends, my argument here is that the word “learning” should be emphasised because it is the major activity in education - thus, the word “learning” has to be redeemed!

Bersin (2004) argues that blended learning is a power business tool. Oliver and Trigwell (2005) support Bersin’s view with two claims: (1) the term “blended learning” is widely used within the training context rather than in public education and it is more meaningful within the training department in a corporation; (2) blended learning is redundant in the context of higher education because it has been prevalent in universities. I would argue against this as Oliver’s and Trigwell’s statement is self-contradiction – if the first claim is valid then it is not
valid for the second claim or vice-versa. The problem with their first claim is from unsupported inferences. It might be true in the last decade but definitely is an implausible claim in present days. The adoption of blended learning and its notable results in higher education have been clearly demonstrated by many researchers:

- In the US, 80% of all higher education offers hybrid/blended learning courses. Blended learning approaches are offered at 93% of doctoral institutions and at 89% of master's institutions (Arabasz and Baker, 2003).
- The University of New Mexico redesigned their General Psychology course of 2250 students. The drop out rate was reduced by 42% due to the adoption of blended learning. Besides, the number of students with C or higher grade increased from 60% to 71% due to the same reason (Whitelock, 2004).
- Brigham Young used blended learning approaches for 3400 students on the writing course in first year. The initial pilot found the overall paper quality produced by students was higher than those in the online course or traditional f2f classroom. It is also reached a 41% cost saving due to the blended learning approaches (Whitelock, 2004).
- In the Hong Kong 2005 survey of part-time students in higher education, 49% of them preferred blended learning mode; 42% of them preferred f2f supplemented with e-learning (Lee and Chang, 2006).
- Blended learning has a direct impact on the tuition fee reduction and by using more structured blended learning platform; students gain more guidance in learning (Chan and Law, 2008).
- City University of Hong Kong share their experience of how blended learning greatly enhanced students’ results in computer programming courses (Wang, Fong, Choy and Wong, 2008).

In the *Handbook of Blended Learning*, Bonk and Graham (2006) present more than 19 HEIs around the globe embedding blended learning and provide less than 10 case studies from corporate training. All these facts show that Oliver’s
and Trigwell’s argument about “blended learning is most widely used within the training tradition rather than the public education” is invalid in the present day. It was, perhaps at an earlier time, pervasive in the commercial training and education industry. They also misconstrue that the term “blended learning” is redundant because its idea has already spread across higher education. I would argue that neither is blended learning “new wine poured into the old bottle” as suggested by Graham (2006) nor “new buzz words used in an old educational setting”, but rather “different old and good wine poured into the new different bottles” based on disciplinary and individual differences. Thus, the term shall persist.

The practice of learning and teaching based on educational theories from the ancient Greek philosophers to the contemporary educationists is complicated (refer to Appendix B). However, this produces exciting meanings and understanding for a better (or not) learning and teaching experience in different generation. Blended learning, like its name reveals, blends, combines and mixes “different types of learning”. Although there were arguments about “which types of learning” and the ambiguities on the definition of blended learning as discussed earlier, its definition has broadly been adopted and agreed in the present day by different researchers such as Derntl and Motschnig-Pitrik (2005), Graham (2006), Fong and Wang (2007) and Fong et al. (2008), that is the “combinations and blends of f2f and computer-mediated instructions”.

In this research, I intend to extend Graham’s definition of blended learning, from the blend of f2f instruction and computer-mediated instruction to the blend of f2f “learning” and “technology-mediated learning”. I would suggest the word “learning” should be emphasised as discussed and to draw parallel between the definitions of the term blended “learning”. The term “technology-mediated” learning was also used by Boyle (2005) and Lai, Lee, Yeh and Hoc (2005). Technologies used in education have vastly changed from one decade to another, from the ancient papyrus and paper, printing press, radio and video...
cassette, to the current personal computer, Internet, Internet2 and grid computing (Foster and Kesselman, 1999; Berman, 2003). Hence, the current trend of blended learning is not restricted only to computers but other devices such as iPod, PDA, mobile phone and other cutting edge technological equipments. In this sense, rather than focus on computers, blended learning should provide wider “sociological imagination” (Wright, 1959) for future trends. The term, technology, used in blended learning is currently referring to the web but who knows what will emerge in the digital future? This view is support by Sharma and Barret (2007). They define blended learning as the combination of f2f classroom component with an appropriate use of technology. To Sharma and Barret, the term “technology” covers a wide range of recent technologies, such as the Internet, CD-ROMs and interactive whiteboard. It also includes the use of computers as a means of communication, such as “chat and email, and a number of environments and web 2.0 technologies which enable the educator to enrich their course - the VLEs, blogs and wikis” (Sharma and Barret, 2007, p.7).

Stubb, Martin and Endlar (2006), however, caution that such simple substitution and enrichment of f2f for electronic learning is unlikely to be successful in higher education. I agree with Stubb et al. in the sense that blended learning is not merely simple substitution of f2f for e-learning. This is expressed clearly by Vaughan and Garrison (2005). They define blended learning as the thoughtful integration of f2f classroom and Internet based learning or technology-mediated opportunity. They further argue that the thoughtful integration of f2f classroom (spontaneous verbal discourse) and Internet based (reflective text-based discourse) learning opportunities is neither a simple add-on to a classroom lecture nor an online course. It is the fundamental redesign and an optimal (re)design approach to enhance and extend learning by rethinking and restructuring teaching and learning (Chew et al., 2006a).

The interpretation of Vaughan and Garrison is notable simply because it addresses and expands Laurillard’s (1993) idea on refining the teaching and
learning in higher education by embedding technology. Littlejohn and Pegler (2007) highlight the space, time, technology and activity blends for blended learning. To paraphrase their views, I would suggest that academics may want to pose themselves two questions during the blend:

(1) What are the aims of learning and teaching (to me)?
(2) What space, time, technology, activity are best used/blended based on the educational aim in (1)?

Presumably, the answers certainly vary from one educator to another. In this respect, Driscoll (2002) states that blended learning will be interpreted differently by different people but at the same time such differences illustrate its untapped potential. Some blended learning researchers agree with Driscoll’s view (Oliver, 2004; Graham, 2006; Picciano and Dziuban, 2007). The reflections from the above two questions, however, may be confusing due to their “differences” and to “different people”. Again, here is an initial assumption which relates to the research question: different disciplines may have different responses to blended learning and such differences may formulate the “untapped potentials”. Such untapped potentials are different with the arguments of amorphous definitions and Sharpe et al.’s (2006) perception of “seeing it fit and develop ownership of it”. The untapped potentials here, in a clear definition and boundaries of blended learning, refer to the differences of educators' epistemology and disciplines to answer the above two questions.

2.2.2 Overview of Current Outstanding Models (Chew et al., 2008b)

“It is challenging to find a widely accepted definition of blended learning, and even more difficult to find a core set of literature on blended learning mythologies or framework.” (Hanson and Clem, 2006, p. 137)

In higher education, there is neither a standard nor simple stage-like framework to model blended learning for all disciplines and all institutions. Blended learning practice is often tailored by different needs and requirements of individual, discipline or organisation. There are too many ways and models of blends
depending on the blender and context. It is a practical and empirical question whether blended learning can be structured yet having the same benefits with different practitioners using the similar model and if so, how.

In this section, I discuss and review five models related to blended learning: (1) E-Moderation Model emerging from the Open University of the UK (Salmon, 2000, 2002); (2) Learning Mix from the Open University of Malaysia (Kaur and Ahmed, 2006); (3) Learning Ecology Model by Sun Microsoft System (Wenger and Ferguson, 2006), (4) Blended Learning Continuum from the University of Glamorgan (Jones, 2006); and (5) Inquiry-based Framework by Garrison and Vaughan (2005, 2008). These models were chosen due to their prominent ideas or vast citations related to blended learning. A critical review of the models in accordance with Maslow or Vygotsky is argued (Chew et al., 2008b).

2.2.2.1 Salmon’s e-Moderation and e-tivities

“The UK Open University (OU) was founded on the idea of blended learning long before the phrase came into common use.” (Salmon and Lawless, 2006, p. 387)

Gilly Salmon (2000, 2002) is perhaps one of the most widely cited researchers on e-learning or online education in the UK in the last decade. Her books on e-tivities and e-moderation have shifted the typical terms such as e-learning or online education to a step-by-step paradigm – the five-stage e-moderation. A new term namely “e-moderator” was created to substitute for “online tutor” or “e-tutor”. The e-moderation model has been widely adopted by educators across the world (Salmon, 2004b). Salmon’s e-moderation model was built on Maslow’s (1943) model of the hierarchy of needs. To understand Salmon’s model, it is necessary to revisit the concept developed by Maslow.

Abraham Maslow (1943) is a famous theorist who put forward the hierarchy of needs. His model can be applied in an educational context especially to understand the motivation of learning and teaching for learners (Kabouridis and
Link, 2001; Dickinson, 2000; Watson, 1998) as well as for educators (Rowley, 1996; 1996a; Conley, 2000; Blase and Blase, 2000). The educational implications of his ideas are summarised in the table below:

<table>
<thead>
<tr>
<th>Need</th>
<th>Pedagogical Implication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage-5</strong> Self-actualisation</td>
<td>The learner will develop the full potential as a human being to realise the purpose driven learning process and the cultural life.</td>
</tr>
<tr>
<td><strong>Stage-4</strong> Self-esteem</td>
<td>The personal strength, qualities and uniqueness within the individual learner is developed and found in the learning process. Learners who are given tasks to play role in the learning environment can contribute to this perception.</td>
</tr>
<tr>
<td><strong>Stage-3</strong> Love and sense of belonging - Social</td>
<td>The individual learner needs to be cared and loved by the peers and educator. The educator shall create such learning community to provide the sense of belonging to the learners.</td>
</tr>
<tr>
<td><strong>Stage-2</strong> Safety</td>
<td>The learning environment must be safe and sound for all students from any background and at any age. For example the inclusive facilities for disabled learners or international students. Psychologically the learners feel safe to communicate with the peers and tutor in this stage.</td>
</tr>
<tr>
<td><strong>Stage-1</strong> Physiological well-being</td>
<td>Learners will lose attention and not be able to learn well if their physical conditions such as accessibility, hungry, insufficient sleep, illness and indistinct noises are not well attended. No physical obstacles that hinder the accessibility to the learning materials in this stage.</td>
</tr>
</tbody>
</table>

**Table 2.1: Pedagogical Implication for Maslow’s Hierarchy of Needs**
**(Modified from Alexander, 2006)**

To interpret Maslow’s Hierarchy of Needs, McFadzean (2001) defines the aim of education as to assist learners to achieve self-actualisation and thus fulfil their potential for personal growth. Through the social interaction, learners feel loved and sense of belonging to the learning group. Noddings (1992) also states that educators may contribute to the sense of belonging and self-esteem by ensuring the engagement of learners in the community which is socially and academically reinforced. These two interpretations are clearly presented in Salmon’s model for
e-moderation. In accordance with Maslow’s model, her stage-like model consists of 5 phases as shown in Figure 2.4. At Stage 1, the warm induction, motivation and accessibility for all learners are the key agenda. E-moderators shall provide an interesting introduction to the use of the technological platform, and acknowledge the feeling surrounding using technology and meeting new people through the online environment (Salmon, 2000).

Salmon (2000) emphasises that socialisation with peers and e-moderator are the essential activities in Stage 2. The learners are familiarising themselves with each other and developing bridges between cultural and social barriers. Information will start to exchange in the following stages if the bridges are built. Rather than merely reading from the online materials, interactions with the materials and interactions with e-moderator and peers will be stimulated at the individual’s own pace. In stage 3, the sense of belonging to this community may grow in parallel. By stage 4, learners start constructing the knowledge and facilitating each other in the process of knowledge construction. The personal strength and knowledge within the individual learner is developed and
constructed along the way. Learners will take control of their own knowledge construction whereas e-moderators merely facilitate the knowledge constructing and sustain the groups’ communication in a manner which is not noticeable. Ideally, the learners will successfully handle their own group dynamically as the learning proceeds. At the last stage, learners become responsible for their own learning and for their group. They also become critical and self-reflective. Ultimately, learners are confident in reflection, assessment and achieve self-actualisation in the whole e-moderation process.

Salmon (2004a) claims that this e-moderating model is a proven resource that provides a clear blueprint for education and e-learning. Hammond (2007) also stressed that the strength of e-moderating lies in its pragmatic and practical nature. I attended one e-moderating course in the first semester of 2006. Based on such personal experience, I do not agree with these claims. E-moderating is a simple step-by-step guide to support the blended teaching and e-learning for the educator at a certain level but it does not provide a clear blueprint for education for all learners. Due to my cultural background and different priority at that time, I did not enjoy the online socialisation and vast information exchange on the discussion boards. Most often, I felt distracted and lost in the massive messages online. I did not “construct knowledge” from those messages as expected in Salmon’s E-moderation Stage 4. Practically it was difficult to convey my thoughts and reflections in the messages or those e-tivities in a short responsive time. As a result I was not confident in reflection and achieving self-actualisation in the process. Nevertheless, the e-moderating course provided a unique e-learning experience that changed my perception of e-learning at a superficial level such as downloading online materials, online assessment and simulation. E-tivities introduce better pedagogical elements such as social engagement compared with the traditional online learning. It is a good start-up reference for an educator who intends to practice e-learning.
In the past few years, there has been an increasing number of studies dealing with the blended issues such as (1) how to integrate different technology and media into conventional classroom and (2) how pedagogy and f2f instructions can be mediated by technologies. To support these issues, Salmon addresses the “what, which and how” type of questions with her e-moderating model. Salmon’s aim is to provide a simple but practical guide for those who are involved in online education and training based on Maslow’s educational concept. I would argue that the “practical and simple guide” may be applied to the educator but not to all learners in all disciplines. I personally experienced that it is difficult to achieve the knowledge construction and spontaneous development claimed in Salmon’s e-moderation model.

Maslow cautions that most learners stop maturing after they have developed a high level of esteem and therefore never reach the stage of self-actualisation (Santrock, 2004b). To Maslow, self-actualisation is always the critical concern and, perhaps, is a problem in his model. In the education context, the learner who is in the self-actualisation stage is cognitively knowing and exploring new knowledge, to connect to something beyond the ego or to help others find self-fulfilment and realise their potential (Huitt, 2004). In this respect, I would caution that it is indeed the greatest challenge for an e-moderator to facilitate learners to the last stage (stage 5). There is one criticism from Hammond (2007) that I strongly agree with: Salmon appears to take a generally negative view on ‘lurkers’ (those participants who read messages but may not post a contribution). It could be argued from my experience of attending an e-moderating course in the past, that some of the messages posted are merely “for the sake of posting” or “for the sake of communicating” without valuable contributions to learning. As a typical Asian student, reading messages or interacting with the learning materials, at times, can be seen as another way of knowledge construction. Interactions with people or actively posting message in the discussion board are not necessarily the only way of assessing a student.
Overall, e-moderating is still an interesting attempt for modeling online education based on an educational theory. However, Lisewski and Joyce (2003) criticise that f2f is less emphasised in the later stages and, indeed, is only present in the first stage. This important element of blended learning is missing. It is challenging to implement e-moderation in the traditional universities who emphasis on f2f classroom.

2.2.2.2 Learning Mix for the Open University of Malaysia

There are many public and private traditional universities in Malaysia. The Open University of Malaysia (OUM) is the first higher education institution in the country which adopted the “open” concept and was backed by a consortium of 11 public universities. Figure 2.5 presents a blended learning model designed and implemented by OUM to accommodate the mission of the first open and distance learning higher education provider in the country.

![Blended Learning Model](source)

According to the model shown in Figure 2.5, blended learning in the Open University Malaysia contains three learning environments: f2f learning, online learning and self-managed learning. Kaur and Ahmed (2006) argue that f2f
learning contributes to the learners’ social interactions with peers and educators; whereas the online learning complements f2f interactions and self-managed learning to create an effective and collaborative learning support. The online tutors are expected to play an equally effective role as a tutor in the actual classroom. Thus, this model acts as a 24-hour virtual classroom to provide a platform for reflective thinking, discussion and learning (Open University Malaysia, 2006).

Self-management learning (SML) is based on specially constructed and print-based modules supported by CD-ROM courseware and digital content. Learners are recommended to study in SML at least two hours per day (Open University Malaysia, 2006b). Kaur and Ahmed (2006) assert that SML is the most important method in this model compared with the other two types. However, it requires high self-initiative and independent study to accomplish the SML process. Not surprisingly, self-discipline is apparently the core requirement in this model. The notion of this model which consists of three platforms (especially the design and development of SML) may suffer from the problem of being time and cost consuming. Such effort is feasible only to a university which is newly setup or to those who require radical change in learning and teaching approaches.

Unlike the stage-like learning process by Salmon (2000, 2002), the blended learning model in the Open University Malaysia lacks theoretical ground given the learning environments that it is instrumental (refer to Figure 2.5). It focuses on the space and educational technology blend rather than learning development. This blended learning model assumes that educators are responsible for creating specific learning conditions, for example CD-ROM courseware and learning objects in online learning, and to promoting an excellent learning experience for learners holistically. Problems such as the maintenance of SML and the inflexibility to change for learning objects may arise. Furthermore, I noticed that online assessment, which is one of the core learning events in the blended learning research, is missing in this model.
2.2.2.3 A Learning Ecology Model by Sun Microsoft System

According to Wenger and Ferguson (2006), the world-wide Sun Microsystem Corporation adopted an ecology framework as a guide to their blended learning model. This model enables them to map current possibilities as well as new possibilities of technology and learning design for IT training in global corporation. The major strength of this model is that it contains a broader and complete view of education (refer to Figure 2.6) and at the same time accommodates a constant changing set of components (refer to Figure 2.7).

![Figure 2.6: General Learning Modalities (Wenger and Ferguson, 2006)](image1)

![Figure 2.7: Learning Modalities (Wenger and Ferguson, 2006)](image2)
Wenger and Ferguson (2006) suggest five important backgrounds to this learning ecology framework as (1) Quality of Learning experience; (2) Control over Learning Experience; (3) Formal versus informal learning; (4) Social nature of learning and (5) Cost effectiveness. These are essential values to construct the framework but I would like to argue that not all of them were embedded and applicable in the model, for instance, the measurement for the “quality” and the “cost effectiveness” of the learning experience. Neither is the Learning Ecology Model able to provide evidence for cost effectiveness nor justify what quality of learning experience is informed based on educational theories. This model presents a methods-rich framework for blended learning. Wenger and Ferguson (2006) named the methods and opportunities as “learning elements” for learners to construct the knowledge and perform social interactions. Each learning element in Figure 2.7 demonstrates the learner-focused or educator-focused idea which is behind it. With the above spiral type of learning modalities, the ecology framework is flexible enough to tailor the learners’ and educators’ needs.

Siemens (2003) indicates that learning is a dynamic, living and evolving state and learners always learn from an evolving process more than static content. In this respect, I would argue that learning modalities shown in Figure 2.7 provides a less dynamic and evolving environment. There is no specific learning element which is undoubtedly distinguishable from the adjacent elements in the other column. For instance, case studies can be learned by “studying” or “teaching” instead of “practicing” in certain circumstances; and exercises can be carried out in a self-initiating manner without guided coaching. The line between studying and practicing, teaching and coaching is therefore ambiguous. There is no clear distinction between self-navigation versus guided navigation. The learning could take place in overlapping circumstances as described by Vygotsky in ZPD (refer to Appendix B) in which the learner constructs the knowledge (self-learning) with the aid of a senior facilitator (guided learning). On the other hand, I would argue that this model pays too little attention to the cognitive factors such as reflection and assessment along the learners’ development. However, this Learning
Ecology addresses the criticism raised by Steven and Frazer (2005) that the concept of “coaching” is the missing ingredient in a blended learning strategy as it emphasis “coaching” as one of the four elements.

2.2.2.4 Jones’ Blended Learning Continuum

The University of Glamorgan (UoG) is one of a number of UK HEIs which has taken a whole institutional approach to adopting blended learning. It made a commitment in 2005 to the adoption of blended learning across the institution and its delivery partners (Jones, et al., 2009). A three-year project across the University’s provision led by Professor Norah Jones, the Head of Centre for Excellence for Learning and Teaching, has been carried out (Chew et al., 2006b). Jones (2006) suggests that the continuum of blended learning is a better guideline instead of a stage-like model for institutional wide adoption. The continuum used by the University of Glamorgan is shown in Figure 2.8. Jones (2006) identifies that PowerPoint presentations and basic web-facilitated learning resources through a VLE are the indication for the category of “Basic ICT Usage” and “E-enhanced”. The next point is “E-focused” where discussion boards, online assessment tests and interactive materials take place. More online facilities are used extensively and creatively here. E-intensive is the last category in the continuum, where whole teaching and learning is delivered online with f2f inductions (Jones, et al., 2009).

![Figure 2.8: Continuum of Blended Learning (Jones, 2006)]
Similarly, Jones’ continuum tallies with Garrison’s and Vaughan’s (2008) view on the rejection for dualistic thinking of choosing between conventional f2f and online learning. A continuum provides more flexibility for practitioners to decide at which point the best option is, in order to suit the individual’s epistemology and disciplines (Jones, et al., 2009). At the same time, one may be able to conduct self evaluation and understand more options along the way. The available directions are well-defined for anyone who adopts this continuum. The “E-intensive” in this model, however, is not asserted as the best solution. It is a subject-dependant and flexible model acting as a guideline to individual disciplines and requirements via different modes of category. It provides an unambiguous method to the institution that is new to blended learning (Jones, et al., 2009).

Jones’ Continuum of Blended Learning is a simpler but more practical model than Learning Mix (refer to section 2.2.2.2) and Learning Ecology Model (refer to section 2.2.2.3) in terms of practical adoption of the technology. It shows the progress and direction of blended learning for a higher educational institution whereas this is not clearly expressed in other models. The Continuum of Blended Learning provides the educators with an idea of what and how to embed blended learning in their teaching process. In this respect, this model provides an overall picture especially on the choices and indications that can be made in producing uncomplicated but effective blended learning experiences, from an individual’s module to the whole programme (Jones, et al., 2009). Allen et al. (2007) conducted an extensive survey among the universities in the US. Their results are similar to Jones’ Continuum. Thus I attempt to relate both ideas as the following:
To compare the Jones’ continuum and Allen et al.’s classification, it could be summarised that “Basic ICT usage” falls into the category of “Traditional”; “E-enhanced” is more likely to be the type of “Web Facilitated”; whereas “E-focused” is labeled as “Blended/Hybrid” course; and “E-intensive” apparently falls into the category of “Online” module. In practice, Allen et al.’s classification might be easier for one to identify the current stage from the exact percentage of the proportion of content delivered online. I would argue at the same time, however, that this may again provoke disagreement from the educationists as it is a typical stereotype. Cross (2006) affirms that the classification by percentage is not a useful way of blending online learning and offline learning as they are “oversimplified” (p.xviii). Jones’ continuum on the other hand, provides more thinking space and flexible variation, which is commonly required in the context of education. Overall, Allen et al.’s idea does not stand comparison with Jones’ continuum.

If there is one point of criticism for the continuum, it is that its emphasis is on technology rather than pedagogy. Pedagogical considerations such as instructional activities and social interactions are not directly described in the continuum. Furthermore, it does not reveal the role of educators and learners as
depicted in the Learning Modalities (Wenger and Ferguson, 2006) and OUM Blended Learning models (Kaur and Ahmed, 2006). As discussed in section 2.1.1, this is essential due to the focal point of education being people and followed by pedagogy, not technology. The main challenge is perhaps to convince the academics that this continuum is not a new initiative but an attempt to improve professional development in a systematic manner. Ultimately it acts as an impetus for academics to move forward in view of the pedagogical issues and of their ICT competencies. Further investigations and discussions are presented in Chapter 5.

2.2.2.5 Garrison’s and Vaughan’s Inquiry-based Framework

“Blended learning is at the center of an evolutionary transformation of teaching and learning in higher education. However, transformational growth can only be sustained with a clear understanding of the nature of educational process and intended outcomes.” (Garrison and Vaughan, 2008, p. 8)

In the context of blended learning, Garrison and Vaughan are perhaps two of the most pioneering and prominent researchers, in terms of the understanding of the nature of both the educational process and educational technology. Garrison and Vaughan (2008) assert that “reflection and discourse” (p.31) are the two inseparable elements at the heart of a meaningful educational experience. My personal learning and teaching experience in HE makes me completely agree with this claim. They promote blended learning design which recognises and maximises such educational experience through: (1) thoughtfully integrating online learning and f2f learning for better reflection and discourse; and (2) fundamentally revisiting and rethinking the learning and teaching to optimise students’ engagement. Based on immense experience grounded in the field of education, Garrison, Anderson and Archer (2000) developed the Framework for Community of Inquiry (CoI) as a guideline for online and f2f learning and teaching. As a result, Arbaugh (2007) reports that Garrison et al.’s work (2000) has shown considerable promise and becomes the most cited piece of research in the journal of The Internet and Higher Education to date. According to Garrison and Vaughan (2008), CoI framework is rooted in Dewey’s idea of constructivism.
They understand Dewey in the sense that educational inquiry is neither to memorise nor seek final answers but a practical process to investigate problems and issues. They believe the ideal educational process is the route for a collaborative constructivist who focuses on inquiry. The key of CoI is heavily reliant on the process of inquiry. In such a process, knowledge is shaped and constructed through social interaction and collaboration. Garrison and Vaughan (2008, p.15) thus argue that “education defined as a process of inquiry goes beyond accessing or even assimilating information. Inquiry joins process and outcomes (means-end) in a unified, iterative cycle. It links reflection and content by encouraging students to collaboratively explore and reasonably question the organisation and meaning of subject matter.”

Figure 2.10 depicts the idea of educational experience from the process of inquiry. Cognitive presence is the most basic idea of the inquiry process. It consists of information exchange, connections of ideas and the creation and testing of the concepts. Teaching presence establishes a reasonable structure and process of learning and teaching. It also provides the quality design and direction for the educational experience. Social presence represents a group communication that facilitates the collaborative learning. A community of inquiry will be formed through its presence.
The personal educational experience will be enhanced when all teaching, cognitive and social presences occur at the same time and facilitate each other. The categories and indicators for CoI are clearly presented in following table.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Categories</th>
<th>Indicators (examples only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive presence</td>
<td>▪ Trigger event</td>
<td>▪ Having sense of puzzlement</td>
</tr>
<tr>
<td></td>
<td>▪ Exploration</td>
<td>▪ Exchanging information</td>
</tr>
<tr>
<td></td>
<td>▪ Integration</td>
<td>▪ Connecting ideas</td>
</tr>
<tr>
<td></td>
<td>▪ Resolution</td>
<td>▪ Applying new ideas</td>
</tr>
<tr>
<td>Teaching presence</td>
<td>▪ Design and organising</td>
<td>▪ Setting curriculum and methods</td>
</tr>
<tr>
<td></td>
<td>▪ Facilitation of discourse</td>
<td>▪ Sharing personal meaning</td>
</tr>
<tr>
<td></td>
<td>▪ Direct instruction</td>
<td>▪ Focusing discussion</td>
</tr>
<tr>
<td>Social Presence</td>
<td>▪ Open communication</td>
<td>▪ Enabling risk-free expression</td>
</tr>
<tr>
<td></td>
<td>▪ Group cohesion</td>
<td>▪ Encouraging collaboration</td>
</tr>
<tr>
<td></td>
<td>▪ Affective/personal</td>
<td>▪ Expressing emotions, camaraderie</td>
</tr>
</tbody>
</table>

Table 2.2: Community of Inquiry Categories and Indicators (adapted from Garrison and Vaughan, 2008, p.19, 33-46)

From Table 2.2, one could think of many educational technologies that are able to facilitate these elements. Many blended learning researchers merely provide an analysis of a list of technologies that can be adopted in learning and teaching. I would like to assert, however, that Vaughan and Garrison (2005) have successfully **shifted the focus of blended learning from technology to learning and teaching, yet simultaneously triggered the exploration and interests in possible technologies or ways to enhance the educational experience.** In addition to these issues, the design considerations on the nature of inquiry, learning activities and technologies during and after f2f sessions proposed by them are useful.

The framework of CoI is facilitated by educational technologies and they can also be used at the faculty level rather than at the individual level. Vaughan and Garrison (2005) conclude from their findings that blended learning was
successfully supporting the development of a community of inquiry in a faculty. Vaughan and Garrison (2006) further highlight that a blended faculty community of inquiry provides the necessary structure to support and sustain the course redesign process. The blended faculty CoI will provide support and recognition for participants to revisit and reflect on their course design, pedagogy and the uses of educational technology. Figure 2.11 illustrates the program outcomes for a blended faculty CoI. This involves the curriculum design (such as course outlines for a particular course), teaching strategies and technology integration.

![Figure 2.11: Program Outcomes for a Blended Faculty CoI (Garrison et al., 2008, p.57)](image)

Blended learning in Vaughan’s and Garrison’s (2006) view may represent the integration of pedagogy and technology in a community-based inquiry development. This is a different view from Salmon (2000) and Jones (2006). Both Salmon and Jones define the blended learning model in a structured, simple and practical manner, whereas Garrison and Vaughan (2008) illustrate blended learning in a more descriptive and wider way. According to recent research, Arbaugh (2007) reports on the empirical verification of the CoI framework and assert that this research needs to move beyond exploratory descriptive studies. One notable achievement of Garrison and Vaughan (2008) is the seven
principles they suggest for the creation of cognitive presence and sustainable social presence during “teaching presence”:

1. Plan for critical reflection, discourse and tasks that will support systematic inquiry.
2. Encourage and support the progression of inquiry.
3. Ensure that inquiry moves to resolution and that metacognitive awareness is developed.
4. Plan to establish a climate that will encourage open communication and create trust.
5. Sustain community by shifting to purposeful, collaborative communication.
6. Manage collaborative relationships to support students in assuming increasing responsibility for their learning.
7. Ensure assessment is congruent with intended learning outcomes.

Blended learning, in the eyes of Garrison and Vaughan (2008) is not simply embedding educational technology into f2f instruction. Rather than suggesting “what and how” type of questions as Salmon (1999, 2000) did, they precisely introduce a holistic, reflective and self-sustainable Community of Inquiry Framework grounding on a strong educational theory. It acts as a conceptual tool that helps the academics and blended learning practitioners who wish to evaluate and position the value of blended learning. It also acts as a stimulation of positive and informed change through such reflections.

2.2.3 Opportunities, Trends and Problems of Blended Learning

“\textit{No vision for the future of learning is complete until we can imagine the power of converged digital and mobile technologies for education…”} (Wagner, 2006, p.41)

Crudely, blended learning represents an opportunity to integrate the technological advances with the physical interactions offered by the f2f classroom (Thorne, 2003). Such integration can compensate for the inadequacies of classroom learning and online learning (Lai et al., 2005). Time
and space, in this sense, are the typical constraints for the traditional classroom setting. In a large class, less attention is paid to the individual student. A complete e-learning or distance learning may potentially lessen a learner’s participations in the learning process. Furthermore, contact and communication in the online learning experience is apparently less humanness due to fidelity issues (Graham, 2006). Blended learning, in this respect, gains the strengths of both e- and f2f learning. Hofmann (2006) also reports that by blending the traditional classroom and online learning, it is more cost-effective to teach larger or smaller groups, or even provide one-on-one tutoring.

I would like to highlight the current blended learning trends and benefits based on Graham’s (2006) ideas: (1) enabling access and flexibility, (2) enhancing current teaching and learning practices, and (3) transforming the way an individual learns or teaches. At the basic level, blended learning enables easy access and flexibility in learning and teaching. Salmon (2000, 2002) suggests in her e-moderating model that the first and essential prerequisite to learning is the students’ accessibility and motivation. Students will be able to enjoy the benefits of learning, only if they have no problem with accessibility. Blended learning embraces the strength of online learning which has easy and flexible access at anytime and from anywhere. With the emergence of mobile technology, Wagner (2006) further underlines that the next wave of blended learning as “education unplugged”, which consists of wireless application and rich mobile application for learning such as WiFi and cellular, Palms and iPod. Easy and convenient access is the fundamental idea of all these technologies as they provide the learners with an enjoyable experience which is accessible. The evolution in technology, such as education in virtual reality and educational expert systems (Gutl and Pivec, 2003; Zhang et al., 2004; Chew and Jones, 2006), is growing rapidly as discussed in section 2.1.1.

Bonk, Kim and Zeng (2006) did a study on the future impact of emerging technology on higher education. They report that reusable content objects,
wireless technology and peer-to-peer collaboration tools will have the greatest impact on the delivery of blended learning in higher education in the next few years, followed by digital libraries, game simulations, assistive technology and digital portfolios. I would further argue that such forecasting by Bonk et al. (2006) is dubious in terms of the ambiguous definition of “the greatest impact on higher education” and “the impact of what”. Are they referring to the impact on transforming the role of higher education or the impact on transforming the delivery mode and educators’ teaching practices? Or are they referring to the impact on the effectiveness of learning? EL-Deghaidy and Nouby (2007) assert that most blended learning research focuses on “effectiveness” rather than the educational values and considerations. I agree with this claim as there has been an increasing number of studies about the effectiveness of blended learning, its impact on higher education (Bonk, et al., 2006; Ross and Gage, 2006; Dziuban, Hartman, Juge, Moskal and Sorg, 2006; Lindquist, 2006; Offerman and Tasave, 2006) and its methods to promote innovative dialogues and practices (Smith, 2006; Barker, 2006). The researchers’ interest in these studies has increased parallel with the development of technology. However, in many blended learning research papers the results are not effectively monitored and evaluated (Chew and Jones, 2006). Evaluation and assessment play a role in providing essential information that blended learning is on track and is achieving its expected learning outcomes. If one of the purposes of education is to help to close the gap between actual and desired performance, the educator must be able to define what the desired level of performance is (Thorne, 2003). Such learning objectives are defined by educators, the educational aims of an institution as well as the national policy. “Effectiveness” and “impacts” are sensitive terms in education due to their ambiguity. Different disciplines may have different views on effectiveness and impact. This issue will be further discussed in the next chapter.

One of the criticisms leveled at much blended learning research is whether it does really enhance learning and teaching? ELESIG (2008) is investigating this area from the learners’ perspective and the results are yet to be published. On
the other hand, Judson (2006) reports from the educators’ perspective that the findings of the US Department of Education shows that the manner in which educators teach and the tools they use have not dramatically changed compared with the growth of the technology. Arbaugh and Stelzer’s (2003) studies also show no significant difference in learning performance and course satisfaction between classroom learning and online learning. Arbaugh further reports (2004) that the research should move beyond the single-course studies to multi-course and multi-semester designs. The learners shall participate in at least two online courses before drawing conclusions about the delivery medium and its effectiveness. Both Judson’s and Arbaugh’s findings appear to convey a message - there is a massive growth of educational technology but it may not transform the way an individual learns or teaches.

I would further argue, at this point, that educational technology alone may neither gain interest from all academics nor change the way they teach but perhaps blended learning does. The discussion in Chapter 6 would provide further evidence on a related agenda. According to Graham (2006), blended learning may incrementally enhance the teaching experience or even facilitate a radical transformation for educators of their teaching practice during the process of revisiting and redesigning. I agree with Graham’s former claim - blended learning may instrumentally enhance the current learning and teaching experience with the aid of innovative technology such as rich media learning objects (Smith, 2006), collaborative learning and classroom design (Andrews and Powell, 2006) and accessing social networking and learning environment (Laffey and Guan, 2006). However, the claim of blended learning radically transforming educators’ teaching practice is yet to be proved. The emergence of web 2.0 technology such as wikis (Doolan, 2006), blogs (Rodger, 2006) and web conferencing (e.g. Elluminate) appear to transform the way an individual learns in the traditional classroom. More evidence grounded in educational theories and from learners' experiences to inform such transformation is necessary.
As discussed in the previous sections, blended learning has received severe criticisms, in particular the rationale of the term and learning enhancement and transformation issues in reality, from various researchers such as Oliver (2004) and Arbaugh (2004, 2006, 2007). Furthermore, Strother (2003) states that blended learning research lacks consideration of different learning styles. He claims that multiple individual variables and learners’ styles must be addressed to provide a powerful blended learning experience. Strother and Alford (2003) present three different views of learning modalities from the literature: (1) Kolb’s Classification of Learning Styles; (2) Felder-Silverman’s Learning Style Model; and (3) Gardner’s Multiple Intelligences; address multiple learner variables, and further examines learning styles and how these preferred styles affect the blended learning delivery of a Aviation English program delivered in China and Russia (Strother, 2003; Strother, Fazal and Gurevich, 2007). However, it could be argued against Strother’s claims that tracking learners’ learning style tends to stigmatise and stereotype blended learners, and prevent them from developing their full learning potential. It is more effective to design the curriculum in such a way that learners of every learning styles firstly engage and then begin to stretch their learning capability in different learning modes (Morrison, 2003, p.12; Delahoussaye, 2002; Coffield, Moseley, Hall and Ecclestone, 2004). Nevertheless, I agree with Strother (2003) in the sense that cross-cultural and cross country differences could have a major influence on the way instruction is shaped and the way learning takes place in a blended learning environment.

Another critique from Steven and Frazer (2005) is that the concept of “coaching” is the missing ingredient in blended learning strategies from the perspective of corporate training (Chew et al., 2008b). On the other hand, Wenger and Ferguson (2006) have suggested the Learning Modalities (refer to figure 2.6) which embrace coaching is in the context of blended learning in higher education. Thorne (2003) addresses two more operational problems of blended learning: (1) isn’t it expensive? (2) is it lack of information and not knowing where to find it? The flexibility and the learning curve to adapt the emerging technologies is one of
the critical challenges for blended learning (Chew et al., 2008b). Educators and organisations may focus on the new technologies that are springing up, but how do people find out who is offering what, and perhaps more importantly, who will offer the right services and “blend” guidelines for individual as well as organisations? I believe this is a practical issue faced by most of the blended learning practitioners. Littlejohn and Pegler (2007) and Allan (2007) make a notable attempt to introduce certain practical guidelines and principles in response to the “what, when, where and how” type of issues (Chew, 2008; in press).

Regardless of the criticisms against the definition (refer to Section 2.2.1) or challenges of blended learning, Cross (2006) clearly writes,

“…is it not nutty for a learning strategist to ask “Why blend?” The more appropriate question is, ‘Why not blend?’…”Why should we use power tools?’ ‘Hand tools can get the job done better.’ For both carpenters and learning professionals, the default behaviour is using the right tools for the job.”(p. xviii)

Vaughan and Garrison (2008) agree with Cross’s view (refer to Section 2.2.1). Further from Cross’s statement above, I would like to highlight a point that – trying to use a tool may lead to not using a tool at the end. In the process of trying it, however, some reflections on the journey will be necessitated by asking the question: “how the job could be done in a better way than what I used to do?” Vaughan and Garrison perceive that process as a “thoughtful” revisiting journey. That is the meaningful and significant part of blended learning rather than merely a “powerful tool”.

Furthermore, Otte (2005) emphasises that the tool, technology, is constantly being considered as a means, with pedagogical ends paramount. Boyle (2005) also argues that blended learning practice should be pedagogically driven. In a parallel and interesting example, Matthews (1980) suggests that an educator without an epistemology is like a sailor without a rudder - blown around by whatever fashions and technology dominate the current educational direction. This is again a response to the dilemma on how technology enhances higher

PART I: THE INTRODUCTION AND CRITICAL REVIEW OF BLENDED LEARNING
education: not only to improve the “efficiency” and “effectiveness” of learning and teaching (again different people may interpret these terms differently), but by leading the educators to revisit their disciplinary needs, the pedagogy to suit their discipline and perhaps ultimately, the aim of education.

Bonk and Graham (2006) predict that in the future, the term “blended learning” will fade when blended learning is embedded in higher education. When the educational technology becomes mature and stable, and everyone learns and teaches in a blended mode, this term will fade. The educational theories, however, remain the fundamental foundation for any educationist as well as educational technologist. Thus, the proposed research represents my attempt to meaningfully configure blended learning in different disciplines in different universities and countries and to explore possible educational theories which relate to the principles of blended learning.

2.3 The Research on Institutional Blended Learning Experience

Much past blended learning research was focused on the practices of a specific module or educational programme, or a range of specific dimensions and links between them, such as the comparison between e-learning and f2f instruction. A comprehensive literature search was conducted by Bliuc et al. (2007) to locate papers on blended learning in higher education. Based on the representative research of blended learning in universities, they provided evidence on many survey-type, case studies or comparative studies with a single focus or a range of specific dimensions over the past decade.

In a wider perspective, there were a number of studies concerning national e-learning or blended learning practices in both the UK and US. In the UK context, the NSS (2009) is the most commonly known national survey which gathers vast students’ experience annually across the country since 2005. JISC (2005) conducted a national survey to identify the current e-learning environments, processes and trends in the UK HEIs. Using questionnaires, the survey findings
in JISC’s report were based upon a sample survey of 235 HE and FE institutions across the UK. The survey quantitatively showed a dramatically increasing and growing environment to support e-learning in UK. In the US context, Allen et al. (2007) conducted a survey based on three years of responses from a national sample of over 1,000 colleges and universities. They concluded that the market for online and blended delivery has a lot of room for growth. However, consumer preference for and openness to online and blended delivery far exceeds consumer experience of these delivery modes” (p.21). Using an online survey that was responded to by 277 stakeholders and telephone interviews with 20 HEIs, Arabasz and Baker (2003) also examined current e-learning activity in the US higher education, in particular the e-learning infrastructure, curriculum development and support models. One of the findings is that the institutional and students’ needs will continue to evolve, and so must the design of institutional support.

Most of the above research was quantitatively surveying a large sample size, i.e. country-wide HEIs. Comparatively, qualitative investigations on blended learning experience and research were conducted by a few researchers such as Sharpe et al. (2006) and Bonk and Graham (2006). Sharpe et al. (2006) reviewed existing research and practice on undergraduate blended learning experience by identifying key studies from an extensive literature review. They also visited seven HEIs to investigate the institutional blended learning experience and issues, and made recommendations to guide future policy, practice and research. Sharpe et al. (2006) have argued that blended learning policymakers and practitioners ought to understand the learner experience on the impact of technology used in f2f instructions, in order to decide the development and application of technology and pedagogies. Giving a variety of insights on blended learning, Bonk and Graham (2006) presented 38 case studies on blended learning models, practice or experience around the globe. They concluded the findings with a list of ten major trends and predictions for the future development and direction of blended learning such as mobile blended learning and greater
visualisation, individualisation and hands-on learning. Overall, none of the above research investigates the cross-country and cross-disciplinary differences for blended learning experience.

2.4 Concluding Remarks

Blended learning is a pervasive term in higher education today. Its amorphous nature leads to the debatable but growing definitions and dimensions. This chapter presents the definitions, strengths and problems of blended learning as well as those arguments against blended learning. A few prominent models were discussed and compared critically in an educational context. Again, I am not arguing that all models are equally good. I am certainly arguing that some models are better than others and it is almost impossible, to design a perfect framework as blended learning resides in the field of education or social science rather than in hard science (Chew et al., 2008b, p.50). It took me a long while to understand this fact but at the same time, such controversy makes this research exciting and challenging.

Whitelock (2004) claims blended learning is a popular term; unfortunately, it has gained ground with practitioners, not theorists. This is perhaps due to the technology-focus of current blended learning studies: during the mixture of online and traditional classroom practice, the variety of educational theories remains unchanged (Chew, 2008). Theories of education may provide insight into important components of blended learning models. However it is a practical and empirical question whether blended learning can be modelled yet having the same benefits with practitioners from different disciplines and if so, how. It is also suggested that blended learning researchers should investigate and develop a framework which recognises disciplinary differences and which is grounded in educational theory (Chew et al., 2008b, p.51). If I use Graham’s (2006) words, Whitelock’s (2004) criticism may remain valid for the first or second level of blended learning trends, which is (1) to enable accessibility and flexibility, and (2) to enhance current teaching and learning practices. Garrison and Vaughan
(2008), however, assert that blended learning “will transform education in fundamental ways” (p.152). This is aligned with Graham’s (2006) third level of blended learning trend: to **transform** the way individuals’ learn or teach – that is something to deal with epistemology and educational theory. However, scholarly evidence based on educational grounds is required to support Graham’s, Garrison’s and Vaughan’s claim.

There are many critiques related to blended learning as explored in this chapter:

<table>
<thead>
<tr>
<th>No</th>
<th>Researchers</th>
<th>Criticisms for Blended Learning</th>
</tr>
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<tbody>
<tr>
<td>2.</td>
<td>Driscoll (2002); Dziuban (2007); Becher and Trowler (2001)</td>
<td>Blended learning is different things to different people – untapped potential? Disciplinary gap in blended learning– the focus of ICT-related discipline versus non ICT-related discipline.</td>
</tr>
<tr>
<td>5.</td>
<td>Whitelock (2004); Chew and Jones (2007)</td>
<td>Lack of theoretical ground – the relationship between blended learning and educational theory/ pedagogy is vague.</td>
</tr>
<tr>
<td>6.</td>
<td>Chew et al. (2008b); Arbuagh (2003, 2004); Judson (2006); Chew and Jones (2006);</td>
<td>Focus on massive growth in educational technology, their effectiveness and impacts rather than educational values and considerations. Much blended learning research is not effectively monitored and evaluated, assessed – does it really enhance and transform learning and teaching?</td>
</tr>
</tbody>
</table>

*Table 2.3: Criticisms and Problems for Blended Learning*
I have discussed and argued points 1 to 4. Many blended learning researchers such as Allan (2007) and Macdonald (2008) provide recommendations for point 7. However, criticisms 2, 5 and 6 remain unsolved and require more evidence. As a summary, current blended learning research is rather trivial and instrumental without grounding in educational theory and the considerations of disciplinary differences. Can the quality of learning and teaching in different disciplines be enhanced or transformed by blended learning? Are these enhancements and transformations making any sense based on educational theory?

Conole, White and Oliver (2007) indicate that early e-learning innovations failed because they did not take account of pedagogical and organisational issues, concentrating too much on the technical aspects. Today, blended learning researchers seem to have a similar emphasis toward practices of “how to blend” without a clear understanding of or underpinned educational theories (Chew et al., 2008b). Education is much more complicated than this. Technologists possibly seldom take time to develop educational technology that is informed by pedagogy and sound educational reasoning. If things go well, educators simply assume that it works; but ironically, they will blame it as “the system is not right” or “this is not what I want”. From my experience, the latter phenomenon is more likely to happen. Most often, this may be caused by the disciplinary and epistemological differences for educationists and technologists, or even the contrasting nature of ontology (Chew et al., 2008b).

There were a number of nation-wide or institutional studies related to blended learning. However, less consideration was given on the disciplinary issues grounded in educational theories in the previous research. The next chapter will discuss such disciplinary controversy and the marriage of blended learning with educational theories in a greater detail.
Chapter 3

In Love and War for Blended Learning

In Chapter 2, I concluded that one of the current major research gaps is the lack of evidence on the potential disciplinary gap and cross-institutional/country research grounded in educational theory - does blended learning enhance or transform the quality of learning and teaching in different disciplines and how? This chapter offers the contrasting perceptions of researchers about blended learning arguments and critiques, and their perceptions on the claim “technology enhanced learning and teaching”. The consideration and guidelines for blended learning design and the available technologies for learning and teaching are also discussed. The discussion of the relationship of learning theory and educational technology lead to a few prominent educationists (refer to Appendix B), specifically Vygotsky, and his insights on learning and teaching in which this research is grounded.

3.1 Simple and Complex: Perceptions for Blended Learning

“In love and war” represents my experience with blended learning research - a mixture of “romance and “painful moments” due to its simple idea but with complications in an educational agenda. It refers to the mixture of sweet and bitter experience which is part of any engagement with blended learning, and which is perhaps yet another dimension to it. From the discussion in Chapter 2, it may be seen that the idea of blended learning is too simple and not simple enough at the same time. It is simple in the sense that blended learning is a combination of f2f instruction and instruction mediated by technology – a simple concept, a design principle of learning and teaching activities with technology. At the same time it is too complicated in the sense that it is neither a simple model nor a framework to formulate and design successful blended learning. The complexity arises from the complex nature of educational behaviour. Garrison
and Vaughan (2008) further state that at one level the idea of blended learning is intuitively obvious and simple, but its application is more complex.

Allan (2007) indicates that the success of blended learning lies in the possibility of responding to research and to the practical demands of the parent organisation and the individual learner’s needs. However, Turner (2007) argues that in the context of educational institutions, knowing and capturing how many people will follow a particular route through the educational system is more useful than being able to predict the behaviour and needs of each individual learner. Similarly, Littlejohn and Pegler (2007) affirm that there is no perfect blend for a specific context, just as there is no perfect blend of coffee for all occasions. In this sense, many blended learning models suggested may be seen as a compromise in the same way as “3-in-1 coffee mix” is a compromise between ease of use and matching personal tastes. These blended learning models may be the equivalent of instant coffee for novice blended learning practitioners (Chew, 2008b). In this sense, we would like to assert that a professional educationist is unlikely to be satisfied by a simple mechanism to model learning and teaching. This is in some way parallel with a professional coffee lover who will never be satisfied by instant coffee, which the connoisseur thinks is too simple and lacks the “real” taste of coffee.

Garrison and Vaughan (2008) capture this complexity as follows:

“Blended learning, in short, is a coat of many colours. It took many reforms, many meanings, and many expressions. It means different things at different times to different people. It was simple as well as complex, pure as well as adulterated. In such ability to absorb such diversity of roles and meanings may well lie the secret of its historical success – defined rather modestly as its establishment as an institution and an idea that lasted beyond its own time” (p.5)

Therefore, professional educationists who reject blended learning may be basing their judgment on a simpler idea of blended learning than that described by Garrison and Vaughan. Likewise, some naive technologists may not be aware of the intriguing and complex nature of education. The latter highlight the
advancement of educational technology and its practical benefits, while the former worry about the shallow perception of naïve technologists, who always neglect the complexity of education and the integral nature of the learning and teaching experience. I would like to stress at this point that more mutual understanding on the meaning and role in the shoes of both disciplines is necessary. The following sections explore such simple and complex thoughts and the “war” between the extreme positions of different academics and disciplines.

3.1.1 The Simple: An Overview of Blended Learning in an Instrumental Perspective

3.1.1.1 Available Technology for Learning and Teaching

The idea of blended learning is simple and exciting for pro-technology academics. However, the technology used for learning and teaching evolves over time. What was once new and on the cutting edge will one day become old technology and be challenged by the generation that follows. The concept of blended learning is not restricted to the consideration of a specific technology, as it is meant to highlight the appropriate use of current technologies for individual learning and teaching.

The focus in blended learning by pro-technology academics is usually “how to blend” rather than the learning itself. The issue of “how to blend” would lead to the uses of a variety of educational technologies – how to blend various technologies and f2f instruction in order to enhance learning? Many researchers and practitioners introduce a pool of technologies for blended learning through the discussion of case studies (Harrison, 2006; Clark, 2006; Shank, 2007; Allan, 2007; Fong and Wang, 2007; Littlejohn and Pegler, 2007). The classification of the technology in the “blend” is, however, varied. Most often, researchers categorise the technology into asynchronous or synchronous (Sharpe et al., 2006; MacDonald, 2008); formal or informal; online or offline (Littlejohn and Pegler, 2008; Sharpe et al., 2006; Allan, 2007). Based on various schools of thought, the
current f2f settings and technology used in blended learning is summarised in Table 3.1.

<table>
<thead>
<tr>
<th>Face-to-face (Live)</th>
<th>Technology (Virtual)</th>
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<tbody>
<tr>
<td></td>
<td>Synchronous (In community)</td>
</tr>
<tr>
<td>Instructor-led classroom (lectures)</td>
<td>Virtual Classroom / Online Lecture</td>
</tr>
<tr>
<td>Tutorials</td>
<td>Online chat / Instant Messaging</td>
</tr>
<tr>
<td>Hands-on lab</td>
<td>E-Conference</td>
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<tr>
<td>Workshops</td>
<td>Online assessment</td>
</tr>
<tr>
<td>Seminars/Conferences</td>
<td>Interactive Whiteboard</td>
</tr>
<tr>
<td>Coaching / mentoring</td>
<td></td>
</tr>
<tr>
<td>Field works / Site Visits</td>
<td></td>
</tr>
<tr>
<td>Work-place learning / Placements</td>
<td></td>
</tr>
<tr>
<td>1-to-1 consultation</td>
<td></td>
</tr>
<tr>
<td>Examinations</td>
<td></td>
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</tbody>
</table>

Table 3.1: The Summary for Face-to-Face Settings and Technology in Blended Learning

Virtual Learning Environments (VLEs), which consists of online learning materials, announcements, emails, discussion boards, chat rooms and so on, are becoming ubiquitous in higher educational institutions. In a survey of ICT environments to support UK HEIs, JISC (2005) reports that Blackboard is the VLE that is most widely used across the 63 surveyed universities, followed by Moodle, FirstClass and Bodington. However, institutions are unlikely to find any single VLE perfect for all purpose (Stiles, 2009). Online assessment is currently widespread in the UK. It is claimed that it offers the “potential of productivity gains in terms of more efficient authoring, publication, delivery, marking and reporting” and “effective
reduction in paperwork” (Warburton, 2006, p.425). Various Computer-Assisted Assessment (CAA) applications on the market are designed to complement the assessment process. One of them, Questionmark Perception assessment management system, claims to be at the forefront of e-assessment technology (Shepherd, 2007). It enables educators to create questions and organise them into exams, quizzes, tests or surveys. In addition to large-scale CAA systems, e-assessment developed by individual institutions is also flourishing (Chew and Jones, 2006; Perez-Marín, Pascual-Nieto and Alfonseca, 2007; Amelung et al., 2007; Mackenzie and Stanwell, 2007; Schmid, Mitchell, Whitehouse and Broomhead, 2007). All of these systems aim to facilitate the assessment process using innovative technology. There is also software that allows educators to create learning materials in a cost-effective, simple, attractive and professional way. Examples of this might be PowerPoint, Flash and Camstudio. These materials can be repurposed and reused to avoid spending valuable time when delivering the same content over and over again. Technology, such as programming simulators, can provide students with a clearer understanding of the abstract reasoning and concepts involved in learning and teaching.

Allan (2007) examined some of the aspects of technology set out in Table 3.1, and discussed some of their strengths and weaknesses. However, Garrison and Vaughan (2008, p.153) assert that blended learning is not about technology alone. They argue that looking at the technology should inspire teachers to completely change their whole approach to designing the curriculum in ways that are positive for the student. The literature includes any number of rhetorical claims that new technology will inspire a renewed confidence and an “I can do it” attitude, but there is relatively little empirical evidence that this actually happens (e.g. Parker, 2007).

### 3.1.1.2 Available Blended Learning Activities and Design

“Education is a structured learning experience designed to achieve intended outcomes effectively and expeditiously. The role of the educational leader is to provide the teaching presence that will structure, support and shape a meaningful and worthwhile learning experience. Hence,
considerable thought and care must be devoted to the design, facilitation and direction of the learning experience.” (Garrison and Vaughan, 2008, p.32)

Many prominent writers on blended learning arrive at a consensus on at least one matter - the design issues for blended learning are challenging. Littlejohn and Pegler (2007) argue that, “one of the biggest challenges for educators is to design blended learning activities that motivate students and capture their imagination” (p.5). Garrison and Vaughan (2008) also caution blended learning practitioners: “Designing a blended learning experience is a daunting challenge” (p.33). There are many f2f and learning activities mediated by technology listed in Table 3.1. At this point, two concerns in the design issues of blended learning are: (1) Which technologies and learning activities listed in Table 3.1 should be used for a particular lesson, a particular module or a particular discipline? (2) How does this blend work in maximising effective learning? Such concerns involve technological and pedagogical concerns in learning and teaching.

Koehler, Mishra and Yahya (2007) introduce a theoretical model to blend the technological, pedagogical and content knowledge (TPCK) in order to obtain the learning and teaching “sweet spot”. According to Koehler et al. (2007, p. 743), “Content (C), is the subject matter that is to be learned or taught. The content to be covered in social studies or journalism is very different from the content to be covered in a graduate course on computer science or engineering; Technology (T), broadly encompasses standard ICT such as the VLE; Pedagogy (P), includes the process and practice or methods of teaching and learning, including the purposes, values, techniques or methods used to teach, and strategies for evaluating student learning. This approach emphasises the connections and interactions between these three elements. For example, a consideration of P and C together results in Pedagogical Content Knowledge, which means the knowledge of pedagogy applied in content delivery. This would include representation and formulation of concepts, pedagogical techniques and knowledge of what makes concepts easier to learn. Similarly, T and C together produce Technological Content Knowledge. This kind of knowledge involves
understanding the manner in which technology and content are reciprocally related to each other."

Figure 3.1 depicts Koehler et al.’s (2007) idea of TPCK. They state that “…technology often affords newer and more varied representations and greater flexibility in navigating across these representations. Teachers need to know not just the subject matter they teach but also the manner in which the subject matter is transformed by the application of technology. A consideration of the overlap between \( T \) and \( P \) results in Technological Pedagogical Knowledge. This knowledge emphasises the existence, components and capabilities of various technologies as they are used in teaching and learning settings. This might include an understanding that a range of tools exist for a particular task as well as knowing what pedagogical strategies to employ to get the most out of a piece of technology. Finally, a consideration of all three elements \( T, P, \) and \( C \), results in Technological Pedagogical Content Knowledge (TPCK)” (p.743)

Koehler et al. (2007) argue that learning and teaching with technology requires knowledge and skills of the transactional relationship between these TPCK. In this respect, blended learning is multi-dimensional and complicated. It requires
understanding of the representation and formulation of concepts using technologies; pedagogical techniques that utilise technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help address these issues (Koehler et al., 2007, p. 743).

While the model presented by Koehler et al. is helpful in that it stresses the interconnectedness of different aspects of the pedagogical and technological process, it is unhelpful in that it suggests that the different spheres are simply additive and ideal. It is not the case that somebody who knows about the content of their subject and can work confidently with ICT will necessarily have any idea at all about how to use ICT in their specialist subject. Paradoxically, such a model reinforces the notion that the different spheres of understanding can be successfully disconnected and recombined. Koehler et al.’s (2007) model is rather a conceptual idea for technologists, not professional educationists. I incline to the view that this is trivial if educators do not know what they wish to teach and have a clear understanding of what promotes learning – or even worse if the educators divide learning content knowledge and pedagogical knowledge. Many academics may comprehend learning content (what is to be learned) and pedagogy or technology (how to learn or how to deliver the learning content) in two independent elements. They are perceived as separate aspects in learning and teaching practice and this results in the misunderstanding of education being made of two parts – learning content and learning medium. From an educational sense, students may already know how to learn and have gone through the process of learning when they understand the learning content.

Littlejohn and Pegler (2007) address the question of blended learning in greater detail. They offer practical advice to enable educational professionals to design a blended learning lesson within a framework called “LD_lite”. This framework is a lesson plan aid that allows educators to plan and to design blended learning
activities, and document these activities for reuse and re-implementation by others.

<table>
<thead>
<tr>
<th>Time</th>
<th>Mode</th>
<th>Tutors roles</th>
<th>Student roles</th>
<th>Resources (Content)</th>
<th>Resources (Courseware)</th>
<th>Feedback and assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>Online</td>
<td>Divide students into groups; introduce students to task and article</td>
<td>Review task and download article</td>
<td>Online article (.pdf file)</td>
<td>Electronic learning environment</td>
<td>Feedback and assessment</td>
</tr>
<tr>
<td>Day 2</td>
<td>F2F</td>
<td>Moderate discussion, offer feedback and encouragement to students</td>
<td>Group discussion F2F, one group member summarises discussion online</td>
<td>Online conferencing, discussion board</td>
<td>Feedback within peers within group</td>
<td></td>
</tr>
<tr>
<td>Day 3-6</td>
<td>Online</td>
<td>Comment on summaries, post feedback to discussion board</td>
<td>Submit summary to discussion board. Group should comment on summaries of two other groups.</td>
<td>Summary generated by each group (doc); feedback and comments from tutors</td>
<td>Online conferencing, discussion board</td>
<td>Feedback summaries are formatively assessed. Feedback from peers and tutors.</td>
</tr>
</tbody>
</table>

Figure 3.2: Blended Learning Lesson Plan (Littlejohn and Pegler, 2007, p.86)

Littlejohn and Pegler suggest that there are four types of blends: (1) the *space* blend: f2f or technology mediated communication; (2) the *time* blend: geographically and availability; synchronously or asynchronously; (3) the *media* blend: tools and technologies; and (4) the *activity* blend: learning and teaching activities, individual or group. They suggest that certain blends will result in different outcomes and that changing the elements will have different implications for educators and learners. The key elements of the LD_lite are: (1) the activities or tasks that learners complete to attain one or more learning objective(s) or outcome(s). During these activities, learners receive feedback from a variety of sources (peers or tutors); (2) People, including learners and tutors, who are assigned roles within these activities, and (3) Resources including content materials and software support required to carry out the activities (p.83).
figure below illustrates a lesson plan in LD_lite that relates to the four types of blends.

LD_lite represents a simple “start-up kit” for educators who wish to practise blended learning and also it encourages them to revisit and redesign their curriculum frequently. The roles of educators and learners are clearly indicated. In this framework, there is no distinction of “what to learn” and “how to learn” but learning and teaching are seen as a whole.

![Figure 3.3: Blended Learning Design Sequence Map Documenting the Same Scenario as in Figure 3.0 (Littlejohn and Pegler, 2007, p. 90)](image)

Littlejohn and Pegler (2007) also suggest an extensive design agenda and the ethical debates in blended learning development. This will stimulate blended learning practitioners to ponder and to incorporate re-usable and re-purposed objects with ethical considerations and in a coherent way. While this is clearly an
approach from the technical perspective, and is a poor substitute for incorporating pedagogical theory, it may stimulate some pro-technologists to address a broader range of concepts than they would otherwise. However, Littlejohn and Pegler provide little evidence that the blended learning experience will be improved by developing the complexity of blend using LD_lite, and such evidence would have been helpful (Chew, in press).

3.1.2 The Complex: Learning and Educational Technology in Higher Education

“...there has been little theorisation of the roles played by technology, despite widespread recognition of its importance and effectiveness. This omission has hampered a critique of the implications of technology within the university, and produced a plethora of crude ideas about its potential.” (Pelletier, 2005, p.11)

There are many educational technologies available and I have discussed the simple idea and design of blended learning in relation to blending those educational technologies. However, as shown in the above quote, Pelletier (2005) argues that educational theory has been overlooked. Taylor (2009) points out that technology is shaping education but education is not shaping technology. Not surprisingly, professionals who are immersed in the practice of educational technology today might have a difficult time seeing the connection between the study of educational theories and practice of educational technology. Blended learning, however, involves the combination of two fields of concern; technology and educational ideas and activities - pedagogy or educational theory (what to learn and how to learn). There is a general consensus that pedagogical considerations should be given priority over technical issues. Technicians and educationists, nevertheless, may have different vocabularies, and even where they appear to use the same terms, the context that each gives to the term means that there is ample room for misunderstandings. For example, computer specialists and educationists use the term “effectiveness” or “learning” to mean different areas of concern – the former perceives from the technical perspective whereas the latter comprehend from the educational context. Such misunderstanding may extend to areas of “learning theories”, where computer
specialists may be more instrumental, or tactical, than educationists. Consequently, terms such as “efficiency” or “effectiveness” in the educational context, which may seem perfectly natural to the computer specialist or e-learner practitioners, may seem problematic or inappropriate to the educationist. The common claim “technology enhanced learning” is also debatable amongst academics from different disciplines – is it the educator who uses technology, the technology itself or the learner’s effort and self initiative alone that enhances learning and teaching?

The result of this is that blended learning suffers from difficulties of definition, and its theoretical foundation is correspondingly weak. For this reason I would explore and develop here a philosophical discussion that scrutinises the educational foundations of blended learning.

3.1.2.1 The Debate and the Divergence of the Disciplinary Differences

The debate dates back to the 1980s, when Richard Clark (1983) criticised the research on learning with media. He asserts that the use of any medium such as computers and television for instruction has no direct influence on students’ learning. The role of the media is nothing more than a vehicle that delivers instruction. In an instructive metaphor, he argues, “Will the truck that delivers our groceries cause changes in our nutrition?” (p. 445). Clark suggests that only the content of the instruction will influence learners’ achievement, not the vehicle or in particular “the truck”. On the other hand, McLuhan (1964) claims that media is the “extension of man” and “the medium is the message” because “it is the medium that shapes and controls the scale and form of human association and action” (p. 9). It plays an influential role not by the content delivered but by its own characteristics. Postman (1990) further explores McLuhan’s notion that it is not the content of cultures that shapes ideologies, but the shape of the culture’s media in relation to human communication and thought that produces the field and scope of ideologies (Wikiversity, 2007). In this case, Clark tends to ignore both McLuhan’s (1964, 1988, 1994) and Postman’s (1986, 1992, 1996)
arguments. Few researchers have agreed with Clark and have persisted in this shortsighted view that the technology is merely the vehicle, and has no effect on learning (Kulik, 1985; Russel, 1999; Perraton, 2000). One researcher, Arbaugh (2004) coincides with Clark and others. He conducted research which showed that the educational technology packages, such as WebCT and Blackboard, have little effect and impact on the students’ learning (Arbaugh and Stelze, 2003). While I agree with Clark and Arbaugh that the important element in education is the content and context of learning, I do not think that technology can be bracketed off as separate to the degree they imply.

To use McLuhan’s term, educational technology is the “extension of educator” and along with technology, other educational factors, such as socio-cultural conditions, support from peers, educators’ communication skills and educational passion, curriculum resources and an emphasis on the learner as an active and constructive learner are essential elements to improve the learners’ ability to learn. Brabazon (2002) puts the question of emphasis in the educational design process very concisely. She states:

“Money is being thrown at technology in education, not education in technology…”

(p.145)

By this she means that in higher education, where technology and education meet in educational design, priority is given to technology. This is normally conceived as a transmission model, with the technology being used to “deliver” content. Thus “technology in education” has three general functions: (1) to present learning materials, (2) to permit an interaction between learner and text, and (3) to facilitate communication between learners and teachers – for operational purposes (Brabazon, 2002, p.105). Brabazon draws a distinction between technology for education and for operational purposes. She emphasises that different strategies are required to enable all three functions. The selection of technology must be based on the consideration of the aims of the pedagogy, not of the limits of the technology. When the emphasis is placed on meeting the educational purposes the result is, Brabazon argues, “education in technology”.
A philosopher of technology, Mitcham (1994), argues that there are different approaches rooted in respective epistemological bases for different disciplines. He suggests that the philosophy of technology consists of two discourses – the engineering philosophy of technology (EPT) and the humanities philosophy of technology (HPT). This classification maps quite readily onto Garrison’s and Vaughan’s (2008) notion that “different discipline provides different mindsets to engage with the same thing”. From these ideas, I expand Mitcham’s (1994) and Brabazon’s (2002, 2007) notion as shown in Table 3.2.

<table>
<thead>
<tr>
<th></th>
<th>“Technology in Education”</th>
<th>“Education in Technology”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority</strong></td>
<td>Technology is the main focus in blended learning.</td>
<td>Education is always the highest priority in blended learning.</td>
</tr>
<tr>
<td><strong>Design consideration</strong></td>
<td>Which technology and how to blend are the main considerations.</td>
<td>Learning and teaching, pedagogy and educational theory are the main considerations.</td>
</tr>
<tr>
<td><strong>Philosophy Being with Technology</strong></td>
<td>EPT - engineering philosophy of technology</td>
<td>HPT - humanities philosophy of technology</td>
</tr>
<tr>
<td>Mitcham (1994, p.62-63)</td>
<td>Begins with the justification of technology or an analysis of the nature of technology itself – its concepts, its methods, its cognitive structures and objectives manifestations.</td>
<td>Seeks by contrast insights into the meaning of technology – its relation to the trans-technical: art and literature, humanities and socio-cultural issues – begins with non-technical aspect of the human world (in this case education) and considers how technology may (or may not) fit in or correspond.</td>
</tr>
<tr>
<td><strong>Consequences</strong></td>
<td>Recognises blended learning as a “blanket solution”, ONE solution for all disciplines; stereotypical mindsets related to blended learning. E.g. Kim (2007)’s 8 combinations and 14 learning types for blended learning and Koehler et al. (2007)’s TPCK model.</td>
<td>Recognise disciplinary differences; learning and teaching mediated with/without technology; integrates what to learn and how to learn; E.g. perceptions from Brabazon (2007) and Littlejohn and Pegler (2007)</td>
</tr>
</tbody>
</table>

|                                               | Educational technology is designed and used and “decorated” by pedagogical theory. Educators and learners may find blended learning “excellent” or “terrible” depending on disciplinary needs and technological competence. | The thoughtful revisiting and redesign of learning and teaching may or may not lead to the uses of certain educational technology. Blended learning occurs with passion and impressive experience if it is the former. |

Table 3.2. Technology in Education versus Education in Technology
(Chew, Jones and Turner, 2009b)

Most often, the focal point of educationists and social scientists is “education in technology”; whereas technologists, engineers or scientists would spend more
effort in “technology in education”. At this point, I notice that Brabazon’s warning raises a critical question related to blended learning: is research into blended learning today focused on “technology in education” or “education in technology”? I would suggest that the latter should be the case from an educationist’s perspective, and blended learning researchers should be increasingly mindful of this issue.

Consider this assertion into Clark’s and Arbaugh’s terminology: one may prioritise the truck rather than the groceries, or emphasise the educational technology packages, such as WebCT and Blackboard, over the learning content. I would agree with Clark (1983) and Arbaugh (2004) that technology by itself does not necessarily improve the learning and teaching experience, in particular when it belongs to the category of “technology in education” or a mere “vehicle”. I would argue, however, what we learn and how we learn in the process of learning and teaching should reshape other knowledge that we hold. “Education in technology” falls into this category which seeks by contrast to gain insights into the meaning of technology. It integrates what to learn and how to learn; greater possibility of being accepted by both educational technologists and educationists. Blended learning, here, is a different perception from merely the “truck and the groceries”. Further investigation of the blended learning practice concerning “technology in education” or “education in technology” is discussed in Chapter 5 and 6.

Some researchers support the idea that educational technology will help to improve the ability to learn with evidence (Alavi, 1994; Kozma, 1994; Salmon, 2000; Price and Oliver, 2007). One of them, Kozma (1994) revisits Clark’s assertion and argues that,

“Educational technology is a design science, not a natural science. The phenomena that we study are the products of our own conceptions and devices. If there is no relationship between media and learning it may be because we have not yet made one. If we do not understand the potential relationship between media and learning, quite likely one will not be made...if we preclude consideration of a relationship in our theory and research by conceptualising media as ‘mere vehicles’, we are likely never to understand the potential for such a relationship” (p.7).
I agree with Kozma’s argument that, unless we understand the potential of such a relationship, most e-learning research will be devoted to technological-centred development. I do not view educational technology as a mere “deliverer” or “vehicle” as Clark (1983) describes it. It can be seen in this way only if researchers do not understand the potential relationship between educational technology and learning, and therefore focus on the “innovative”, “effective” and “intelligent” design of the technology rather than on education and people. Less attention has been paid to educational theory and a pedagogical perspective or “education in technology”. In the worst case, the educational system developed by the technological scientist may not fulfil the educators’ or learners’ real needs. O’Toole and Absalom (2003) researched the impact of blended learning on learning outcomes. They concluded that educational technology is unlikely to be effective if it is merely a replacement for traditional settings such as lectures or is seen as an alternative mode of delivery. Blended learning, however, may impact on learning outcomes only if both educational technology and f2f learning are “carefully blended, operating in tandem and both facing the same direction” (p.189). This raises the question of which direction they are facing.

Clark (1983) urges researchers to desist from investigating the relationship between media and learning unless a novel theory is propounded. However, based on substantial research findings from the past, Kozma (1994) argues that the theories that have been applied to blended learning have been constrained by behavioural roots from which the disciplines sprang. For example, how social scientists and engineers interpret and employ the term “educational technology” may create constraints to its development and application. In this way, I would link Kozma’s claim to the possible cause of the debate in blended learning, which is the divergent disciplinary or even philosophical roots – the epistemology. From a similar position, Simsek (2005) asserts that the literature related to the educational technology includes various definitions which draw upon different...
epistemological concerns. For example, Hunter and Carr (2000), from a technological position, say:

"Universities are in the information dissemination business and computers are changing the way they work." (p.122)

Brabazon (2007), from a perspective provided by media studies, contends that Hunter and Carr’s statement is punchy but wrong, because academics do not only “disseminate information”, but develop knowledge through research. In the field of education or social sciences, the variety of social contexts and the complexity of educational purposes are the main focus. On the other hand, mechanical and experimental results may be taken into the main consideration for computer science and engineering studies. Thus, educational theorists are more likely to be in sympathy with Brabazon’s position. During the discussions in the conferences and workshops that I have attended, those who found Brabazon’s analogy stimulating and valuable are educationists or social scientists; blended learning practitioners, computer scientists or technologists are the ones who perceive her ideas as too provocative, personal and anti-technology. In fact, Brabazon does not blame technology but draws attention to educational literacy rather than technology alone as the total solution for education. In this sense, I would assume that such arguments were caused by disciplinary differences. Luppicini (2005) indicates this disciplinary difference with a noteworthy insight:

“Engineers, technologists and technicians are closely related in their view of technology as the process of material construction based on systematic engineering knowledge of how to design artifacts. This conception associates technology very closely with machines or physical systems of some sort.

Social Scholars typically view technology in broader terms, extending what is understood of material construction to take social significance into consideration. First, social science scholars’ employment of the term “technology” refers to material construction uses as well as the intellectual and social context. It refers to the organisation of knowledge for the achievement of practical purposes as well as any tool or technique of doing or making, by which capability is extended “ (p. 104)

I completely agree with Luppicini’s view based on my personal experience. I was involved in computer science research from 1998 to 2005. Seven years of such applied science and systematic training shaped my entire reasoning and I
conceived educational technology as being associated with physical and technical system design, as Luppicini describes. My skills of analysis were grounded in a purely “digital concept”, the principle of right or wrong; black or white; and “zero or one” mechanism without wider considerations, social imagination and educational reflections. The focus is merely on “the right”, “the best”, “the innovative”, “the effective” solution as opposed to the traditional, the slow and the old, the theoretical and impractical one. Most often, I was in agreement with certain superficial claims such as “the cornerstone of successful education is the effective use of assessments” (Shepherd, 2007, p.399) or “blended learning consists of 8 combinations and 14 learning types” (Kim, 2007). With technological advancement, I tended to get caught in technology in education instead of education in technology as Brabazon (2007) describes. I had the engineering philosophy of technology rather than the humanities philosophy of technology as Mitcham (1994) described it. I designed and developed curricula with PowerPoint, online assessment, websites, and a full array of online support materials. However from time-to-time there was no substitute for getting into the lives of the students. It has to be recognised that education is about people not the design of educational technology. After a few years of cross-disciplinary research in the social sciences and education, my perception has increasingly extended to broader consideration of the intellectual and social context. In terms of Brabazon’s and Mitcham’s terminology, my focus has gradually shifted from technology in education to education in technology; and from the engineering philosophy of technology to the humanities’ philosophy of technology.

In order to understand what “education in technology” is and how technology contributes to learning, I borrowed Kozma’s (1994) idea, that is the understanding of “their underlying structure and the causal mechanisms by which they might interact with cognitive and social processes” (p. 11) is the essential rather than the surface feature of technology. On the other hand, learning theories need to be grounded in such mundane concerns as whether educational
technology is being used effectively and in the best possible way in order to interact with cognitive and social processes. Based on McGinn’s (1978) work, Luppicini (2005) relates technology to a broader concern of the social processes and context. Luppicini (2005, p.104) concludes technology is a “value-laden human activity connected to socio-cultural and environmental influences” in its conceptualisation, and there are five ways in which technology is value-laden:

1. The value of a technique reflects the values of who makes it and uses it.
2. Technology is optimistic in assigning value to “technological progress”.
3. Technology is value-laded insofar as the use of resources for advancement may preclude their use in other work that may improve life.
4. The institutionalisation of modern technology allows the direction of technology to be influenced externally by organisations rather than by practitioners.
5. Products of technology are expressions of individual and cultural values of designers.

(p.104)

However, the technological scientist may not be concerned with the agenda on which the sociologist and educationist focus as described by Luppicini (2005) – “technology as a value-laden human activity connected to socio-cultural and environmental” concerns. Koehler et al. (2007) further contend that most research on educational technology has been criticised as being driven more by the imperatives of the technology rather than sound theory (p.759). The educational technology may undermine the principles of education. The design processes must acknowledge the nature of academic learning and seek to promote blended learning beyond the flash and hype. There are also many research projects based on pedagogical concerns (Jonassen, Peck and Wilson, 1999; Mehrotra et al., 2001; Simonson et al., 2006). However, less evidence show that what and how of state-of-the-art technology contributes to education from the students’ experience.

Based on contrasting schools of literature reviews, I would assert that technology, by itself, may not necessarily improve the learning and teaching experience. Only
through mutual understanding of both contrasting disciplines can initial principles for the grounding of blended learning theory be established. Educational theory provides the basis for a coherent and stringent critique of blended learning practice, and by that means provides a framework for grounding its theories.

3.1.2.2 The University of Google and Thinking through Technology

The term, *The University of Google* is from Brabazon (2007). In that work Brabazon goes further than previous research to identify how the introduction of different media is changing what is learned and how. Most often, academics and researchers in the UK emphasise reflection - “reflect on the materials you have read” or “reflect on the seminar or lecture you have attended”. I perceive Brabazon’s book is a true reflection on the problem caused by “technology in education”. The Education Coordinator of Oxford University’s Library Service, Reading (2008) strongly recommends this book as it critically discusses what education is, its purpose, and what academics should be doing to safeguard the quality of education, and how technology should be the servant of academics, not the academics’ masters.

Brabazon (2007) claims the relationship between lecturers, students and education is complex and intricate. Embedding technology into that relationship adds even greater complexity. Curriculum design is a key factor in students’ learning experiences. Less time and credit is being given to those academics who spend effort on their curriculum design and teaching yet policy makers keep pushing strategies on “technology in education”. Considerable pressure has been exerted on academics by universities’ management. This is why technology has become the servant of academics’ masters, as described by Reading (2005).

Brabazon further explains her experience as an academic in the modern university: that she feels powerless when she is responsible for events over which she has no control. Turner (2008) believes that an autonomous academic would rather be the one driving than the one driven. Intellectual individual usually
thought – “it is my purpose and direction that counts and I do not want to be pushed around passively by forces beyond my control”. Hence, one would rather be a hammer than a nail as the nail that stands up get hammered down (Turner, 2008). This is a true reflection of the frustrations of those who are passionate about education but have less control in technology. Although such expression may be extreme, it reveals the circumstances of “powerlessness” and helplessness that educational technology brings to academics from certain disciplines.

I believe that Brabazon is not anti-technology as her academic position is in a Faculty of Computer Science. Brabazon does not reject technology but considers a variety of social contexts and the complexity of educational purposes behind technology. She clearly states,

“The computer is not the fount of educational troubles. Google is not the facilitator for neoliberalism. The goal of this book is to embed computer-mediated communication and applications into other media and social structures. I look for the continuities and alliances between the analogue and the digital, past and present.” (Brabazon, 2007, p. 9)

In this sense, Mitcham (1994) raises an interesting opinion:

“Technology is necessary but dangerous.” (p.276)

Technology is a developmental trend and is necessary according to Mitcham. Brabazon would seem to agree with this view because “education in technology” is necessary but “technology in education” is dangerous. It is “dangerous” if technology is the exclusive focus; it is “dangerous” if technologist develop educational technology without pedagogical consideration; it is “dangerous” if blended learning practitioners highlight technology than learning and teaching. I believe that education usually comes before technology, rather than the other way round. Learning and teaching is the central focus, not technology. Jaspers (1960) highlights that higher education should not leave behind social trends and technology; whereas Brabazon (2007) cautions that in this digital society, flexible learning (simplified and reduced to internet-mediated education) must be
introduced carefully and critically, otherwise it easily falls into the “culture of fast food”. In a fast food and fast data environment the web transforms into an information drive-through. It encourages a “type in-download-cut-paste-submit” educational culture (p. 22). Brabazon elaborates on this with an example of e-mail from a student:

From: Yuanetta  
Sent: Thursday, 4 August 2005 6:04PM  
To: Tara Brabazon  
Subject: Te: lecture notes  

Hi Tara, just wanted to know if you post any notes online from the lectures? I assume you would so I made no attempt to write anything down from the previous lectures, so I’m having a bit of panic, now that I can’t find anything on the web.

If you don’t, could I access to the overheads you used so that I could make some notes, please? I’ll come to your office at a time that’s convenient for you.

Thank you.

Yuanetta

Figure 3.4: Email from a Student (Brabazon, 2007, p. 107)

In response to the above email, Brabazon (2007) critically reflects upon the incident, and a tone of anger enters her reflection:

“I was wondering in the first two lectures why some students were sitting in the lecture theatre with no paper, pen or bag and staring at me…the notion she expected notes would be available online means that technology has become a crutch and a replacement for learning…The ‘reading’ they determine to be sufficient is off PowerPoint slides, derived from a lecture…Such assumptions are corrosive of effective learning and reading.” (p.107-108)

This is a picture that I recognise from my own experience of lecture theatres, where many students merely sit in the lecture with no paper and pen but expecting the PowerPoint slides and exam tips from the lecturers. Brabazon further contends this kind of attitude results from the idea of flexible learning by providing choices that allow students to meet their own educational requirements and preferences. Such an ideology is more relevant to shoe shopping than higher education. Brabazon highlights the term “choice” as crucial – “the emphasis is on individuals and choice, not communities and context. The roles
and function of groups and collectives – sharing a time and place – discussing the issues of the day is no longer a priority. Students become consumers, selecting generic competencies for their shopping trolley, dodging around the issues and ideas that might require more than a passing glance. Yet this truth is masked as flexibility, becomes confused with access.” Brabazon (2007, p. 80)

Due to globalisation and increasing market demand, university has become a business organisation “shopped” by students. Convenience, flexibility and accessibility are the key considerations rather than, as Flexner (1930) described it, an “autonomy organism” (refer to Section 2.1.1). Similarly, Neumeier (2005) states that blended learning is as easy as a child shopping in a toy shop but correspondingly difficult because academics are confronted by a vast variety of “toys” (technologies) and complex tasks with which they are not familiar. Brabazon (2007) points out that if one were “lost in the shopping mall”, i.e. not familiar with the technology, a feeling of powerlessness, helplessness and frustration, again, may possibly be aroused.

If I think of this in Mitcham’s (1994) terms of a separation of the philosophy of technology into two discourses (i.e. the engineering or humanities’ philosophy of technology) - the technologist may see blended learning as flexible and convenient learning mediated by technology while the humanist may believe there is more to education than convenience and flexibility. There are consequences of making education convenient and flexible, both good and bad.

Brabazon acknowledges educational technology but stresses the humanistic and social considerations that lay behind the technology. Mitcham (1994) affirms that technology is so broad that only a humanities philosophy of technology (rather than the engineering philosophy of technology) can meaningfully engage with it. In the past, AECT (1972) have already illustrated this perception:

“I firmly believe that the future of Educational technology is now in the hands of thinkers. What is needed is a handful of experienced people who have thought widely and deeply, and who are literally obsessed by the problems posed.” (p.103)
Chapter 3: In Love and War for Blended Learning

The future of educational technology is “in the hands of thinkers”, not in the hands of technicians; of educational philosophers, not of computer technologists. Does it enhance the learning experience? If the answer is yes, then how does this happen (and on the basis of what evidence)? This tallies with Kozma’s (1994) perception that, “If there is no relationship between media and learning it may be because we have not yet made one” (p.7). An educational thinker or philosopher would propose an appropriate link after careful and profound thought, evidence-based investigation and careful consideration of the many problems posed.

3.2 Consolidation of the Complexity: The Marriage Begins

From an educational philosophical perspective, Mitcham (1994) suggests a three-way of being with technology in a philosophical manner as described in Table 3.3. The basic attitudes that Mitcham suggests are closely linked with the discipline and philosophical stance adopted, and the epistemology and ontology that underpin them. Science-based or IT-related disciplines may easily fall into the category of “Promotion of Technology” by disciplinary nature and advantage; whereas social science-based or educational disciplines may be more likely to have the attitudes of “suspicious of technology or “ambivalent about technology”.

<table>
<thead>
<tr>
<th>Conceptual Elements</th>
<th>Basic Attitudes</th>
<th>Promotions of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong> (ethics)</td>
<td><strong>Suspicious of Technology</strong></td>
<td><strong>Ambivalent about Technology</strong></td>
</tr>
<tr>
<td>Personal: Technical affluence undermines individual virtue</td>
<td>Personal: Technology engenders freedom but alienates from affective strength to exercise it</td>
<td>Personal: Technical activities socialize individuals</td>
</tr>
<tr>
<td>Societal: Technical change weakens political stability</td>
<td>Societal: Technology weakens social bonds of affection</td>
<td><strong>Societal: Technology creates public wealth</strong></td>
</tr>
<tr>
<td><strong>Knowledge</strong> (epistemology)</td>
<td>Technical information is not true wisdom</td>
<td>Imagination and vision are more crucial than technical knowledge</td>
</tr>
</tbody>
</table>
One group of researchers may believe that technology will break through and enhance learning and teaching (promotion of technology) whereas on the other hand another group of researchers may disagree with this view (suspicious of technology), and there may be researchers who are ambivalent about technology or between any of the above three groups. When a group of pro-technologists holds an extreme position, they may naively (or less sophisticatedly) believe in all the “wonders” of modern technology. They may view themselves as evangelists who reveal the persistence of traditional settings and produce creative and effective efforts to develop modern learning. In contrast to the attitude of “promotion of technology”, there is a group of academics who may have reservations about “technology enhanced learning”. To them, technology may be regarded as no more than a tool, a mere vehicle or information carrier (Luppicini, 2005). They may highlight the constraints imposed by the technology, while mumbling, “This system is useless”, or “The VLE will not let me do this”. They perceive that technical information is not true wisdom. In the worst cases, they may not regard blended learning as a scholarly, educational or social science research activity at all.

Consider these terms in a continuum form to express the view towards “technology enhanced learning and teaching”:

<table>
<thead>
<tr>
<th><strong>Objects</strong> (metaphysics)</th>
<th>Artifacts are less real than natural objects and thus require external guidance</th>
<th>Artifacts expand the process of life and reveal the sublime</th>
<th>Nature and artifice operate by the same mechanical principles</th>
</tr>
</thead>
</table>

Table 3.3: Three Ways of Being with Technology (Mitcham, 1994)
Among these attitudes, I would suggest that blended learning researchers need to further investigate the experience and arguments from the continuum of attitudes and critically obtain values and in-depth considerations for how learning and teaching can be enhanced or transformed by educational technology and how it is not. This will be explored further in Chapter 5 with the confirming and disconfirming experiences of academics and students.

Again, educational technology is necessary but at the same time dangerous if (1) there is no mutual understanding of the multi-faceted nature of the curriculum development process; of different attitudes towards technology; of contrasting philosophy and discipline; and (2) there is no relationship between learning theory and technology or an absence of the wider social considerations underpinning educational theory. Since an educational focus and the humanities’ philosophy of technology are proposed to be the means to provide an educational ground for blended learning and to understand how it enhances or even transforms learning and teaching, an investigation between educational theories and educational technology is necessary.
3.2.1 The Relationship of Learning Theory and Educational Technology

“Pedagogy is often described as the science of the art of teaching.” (Loveless, 2006, p.343)

Pedagogy is some principles or methods of instruction based on learning theory. Since the mutual understanding of learning theory and technology is important, I summarise their relationships in this section based on various researchers’ insights. In the light of the classic educational theories in the previous centuries (refer to Appendix B), the contemporary literature in education is extended to a variety of categories such as Behaviorism, Cognitivism, Constructivism and Social Constructivism. Hung (2001) defines each theory in a simpler manner with interesting examples (refer to Table 3.4).

There are many learning theories which have emerged in the last few decades, different educationists are ceaselessly and progressively influenced by respective theories. The arguments are complicated. In addition to the four learning theories shown in Table 3.4, learning theories such as the humanistic learning theory from Maslow (Aspy and Aspy, 1998; Huit, 2004; Bailey and Pownell, 2006) and higher order learning theory from Bloom (Bloom et al., 1956) are prevalent. These learning theories were used to construct the instructional learning model used by professional educators. Hung (2001), Koohang and Plessis (2004) summarise a list of instructional learning theories, with the original theorists, as shown in the Table 3.5.

<table>
<thead>
<tr>
<th>Learning Theory</th>
<th>Description</th>
<th>Mathematical Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behaviourism</strong></td>
<td><strong>Stimulus and response</strong>&lt;br&gt;• Students remember and respond (change in overt behaviour due to conditioning).&lt;br&gt;• Teachers present and provide for practice and feedback.</td>
<td>e.g. $8 \times 5 = 40$</td>
</tr>
<tr>
<td><strong>Cognitivism</strong></td>
<td><strong>Information transmission and processing</strong>&lt;br&gt;• Students remember strategies, rules and patterns.&lt;br&gt;• Teachers plan for cognitive learning strategies.</td>
<td>e.g. $8 \times 5$ equal $5 \times 8 = 40$; or $n \times 1 = n$</td>
</tr>
</tbody>
</table>
Table 3.4 Summary of Learning Theories with Examples (Hung, 2001, p.53)

<table>
<thead>
<tr>
<th>Learning Theories</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
</table>
| Personal discovery of knowledge | • Discover relationships between concepts, e.g. addition and subtraction.  
  • Teachers provide instructional context for active and self-regulated students. | e.g. $8 \times 5 = 8+8+8+8+8$                                           |
| Social Constructivism     | Learning is a social construction, mediated by different perspective     | e.g. two job offers: same salary:  
  • Through authentic projects, students discuss and discover meanings, e.g. concept of multiplication.  
  • Teachers provide for facilitation and scaffolds among the students. |}

Table 3.5 Summary of Instructional Learning Models (Koohang and Plessis, 2004)

<table>
<thead>
<tr>
<th>Instructional Learning Models</th>
<th>Theorist</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviorist</td>
<td>Gagne</td>
<td>Instructional Events, types of Learning</td>
</tr>
<tr>
<td></td>
<td>Skinner</td>
<td>Stimulus-Response</td>
</tr>
<tr>
<td></td>
<td>Thorndike</td>
<td>Connectionism</td>
</tr>
<tr>
<td></td>
<td>Watson</td>
<td>Psychological experimentation</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Piaget</td>
<td>Cognitive development</td>
</tr>
<tr>
<td></td>
<td>Vygotsky</td>
<td>Mediated learning</td>
</tr>
<tr>
<td>Humanist</td>
<td>Maslow</td>
<td>Hierarchy of needs</td>
</tr>
<tr>
<td></td>
<td>Rogers</td>
<td>Experiential learning, whole learning</td>
</tr>
<tr>
<td>Constructivist</td>
<td>Piaget</td>
<td>Cognitive development</td>
</tr>
<tr>
<td></td>
<td>Papert</td>
<td>Impact of computers in learning</td>
</tr>
<tr>
<td></td>
<td>Bruner</td>
<td>Discovery learning</td>
</tr>
<tr>
<td></td>
<td>Vygotsky</td>
<td>Mediated learning</td>
</tr>
<tr>
<td></td>
<td>Dewey</td>
<td>Project-type learning, authentic-learning experience</td>
</tr>
<tr>
<td>Others</td>
<td>Bloom</td>
<td>Mastery learning and taxonomy</td>
</tr>
<tr>
<td></td>
<td>Erikson</td>
<td>Psychological stages in life cycle</td>
</tr>
<tr>
<td></td>
<td>Gardner</td>
<td>Multiple intelligence</td>
</tr>
</tbody>
</table>

Demetria (2004) states that the two most established learning theories are Behaviorism and Constructivism. Karagiorgi and Symeou (2005) further affirm that Constructivism is the dominant theory of the last decade and it supports construction of knowledge by the individual. Learners construct and reconstruct
knowledge with their reasoning or within the social world in the learning process (Burk, 1996). However, Karagiorgi and Symeou (2005) state that Constructivism is a learning theory and not an instructional-design theory. In this sense, the line between learning theory and instructional design is rather vague. Researchers tend to make use of learning theories in designing the teaching and instructional application. Constructivism is considered as the dominant learning theory throughout last decade and there are many researchers designing blended learning based on this idea, such as using computers to create a constructivist learning environment (Huffmann et al., 2003) or re-conceptualising online interaction in terms of meaningful learning based on social constructivism theory (Woo and Reeves, 2007; Dalsgaard and Godsk, 2007).

In recent research, Moreno, et al. (2007) conducted a study on how constructivism has been applied in engineering education. Similarly, many learning theories, other than that of constructivism, support the idea of learning and teaching mediated by technology. Hung (2001) and Demetria (2004) made an attempt to link technology with learning. Their work concerning the relationship of learning theories and educational technology is summarised in Table 3.6 and 3.7:

<table>
<thead>
<tr>
<th>Learning Theories</th>
<th>Description</th>
<th>Technology Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviorism</td>
<td>Emphasises memorisation and repetition in teacher-centered environments. The curriculum is structured hierarchically to allow students to gain prerequisite skills and advance to intermediate and advanced levels of knowledge. Predefined criteria and systematically constructed learning promote mastery.</td>
<td>Technology is used to remedy identified weaknesses, promote fluency, and support practice through tutorials, drill and practice software, online worksheets, and other forms of computer-based learning.</td>
</tr>
<tr>
<td>Constructivism</td>
<td>Allows students to build rather than receive knowledge. Based on collaboration and cooperation, Constructivist Learning focuses on real problems, creative solutions, transfer, and problem solving. Teachers function as guides or facilitators that assist students as they</td>
<td>Technology (simulations, applications software, and multimedia, constructive and informative software tools) is used to facilitate meta-cognitive skills, emphasise transfer, create group projects and presentations, highlight the contributions and talents of diverse</td>
</tr>
</tbody>
</table>

PART I: THE INTRODUCTION AND CRITICAL REVIEW OF BLENDED LEARNING
generate solutions and explore in complex and rich environments. The curriculum focuses on higher-and-lower level skills; performance measures include checklists, rubrics, and portfolios.

<table>
<thead>
<tr>
<th>Cognitive, Social, and Radical Constructivism and Situated Cognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relies on individual and group thoughts, perceptions, and actions. Problems are solved through individual and shared meaning.</td>
</tr>
<tr>
<td>Learners use technology (hypertext and hypermedia, bulletin boards, chats, computer-supported intentional learning environments, and computer mediated environments) to gather information, conduct research, communicate, decompose problems, share documents, and participate in open-ended learning</td>
</tr>
</tbody>
</table>

Table 3.6: The Marriage of Learning Theories and Educational Technology By Demetria (2004, p.285)

<table>
<thead>
<tr>
<th>Learning Theories</th>
<th>Technology Used</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviorism</td>
<td>Variety of drill and practice computer-based learning software.</td>
<td>Computer-based learning that drills students on multiplication and addition (individual instructive tools).</td>
</tr>
<tr>
<td>Cognitivism</td>
<td>Tutorials and information databases</td>
<td>Encyclopedia and Internet Resources (informative tools).</td>
</tr>
<tr>
<td>Constructivism</td>
<td>Individual generic purpose tools</td>
<td>Excel, Word, and PowerPoint, simulations, hypertext and hypermedia, organizational tools (individual constructive tools).</td>
</tr>
<tr>
<td>Social Constructivism</td>
<td>Collaborative generic environments</td>
<td>E-mails bulletin boards, knowledge co-construction / discussion board, computer-collaborative problem solving environments (social communicative / constructive tools).</td>
</tr>
</tbody>
</table>

Table 3.7: The Relationship between Learning Theories and Educational Technology by Hung (2001, p.53)
Both Hung (2001) and Demetria (2004) relate the learning theories to educational technologies. This effort seems to facilitate the researchers to integrate easily different kinds of technology with learning theories. Hung (2001) advocates the educator and educational technologist “to be a pedagogical engineer”, with greater responsibility to design sound blended learning programmes with the most relevant learning theories and technologies. However, which learning theory and which technology to be applied in a particular discipline are the key factors to improve learning and teaching experience. These learning theories, obviously, are meaningful and interesting to professional educationists or social scientists but not to engineers and computer scientists. The latter may not care what learning categories they belong to. There are so many educational theories, learning theories and pedagogy which may be confusing to certain group of people, especially those technologists.

Interestingly, different learning theories and educational theories may be perceived and interpreted in a different way by different educationists. It is difficult to differentiate learning theories, educational theories and pedagogic theories. It is also difficult to categorise the belief of pedagogy and the practice of pedagogy (CAL, 2009). These are not like religions which may exclusively contrast with each other. Academics do not have to choose between Islam and Christianity and reject each other exclusively. Zemke (2002) argues that the primary aim is to apply the appropriate theory for the appropriate situation. Zemke further describes that the situation is depend on “the people you serve, and the nature of the skills they must master and the context in which they are to perform” (p.88). Carman (2002) also made a related statement: “if this is true, that people perform better when they have a mix of methods of learning—what defines the most effective mix? Will any combination of methods do, or is there an “optimum blend,” a “sweet spot” to blended learning?” (p.1). Carman (2002) relates several learning theories to learning activities to depict the “sweet spot” for blended learning.
Five critical ingredients for blended learning are essential in the design of “sweet spot”:

To apply learning theories in learning and teaching mediated by technology (refer to Figure 3.6), five key ingredients emerge as the foundation of blended learning design as shown in the Figure 3.7. The five key ingredients are: (1) **Live Events**: Synchronous, instructor-led learning events in which all learners participate at the same time, such as in an online or virtual classroom; (2) **Self-Paced Learning**: Learning experience that the learner completes individually, at his own speed and in his own time, such as interactive, Internet-based or CD-ROM training; (3) **Collaboration**: Environments in which learners communicate with others, for example, e-mail, threaded discussions or online chat; (4) **Assessment**: A measure of learners’ knowledge. Pre-assessments can come before live or self-paced events, to determine prior knowledge, and post-assessments can occur...
following live or self-paced learning events, to measure learning transfer; and (5) 
*Performance Support Materials*: On-the-job reference materials that enhance 
learning retention and transfer, including PDA downloads, and printable 
references, summaries, and job aids (Carman, 2002, p.2)

Carman suggests these five critical ingredients are the foundation of the design 
of blended learning. Each ingredient should gain ground in learning theories. The 
variety of learning theories is available for the educator to ponder and to make 
decisions. For instance, an educator may want to consider Bloom’s (1962) 
taxonomy in designing an online assessment test (refer to the blue component in 
Figure 3.6 and 3.7); or use Piaget’s stage-like learning in designing some self-
pace e-tivities for a mathematical subject; or adopt Vygotsky’s Zone of Proximal 
Development in designing an online collaborative project for a journalism subject 
(refer to the yellow component in Figure 3.6 and 3.7). Carman (2002) made a 
good attempt to relate learning theory to blended learning. However, I disagree 
with Carman’s mixing of learning theories to obtain the blended learning “sweet 
spot”. One may gain the misconception that the best blended learning is the 
mixture of learning theories as shown in the Figure 3.6. Learning theories vary in 
Carman’s (2002) blended learning ingredients and that, presumably, fall into the 
controversial issues of blending theories – this has been indicated by Oliver 
(2004) and has been argued in Section 2.2.1.

Blended learning should gain ground with one or more related and prominent 
theories with a wider and deeper insight about what education is. I believe that 
the “sweet spot” for blended learning is when the educators understand 
“education in technology” – the blended learning that is grounded in educational 
theories. Based on a deeper understanding of educational theory and its 
relationship with educational technology, an attempt to show how blended 
learning can be grounded in educational theory through such reflections is 
necessary.
3.2.2 Educational Theories and Educational Aims

Without wedding myself to any educational theory, I revisited the ancient Greeks, Plato’s and Aristotle’s ideas of education, and studied prominent educational concepts by Locke, Rousseau, Dewey, Piaget, Vygotsky, Freire, Maslow and Bronfenbrenner, on what they have contributed to the development of pedagogy (refer to Appendix B). Collectively from their distinctive ideas, I realised that great educational theorists have themselves rarely been narrow-minded or stereotyped people. For example, Freire (1970) proclaims that the aim of good pedagogy is to enable people to increase their understanding of their own objective conditions. Such understanding will inevitably lead the learner to change the world as they climb out of the oppression which has dominated (Barnard, 1980). This insight is considerably wider than merely “how to deliver the content and skill” and “flexible learning and teaching”.

Overall, the educational aim that is suggested by these prominent educationists have gone the way of all socio-cultural constraint and sceptical process, and yet provide modern higher educational meanings and directions. In the previous chapter, I summarised various educational researchers’ views on the aim of education – that is a process of learning, teaching and research for knowing, doing, working or living together - to play a major role in developing one’s personality and act in order to contribute to the community and society. To realise this aim of education, educators need knowledge of educational theories for knowing and collaborative learning, and ways to translate both established theories and emerging technology into classroom practice. Hence, Demetria (2004) challenges academics that they need to have the initiative to develop individual educational philosophies to guide their selection and utilisation of technology. Again, the challenge of an educator is to understand and encompass one or more educational theories to suit the present needs of their disciplines. Perhaps, this can be facilitated by blended learning.
Rousseau’s view for education is perceived as the pioneer of the modern education (Boyd, 1963). In the history of education, Rousseau (1762; 2004) has been labelled as a precursor of autonomous education. Learners must recognise that knowledge cannot be acquired by passively receiving it from others. Instead, learners must work through problems and assess the merits of competing theories with an independent mind (Kraut, 2004). Of all modern educationists, Rousseau was the first educational philosopher who raised the idea of autonomy and to breakthrough the authoritative education.

Before Rousseau, education was perceived as “imparting” or “instilling” knowledge and virtues to students, namely “tabula rasa”. This ‘tabula rasa’ concept describes the mind as like a blank sheet of paper upon which ideas or knowledge are imprinted (Ozmon and Samuel, 1981). Its inventor, Locke (1995, 2001) claims that a learner is like a blank sheet of paper who accumulates knowledge by experience, through sensations to instantly read, listen and digest what has been taught. Furthermore the learner shall practically reflect on what has been sensed and what has been taught through practice. From the educators’ perspective, Locke describes the learner as a new-born child in a blank state. The educators shall teach with care and at the same time teach with authority in order to protect the learner from malignant influence.

However, Rousseau scattered Locke’s ideas as to the replacement of authority by investigation and reason (Cubberley, 2003). The new idea of the rejection of authority and the emphasis of the individual’s reasoning inspired new educational aim which influenced the 19th century’s direction of education development such as Dewey’s, Freire’s and Vygotsky’s concepts. Learners must be developed in the consciousness of complete freedom. They must think they are being allowed to do what they want. The learner is committed to the reasoning willingly not because he has been forced to do so. His desire is shaped to conform to necessity, not to the authoritative instructions from the educator.
Based on Rousseau’s view, therefore, I would suggest that **blended learning may stand on this ground to facilitate an independent learner, responsible for individual thoughts and actions, yet able to interact with others.** Rousseau’s view of education is how to naturally prepare better individuals to construct a better society, not how to teach or learn effectively. The challenge of an educator is to create such a free learning environment without disruption (Pannabecker, 1995).

Thus, Rousseau’s purpose of education may be summarily stated to be the “forming” of men as social beings - to make them both human (from *Emile*) and citizens (from *Social Contract*). It seems to have two opposing ideas concerning education: (1) *Emile* – individual education that emphasises personal learning experience and personal and “natural” potential; and (2) *Social Contract* – national/social education that emphasises employability, social engagement and contribution to the country and national economy. **Most often, educators in higher education also emphasis one of these ideas and tend to ignore the other one.** Rousseau never approves the necessity to make a choice between individual education and national education. He is stating a fact, not passing a judgement. What he is concerned to urge is that it should be from one of them and not from both of them at the same time (Boyd, 1963).

Before the time of Rousseau educationists had largely agreed that education is a kind of top (educator) - down (learner) instilling concept. From Rousseau onwards educationists speak continually of the autonomous pedagogy as an educational environment. Many educationists in later centuries embrace this idea, one of the most prominent, Vygotsky. His name was mentioned in many research papers concerning e-learning and blended learning (Chew, et al., 2008b; Leong and Bodrova, 2007).
3.2.3 Vygotsky and Blended Learning Initiatives

“The influence of Vygotskian theory on educational practice has been one the most striking features of the past decade.” (Yelland and Masters, 2007, p.363)

It is believed that Vygotsky’s educational ideal is best suited to blended learning or technology enhanced learning (Jennifer and Monfries, 1995; Subramaniam, 2007; Chew et al. 2008b). He is the profound educationist who was contemporaneous with Piaget. Unlike Piaget’s stage-like theory of cognitive development (refer to Appendix B), Vygotsky considers socio-cultural factors in cognitive learning and education. For this reason, his ideas are increasingly adopted as welcome guidance for classroom practice (Lipman, 1996). His three fundamental claims are: (1) the learner’s cognitive skills can be understood only when they are developmentally analysed and interpreted; (2) these cognitive skills are mediated by words and language which serve as psychological tools for facilitating and transforming mental activity; (3) cognitive skills have their origins in social relations and are embedded in a social-cultural backdrop (Santrock, 2004).

For Vygotsky, a learner’s knowledge is developmentally constructed in social or cultural interaction (Cortazzi, 1999). These interactions include communication with educators, parents, classmates, family members and friends. They involve relationships with significant objects, such as books or toys. Such interaction is culturally practiced in that learners engage with people in school, at home, and in the community. This is called the Vygotsky’s Cultural-Historical Theory (Deborah and Bodrova, 2001), which integrates historical and psychological processes into a loose theory of human consciousness (Ussher and Gibbes, 2002). In addition, this social and cultural construction of knowledge is mediated by words and language (Cortazzi, 1999). Vygotsky perceives language as the substantive element in his Cultural-Historical Theory. He describes language as a tool that humans use to share social meanings with one another and to explain how we
advance developmentally from natural processes to higher mental processes (Jaramillo, 1996).

The Zone of Proximal Development (ZPD) is Vygotsky’s term to describe the range of tasks or knowledge that are too difficult for the learner to learn alone but can be developed with guidance and assistance from educators or more-skilled peers (Santrock, 2004). Vygotsky believes learning could lead to development if it is occurred within the learner’s ZPD. There is a simple but powerful principle which lies behind ZPD: the quality of the learner’s thinking and performance is much better if he is aided with a more skilful and knowledgeable educator rather than working independently (Alexander, 2006). For the skills and concepts that lie outside a learner’s ZPD, significant instructional efforts may fail to produce developmental gains. Vygotsky recognises this kind of assistance is needed to help learners develop new skills and concepts within their ZPD and it takes different forms for learners of different ages (Deborah and Bodrova, 2001).

![Figure 3.8: Vygotsky's ZPD (Leong and Bodrova, 2007)](image)

Vygotsky perceives the role of an educator as a complex one. He views the role of an educator as a facilitator. The nature of this role is reflected in the ZPD
model. There is a case when educators teach students certain new knowledge which is above the students’ current skills and knowledge level in ZPD. Educators utilise supporting techniques to motivate the students to excel beyond their current level. The facilitating process from the educator is essential to encourage and to enable the learner to achieve a higher level of ZPD. This differs and flourishes from Piaget’s stage-like approach. Vygotsky places the educator in a more functional and social role than Piaget does. According to Vygotsky, the educator should be keenly aware of the learner’s personal characteristics and social milieu in addition to the teaching activities. Only then the educator can integrate all these elements to raise the learner’s mind to a new level of consciousness and activity (Jennifer and Monfries, 1995). Vygotsky provides a new framework that prompts the educator to think beyond traditional teaching styles and methods, and to provide relevant and meaningful contexts for the student experience (Ussher and Gibbes, 2002). He stresses that the learners combine an internal and external learning experience. This experience is an interplay of internal cognitive, internal emotional and external interactions with peers and educators (Jaramillo, 1996). Thus, the educator’s role is to design and facilitate such social and cultural experience. For instance they facilitate learners to play a role in the group discussion, and encourage and recognise the learners when they reach certain achievements. This discourse could be further empowered in blended learning.

The learners’ role in Vygotsky’s view is as active partners in all socio-cultural interactions. They construct values, knowledge and skills and do not just mirror the world around them (Deborah and Bodrova, 2001). He promotes a learner-centred learning environment just as Rousseau does. In summary, Vygotsky’s theory emphasises the social interactions, language and culture of learners’ total learning environment, with the educators’ and more-skilled peers’ facilitation in learners’ ZPD. This idea may fit perfectly into the complexity of blended learning as discussed in Section 3.1.2.
Turner (2007) declares,

"In the light of the contemporary debates about the education, it is worth noting here that education cannot only be learning how to learn, or learning certain study skills. Education may involve learning those techniques, but must ultimately be about the learner mastering his own higher mental functions, directing attention, remembering, analysing, proving, and reflecting, by internalising cultural signs and tools so as to transform himself. Within Vygotsky’s work we have a hint as to what the proper function of the teacher should be, and it is not to transmit inert knowledge of her subject." (p. 122)

Turner perceives that Vygotsky creates a theoretical space for “the emergence of higher mental functions”. The skill and art of an educator, therefore, rests in being able to facilitate a social and interactive experience that allows the learners to develop higher mental functions. With the similar view, Garrison and Kanuka (2004) assert that a blended learning context provides the independence and increased control essential to developing critical thinking. In this respect, most often, the learner can be developed to reason at a higher level by cultural interaction (Santrock, 2004) or by a more knowledgeable senior peer or educator as suggested by Vygotsky.

3.3 Concluding Remarks

As a summary, the recent literature review exhibits two focuses on blended learning definitions and research: educational-focus or technological-focus. There are various dimensions of complexity around the theoretical context for blended learning: contrasting focus, views and practice - “education in technology” or “technology in education”; engineering philosophy of technology and the humanities’ philosophy of technology - caused by disciplinary (epistemology) differences. Taylor (2009) asserts that the two views (technology and human view) need more co-evolution. Inter-disciplinary projects are required for further investigation.

I can now see, however uncertainly, the links between disciplinary differences, and blended learning experiences, and the relationship between blended learning and educational theory. The cross connections are everywhere and
there is great difficulty in picking the right spot to begin. What I perceive very clearly is the difficulty of conveying those cross-connections and interrelationship in a text that is linear. Summarising from Chapter 2 and 3, the need to investigate the blended learning experience in higher education, and the disciplinary differences is a must. At the heart of the blended learning practice is the need for a deep understanding of the differences and educational theories by educational philosophy or “thinker”; only through that understanding can emerge initial principles for a blended learning model. I would suggest, based on the various schools of literature reviewed in Section 3.2 that blended learning research should be grounded in educational theory with an understanding of both disciplinary needs and diversity. Educationists and technologists; lecturers and developers or instructional designers should use pedagogical theory to inform their passion for education (and not merely for a market or for business). Pedagogical theory is proposed to be linked (not mixed) with the thoughtful integration of blended learning – the decision as to whether to use educational technology or not, and if so how.

The core of Dewey’s argument is that the different elements of learning need to be harmonised and balanced (Turner, 2005). The challenge of the present educator is to understand and encompass one or more educational theories to suit the present needs of different disciplines, and to create such a balanced and free learning environment. In the context of this research, a few educationists’ views related to educational aims were discussed and Vygotsky’s educational theory was highlighted. This initial “marriage” may aid primitively on a further investigation of current blended learning practices in HEIs.

The paradigms of blended learning practice and experience will be examined in Chapter 5, in part illustrated by a survey of the opinions of academics who work in a number of settings described in the next chapter. Such findings contribute to a blended learning model and the formulation of its principles in Chapter 6.
Chapter 4
Research Methodology

“A scientific methodology is a system of explicit rules and procedures upon which research is based and against which claims for knowledge are evaluated…The methodology of the social sciences has evolved slowly. Within this evolution, the continuous interchange of ideas, information and criticism made it possible to firmly establish, or institutionalize, commonly accepted rules and procedures and to develop corresponding methods and techniques…This system of rules and procedures define the ‘rule of the game’, scientific norm set the standards to be followed…and enable communication, constructive criticism and scientific progress.” (Nachmias and Nachmias, 1996, p. 13)

Similar to Nachmias’s and Nachmias’s definition, Taylor and Bogdan (1998) perceive methodology as a systematic way researchers approach problems and seek answers – how research is conducted. This chapter begins with an overview of social research philosophy and approaches, followed by the strategies and methods applied in this research with specific considerations, and the strength and challenges of the research methodology used.

4.1 Overview of the Research Philosophy and Approach

Over the last decades, the criticisms of both quantitative and qualitative research strategies and their epistemological and ontological roots have been the focus of a great debate for researchers (Burrell, and Morgan, 1979; Scott, 1997; Cohen, Lawrence and Morrison, 2001). Based on the arguments from Bryman (2004) and Cohen, Manion and Morrison (2001), quantitative research is usually associated with positivism, epistemology and realism ontology; whereas qualitative research is typically associated with interpretive or post-positive epistemology, and constructive ontology. Quantitative approach explores the relationship of measurable variables with the purposes of explaining, forecasting and controlling phenomena, and typically ends with a firm and statistical conclusion of hypotheses. A qualitative study, in contrast, investigates a phenomenon and ends with conceptual hypotheses about what has been explored. The key point here is that some researchers attempt to distinguish both quantitative and qualitative methodologies by reflecting their respective
philosophical foundations. I summarised the distinctive nature for both research
paradigms in Table 4.1 (Punch, 1998; Newman and Benz, 1998; Leedy and
Ormrod, 2001; Cohen et al., 2001; Bryman, 2004). According to these
researchers, quantitative and qualitative approaches appear to form two
distinctive and exclusive clusters:

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aims</strong></td>
<td>▪ Deductive; Theory / framework testing</td>
<td>▪ Inductive: Theory / framework generation</td>
</tr>
<tr>
<td></td>
<td>▪ To explain and predict</td>
<td>▪ To describe and understand</td>
</tr>
<tr>
<td></td>
<td>▪ To confirm and validate</td>
<td>▪ To explore and interpret</td>
</tr>
<tr>
<td><strong>Philosophical</strong></td>
<td>▪ Positivism</td>
<td>▪ Interpretivism</td>
</tr>
<tr>
<td><strong>Roots</strong></td>
<td>▪ Objectivism</td>
<td>▪ Subjectivism</td>
</tr>
<tr>
<td></td>
<td>▪ Realism</td>
<td>▪ Idealism</td>
</tr>
<tr>
<td></td>
<td>▪ Post-positivism</td>
<td>▪ Constructivism</td>
</tr>
<tr>
<td></td>
<td>▪ Interpreativism</td>
<td>▪ Post-positivism</td>
</tr>
<tr>
<td><strong>Nature</strong></td>
<td>▪ Focused</td>
<td>▪ Holistic</td>
</tr>
<tr>
<td></td>
<td>▪ Established guidelines</td>
<td>▪ Flexible guidelines</td>
</tr>
<tr>
<td></td>
<td>▪ Static design</td>
<td>▪ Emerging design</td>
</tr>
<tr>
<td></td>
<td>▪ Detached view</td>
<td>▪ Personal view</td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td>▪ Experimental or quasi-experimental validation of</td>
<td>▪ The search for meaningful relationships and the</td>
</tr>
<tr>
<td><strong>methods</strong></td>
<td>theory</td>
<td>▪ discovery of their consequences for actions.</td>
</tr>
<tr>
<td></td>
<td>▪ Empirical studies</td>
<td>▪ Descriptive studies</td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td>▪ Representative, large sample</td>
<td>▪ Informative, small sample</td>
</tr>
<tr>
<td><strong>instruments</strong></td>
<td>▪ Survey, questionnaires</td>
<td>▪ Observations, interviews</td>
</tr>
<tr>
<td></td>
<td>▪ Open-ended survey, questionnaires</td>
<td>▪ Open-ended survey, questionnaires</td>
</tr>
<tr>
<td><strong>Analysis</strong></td>
<td>▪ Statistical analysis</td>
<td>▪ Narratives, individual quotes</td>
</tr>
<tr>
<td></td>
<td>▪ Aggregated data</td>
<td>▪ Generalisation and conceptual conclusion</td>
</tr>
<tr>
<td></td>
<td>▪ Firm conclusion</td>
<td></td>
</tr>
<tr>
<td><strong>Findings</strong></td>
<td>▪ Numbers</td>
<td>▪ Words</td>
</tr>
<tr>
<td></td>
<td>▪ Formal voice, scientific style</td>
<td>▪ Personal voice, literary style</td>
</tr>
</tbody>
</table>

Table 4.1 Comparison of Quantitative and Qualitative Research

On the other hand, there are researchers who are against such an exclusive
divide. Many elements listed in Table 4.1 can be integrated or cross-referenced
between qualitative and quantitative research. Mouly (1970) proposes multiple
perspective research methods where the process involves looping actions
between inductive and deductive approaches. Sturman (1997) also suggests that
both qualitative and quantitative research can be combined. Punch (1998) asserts that they can be combined in any proportions of the research. Such qualitative-quantitative integration is not a new idea; Merton and Kendall (1946) already presented this view by declaring social scientists have to combine both quantitative and qualitative methods and make use of the most valuable features of each rather than choosing between them.

Overall, the arguments supporting either qualitative or quantitative; or mix-methods vary from one researcher to another. The concerns become this: at which point should a researcher adopt the one and at which other point should a researcher embrace the other one, or combine the both? This is a challenging decision for many researchers, including myself. Bryman (2004) states that many researchers find it helpful to distinguish between quantitative and qualitative research methodologies based on the philosophical nature of individuals and their research. He further highlights ontological and epistemological considerations, concerning objectivism versus constructionism which also constitute important dimensions of the qualitative and quantitative contrast:

<table>
<thead>
<tr>
<th></th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontological orientation</td>
<td>Natural science model, in particular Positivism</td>
<td>Interpretivism</td>
</tr>
<tr>
<td>Epistemological orientation</td>
<td>Objectivism</td>
<td>Constructionism</td>
</tr>
</tbody>
</table>

Table 4.2 Fundamental Differences between Quantitative and Qualitative Research

Likewise, Taylor and Bogdan (1998) perceive there are two major theoretical perspectives in social science: positivism and phenomenology. They highlight that positivists search for causes through quantitative methods whereas phenomenologists seek understanding though qualitative methods. Taylor and Bogdan, on the other hand, understand that social science research is neither constrained in a tabular distinct categories nor where individual research interests lie. They, with evidence, state that positivists can also use qualitative methods to address their own research interest.
At the beginning of the research, I was struggling with the confusion between different epistemological and ontological views relating to qualitative and quantitative research by various researchers. The process of identifying which theoretical ground I belong to and of decision making for a qualitative and/or quantitative approach were difficult. Regardless of the philosophical and theoretical differences, Newman and Benz (1998) assert that most quantitative research suggests that there is a common phenomenon on which people can agree. Similarly, most of the qualitative research strategies, regardless of their philosophical differences, reflect some sort of individual contextual and phenomenological perspective. Drawn from the work of Newman and Benz, I understand that there are no "rules" which enforce that any epistemology must be associated with either qualitative and/or quantitative method; and there is no one method to acquire all knowledge. Morse (1991) also asserts that both qualitative and quantitative paradigms cannot be weighted equally in research. In some studies, both methodologies co-exist but with different weight in the research process and together they form a triangulation for validation. Most often, which paradigm (qualitative or quantitative) serves the better finding is based on the different nature of the research aims and questions.

Hence, I do not wish to simply adopt an “either-or” or mixed qualitative/quantitative approach. It was necessary to revisit the research aims of my study – that is “to explore, analyse and compare the blended learning experience in four HEIs in the UK and Malaysia”. According to Sturman (1997), qualitative research is useful for the investigation of the interdependencies of past and of patterns. I adopted Sturman’s view to embrace a qualitative approach as the main strategy in this research. The research involves four in-depth case studies of the interdependencies of past and of patterns that emerge in current blended learning practice with exploratory and interpretive research questions. However, I used to be a computer science lecturer and a positivist, who was prone to use quantitative research for AI algorithm and system development. I used to underestimate the value of solely qualitative exploration, such as
interviews and questionnaires, in my own research as well as in supervising students’ projects. At that time I was trained to use only the third person pronoun in all academic papers and dissertation writing. During the cross-disciplines literature reviews and educational research, I have gradually transformed from a stereotypic thought to a wider socio-humane considerations; from a third person writing form to being comfortable writing in the first person voice; from a hold of the engineering philosophy of technology to humanities philosophy of technology (as described by Mitcham (1994) in Chapter 2). Burrel and Morgan (1969) drawn from Weber’s (1949) perception, states that,

“He adheres to the positivists’ concern for providing causal explanations of social phenomena but insists that such explanations must be reduced to the level of the individual.” (p.230)

The findings of science are themselves social constructions and human interpretations in a different form of constructions and interpretations (Crotty, 1998). I must admit that the quantifiable and empirical methods I used in computer science investigation cannot fully explain what happens in the social science and educational world. The qualitative research and all the past debates with supervisors and peers from different disciplines are a real eye-opener. I have gradually come to understand and appreciate the richness and values of qualitative data. From this standpoint, I slowly shifted my epistemology from positivism to post-positivism paradigm, which practices investigation and explains the social world primarily from the point of view and experience of the individual who is directly involved in the social and educational process (Burrell and Morgan, 1969). In this research, such individual stakeholders referred to are the academics and learners in HEIs.

In summary, the research tends to be grounded on a post-positive theoretical basis. Based on different schools of researchers’ views in Chapter 2 and 3, it appears that educational technology does enhance learning and teaching in certain aspects but disciplinary differences may lead to different attitudes and practices of using an educational technology. Such disciplinary differences, especially the lack of educational values and theoretical ground could be a
challenging gap or alternatively, an untapped potential in blended learning research. Therefore, it is necessary to investigate how technology has enhanced the quality of learning and teaching, and how it hasn’t in various disciplines. As a post-positivist, I hold an assumption of educational technology enhanced learning and teaching but perhaps not for all disciplines. Without educational theory to ensure the priming for blended learning, all principles, models and frameworks are rather instrumental and trivial. I also recognised the limitation of my context as well as the importance of multiple measurements to obtain a better understanding of the reality in each HEI. I acknowledged that, in such complex educational phenomena, all research participants and institutional cases are individuals and they may hold different point of views on “technology enhanced learning and teaching”. However, I needed to explore and find out what possible facts and values embodied in blended learning experience to enhance or transform learning and teaching; followed by proposing practices or principles for educators and HEIs to meet similar enhancement or transformational aims. Thus, I collected descriptive data, academics’ own voices and learners’ experience mainly through qualitative research.

4.2 Research Strategy and Methods Used for Qualitative Research

Rist (1997) signifies that qualitative research is more than qualitative data collection but a way of approaching the social world empirically. Leedy and Ormrod (2001) further describe qualitative research as fulfilling a role of understanding the phenomena from the research participants’ perspective. In the process of this qualitative research, I took note of Taylor’s and Bogdan’s (1998, p. 7-10; 175-176) several notions as my research strategies and considerations: First, qualitative researchers emphasise the meanings people attach to things in their lives: I tried to empathise with the research participants, both academics and learners, in order to understand from their own experience and frames of reference. As Blumer (1969) advises, I must attempt to set aside my own perspective and taken-for-granted views. Second, qualitative research is inductive; of course, qualitative researchers operate within a theoretical
frameworks according to Taylor and Bogdan (1998). Pure induction is almost impossible; researchers can never escape some assumptions. Within a broad theoretical ground gathered from different schools of researchers discussed in previous chapters, I made an attempt to make sure the theory fits the data and not vice versa. For example, I used the assumption of “technology enhanced learning varies between disciplines” to create research questions of how it differs from one to another rather than use the data to “prove” the assumption. Most qualitative studies are directed toward building theory. The purpose is to understand and explain features of social phenomenon beyond a particular person or the setting of studies. For such purposes of induction, it is important to be sensitive to unstated assumptions and unarticulated meanings. I need to use more descriptive data to illustrate the proposed principles or theory to convince readers of the principles or theory.

Third, in qualitative research the researcher looks at the setting and people holistically; people or settings are not reduced to variables, but are viewed as a whole: I tried not to quantify the qualitative data because if I reduced interviewees’ words and acts to statistical equations, I may lose sight of the human side of social life and experience. Fourth, for qualitative researchers, all aspects are worthy of study: the goal of my research is to examine how things look from different vantage points. The learners’ perspectives are just as important as the educators’. Thus, I investigated as many wider perspectives as possible around the topic. Fifth, in the next discussion chapters, I tried to avoid some common mistakes in writing from qualitative data. For example, I avoided lengthy quotes and tried not to repeat the same quote more than once unless it was necessary. Due to the differences between my computing background and an educational paradigm, I needed to be extra careful of any lapses in the quantitative language – I tried to avoid absolute phrases in the discussion such as “always” or “definitely”; and not to use “investigated subject” but “educators” or “learners” instead. I also tried to provide interpretation and analysis of quotes by avoiding using them alone to make the points. Vaus (2001) notes that there are
researchers who argue about a point - “let the facts speak for themselves and avoid imposing the researcher’s interpretation on the facts” (p.250). However, this argument is impossible as he further defends the necessity of the interpretation of quotes for all quotes are based on researchers’ selection of what they see as relevant and important. Finally, *qualitative research is a craft*: qualitative methods have not been as refined and standardised as, for example, computer science or engineering research approaches. Qualitative researchers like me, therefore, are allowed flexibility in conducting research. I perceive myself as a craftsperson. There are methods or phases to be followed (as discussed in the next section), but never rules.

According to Babbie (2004), Bryman (2004) and Creswell (2007), there are some research methods in qualitative research, such as (1) *naturalism*, the earliest and oldest traditional qualitative research method which operated on a positivist assumption that an objective social reality exists and is ready to be observed and reported accurately; (2) *ethnography*, a study that focuses on an entire cultural group and their beliefs, behaviours and language of a group - a detailed and accurate description rather than explanation; (3) *phenomenology*, which describes the meaning for several individuals of their live experience of a concept or a phenomenon; (4) *grounded theory*, that is the move beyond description to discover or generate a theory from the contrasting comparison of unfolding observation. It is different from hypothesis testing; (5) *case study*, an in-depth investigation of an issue based on one or more instances of some phenomenon within a bounded setting or system.

Again, there is a need to revisit my research aim and questions to make a choice of the above methods. The research boundaries involve blended learning investigation and comparisons of four HEIs in two countries and an in-depth study of the educational research questions explored through all four cases is necessary. Lancy (1993) and Denzin and Lincoln (2005), relate a case study approach with the interdisciplinary roots of education and social science. Yin
(1989) asserts that a case study must begin with a theory or a set of rival theories concerning the phenomenon to be explored. Similarly, Vaus (2001) highlights that case study must have a theoretical dimension. Without such a theoretical dimension a case study will be of little value for wider generalisation. Bliuc et al. (2007) studied the representative research of blended learning, categorising past blended learning research in terms of methodological focus and complexity. In terms of methodology, they classified most research in blended learning as survey-based studies, case-studies or comparative studies.

Based on these researchers’ imperatives, I adopted a case study approach in this research due to the complexity of blended learning, the nature of the educational world, a set of assumptions and the complex educational theories. Information and literacy was obtained and interpreted from interviews and observations of each case. Quantitative data acts as a minor and supplementary source and was collected from the official documents published by respective institution or country. Qualitative data would later be used to understand, describe and form the blended learning conceptual framework and principles. The revised finding was then looped back to the qualitative findings for a comparative study of the following cases.

4.3 Case Study with Comparative Methods

The case study approach used in this research is widely used in social science and educational study (Burgess, 1985; Creswell, 2002; Merriam, 1998). Its definitions are suggested by various researchers as follows,

“Case study is detailed investigations of single individuals, single groups or departments in an organization…Case study data can be extremely rich, varied and detailed.” (Buchanan and Huczynski, 1985, p.25)

“Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances…draws from naturalistic, holistic, ethnographic, phenomenological and biographic research methods.” (Stake, 1995, p. xi)

“Case study method is an approach to studying a social phenomenon through a thorough analysis of case(s).” (Kumar, 2005, p. 113)
“Any sociologist who is trying to identify the causes of social events and behaviour is going to be involved in making comparisons, whether by means of conducting surveys among different groups of people.” (Mcneill and Chapman, 2005, p. 88)

Creswell (2007, p. 73) provides a simpler and practical definition to the case study method - a qualitative approach in which the researcher explores a bounded system (a case) or multiple bounded system (cases) over time, through detailed, in-depth data collection involving multiple sources such as interviews, observations, documents and reports. Soy (1997) states that researchers from various disciplines adopt the case study to explain a situation and to provide a basis to apply solutions to situations. Soy also asserts that case study is used by researchers to construct or to challenge theory. Denscombe (2002) further points out that one of the major strengths of the case study is that it embraces a variety of research methods depending on the specific situations and needs.

### 4.3.1 Methods and Discussions

“Theory-building and theory testing research can both use the case study approach to good effect.” (Denscombe, 2002, p. 40)

In general, the case study approach is a holistic approach to form a conceptual framework from gathering, analysing, comparing and evaluating a specific phenomenon in selected case(s). Vaus (2001, p.219) comments that the case study research method, for many years, had been the “ugly duckling of research design” but Yin (1989, 2003) has provided a useful and systematic discussion as a powerful defence of its values.

One criticism of case study research which has been levelled is that knowledge in the field is not being cumulated (Jensen and Rodgers, 2002). Some researchers may doubt that theory building cannot be carried out effectively by case study research and the quality of generalisation made from the singular cases – there can be no generalisation (Denscombe, 2002). This view is expressed in a different way by Gill (1995) who has pointed out a number of well known classical case studies that produced considerable theoretical findings. For
example Darwin constructs his Theory of Evolution with collective case study research and Piaget investigates developmental phases with multiple case studies of children. With evidence and in a systematic manner, Yin (1989) defends the value of case studies as leading to theory development that could be applied and generalised in the world at large. Sturman (1997) further argues that even a single case study can be used for generalisation. He argues that “if the primary focus is on regularities, the unique shows up; and if it is on particulars, regularities show up…case study method includes both the particular and the universal instead of segregating the two, and moves from the particular to the universal and back in graded steps” (p. 63).

Jensen and Rodgers (2002) propose a solution to the criticism that generalisation made from a case study cannot be carried out to form a theory, by showing how meta-analysis can be used to cumulate knowledge using evidence from case studies. Jensen and Rodgers states that in meta-analysis, the researcher could create a summary table that consists of cross case comparison where the rows are case studies and the columns are related attributes or finding, or vice versa. The purpose of meta-analysis is to help the researchers to construct principles or theoretical generalisations from the meta-analytic table that summarises the case studies. Hence, I constructed the meta-analysis from the cross case studies according to Jensen and Rodgers’ view in the cross case comparison (refer to Section 6.1) and construct the blended learning principles based on such meta-analysis.

There are a few challenges, however, faced by the case study researcher as drawn from Cohen’s et al.’s (2001) and Denscombe’s (2002) works: (1) the lack of the degree of rigour, credibility and measurable findings; (2) access to case study settings which are typically confidential; (3) observer effect, which means people are likely to alter their behaviour or answer the research question “ideally” when they are aware that they are being interviewed and observed. Denscombe (2002 highlights that interviewees would normally be embarrassed and conceal
normal practice. Thus, I had spent some time on site for indirect observation and used published quantitative data integrated with case study method to obtain “natural” and reliable data without further effects arising from the formal interviews. According to Sturman (1997), strategies below were carried out in this research to achieve credibility in case study research:

- Procedures for data collection were clearly explained (refer to section 4.3.3).
- Data collected was stored securely and ready for re-analysis.
- Negative instance was reported (refer to disconfirming experience in Chapter 5 and 6).
- The relationship between assertion and evidence was clarified (refer to Chapter 5 and 6).

Nisbet and Watt (1984) criticise that the case study approach may result in biased, personal and subjective findings. A similar view is expressed in a different way by Yin (2003) that multiple data collecting methods are used in case studies to prevent inaccurate and biased interpretations and conclusions. Multiple cases are also selected so that they replicate each other and further determine the validity and feasibility of the finding to prevent bias and selective finding. This is called triangulation. Denscombe (2002) states that,

“*In parallel with the use of multiple methods, the case study approach fosters the use of multiple sources of data. This, in turn, facilitates the validation of data through triangulation*” (p. 40)

Yin (1989) recommends case study research to explore phenomena within real-life contexts - in this research the context is higher education and the phenomena is blended learning experience – in which the boundaries between contexts and phenomena are ambiguous. The case study strategy was used in order to understand such a complex issue and insert values to previous research findings by other researchers. Data triangulation (the use of a variety of data sources for this study such as interviews, group interviews, official documents and websites)
was used to prevent the bias and constraint brought by single method and my socio-cultural background.

Anderson (2004) perceives education as a complicated process and therefore a research method which is flexible and a process-oriented investigation is needed. According to Adelman (1980), the case study method is used to recognise and evaluate the flexibility of the reality especially in the variety and complexity of educational purposes and environments. With these boundaries and based on the arguments discussed by various researchers above, the case study with comparative method was the appropriate choice used in this blended learning research (Chew, Jones, and Turner, 2008a).

Jensen and Rodgers (2002) express that comparative case studies consist of a series of research case studies for the cross-entity comparison. The findings of case studies were then compared based on Bereday’s (1965) idea of educational comparative method: juxtaposition and preliminary confrontation of data from different disciplines, HEIs and countries. He identifies four systematic comparative stages below:

1. Description: systematic collection of pedagogical information in one country
2. Interpretation: the analysis in terms of social sciences
3. Juxtaposition: establishing similarities and differences
4. Comparison: Simultaneous comparison

Traditionally, comparative education is a search for similarities or differences in educational ideologies and educational activities (Fox, 2003). In general, Epstein (1994) defines comparative education as the study of the variations in the educational processes and systems, and how education relates to wider social factors. McNeill and Chapman (2005) further say that such “comparisons are made between instances where the thing to be explained is present and instances where it is absent” (p. 88). Thus, a comparison method is used to
explain a current phenomenon by comparing the experience of the group with another when the experience is not occurring or it is, but in a variant way. Based on Bereday’s (1965), Eisenhardt’s (1989) and Anderson’s (2004) perceptions of case studies with educational comparative methods, I compiled and customised the stages detailed below for conducting this research (again, these are guidelines, not rules):

1. Getting started; defining the research questions.
2. Selecting case study.
3. Selecting the cases and establishing boundaries for the cases.
4. Crafting instruments and data collection methods for multiple data sources.
5. Description: collecting data and recasting information based on the real-life phenomena.
6. Interpretation: analysing four single cases.
7. Juxtaposition and Comparison: searching for cross-case patterns, meta-analysis, finding similarities and differences.
8. Triangulating findings and interpreting by prior theoretical knowledge.
9. Shaping principles; the theory / data relationship.
12. Outputs: principles; conceptual framework; propositions or mid-range theory.

Grounded on the above stages, Figure 4.1 presents multiple case studies research which consists of preparation, collection and analysing phases used in this research.

Figure 4.1 Case Study Method (Modified from Whitelock, 2006, p. 506)
4.3.2 Preparation Phase: Pilot Study and Selected Cases in the UK and Malaysia

I chose the UK and Malaysia as the research boundary due to the similarity of their HE system since Malaysia is a former British colony. The different culture and context of the two countries would make this comparative study richer in terms of research responses and individual experience. In the preparation phase, I designed a set of interview questions (refer to Appendix D) and protocol based on the research aim as discussed in section 1.4. I conducted a pilot study prior to the real case investigation. Bryman (2004) states that pilot testing should be designed to determine and to ensure all research instruments, as a whole, function well. The pilot protocol shall reflect the challenges of the real research process. Given this, a series of exploratory interview questions were distributed to several academics and students in the University of Glamorgan. I reviewed, evaluated and obtained feedback from them; and a refined version was emailed to them for another round of review. This iterative process forced me to repeatedly address the questions: Did any questions need to be improved? Had sufficient information been learned and has any problem arisen? I later fine-tuned the interview questions and their presentation at the end of the pilot test phase.

At the same time, I needed to select 4 sample cases for research investigation. Stake (1995) highlights, “it may be useful to try to select cases which are representative of other cases, but a sample of just a few is unlikely to be a strong representative of others. Researchers do not study a case primarily to understand other cases - first obligation is to understand this one case” (p. 4). According to Stake (1995) and Hamel, Dufour and Fortin (1993), the first criterion of selecting a case is to maximise what can be learnt, understood and to modifying for generalisation. Yin (2003) further points out that exploratory type of case study is aimed at creating a conceptual framework and hypotheses for a later investigation and possible subsequent study. Multiple cases should be selected to predict similar findings and to compare the findings. The selected cases, however, are not representative of the statistical point of view at which a
phenomenon occurs but as an initial sociological theory instead (Yin, 1989). Hamel et al. (1993) further explains this initial sociological theory as initial ideas that a researcher has of the perceived social issues. He asserts the same view as Yin (1989) that a selected case involves a social phenomenon; therefore a selected case is sociologically representative instead of statistically representative.

I considered both Yin’s (1989) and Stake’s (1995) arguments, by picking those cases which do not only offer easy accessibility to the inquiry but incorporate sociologically representatives and contrasting groups of cases - including contrasting findings to the research questions. The main research questions to be considered were: (1) What is the current blended learning experience in the selected higher educational institutions in the UK and Malaysia? (2) How such experience varied in different disciplines (social science-based academics and science-based academics)? (3) What are the reflections on the comparative experience in (1) and (2)?

Thus, the principal criterion for the selection of the HEIs was less “which HEI represents the totality of the UK and Malaysia?” but rather, “which group of HEIs can offer a better understanding of the research questions (1) to (3)?” and “which group of HEIs reflect strong, both positive and constructive examples of the research interest?”. Given these criterions, a diverse group of HEIs and disciplines were needed. For instance the traditional old universities versus the new universities which had been upgraded from polytechnic institutes, and the contrasting nature of disciplines related to technology such as the Faculty of Computer Science versus the Faculty of Education; or the Faculty of Science versus the Faculty of Humanities and Social Sciences were selected for the criterion stated above. Hence, the following multiple cases were finally chosen:

<table>
<thead>
<tr>
<th>Multiple Dimensions</th>
<th>UK</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional University</td>
<td>University of Leicester</td>
<td>University of Malaya</td>
</tr>
<tr>
<td>Disciplines</td>
<td>Science-based</td>
<td>Science-based</td>
</tr>
<tr>
<td></td>
<td>(including applied science)</td>
<td>(including applied science)</td>
</tr>
<tr>
<td></td>
<td>Social Science-based</td>
<td>Social Science-based</td>
</tr>
</tbody>
</table>
(including applied social science) | (including applied social science) 
---|---
**New University (upgraded from polytechnic institutes)** | University of Glamorgan | University of Tunku Abdul Rahman 
**Disciplines** | Science-based (including applied science) | Science-based (including applied science) 
| Social Science-based (including applied social science) | Social Science-based (including applied social science) 

<table>
<thead>
<tr>
<th><strong>Table 4.3: Cases Selected</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>However, these selections would neither be representative of the country nor the disciplines statistically but they provide a better understanding of current blended learning practice sociologically. Stake (1995) highlights that the balance and variety are both important. According to Anderson, factors such as resources, time-lines and access to confidential information are considered in the research. The combination of purposive sampling and stratified random sample methods (Jankowicz, 2005) were used in the sampling of research participants. Purposive sampling involves choosing academics whose views are relevant to issues related to the research area: (1) select people using the key informant technique by which people with specialised knowledge about such issues (blended learning/e-learning and education) are chosen or (2) select people because of the positions they occupy in the organisation. Hence, the dean or the head of learning and teaching of a faculty was one of the targeted interviewees in the research. New interviewees will be selected following the recommendations of these key informants. As the research proceeds, a stratified random sample of academics categorised into experienced versus less experienced in social networking were surveyed. Student participants were recommended by the key informants and approached by me randomly based on the criterion described above. Being a member of staff at Glamorgan and ex-member of staff at the University of Malaya, I have the advantage of communication, key informant selection and geographical familiarity. On the other hand, I tried to avoid both favoritism and bias through the literature review and analysis that is solely for this research (e.g. the criticism of Jones’ continuum in Chapter 2 and findings in Chapter 6).</td>
</tr>
</tbody>
</table>
4.3.3 Collection Phase: Research Instruments Design and Implementation

“The term "instruments" refers to the range of questionnaires, interviews and tests used for the collection of data that are suitable for conversion into variables for subsequent analysis." (Rosier, p.156)

The dean or e-learning/blended learning co-coordinator in each faculty or institution was approached by email. At least 9 academic staff per faculty and 3 students per institution were interviewed through arrangement by the dean or co-coordinator. Stake (1995) defines the case researcher's role as an advocator, biographer and interpreter. In the process of the data collection phase, I employed the idea of Stake to carry out my role in the interviews as an information seeker; biographer in observations, interpreter and advocator in analysis and interpretation. To maximise the findings, I incorporated a series of data collection instruments such as (1) recorded f2f interviews individually or in groups; (2) sites visit to all cases with direct and indirect observation; (3) official emails and annual reports from respective universities and (4) offline/ online documentation, reports, websites, systems and data observations.

Recorded f2f interviews

In total, 38 academic staff and 14 students were approached and interviewed for an average of 40 minutes in each session. Semi-structured interviews were planned and conducted to encourage all interviewees to speak more widely and in-depth on the related issues. Most of the questions were open-ended (refer to Appendix D). Sufficient explanation and examples were given to aid the understanding of questions and ideas for responses. I used a digital recorder to capture all the conversations to prevent bias, and partial memory and to increase the preciseness of the analysis and findings in the later stages. Interviewees, however, may be nervous under the pressure brought by a voice recorder. I followed Denscombe’s (2002) suggestion that field notes are written during each interview and soon after each interview, especially covering significant non-verbal communication that could not be captured by an mp3 recorder but which would be useful for the findings. The interview sessions were conducted in three
languages - English, Malay and Mandarin. The latter two languages were all translated into English during the transcriptions.

_Sites visits with direct observation_

Each HEI was visited for the research interviews. The physical observations of their blended learning facilities would also be taken and complement the findings from interviews. The observations were captured during the interviews and transcription. Again, field notes were made in the process of each site visit to refresh the memory in the later analysis.

_Offline/ Online documentation, reports, website, systems and data observations_

Books, published journals and country reports, public policy, official statistics and all sorts of written documentation were gathered. Educational information systems implemented at each HEI were observed and online documentations and websites were referenced.

**4.3.4 Analysing Phase: Interpretation and Representation**

Stake (1995, p.163) identifies 4 forms of case study analysis and representation: (1) direct interpretation from a single instance and draw meaning from it; (2) category aggregation which seeks a collection of instances from the data and hopes that issue-relevant meanings will emerge; (3) pattern matching for cross case synthesis and (4) natural generalisations from analysed data that others can learn from the case(s) or to apply to a number of cases.

The _Analysing Phase_ in my research involves all the above forms. I commenced with the direct interpretation from transcripts through open coding in Nvivo, to obtain the themes of a case as well as category aggregation. Babbie (2004) defines open coding as the initial categorising and labeling of themes and concepts in data analysis. Drawing heavily on Ryan and Bernard (2003), I used a number of ways in which those coding could discover new themes, such as word repetitions, keywords in context, compare and contrast, metaphors and analogies.
used by interviewees. In the later stage, pattern matching themes for cross cases synthesis were emerged, followed by the generalisation of the blended learning principles. Finally the findings were shaped and formed to construct a blended learning model which is discussed in Chapter 6.

4.4 Research Measurements and Further Considerations: Reliability and Validity

The limitations of the study, however, are the complexity of qualitative data analysis from a multi-dimensional case, from an individual academic’s experience to academics from two disciplines; from an institution to four HEIs in different countries. Therefore, the design measurements for such a complex research plan are essential, such as the validity and reliability. Zeller (1997) defines validity as “the isomorphism between the reality that exists in the world and the description of that reality...a measurement is valid if it measures what it is intended to measure” (p. 822). Leedy and Ormrod (2001) perceive reliability of a measurement instrument as “the extent to which it yields consistent results when the characteristic being measured has not changed” (p. 99). According to Babbie (2004), qualitative research is generally weak on validity and strong on reliability; where as Bryman (2004) points out that reliability is related to quantitative research which assesses whether a measure is stable or not. Anderson (2004), however, argues that every data collection instrument, regardless of whether it is collecting qualitative or quantitative information, has reliability and validity considerations.

Therefore I addressed few general questions repeatedly in the process of data collection and analysis: Are the findings repeated? Are the answers consistent between different research participants? Are all the responses real, valid and have integrity after cross checking with each other and with the observations during the interviews? In addition, I further incorporated the following considerations and actions to improve the validity and reliability issues during data collection process and site visits:
(1) Before Data Collection: Babbie (2004) asserts that research participants must be competent to answer, thus the samples for interviewees were recommended by the dean, informant or co-ordinator for such context competence and relevant. Other design issues identified by Denscombe (2002) such as double-barreled questions, similar questions in a different fashion, ambiguous wording and technological or social science jargon were prevented. A pilot test for refining the interview questions was conducted as described in Section 4.3.2.

(2) Recorded f2f interviews: An interview typically provides a high response rate, the flexibility to clarify, and to probe the deeper understanding and insight views. However, Bryman (2004) points out that the cost and time for each session and their transcription are considerably high and may be challenged in data analysis due to the semi-structured interview organisation without pre-coded answers. In this sense, I personally transcribed and coded all 52 interviews to reduce the cost incurred but I must admit that the time and effort spent on doing this were immense. All qualitative data was coded using NVivo 7 to speed up the research analysing process. Denscombe (2002) and Cohen et al. (2001) both stress that reliability issues, such as interviewer bias and misperception of responses, are major problems in research. Therefore I always remind myself of these issues and tried to be more objective during data coding and analysing. I would further argue, based on Vaus (2001) and Taylor’s and Bogdan’s views (refer to the discussion in section 4.2), that it is almost impossible not to interpret quotes based on the researchers’ selection of what they see as relevant and important.

On the other hand, Anderson (2004) asserts that interviewees typically provide socially acceptable responses which are not valid and also probably “what people say rather then what people do” (Nachmias and Nachmias, 1996, p. 13). In this respect, I probed or requested for further explanation when interviewees gave incomplete or ambiguous responses; or when I observed that the statement was perhaps “what people say rather then what people do”. According to Denscombe’s idea (2002), the transcripts were sent back to the interviewees for
information quality and accuracy checking. This exercise is meant to prevent the interviewer bias, misunderstandings and respondents’ subjectivity issues addressed above. It invites research participants to confirm that what was said at the time of the interview session and was what was really meant. I exercised this practice only by request due to time constraints for the interviewees to review and feedback on the transcripts. Ad hoc, unscheduled and informal interviews were conducted with staff and students whom I met during the site visits to increase the reliability of the information obtained from the formal interviews. Besides, validity and reliability were also improved by follow-up emails.

Sites Observations, documentation, website, systems and data observations
Site observations, online system and offline documentation observation were made to minimise the disturbance to the naturalness of the setting caused by my presence during the interview sessions. Bryman (2004) highlights that the findings from the site observation are normally more efficient, accurate and precise due to its direct data collection nature. I faced the problem of accessing some of the confidential information and websites which require a log in. Some of the research participants, however, were generous enough to show me.

Many researchers including Cohen et al. (2001) identify several validity and reliability issues in observations, especially the subjectivism of the observer’s judgment and antecedent information or events as discussed above. As a conclusion, a triangulation method (i.e. observation, documents and website analysis and interview findings from academics and students) was used to map out, check against, and explain more fully, the richness and weaknesses of the research in terms of reliability and validity in total (Flick, 1998; Denscombe, 2004). These data collected were analysed, compared and discussed in the following chapters.
Chapter 5

The Blended Learning Experience in Four HEIs

This chapter begins with the national context - the discussion of the HE system of the two countries from various educational reports, to the institutional profile, disciplinary context of the four HEIs and individual voices. Taylor and Bogdan (1998) highlight that quotes bring people to life. The chapter offers a comprehensive investigation of the blended learning strategies, practice, awareness and perception directly from the academics’ and students’ voices in four case studies. Confirming and disconfirming experiences related to blended learning practice were collected and reported in each single case study.

5.1 Profile Analysis of the Case studies: Overall Context and Policy

Four case studies were selected from the UK and Malaysia. There are similarities between the higher educational systems in both country due to the historical background and that make this comparative research interesting. Table 5.1 outlines the general profile and basic information of both countries:

<table>
<thead>
<tr>
<th></th>
<th><strong>UK</strong></th>
<th><strong>Malaysia</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>Europe</td>
<td>South East Asia</td>
</tr>
<tr>
<td>Area (km²)</td>
<td>242,900</td>
<td>329,847</td>
</tr>
<tr>
<td>Education for All Development Index (EDI) (2004)</td>
<td>0.994</td>
<td>0.934</td>
</tr>
<tr>
<td>EDI rank out of 125 countries (2004)</td>
<td>1</td>
<td>62</td>
</tr>
</tbody>
</table>

Table 5.1 Country Basic Information by UNESCO International Bureau of Education (Sources extracted from WDE, 2007)

5.1.1 Higher Education in the UK and Malaysia

HE is one of the British Government’s highest priorities (WDE, 2007) as it contributes to the major economic success and social well being of the country
It generates over £34 billion for the UK economy and supports more than half a million jobs (Clarke, 2003). Similarly, education in Malaysia has always been the focal point of the government’s developmental policy since Malaysia’s independence in 1957 (WDE, 2006). Higher education in science and technology has gained recognition and popularity in the country due to the technical demands of the national development needs (Ahmad, 1998). The educational relationship between Malaysia and the UK has always been strong (Esa, 2007). The UK has long been a popular destination with Malaysians for tertiary education and I personally came to the UK twice for higher education. Such popularity is due to the influences on Malaysia as one of the Commonwealth countries which is a former British colony, and as the education system in Malaysia was developed around the British system it made this a natural fit (Esa, 2007). For example, “moral and values education has always been recognised and acknowledged in the Malaysian curriculum of schools and public universities. It dates back to the time of the British colonial government, when missionary work was one of the reasons for providing education for the people” (Ahmad, 1998, p.462). However, the model and practice of an educational system in a country cannot be incorporated by another country without customisation and localisation. Saha (2003) states that education is a “major agent for the economic, social and political improvement of society, but only if it is adapted and used in a manner appropriate to the cultural context of a particular country” (p.179).

<table>
<thead>
<tr>
<th></th>
<th>Universities</th>
<th>Higher Education Institutions</th>
<th>All Students Enrolments (2006/2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>88</td>
<td>132</td>
<td>1,957,195</td>
</tr>
<tr>
<td>Wales</td>
<td>3</td>
<td>12</td>
<td>131,765</td>
</tr>
<tr>
<td>Scotland</td>
<td>13</td>
<td>20</td>
<td>223,530</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>2</td>
<td>4</td>
<td>50,325</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>106</strong></td>
<td><strong>168</strong></td>
<td><strong>2,362,815</strong></td>
</tr>
</tbody>
</table>

Table 5.2 Number of UK HE Institutions (Universities UK, 2007; National Statistic, 2008)

There are divergences between the management of HEIs in the UK and Malaysia. In the UK, HEIs are legally independent and are prevalent in the four nations -
England, Wales, Scotland and Northern Ireland as shown in Table 5.2. HEIs in Malaysia are spread across all provinces of the country. There are much fewer universities but more community colleges established in Malaysia compared with the UK. This is perhaps due to the high vocational demand for a developing country like Malaysia.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Universities</td>
<td>20</td>
</tr>
<tr>
<td>Private Universities</td>
<td>13</td>
</tr>
<tr>
<td>Campuses of Universities from a Foreign Country</td>
<td>5</td>
</tr>
<tr>
<td>College Universities</td>
<td>15</td>
</tr>
<tr>
<td><strong>Subtotal of Universities</strong></td>
<td><strong>53</strong></td>
</tr>
<tr>
<td>Community Colleges</td>
<td>482</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>535</strong></td>
</tr>
</tbody>
</table>

Table 5.3 Number of HE Institutions in Malaysia (MoHE, 2008)

The Ministry of Higher Education (MoHE) in Malaysia clearly categorises HEIs in the country into (1) public universities which are managed by the government; (2) private universities which are run by the private sectors or political parties; (3) campuses of universities from foreign countries, such as the University of Nottingham and Monash University; (4) college universities and (5) community colleges (HEIs which have not gained universities status) which are administered by both government and private organisations (refer to Table 5.3).

The government of HEIs in the UK and Malaysia also varies. The British education system is decentralised and is supported by central government, a number of local government departments, sponsored agencies, churches and other organisations (WDE, 2007). Overall policy and funding for education is determined by the several major government departments as shown in Table 5.4. In England, Wales and Northern Ireland, HEIs are independent, self-governing bodies and established by Royal Charter. However, they are broadly similar in terms of the management and accreditation (QAA, 2008). The education system
in Scotland has, however, always been completely separate with its own laws and practice (Eurydice, 2007a; 2007b). Overall, differences across the UK are particularly marked in the school systems, not at the university level. The policy and strategy is less varied at the HE levels (WDE, 2007).

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Wales</th>
<th>Scotland</th>
<th>Northern Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government</strong></td>
<td>Department for Innovation, Universities and Skills (DIUS) - which has replaced the Department of Education and Skills (DfES) in June 2007.</td>
<td>Welsh Assembly Government</td>
<td>Scottish Executive Education Department</td>
<td>UK Government</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Enterprise Transport and Lifelong Learning Department (ETLLD)</td>
<td>Northern Ireland Higher Education Council (NIHEC) (Advisory Role)</td>
</tr>
<tr>
<td><strong>HE Funding Body</strong></td>
<td>Higher Education Funding Council for England (HEFCE)</td>
<td>Higher Education Funding Council for Wales (HEFCW)</td>
<td>Scottish Higher Education Funding Council (SHEFC)</td>
<td>Department for Employment and Learning (DEL)</td>
</tr>
</tbody>
</table>

Table 5.4 The British HE Education: Government and Funding Bodies (Hero, 2006; WDE, 2007; DIUS, 2008)

On the other hand, the education system in Malaysia is much simpler than the UK’s – all HEIs are governed by the Ministry of Education of the ruling government or private organisation (either run by a political party or a corporate company which has established close links with the Government). Until recent years, universities and colleges were coordinated and monitored by a centralised HE division, the newly established Ministry of Higher Education (MoHE), which aimed to turn Malaysia into a Centre of Excellence for HE (MoE, 2004; 2008; WDE, 2006). In the UK, students are free to apply to any HEIs through the UCAS by merit system. A similar system is, however, only applied in the private universities and in postgraduate applications in the public universities of Malaysia. The admission of students into the public universities for their first bachelor degree and diploma courses is managed by the centralised Department of Student Admission (MoE, 2008). This department tightly controls the admission of the students based on racial quota system whereby the ethic composition of the student population in the universities as a whole and in each of its faculties
should reflect the ethnic composition of the country (Hawkins and Su, 2003). The tables below summarise and distinguish some basic facts and figures:

<table>
<thead>
<tr>
<th>HE Qualifications obtained by All students</th>
<th>UK</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/2005</td>
<td>633,045</td>
<td>228,352</td>
</tr>
<tr>
<td>2005/2006</td>
<td>640,850</td>
<td>166,442</td>
</tr>
<tr>
<td>2006/2007</td>
<td>651,060</td>
<td>196,151</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All Student Enrollments at HEIs</th>
<th>UK</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/2005</td>
<td>2,287,540</td>
<td>690,196</td>
</tr>
<tr>
<td>2005/2006</td>
<td>2,336,110</td>
<td>649,653</td>
</tr>
<tr>
<td>2006/2007</td>
<td>2,362,815</td>
<td>748,130</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Staff in HEIs</th>
<th>UK</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>164,975</td>
<td>36,007</td>
</tr>
</tbody>
</table>

Table 5.5 Facts and Figures of Students and Academics in the HEIs
(Sources extracted from National Statistic, 2008; Hero, 2006; HESA, 2008; MoHE, 2008)

<table>
<thead>
<tr>
<th>UK</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The structure of institutional governance is very similar among the universities, such as the vice-chancellor and pro-vice-chancellor are the leaders of an institution.</td>
<td>4. Centralised system: Public universities are monitored and funded by the government of Malaysia, Ministry of Higher Education (MoHE). Private universities are governed by private sectors or sponsored agencies but monitored and accredited by the MoHE.</td>
</tr>
<tr>
<td>2. 3-4 years honours degree, 1-2 years master degree, 3 years PhD.</td>
<td>5. The Framework for Higher Education Qualifications in England, Wales and Northern Ireland, defined in 2001, places qualifications awarded by universities and colleges. The accreditation slightly varied in Scotland (WDE, 2007). Quality Assurance Agency (QAA) and Research Assessment Exercise (RAE) are embraced by all universities in the UK to ensure the quality of research and teaching (QAA, 2008; RAE, 2008). There is no law or act that monitors academic and student voice.</td>
</tr>
<tr>
<td>3. English as the main language of teaching for both countries. Bi-language (English and Malay) teaching is used in some of the public universities in Malaysia,</td>
<td>5. Public universities used to embrace Quality Assurance Agency (QAA) for maintaining the standards and quality of teaching and research. Individual institutions may also obtain respective certification such as MS ISO 9001:2000. However, a standard quality assurance protocol - the Malaysian Qualifications Framework is designed in 2007 to be a unified system of qualifications offered on a national basis by all HEIs (MQA, 2007; WDE, 2006).</td>
</tr>
<tr>
<td>4. Decentralised system: University is decentralised and is supported by central government, a number of local government departments, sponsored agencies, churches and other organisations as shown in Table 5.4.</td>
<td>6. The academics and students are bounded by the University and University College Acts (UUCA) for not involving in politics and public comments (Education in Malaysia, 2008; Loh, 2005, Thomas, 2001)</td>
</tr>
</tbody>
</table>

Table 5.6 Similarities and Differences of HE in the UK and Malaysia
Saha (2003) highlights that comparative education research always recognises the relationship between education and the political life of a country (p.176). I agree with Saha’s view because HE is largely politicised in Malaysia. Such centralised control may result in racial oppression and the fading of autonomous voice (BBC, 2006; Loh, 2005; Thomas, 2001; Education in Malaysia, 2008). This issue is revealed during the interviews and will be discussed in Section 5.4 and 5.5. In contrast, HEIs in the UK are decentralised and are supported by a number of local government departments and organisations, and there is less of an issue of political oppression.

5.1.2 The Brief Background of the Four Investigated HEIs

HEIs are great national assets for the UK and Malaysia. In this research, 4 HEIs were investigated: University of Leicester (UoL) and University of Glamorgan (UoG) from the UK; University of Malaya (UM) and University of Tun Kelly Abdul Rahman (UTAR) from Malaysia. In order to conduct the qualitative data collection, I visited all four universities during the years 2006-2007. The UoL is a civic and old university in the middle of England whereas the UoG is a new university in South Wales; and both UM and UTAR are located in or near to the capital of Malaysia, Kuala Lumpur. In terms of the size of the campus and students, UTAR is rather new and small compared with UM, UoL and UoG. Leicester is the UK’s largest provider of distance learning education after the Open University, and is also a leading UK university for learning and teaching. UM is the best university in the country and both UM and UoL are noted for their research. UoG and UTAR originate from vocational colleges and they are good new universities in their respective countries. Please refer to Appendix C for further details of each university.

All academics were friendly and willing to provide their views and comments during the interview. Some of the students, however, were nervous under the pressure brought by a voice recorder. Not surprisingly, the more experienced the academic then more elaboration and examples would be given. Responses from
the UK interviewees are generally longer than Malaysian. Comparatively, academics from UM are more reserved and careful, especially when they expressed certain sensitive issues such as government policy, since they are government servants under UUCA as mentioned in Table 5.6. The comparative facts and figures for the case studies are listed as follows:

<table>
<thead>
<tr>
<th>University Emblem</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Founded</strong></td>
<td>1921</td>
<td>1913</td>
<td>1905</td>
<td>1972</td>
</tr>
<tr>
<td><strong>Gain University Status</strong></td>
<td>1957</td>
<td>1992</td>
<td>1962</td>
<td>2002</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td>UK</td>
<td>UK</td>
<td>Malaysia</td>
<td>Malaysia</td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td>Civic university</td>
<td>Vocational college to university</td>
<td>National university</td>
<td>Vocational college to university</td>
</tr>
<tr>
<td><strong>Nature of the University</strong></td>
<td>Old university, research-led</td>
<td>New University, teaching-led</td>
<td>Old university, research-led</td>
<td>New University, teaching-led</td>
</tr>
<tr>
<td><strong>Number of Students (2007)</strong></td>
<td>19,002</td>
<td>21,000</td>
<td>27,498</td>
<td>17,000</td>
</tr>
<tr>
<td><strong>Number of Academic Staff (2007)</strong></td>
<td>1,186</td>
<td>1,244</td>
<td>1,921</td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>Total Number of Staff (2007)</strong></td>
<td>3,355</td>
<td>2,520</td>
<td>5,053</td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>UK Ranking - out of 120 universities (Guardian University Guide, 2008)</strong></td>
<td>21</td>
<td>65</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>The World Top 500 University Ranking (THES-QS, 2007)</strong></td>
<td>185</td>
<td>Out of the Top 500 list</td>
<td>246</td>
<td>Out of the Top 500 list</td>
</tr>
</tbody>
</table>

Table 5.7 Summary of Some Key Facts (UoL, 2008; UoG, 2007; 2008; UM, 2008)

In accordance with the THES-QS (2007) ranking, Glamorgan and UTAR are not in the list of the top 500 universities in the world. Thus, the table below only shows the overall ranking by University of Leicester and University of Malaya for the past four years:

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM</td>
<td>89</td>
<td>169</td>
<td>192</td>
<td>246</td>
</tr>
<tr>
<td>UoL</td>
<td>189</td>
<td>273</td>
<td>239</td>
<td>185</td>
</tr>
</tbody>
</table>

Table 5.8 The World University Ranking by Times Higher Education (THES-QS, 2007)
Table 5.9 details the scores of two UK universities in the year 2008:

<table>
<thead>
<tr>
<th></th>
<th>UoL</th>
<th>UoG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall ranking out of 113 universities</td>
<td>21</td>
<td>65</td>
</tr>
<tr>
<td>Student satisfaction (Max scores = 5.0)</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Research quality (Max scores = 7.0)</td>
<td>4.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Student-staff ratio (Max scores = n/a)</td>
<td>16.2</td>
<td>16.3</td>
</tr>
<tr>
<td>Entry Standard (Max scores = n/a)</td>
<td>371</td>
<td>273</td>
</tr>
<tr>
<td>Completion (Max scores = 100.0)</td>
<td>92.9</td>
<td>69.3</td>
</tr>
<tr>
<td>Good Honours (Max scores = 100.0)</td>
<td>62.5</td>
<td>52.1</td>
</tr>
<tr>
<td>Graduate Prospects (Max scores = 100.0)</td>
<td>64.4</td>
<td>53.4</td>
</tr>
<tr>
<td><strong>Total scores (1000.0)</strong></td>
<td>705</td>
<td>397</td>
</tr>
</tbody>
</table>

Table 5.9 Details Scores of Times Good UK University Guide (2008)

### 5.1.3 Science-based versus Social Science-based Disciplines

In spite of the national and institutional context discussed in the precious sections, “discipline” is the key consideration in selecting research participants. According to the Cambridge Advanced Learners’ Dictionary, discipline is a particular area of study or a subject at a university. Similar disciplines (i.e. hard sciences or social sciences), typically, would be grouped in the same faculty and same department. In certain cases, different disciplines may be categorised under one faculty but different departments or even different faculty. Becher and Trowler (2001) describe the concept of an academic discipline “is not altogether straightforward, in that, as is true of many concepts, it allows room for some uncertainties of application” (p.41). Disciplines have been generated in a wide variety of ways and have yielded different structures in different HEIs. For example in the UM, both the Faculty of Computer Science and the Faculty of Engineering are two independent faculties, whereas in the UoG, they are departments under the same faculty – the Faculty of Advanced Technology. The Education Department in the UoL, UoG and UTAR resides in the Faculty of Social Sciences whereas it is independent as the Faculty of Education in the UM. In this comparative research, my initial plan was to select different disciplines according to their usage of technology and their understanding of education and social complexity.
such as computer science versus education; or science and engineering versus language and humanities. However, I could not find such straight forward and clear comparison from all four HEIs since they have different faculties, departmental and divisional structure dealing with a particular subject area. As a result I had to group all faculties in the respective universities into two simplified groups according to Becher and Trowler (2001) – science and social science.

<table>
<thead>
<tr>
<th>Disciplinary Nature</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science-based (hard science / applied science)</td>
<td>1. College of Medicine and Biological Sciences and Psychology</td>
<td>1. Faculty of Health, Sport and Science</td>
<td>1. Faculty of Science</td>
<td>1. Faculty of Engineering and Science</td>
</tr>
<tr>
<td></td>
<td>2. College of Science and Engineering</td>
<td>2. Faculty of Advanced Technology</td>
<td>2. Faculty of Engineering</td>
<td>2. Faculty of Information and Communication Technology</td>
</tr>
<tr>
<td>Social Science-based (soft science / applied social science)</td>
<td>3. College of Social Sciences</td>
<td>3. Glamorgan Business School</td>
<td>7. Faculty of Arts and Social Sciences</td>
<td>3. Faculty of Art and Social Science</td>
</tr>
<tr>
<td></td>
<td>4. College of Arts, Humanities and Law</td>
<td>4. Faculty of Humanities and Social Sciences</td>
<td>8. Faculty of Education</td>
<td>4. Faculty of Accountancy and Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Cardiff School of Creative &amp; Cultural Industries</td>
<td>9. Faculty of Languages and Linguistics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10. Faculty of Business and Accountancy</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>11. Faculty of Economics &amp; Administration</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>12. Faculty of Law</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.10 Faculties of Four Higher Educational Institutions

In the context of this research, I chose to label “science-base discipline” to represent academics and students from engineering, science and computer science; whereas “social science-based discipline” to represent research participants from education, psychology, humanities and language studies. Academics were interviewed based on such divide in bold as shown in Table 5.10 (refer to Appendix F). I also assume that due to the subject nature of the science-based discipline (e.g. Faculty of Science or Faculty of Computer Science and IT) they are generally more technological competent than those in the social science-based discipline (e.g. Faculty of Education or Faculty of Arts).
Chapter 5: The Blended Learning Experience in 4 HEIs

PART II: THE RESEARCH DESIGN AND INSITUTIONAL INVESTIGATION

5.1.4 The Analysis of the Interviewees: Profile of the Participants

I conducted 45 interviews and 3 interview groups, with a total of 52 interviewees (38 academics and 14 students) from four universities. Due to the out-of-topic responses and irrelevant comments to the research questions, an interview transcript of a UTAR academic was removed from the analysis. The profile of the selected 51 (37 academics and 14 students) research participants from the contrasting disciplines are analysed as shown in the following tables:

<table>
<thead>
<tr>
<th>Interviewees</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>19</td>
<td>51</td>
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<tr>
<td>Female</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>2. Discipline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science-based</td>
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<td>3</td>
<td>6</td>
<td>7</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>Social Science-based</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>16</td>
<td>50</td>
</tr>
<tr>
<td>Inter-disciplines of the above</td>
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<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>3. Experience of Blended Learning / e-learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Beginner (Basic ICT)</td>
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<td>4</td>
<td>2</td>
<td>6</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Intermediate (e-Enhanced)</td>
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<td>1</td>
<td>3</td>
<td>2</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Professional (e-Focused/intensive)</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>15</td>
<td>41</td>
</tr>
<tr>
<td>4. Length of Experience in Academic Institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>16.2</td>
</tr>
<tr>
<td>5-9 years</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>24.3</td>
</tr>
<tr>
<td>10-14 years</td>
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<td>2</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>24.3</td>
</tr>
<tr>
<td>15-19 years</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>20 years or more</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>16.2</td>
</tr>
<tr>
<td>5. Experience of Teaching Abroad</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Yes</td>
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<td>7</td>
<td>6</td>
<td>19</td>
<td>51</td>
</tr>
<tr>
<td>6. Involvement in Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>19</td>
<td>51</td>
</tr>
</tbody>
</table>
7. Duration of Interview

<table>
<thead>
<tr>
<th>Duration of Interview</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 30 mins – 60 mins</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>8</td>
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<td>Between 61 mins – 120 mins</td>
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<td>2</td>
<td>11</td>
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<tr>
<td>More than 120 mins</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td><strong>Total</strong></td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>37</td>
</tr>
</tbody>
</table>

_Academics (N=37)_

Table 5.11 Analysis of Interviewees I – Academics

In Table 5.11 (point 3), “Experience in blended learning/ e-learning” refers to the level of thoughtful integration of educational technology and f2f instruction based on Jones’ Continuum (2006). “The involvement in management” includes the Scheme/Awards Leaders, Heads of Department and Deans of Faculty.

<table>
<thead>
<tr>
<th>Interviewees</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Discipline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science-based</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Social Science-based</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Inter-disciplines</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

_Students (N=14)_

Table 5.12 Analysis of Interviewees II – Students

Figure 5.1 Disciplinary and Gender Analysis of Interviewees: Academics
Table 5.13 Summary of the Descriptive Statistics related to the Academics

Among the academics who participated in the research, 18 interviewees (44%) came from a science-based discipline, 19 interviewees (50%) belonged to a social science-based discipline and there are 3 (6%) inter-disciplinary interviewees. The interpretation of inter-disciplines in this research means a particular academic who has received a higher degree in an inter-disciplinary subject, or who has received two higher degrees in contrasting disciplines discussed in Section 5.1.3. For example, a degree in Computer Science and a
Master in Educational Psychology (see Appendix F for further description of the research participants). The following sections present all four case studies.

5.1.5 The Presentation of Each Case Study

The findings of each case study in this research are presented under five main themes: (1) **Strategy and Practice**; (2) **Awareness and Perception** of Blended Learning; (3) **The Academic Experience** (confirming and disconfirming experience and their wish list); (4) **The Student Experience** (confirming and disconfirming experience and their wish list); and (5) **The Summary of the Practice and Experience** for each case that is presented in table forms to ease the meta-analysis and presentation in Chapter 6 (refer to Section 4.3.1 and 6.1).

5.2 Case Study I: University of Leicester (UoL)

5.2.1 Strategy and Practice

It is a challenge for a traditional, old university such as Leicester to embed blended learning across the institution. Salmon (2005) emphasises:

“Leicester is typical of the traditional campus-based university keen to capitalise on the benefits of e-learning…In a ‘research-led old’ university, dominated by campus learning in traditional subjects, the process of strategy development needed to be one deep engagement of groups of management and staff, academics and support departments…I needed to develop **insight** into a range of fundamentals such as resources, control and autonomy and the power of commitment to disciplines and departments.” (p.210)

![Figure 5.3 the E-learning & Pedagogical Innovation Strategic Framework (UoL, 2005a)](image-url)
In July 2005, the University of Leicester adopted an e-learning strategy (UoL, 2005a) which was supported by a centralised department, Beyond Distance Research Alliance (2008). Figure 5.3 depicts the E-learning and Pedagogical Innovation Strategic Framework for Leicester to realise its institutional e-learning strategy. **Research is the key element emphasised in Leicester** to underpin the on-going implementation of its e-learning strategy across all quadrants. Quadrants 1, 2 and 3 represent the deployment of UoL’s existing core capabilities and capacity through incremental innovation. Quadrants 1 and 2 suggest deployment of UoL key strengths in teaching excellence but with adjustments to new technologies. Quadrant 3 suggests deploying the understanding of technologies already in place to promote business development, solve problems and increase quality of all kinds. Quadrant 4 represents a more radical view of change using peripheral technologies, new products, new markets and missions (Salmon, 2005, p. 211). Interestingly, these four quadrants are conveyed in a creative and colourful illustration, namely Media Zoo (2008) as shown in Figure 5.4. An academic describes,

“The zoo is based on the E-learning and Pedagogical Innovation Strategic Framework for Leicester...So, this is where we research, and we research here and we research here and we research here (Pointing to all quadrants).”  ~ Academic D9

![Figure 5.4 the E-learning & Pedagogical Innovation Strategic Framework (Media Zoo, 2008)](image-url)
The four quadrants, Pet’s Corner, Breeding Area, Safari Park and Exotics House are supported by ongoing practical blended learning projects and research projects respectively:

(1) Pet’s corner (Quadrant 1) demonstrates the established technologies that Leicester’s academics can adopt such as the current VLE (e.g. Blackboard) and Podcasting. One of the major projects in this corner is ADELIE (UoL ADELIE, 2008):

“ADELIE stands for Advanced Design for E-learning. It is a two-day workshop which we run on a regular basis which focuses on finding the best tools out of them. It is also called Carpe Diem, from the Latin for ‘Seize the Day’…We do not encourage them but we enable them…we try our best to understand the needs and requirements of the lecturer from different disciplines, and enable them via ADELIE project.” ~Academic D9

“ADELIE provides an educational process of intervention into a whole team...they bring a team in an environment to work on the design for e-learning, focusing on a particular module or what they are teaching...we do not provide intervention of Carpe Diem to individual. You need to have a minimum of 4 or 5…and ideally in those two days, they will go out with everything they need, the skills they need, examples for blended learning activities they have designed.” ~Academic D4

“...about once a month or two months. The purpose is to encourage all academics in all departments in the university to attend at least once.” ~Academic D3

Based on the above voices, the central idea of ADELIE is to provide a practical and tailored technology enhanced learning workshop at least once a month which is built into a staff development programme. The purpose of ADELIE is not only to support e-learning adoption but to practically enable academics to such adoption through Carpe Diem. To join this workshop, 4-5 academics from the department have to be in a group for peer support before and after the Carpe Diem. I am impressed by the idea of working in group and disciplinary tailored workshop. Such workshops in a group play a major role to motivate and provide peer-support and a self-sustaining blended learning experience. Grounded on the positive responses concerning ADELIE, it effectively enhanced the blended learning experience in a tailored way:

“For example, they have done the Carpe Diem in ADLEIE...are quite positive about what they have got out from it. They are quite confident to develop a course in blended learning. So, the people who come here would be more advance practitioners... ~Academic D4

“The best way for an academic is to start with the ADELIE...you are welcome to join these workshops if you are interested regardless which department or discipline you are
from...in the past it's around 3-5 or up to 10 people...They join the workshop and discuss with the ADELIE group, report their current stage and what they plan to do. In ADELIE tailored strategies and directions on how to make use of e-learning will be suggested to them.” ~Academic D3

(2) Breeding Area (Quadrant 2) demonstrates many new technologies available that have not been specifically developed for learning in a large cohort, but are prevalent among entertainment and business communication. In order to obtain a good understanding of how potential new technologies enhance learning and teaching experience, three research projects concerning social networking and mobile devices in education reside in this quadrant. Informal Mobile Podcasting and Learning Adaptation project (IMPALA) is one of them. An academic described this project in detail:

“This project was started by a professor in the Engineering School, John Fothergill, who is also the vice chancellor of the university. He used Podcasting in his lectures for the first time. We used his project as a pilot study to apply for external funding. We got it...there are many lecturers in this university and in the UK already using Podcasting and...joined our project and the workshops. So, the project is growing.” ~Academic D4

This project shows how an extensive research programme begins from a simple idea - an academic’s experience of embedding new technologies in teaching practice. I would certainly believe in the influences of exemplars – academics would possibly be attracted by a simple but practical idea on how technology can enhance the learning and teaching experience. **External funding** plays a major role to motivate more educators to join in similar research. In this case, a model of f2f learning with podcasting was started with a simple construct. It was tested later in different contexts to enrich its validity. Within that boundary, the emergence of untapped potential is exciting.

“...we started with a simple model...we introduced the model from John Fothergill on how he used Podcasting to others. The partners will use that model and enhance it in their context and individual subject. **At the end, different people will come out with different ideas and this is wonderful!** We will contact them for data collection such as focus group and interviews for students and staff...concerning the purpose, the rational of using Podcast...and their learning experience, how Podcasts could help students' learning.” ~Academic D4

(3) Safari Park (Quadrant 3) demonstrates the use of expertise and technologies that Leicester has developed and applied in new ways. New ways are in terms of new markets, new missions, and new levels and disciplines of learning and teaching through a global alliance such as UN-Gaid (2008):
“Now down here, what we are looking at here is a new mission that uses the existing ideas. And this is where we have got our Un-Gaid network, called ELKS, and that’s where we transfer what we understand about that to the developing world…” –Academic D9

Leicester is one of the UK’s largest providers of distance learning as described in Section 5.1.2. Their distance learners come from all over the globe. Safari Park is the e-learning strategy implementation to research, to introduce and to enhance its collaboration and education to the world.

(4) *Exotics House* (Quadrant 4) is the most risky, challenging but potentially rewarding area of the zoo. Research on new technology in a new environment is required in this quadrant. For example how Second Life can be embedded in higher education is the focus at the moment: Second Environment Advance Learning (SEAL, 2008). There is no comment from the interviewees in this area as it is still a developing idea and an area associated with the introduction of innovative technology in learning and teaching.

In general, Leicester has a clear, creative and research-led e-learning strategy (2005a) that recognises disciplinary differences and potential opportunities (e.g. through the *Pet’s corner*). The University has, however, an eleven page Learning and Teaching Strategy (UoL, 2007a) that only mentions this e-learning strategy once:

“6.5…the development and dissemination of good practice to ensure the promotion of high quality f2f, blended and distance learning, consistent with both this Strategy and the E-learning Strategy” (p.10)

Therefore, Leicester has two independent learning and teaching strategies, one for traditional settings and the other one for the “e” environment. At this point, I would like to raise an issue: what is the definition or perception of “e-learning” or “blended learning” in Leicester? Are the processes of learning and teaching the same when it occurs in a conventional class room as in an e-platform? Salmon (2005) states that, “Leicester is typical of the traditional campus-based university keen to capitalise on the benefits of e-learning…” (p. 210). By separating the learning and teaching strategies for traditional settings and for e-learning, it...
appears that the University has a certain level of reserve to the benefits and investment of e-learning by not completely integrating e-learning into the learning and teaching strategy.

5.2.2 Awareness and Perception of Blended Learning

5.2.2.1 Confusion over the definition

From my observation during the data collection, both officially published documents and academics’ responses rarely used the term “blended learning” but “e-learning” instead. The confusion of the definition of blended learning discussed in Section 2.2.1 is revealed amongst some of the academics in Leicester:

“…blended learning is a bit of a fuzzy concept at the moment. What makes the blend? The technology? Or the facts is that the distance and f2f together?” ~ Academic D1

“Blended learning? ...I am not sure what it means.” ~ Academic D6

“Well I would like to think we are but I am not very sure if are we practising blended learning.” ~ Academic D5

The concept of “blended learning” is hidden behind a term that is more commonly used, “e-learning” or “online learning”. This is the consequence of the vague nature of the blended learning definition and of the institutional learning and teaching strategies that merely highlight e-learning instead of blended learning.

5.2.2.2 Students’ Expectations (e.g. Blended Assessment Feedback)

Academics often comprehend e-learning as a flexible delivery of learning materials for the students’ convenience – availability of learning materials at anytime. Feedback on assessment either in print, online or f2f is expected by students to support the learning process. Consider the voice below,

“An important part of what we do in terms of supporting learning is to provide feedback on the assessment...We do that online and we also do that f2f and in print...we don’t make compulsory because we recognise that not everyone can find the time to take the advantage of that but we try to make sure that is available. And we also recognise increasingly online support is important...there are expectations.” ~ Academic D5

Recognising the expectation of the students is crucial but on the other hand, such expectation is not necessary the best for the students. Academics have to
always make their academic decision to these expectations based on individual professional judgment and context. Moreover, it is a challenge to realistically make the expectation happen. The individual differences make it even more challenging:

"The idea of hybrid and the idea of blend would vary from person to person. You can say this course is blended and provide the best of both worlds. It gives you the best of f2f and the best of online, rubbish! Because that blanket approaches take it for granted that everybody seems to be the same and they are not. Some people would perform and would enjoy and feel be rewarded, feel brave about being in the classroom much more so that online and the other way round." ~ Academic D1

5.2.2.3 From Blanket Approach to Tailored Approach – the Empowerment

A blanket approach would not benefit all educators and students, nor would one type of blend meet everyone’s taste. The superficial perception of a particular way of blended learning as a blanket approach may emphasise technology rather than people and pedagogy. Promoting technology without recognising individual and disciplinary differences, most often, may lead to disappointment. Education is dealing with people and people are complex. Therefore, the enhancement of the learning and teaching experience must lay on the deeper understanding of the nature of education. For this nature, a blanket approach, say “Podcasting plus f2f instruction will make the best learning experience”, will not satisfy everyone. A major concern raised by an academic:

…I think the key is that: how to foster the meta information; how to empower people to make their own choices…empower people to make that kind of decisions, of choices." ~ Academic D1

Empowerment is the important theme here – not only to promote a “technology enhanced learning and teaching experience” in words but to empower educators practically to make their choices of blended learning. There are two empowerment approaches obtained from Leicester. First, educators can learn from each other by actually “seeing” how educational technology was incorporated into teaching practice. The journey of a successful peer can be recorded and publicised for others to adopt and more importantly to adapt. Here is one of the exemplars that is well-known and frequently mentioned by interviewees.
“There is a professor in the engineering school - John puts his entire teaching module, each chapter of the learning material with Podcasting available online. He used e-moderation model, including a discussion board.” ~Academic D3

“You have people (like John) who have done the pioneering work before. I think it’s also quite important to see what people have done, learned from people like John.” ~Academic D4

With these “light bulb moments”, peers would visualise and learn from the idea of a successful blended learning case study. Second, ADELIE is the disciplinary tailored workshop aimed to eliminate the impression of a blanket approach for all disciplines. Academics in a group development can support and learn from each other from “seeing” to “experiencing” how educational technology could be incorporated into teaching practice and move on to practically do it with peer-support. Overall, ADELIE offers extensive workshops and successful case studies to both the novice and expert in blended learning. It is not merely providing training courses but empowering the academics to practice in their daily teaching practice:

“There are many training courses in the Staff Development Centre in Leicester, for example, how to use Blackboard and how to transfer your course details and data to Blackboard, some technical skills. However if you wish to have an overall idea for blended learning, ADELIE is the choice.” ~Academic D3

5.2.3 The Academic Experience

5.2.3.1 The VLE: Blackboard

Blackboard is the VLE used in Leicester. The academics value Blackboard for the accessibility and flexibility it offers to students, in terms of how learning and teaching materials can be delivered and discussed online in a structured manner:

“Basically, our modules are 100% on Blackboard.” ~Academic D9

“I was quite impressed by Blackboard when I came here...It’s something new compared with when I was an undergraduate...if you didn’t go to the lectures, you didn’t get the notes, that kind of thing. Initially at the surface I saw Blackboard as a kind of place to put the notes for students. I was impressed by that and now by developing the distance learning, I have been even more impressed with the discussion board we can do and that sort of thing really.” ~Academic D6

Although all modules in Leicester are on Blackboard, the usage of Blackboard among the academics is, however, limited to materials, publishing external
websites and announcements. The degree of integration of f2f classroom and further online interactivities varied across the departments. It appears to be a dependency on the academics’ ICT competency:

“Basic users merely upload the reading list, announcement and teaching materials. Advanced users such as J.F, would use online activities and more interactions. He is a technology competent person. He did the Podcast himself.” ~Academic D3

The level of Blackboard usage may be due to disciplinary needs and background. It could not satisfy the requirements of all disciplines. For example, Blackboard does not support typing up mathematical symbols. This can be a major frustration for lecturers from the Mathematics department whereas this is not an issue for other departments. Selected responses related to this issue are presented as follows:

“One frustration that I found with technology is getting the Maths into Blackboard because you can set the online assessment in Blackboard but you can’t type in Maths. There is no ways for you to put in mathematical symbols!” ~Academic D6

“I think there are a lot of problems we haven’t overcome over the time of the course...So, forces are online now, but I think as an actual teaching tool, as online lectures, still...it doesn’t really work for all.” ~Academic D4

“And now my usage of Blackboard is very basic...I do like it but I think we have some problems using Blackboard in our department which I think is partly our own approach to using Blackboard and partly what Blackboard could do for you.” ~ Academic D2

5.2.3.2 Confirming and Disconfirming Experience

According to Salmon (2000), the first and the most basic element in online learning is accessibility. Leicester students will lose attention and not be able to learn well if accessibility is not well attended to:

“If they got a password wrong once they will not use it again. They would be convinced that it didn’t work.” ~ Academic D8

Leicester Academics experienced the benefits of educational technology as described in Table 5.14:

<table>
<thead>
<tr>
<th>Technology Usage</th>
<th>Descriptive Experience</th>
</tr>
</thead>
</table>
| Email – used to improve communication between educators | “For the job that I am doing now, the main thing is obviously the emails that make things differently compared with ten years ago when I first started, we used to send lectures by post to Malaysia, to Hong Kong. We used to send those assignments and comments about them, sometimes they will telephone, but the time differences in Hong Kong make things difficult. So, a lot of these things have made a longer time, it’s slow and etc. So, technology made a huge huge
Podcasting - used as a flexible lecture (audio/video guide) for independent learning; used as a tour guide and manual to enhance traditional teaching and learning setting.

"Students in Geography Studies need a lot of field trips. They need to go to the outdoors for observations. For example we brought the students to the River Thames for research, to investigate that whether it can be an appropriate landscape or resource for water? Normally the students are required to visit different places along the Thames. The students can listen to the Podcasting in one place, it says that you are now standing in XXX place along the river and you need to observe XXX and this XXX is what and etc. What is the next step that you need to perform? The students move to another place and listen to another Podcasting. We call this location-specified information. It is something like an audio guide or video guide. The lecturer could bring them physically and tell them physically in that place. That is however, with the pre-recorded Podcasting, the students can listen repeatedly and do it accordingly by themselves without tutors present. ~ Academic D3

"It's something like a museum guide or tour guide. There is another thing, that some students need to use a lot of equipment for research and for testing. You need to provide a video or audio guide on how to use that particular piece of equipment. Sometimes it can be quite complicated to use equipment. Benjamin recorded a video to teach the students how to use the equipment. They could listen to it when doing a field trip." ~ Academic D3

Video - used in the traditional classroom.

"I was very much impressed by the use of video in the class. I thought that was fantastic at that time." ~ Academic D1

Tablet PC – used in the traditional classroom for better learning and teaching experience.

"I got a Tablet PC...I found it really impressive when I write on the Tablet PC, just sat down in front of the class and writing. So, without having my back facing the students, I can keep eye contacts with them all the time. I really really enjoy that and I think I have done a better job, teaching on campus and the students were very impressed." ~ Academic D6

Online Conference – used for communication remotely with students.

"Our department was quite advanced in using technology. In 1997, we started to use online conferencing with our students. So I think we are the first department to use this." ~ Academic D2

<table>
<thead>
<tr>
<th>and students.</th>
<th>difference.&quot; ~ Academic D2</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Table 5.14 UoL-Examples of What and How Technology Enhanced Learning and Teaching

The above voices present several good examples of what and how educational technology could enhance the learning and teaching experience. As discussed before, accessibility is both the first priority and a major frustration. Most of the academics who are experienced in distance learning, report that there is confusion over several passwords, such as Blackboard, library and Athens, provided to the distance students. Learning would be delayed and both students and educators would be frustrated once accessibility is disrupted:

“One of the biggest frustrations for all, is both Blackboard and Athens...for the distance learning students...they are not on campus so they have different password...3 or 4 passwords for them, it’s really really confusing...So, it’s quite difficult for students to have
more than one password and we often get emails saying that “I can’t access this”, “My username is not working” and etc. So, that’s been a real frustration…” ~ Academic D8

Furthermore, comparison is made between the experience in industry and university. For example an academic who has an extensive background in industry was disappointed when she entered HE:

“…the challenges I find now is that the systems that we use in the teaching and learning environment are not as advanced as those software I used to use when I was working in the industry.” ~ Academic D7

Most often, HE is “chasing” or merely “following” the innovation and progression of industry in terms of technology. The pace of HE is possibly slower and “plumper” (sufficiently fat and difficult to move forward). Educational technologies adopted by HE perhaps do not look competitive with those prevalent in industry. This insight is described by an academic:

“…the challenge I have with the teaching and learning in terms of electronic technology we have go with the university is that, is much what I call ‘plumper’ in terms of trying to do anything, it takes longer.” ~ Academics D7

5.2.3.3 Wish List Related to Blended Learning

There is a “wish list” of ideas generated from Leicester academics related to blended learning. An academic wishes to have a research day for blended learning, without distraction from students, administrative tasks and teaching:

“…we call that ‘research day’ which is fantastic…” ~ Academic D8

Some academics suggested that a FAQ or knowledge-based system related to the module or programme would be good to avoid irritating emails from students asking the same questions. It is for the benefit of the students to obtain quick answers for subject-related doubts or administrative-related questions. This desire is expressed here:

“…in addition for them to come to me, they can ask the expert system to answer it…we got accumulation of the questions done on the Tablet. I like the idea of questions and answers built and end up with a database.” ~ Academic D6

“It would be irritating for us to answer the same questions again and again. The advice that you can give in that kind of system would be much more comprehensive and much more helpful rather than the irritating emails…in Leicester we have three of us, three academics who are involved in xxx module…I think between us, we must write every year, thousands of words of advice, answering questions, support through emails and they goes and disappear. It would be fantastic if it could be a collected and you wouldn’t need to repeat. It could create a kind of encyclopedia of advice.” ~ Academic D5
Intrinsically, such a FAQ and knowledge-based system can be used by academics for knowledge capturing, not only for the benefit of the students but for academics themselves. However, an academic highlighted that technological stability, most of all, is what he wishes during the blend. He would prefer to go back to the comfort and stable of the old technology rather than adapt educational technology that is flashy but not stable:

“I want the old fashioned overhead projector to be in the classroom…actually there are things that are so much easier done on the old fashioned overhead projector than a fancy interactive whiteboard - looked very nice but it does not give you the flexibilities…very innovative but not stable enough. I have seen many people struggling to get things on the interactive whiteboard when in fact…in 5 seconds…they can do it all on an OHP.” ~ Academic D1

Technology is sometimes perceived to be flashy and over the top. To most of the academics, stability and reliability are the most important elements rather than the flashy elements. For example, academics spend some time to set up an online submission and assessment with plagiarism detection facility, and familiarise themselves with its functions by reading its manual. However, they would be very frustrated if the system cannot be accessed due to server down or an unknown technical problem. The same applies to blended learning. It is pointless if there is an unresolved “technical problem” that makes technology does not enhance learning and teaching but instead, brings more troubles and hassles to academics.

5.2.4 The Student Experience

Leicester students who participated in the research expressed their high satisfaction of being a student at UoL due to the historical research, learning and teaching excellence of the university (refer to Table 5.9 and Appendix C):

“I feel good to be a student here.” ~ Student D4
“I am enjoying it.” ~ Student D3

“I feel proud…” ~ Student D1
“I feel independent but there is a support system there, I feel I am being pushed…I mean pushed to be self-motivated…I enjoy them (the classes).” ~ Student D2

“Good! For me, I have to win the battle to get in here because of the health problems. Those were the times that I think I won’t be able to come…it makes me feel that the struggles I have been through in the past are worth it. I love it here, I really do.” ~ Student D5
5.2.4.1 Private Space for Easily Accessible, Flexible, Repeatable and Personalised Learning Experience

From the other aspect, educational technologies embedded in learning and teaching, particularly Blackboard, a digital library and an online journal did contribute to a positive student experience. For example,

“ Athens, digital library, those kind of electronics help a lot. I really like all these.” ~Student D1

“The main thing that impressed me is Blackboard with lectures notes and information on it…I was in Derby University for a year, I have also been to University of Strathclyde, and they didn't really have anything like that, so it's very useful and I find it useful.” ~Student D3

“Blackboard, shared computer environment and also being able to get journals electronically…are really good because I am quite lazy and like to stay at home, especially winter. If I was asked to go outside and I just think oh no…so Athens is really good and I really like it.” ~Student D5

One of the most impressive learning experiences in Leicester is the use of Podcasting (e-lectures) on Blackboard. Many research participants, both academics and students, mentioned similar experiences during the interviews. All pre-recorded lectures were uploaded on Blackboard. Lecturer and students only met a few times during the academic semester for f2f discussions. Online discussion boards with e-tivities were set up for regular interactions. One of them even perceived the course as the best e-learning experience:

“I would say that the most impressive experience is the XX course, which is obviously the best really, the best e-learning maybe…It's the one I saw, the most impressed by how it actually works.” ~Student D4

At the beginning, students had a presumption that the lecturer was too lazy to conduct lectures and adopted e-learning instead. Students, however, changed their perceptions, after a while, due to its benefits. Both personalised and public coaching are benefits brought by blended learning. Two students shed light on this:

“At first I thought it is just an easy solution for a lecturer to pre-record the lectures and they don't need to have the lectures. But I have changed from that view and actually now I am quite impressed by that…Basically I thought it was just a lazy lecturer, but when I saw the benefit of having and been able to actually listen to a lecture, and just pausing it, and skipping back if there is something you don't understand…I really enjoy the course.” ~Student D4
“We have discussion board here. And we can ask him *publicly* where everyone can know or we can ask him *privately*. Sometimes, he comes to the seminar one hour and talk to us. We have to do some electronic activities.” ~Student D1

Other than the advantage of having the choice to ask questions in public or in private on discussion boards, students personally experienced the benefits of flexible and repeatable learning of online lectures:

“You can download the lecture at anytime. If you don’t understand what he said, you can go back and listen to it again. What he said is transcribed next to the video.” ~Student D1

“I like that because you can go back to read it afterwards.” ~Student D5

“Compared to a normal setting, lecturer just standing in front of the class and you just sit there and listen, if there is something you don’t understand and you raise your hand once, ask the question. But sometimes you still don’t understand even after the first explanation. And often you don’t want to ask again. And therefore you just leave it be while in a situation where you actually got a pre-recorded one, you could jump back. It’s very good for revision and to find a specific area that you want to study and just go in there to study.” ~Student D4

Such flexible and repeatable learning is a “private space” for study and self-revision. The only issue is that there is no synchronised and immediate response if there is any question from the students:

“If there is a situation where you don’t understand and you listen to the e-lectures again and again, it’s quite frustrating. Then you don’t have anybody to ask. So that’s a bit annoying.” ~Student D4

“In f2f lecture, you can ask and they will give you an answer immediately.” ~Student D1

This issue can however be resolved by blending f2f sessions with the Podcasting. Students’ questions can be posted on the discussion boards or discussed f2f in an asynchronous way. The lecturer in Leicester actually practiced this blended learning mechanism:

“If you have any doubts, we have this tutorial and seminar. In the seminar we will be in a group and he will explain to us. He will go through the process with us several times to answer all our queries.” ~Student D1
5.2.4.2 Web 2.0 Technology Created Community of Enquiry that Motivates the Learning Experience

Web 2.0 technology such as blogs, wikis and online communities are highlighted by student participants from Leicester:

“Before we started the course, they gave us a little assignment to meet people on the Blackboard site, and you just said “Hello” and they gave you a set of questions in the e-community, say, about your holiday or something. I think that’s actually good in creating a community feeling about learning…they could be more interesting.” ~Student D5

“Wikipedia is an awesome tool. I use that a lot…as in giving background or giving you an idea and overall view…some of my courses also have programming and software writing, it’s very useful to get into e-community, forums and discuss. Basically you can post a question and they answer you.” ~Student D4

From the above students’ experiences, it appears that the “feeling” or sense of community is interesting and motivating. Peer support from the community is very useful. Some academics may argue that there is a worry about students obtained ‘answer’ from e-forums or wiki without thinking. There is a big debate on intellectual property and academic usage of social software which is not covered in this research.

5.2.4.3 Independent Learning Experience for Employability

Students from Leicester highlight how blended learning enhances their learning experience - that is to promote independent learning for employability, for example:

“…it actually encourages you to find that by yourselves, not making you so depended to have a person telling you what to do and what to think which is a very important thing out from the university… I feel that one lesson I have learnt in the university is that, we don’t know everything, you go to find it out yourself, that is something you need in a job…I can’t depend on a lecturer or a boss to tell me, just do this and it will work. That’s something that I like wikipedia, e-learning…have a lot of resources.” ~Student D4

“I think it can be beneficial…in the real working environment, you have to be more independent. It certainly is a strength if you are able to be independent in your work and I think that will be part of your university life.” ~Student D5

In the old days, one may have practiced the tabula rasa where “students are assumed to be at a blank state - knowing nothing about the subject; the lecturer teaches and students learn solely from the lecturer and develop knowledge ‘deposited’ by the lecturer”. Today, independent learning such as reflective,
problem-based and enquiry-based learning is emphasised in HE. The learning atmosphere brought by blended learning promotes independent learning and prepares students for the workplace. It is suggested that the idea of blended learning is put in place gradually from level 6 to 7 in the university. There is a need to provide a transition period for freshers from high schools to university independent learning:

“I think that will be very good actually. But not from the beginning, it’s a transition anyway to come from school where you got classes every hour but from the second year, it can be cut down and more blended.” ~Student D5

5.2.4.4 Disconfirming Experience and Wish List

Students experienced issues of information overflow, validity and originality of the resources as described next,

“It is certainly interesting working with Wikipedia... There will be too much information perhaps.” ~Student D3

“…if everybody shared their ideas and how do you pick up which is the original first voice about a certain topic? You know, and maybe certain ideas you came across from reading, not your personal thoughts, where you got your ideas from and things like that. That would be good to have it without this concern.” ~Student D5

There are two major disconfirming experiences related to Blackboard and the online assessment system: firstly, no “how-to” guidelines for the beginner and secondly, technical and design problems for the online assessment system. This shows how critical the communication between technologists and educators/students for an educational technology design and support are.

“It would be great to have a tutorial on how to submit assignments in Blackboard because we got the tutorial about the library but Blackboard has never mentioned anything until we have to try things ourselves. It as not demonstrated to us before the first time we have to use it. So, it is a bit pain…” ~Student D2

“In between each online test, it’s quite frustrating...for example sometimes I choose option A, if I click option A and then if I click outside the box, the question will still open as unanswered...if you click outside the box, still the option box is open!” ~Student D1

After all, one important theme here is that blended learning is not the major problem but the educator and their ICT competency is. This is a similar position to an academic experience (refer to Section 5.2.3.1) where the degree of
integration of f2f and online learning is dependant on the competency of the academics:

"...if that lecturer is not technically competent, then they are not using it compared with other lecturers. You can get a very good one who put everything on Blackboard and you can get another one did not put anything on it." ~Student D3

Students’ expectations are not to learn with technology alone but with a good and ICT competent educator who practices blended learning. Video conferencing and pre-recorded and published lectures for revision purposes are in Leicester students' wish list:

"...video conferencing is good...This system so far, could help a lot." ~Student D1

"...say the lectures are recorded and then in the summer term when we don't have any teaching, we can have film screening for revision purposes...We got film studios here, so they can do that." ~Student D2

Based on the above voices from the student experience, I conclude that the student participants from Leicester preferred blended learning more than a complete e-learning or a complete f2f instruction. This is clearly expressed next:

"I would prefer the e-lectures because I am quite a structured person…I am in a place that I feel like it. I wouldn’t like to miss the normal lecture because they also benefit me. I like a combination of them." ~Student D4

5.2.5 The Summary of the Practice and Experience in Case Study I

Table 5.15 summarises Leicester's institutional practice and academic perception:

<table>
<thead>
<tr>
<th>Blended Learning model / e-Learning Strategy (refer to Section 5.2.1)</th>
<th>UoL</th>
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<tbody>
<tr>
<td>- Salmon’s E-learning and Pedagogical Innovation Strategy: 4 quadrants in the Media Zoo (separated from the institutional learning and teaching strategy for traditional f2f setting).</td>
<td>- Emphasis on research and disciplinary tailored support.</td>
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</table>

<table>
<thead>
<tr>
<th>VLE Implemented Across Institution</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Blackboard</td>
<td>- Only basic functions of Blackboard are used.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Awareness and Perceptions (refer to Section 5.2.2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Confusion on the definition of blended learning - emphasis the term “e-learning” instead of blended learning.</td>
<td>- The student expectation such as blended assessment feedback.</td>
</tr>
<tr>
<td>- The student expectation such as blended assessment feedback.</td>
<td>- Reject “blanket approach” for blended learning - individual and disciplinary differences must be recognised.</td>
</tr>
<tr>
<td>- Reject “blanket approach” for blended learning - individual and disciplinary differences must be recognised.</td>
<td>- Empowerment is the important theme - to practically empower educators to make their choices of blended learning: (1) exemplar or successful case studies; (2) The tailored workshops in disciplinary group for better and practical peer-support.</td>
</tr>
</tbody>
</table>

Table 5.15 The UoL's Institutional Practice and Challenges (Summarised from Section 5.2.1 and 5.2.2)
Table 5.16 presents both confirming and disconfirming experience in a comparative manner for Leicester academics and students:

<table>
<thead>
<tr>
<th>Confounding Experience</th>
<th>The Academic Experience (refer to Section 5.2.3)</th>
<th>The Student Experience (refer to Section 5.2.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. <strong>Blackboard</strong> - Easy accessible, flexible and organised learning materials repository and delivery platform. - Engage dialogue and interaction through discussion boards. 2. Evidences proving that “technologies enhance learning and teaching” - with positive experience and successful case studies: Email, Podcasting, Tablet PC, Video and Video Conference - Consequences: a) Audio/video guide, flexible and independent study without the presence of educator; b) Get satisfaction, motivation and enjoyment in the learning and teaching process.</td>
<td>1. Digital library, online journal, online lectures and Podcasting (the best e-learning experience) - private study space for easily accessible, flexible, repeatable and personalised learning experience 2. Web 2.0 technology creates community of enquiry that motivates the learning experience - sense/feeling of learning community for peer support. 3. Blended learning promotes independent learning for employability but has to be put in place gradually.</td>
</tr>
<tr>
<td></td>
<td>1. <strong>Blackboard</strong> - Does not meet specific disciplinary needs, e.g. does not support Maths symbol. - Cannot edit and preview at the same panel. - Download learning materials or visit the web pages do not equate to reading and learning. 2. Problem with accessibility due to multiple passwords in multiple environments. 3. Comparative disappointment caused by expectation from the previous experience and background - Technology in HE is “plumper” than in industry.</td>
<td>1. No synchronised and immediate response if there is any question arisen in Podcasting – have to post question online or in the f2f seminars sessions. 2. Information overflows. 3. Problem with originality. 4. No “how-to” guideline and personalised support for the beginner. 5. Technical and design problem for the online assessment system.</td>
</tr>
</tbody>
</table>

Leicester academics and students who experienced various technologies felt that it did enhance their learning experience by disseminating different ideas online, providing peer and community support and making the process of learning and teaching accessible, flexible and repeatable. On the other hand, disconfirming experiences such as disciplinary issues are the obstacles to blended learning adoption. Table 5.17 summarises the wish list from research participants from Leicester:
<table>
<thead>
<tr>
<th>Wish List</th>
<th>Academics</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Blended learning day (concept of research day).</td>
<td></td>
<td>(1) The student expectation is not blended learning alone but a good and ICT competent educator who practices blended learning.</td>
</tr>
<tr>
<td>(2) FAQ or knowledge-based system to avoid irritating emails asking the same questions.</td>
<td></td>
<td>(2) Video conferencing.</td>
</tr>
<tr>
<td>- Blended Learning Encyclopedia</td>
<td></td>
<td>(3) Pre-recorded lectures.</td>
</tr>
<tr>
<td>(3) Wish to use stable but old technology rather than flashy but not stable technology.</td>
<td></td>
<td>(4) Prefer blended learning than a complete e-learning or complete f2f.</td>
</tr>
</tbody>
</table>

Table 5.17 Wish List of the UoL’s Academics and Students  
(Summarised from Section 5.2.3.3 and 5.2.4.4)

5.3 Case Study II: University of Glamorgan (UoG)

5.3.1 Strategy and Practice

The University of Glamorgan (UoG) started a large scale e-learning project – E-College Wales (ECW) which was a £6m EU project to stimulate entrepreneurial activity in Wales (Jones, 2006). The ECW project indicated that the most effective delivery is a blended delivery model (Chew et al., 2006a). What Glamorgan learnt from the ECW project is that building on the vast knowledge and skill to improve learning and teaching using what they have experienced from ECW to embed blended learning across the institution. The university thereby making a commitment to the adoption of blended learning across the institution and its delivery partners:

“Glamorgan is … committed to the delivery of a first class learning environment incorporating the highest standard of e-learning, tutor facilitation and use of cutting edge learning facilities”   
Professor David Halton – Vice Chancellor (UoG, 2005)

Given this vision, the university is continually striving to improve excellence in learning and teaching by using blended learning as an agent of change. The objectives are (1) to provide a learning environment where all students are commonly experiencing technology aided delivery and assessment within their regular programmes of study. (2) to enable the academics to enhance their teaching experiences, delivery and assessment by staff undertaking training in design and development in the use of technology (including collaborative and
A three-year project to embed blended learning across the university's provision, led by Professor Norah Jones, is being carried out. A continuum of blended learning used by UoG is shown in Figure 2.8 and is discussed in Section 2.2.2.4. The continuum is subject dependent and is a flexible model which acts as a guideline to individual disciplines in the university. It provides a clear practical overview to the institution that wishes to adopt blended learning. This model provides the overall picture, especially the choices that can be made in producing a simple but direct blended learning experience. Using the Blended Learning Continuum created by Jones (2006), all faculties have all of their modules aligned with one of these points. In addition to this, the clear model being embedded across the university has raised the awareness of the academics as well as students on blended learning (Chew, et al., 2008a). Such awareness is the initial and substantive move for the changes described in Section 5.3.2.

A few implementations across the institution have successfully raised the blended learning awareness of the academics as well as the students. Jones (2007) reports that as a result of ECW the university invested in a central support unit - the Centre for Excellence in Learning and Teaching (CELT, 2006) that comprises staff who have a breadth of professional and operational experience in blended learning, education and the use of information and communication technology (ICT). This multi-disciplinary team are proficient in developing and supporting pedagogy and the development and technology to enhance learning practice. It consists of (1) the blended learning team of educational experts and (2) its central IT department - the e-support team as summarised in the following table:

| Learning and Teaching / Blended Learning Team | Comprises of blended learning pedagogical advisors, research and evaluation staff and staff involved in providing advice and policy on teaching, learning and assessment. This team is committed to ensuring that blended learning will be not being driven by technology but by the needs of the University, its staff and students. It is important to note that although face to face teaching will be the norm for most students it is anticipated that there will be a continued growth and development in the use of blended learning. |

PART II: THE RESEARCH DESIGN AND INSITUTIONAL INVESTIGATION
Learning and Corporate Support Services (LCSS) - eST Team

The LCSS-eST team (ISELS) offers:

- **Customer Support Services**: One-stop-shop for all ICT and e-learning support. Experience includes customer service centre set up, proactive student support and provision of support and advice 24/7.
- **Facilitation & Publishing**: Practical advice for utilising technology to enhance learning within pedagogically proven frameworks. Includes developing online content from both an instructional and publishing view point.
- **Multimedia Development**: Experienced in providing a range of graphical, audio, video and animated e-learning solutions, technical knowledge of software tools, development capability for games, quizzes, interactive simulations and case-studies. Able to advice in the following areas: accessibility, technical issues, creating e-learning and multimedia, good practice guidance, layout and design.
- **Systems Development, Training and Support**: Develop maintain and support the Blackboard and bespoke virtual learning environment (VLE) systems. Provide advice on system functionality and development. Assess software capabilities and provide in-house solutions to development issues.

The LRC LCSS-eST offers -

**eResources Management**: to help staff integrate into their teaching — in the classroom or online — the most appropriate existing learning resources from the Learning Resource Centre’s collections and beyond, to create a resource-rich and easy to use learning environment for students. Advice is provided on the availability of learning resources in different formats, and on the options for linking to external resources from Blackboard. Guidance is offered on the copyright implications of using content and permissions can be obtained on the academics’ behalf if required.

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### Table 5.18 The UoG’s Centralised Support Team related to Blended Learning (Jones, 2007)

The following table summarises the major changes and practice across the university and how they have been implemented and highlights blended learning innovations across the institution.

<table>
<thead>
<tr>
<th>At the university level</th>
<th>(1) The establishment of the centralised CELT and e-support team: a multi-disciplinary team which provide both educational and technological support and consultation (CELT, 2006).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(2) CELT website: provides all necessary and prominent resources to blended learning practitioners and academics.</td>
</tr>
<tr>
<td></td>
<td>(3) Blended learning team: actively involving in blended learning research and projects both internally and externally.</td>
</tr>
<tr>
<td></td>
<td>(4) Monthly blended learning seminars: provide practical case-studies and up-to-date educational methods and experience.</td>
</tr>
<tr>
<td></td>
<td>(5) Full financial support from the management to:</td>
</tr>
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<td></td>
<td>- Personnel in CELT.</td>
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<td>- E-support team.</td>
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<td>- The initiative of CELT innovation project grant to the academics.</td>
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<td></td>
<td>(6) Learning zone: a blog acts as an impetus for blended learning discussion. (CELT Learning Zone, 2008)</td>
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<td></td>
<td>(7) Blended Learning Benchmarking and Evaluation project: the creation</td>
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</tbody>
</table>

PART II: THE RESEARCH DESIGN AND INSITUTIONAL INVESTIGATION
of new post such as Research Fellow and Research Assistant.

(8) Blended Learning bid/proposal initiated by academics, supported by CELT and LCSS-eST Team.

(9) Leading edge developments such as interactive workbooks, computer-aided assessment, reusable learning objects, simulations and game-based learning (e.g. GlamStart), hand held electronic voting and the use of weblogs and wiki as part of critical reflection.

(10) Will introduce Template for Blackboard across all faculties in the academic year of 2008/2009.

(11) The establishment of the Excellence in Learning, Teaching & Assessment Awards acts as a direct link between excellence in learning and teaching with academic recognition – a formal incentives or rewards system across the University to motivate the blended learning practise to be widely embedded.

At Faculty Level

(12) The creation of new post: the Head of Learning and Teaching in each faculty.

(13) The creation of a new role: the Blended Learning Champions in each faculty.

(14) The creation of a new role: Blackboard administrator.

(15) The creation of templates for Blackboard across all faculties.

### Table 5.19 Disruption and Practice in the UoG’s Blended Learning Project (Jones et al., 2009)

#### 5.3.2 Awareness and Perception of Blended Learning

##### 5.3.2.1 Clear VC’s vision and Blended learning Champions as Endorsement

The finding of an internal survey for academic staff (Staff Survey, 2007) shows that more than 86% of the staff were aware of the VC’s vision mentioned in Section 5.3.1. During 2006/07 Glamorgan was engaged in an HEA project to benchmark its blended learning activities. It involved a survey capturing the blended learning experience of Glamorgan educators. In this research project, Jones (2007) reports that “the most common pedagogical use of technology by lecturers was to post lecture notes, this accounted for 79% of respondents. The next most common usage (67%) was to use the VLE (Blackboard) to make announcements to students. Over half the sample (56%) used the VLE for testing and assessment. There were also a growing percentage of academics (45%) who used the discussion group features” (pp. 120). Jones et al. (2009) further
report that positive engagements with academic faculties are being achieved, especially the creation of the Head of Learning and Teaching and Blended Learning Champions as the voice of the faculties. They have enabled good practice to flow between and within faculty. There have been a number of supports and initiatives which encourage staff to work on integrating technology into their learning and teaching:

“...Blended learning Champions - people who based in each faculty to have sort of cascaded training to get key people trained and then you look into ways that you could share that knowledge and share that expertise.” ~ Academic C2

“We were lucky in a sense that Mr. X is the Champion of that, and he set it up, and he uses it and worth payback.” ~ Academic C8

5.3.2.2 Link between Scholarly Recognition and Teaching Excellence as Motivation

The centralised support department, CELT, offered Innovation Project Grants which are awarded annually to projects which prove they contribute innovatively to learning and teaching at Glamorgan. CELT also recently introduced four Awards for academic staff in all faculties: (1) Excellence and innovation in classroom practice; (2) Excellence in technology-enhanced learning, teaching and assessment; (3) Innovation and excellence in student assessment and (4) Demonstrating excellence in academic leadership (CELT, 2008). Monthly Seminars, Blended Learning Road shows and the CELT website (CELT, 2006) have successfully raised the awareness and motivation of the blended learning implementation across the institution:

“There is the Learning and Teaching grants in this university that we can apply for - to get the money to work on a project...It's sent around to all staff, it is discussed...and it is a brilliant way of getting a project on its way. This is motivating people.” ~ Academic C2

“I think showing people of what is available...sort of Blended Learning talk, I think it is very useful as well. The seminar series also, just making people aware of possibilities, and taking the fear out of it, and getting people enthusiastic.” ~ Academic C2

5.3.2.3 Yet to Reach Out the “Unconverted” Group and Break Through the Impression of “Too Much Technology”

However, such awareness and enthusiasm may only be shared among the “converted group”. The following claim precisely points out the main challenge of
embedding blended learning practice across the university: only preaching to the “converted group” as there are too many technological elements in the seminars, road show and etc:

“We have a seminar tomorrow but if you look at the people attending our seminars they are the same groups of people you know. You are only preaching to the converted group.” ~ Academic C9

“Many academics have the impression that there is too much technology...” ~ Academic C6

To promote such an institutional wide culture, the message must find a way to penetrate outside the small group of “converted” staff. Some of them perceive that the campaign for blended learning has too much emphasis on technology. More effort will be made on attracting more audiences’ participation to the monthly seminars, rather than merely preach to the “converted group”. In order to do this, the university has a strong emphasis on education – learning and teaching, rather than merely campaigning for educational technology.

“...we have a strong commitment in this university to widening the participation, on bringing people into education, not technology.” ~ Academic C2

The creation of four awards for learning and teaching excellence listed in Table 5.19 may widen participation of academics other than the converted group. Students value the experience of blended learning and intrinsically, such experience leads to the demands and expectation of other lecturers to deliver the course in a blended manner – a demand led disruption that may shake the “unconverted group”. Once one module on a course is delivered in blended manner, students expect it for all modules. The flexibility of access to course materials and resources is highly valued as expressed next:

“I think that would be very useful from the students’ perspective. They used are to one medium, they know where things are, they know where the module description is going to be located, or staff details.” ~ Academic C9

“You can get a very good one who puts everything on it and you can get another one who did not put anything on it. ~Student D3
5.3.2.4 ICT Competency and Supporting Resources Form the “Natural Reason” for Embedding Blended Learning

Another challenge is that not all staff and students have competent technical skills, or know who to ask when problems arise during blended learning. Technological competence influences the interest and awareness on this agenda:

“...some of them can work their way through it very easily, while others find it very difficult. And that would be much to do with their experience with working with technology.”

~ Academic C1

The requirements from faculties, however, are complex and diverse due to the varying disciplines. This results in multifaceted and disciplinary support needs. Issues such as human resources, skill and knowledge competence for blended learning technologists who sit in each faculty are yet to be resolved. There is one critical response from an academic which says that,

"I think you got to sort out this resource...there must be some sense of resources available; the university should either bite the bullet and pay for it, or forget all about this!"

~ Academic C3

This comment sounds extreme but is critically important. Obviously it is an ideal to embed blended learning in each faculty. However the credibility gap between idealism and reality needs time and resources to accomplish. The university must be properly resourced with technical and pedagogical support. UoG recognises this issue. Support and resources listed in Table 5.18 and 5.19 have created the institutional culture and supportive environment for blended learning and that makes a “natural reason” for them, especially academics from a science-based discipline, to embed blended learning. The ICT capability of academic staff, “I know how to do it”, has thus been developed to drive the agenda further:

“...in our school we used Blackboard for a number of years. So that's the natural reason for going for it. So we just take our documents, some links and we start building up, what class could be blended in learning...we do that because we know how to do it.” ~ Academic C9

Perhaps it would add value to the “natural reason for going for it” if academics perceived the benefit of blended learning for staying in touch, f2f, with students and making the best use of technology at the same time:
5.3.2.5 Time Consuming

Time, however, is definitely one of the key issues for academics to pick up new educational technologies or redesign their curriculum mediated by them. The life of an academic is fully occupied with teaching, research, providing advice and marking. Blended learning has yet to capture the academics immediate attention. Most often, to “revisit and redesign” the curriculum is always one of the lowest prioritised task to be carried out unless the module evaluation is near or the academic is reasonably free:

“I think blended learning is very useful, I would like to do that but I just can’t do it at the moment because...there is so much crossing my desk that those capture my immediate attention...” ~ Academic C5

5.3.2.6 Blended Learning Challenge and Transforming Teaching Practice

Most often, the impact of blended learning is to challenge the way of thinking and current learning and teaching practice of academics. Furthermore, Garrison and Vaughan (2008) and Graham (2006) claim that blended learning will transform education in fundamental ways - to transform the way individuals’ learn or teach by revisiting the traditional practice. This has been captured in the following voice:

“I would see technology as a positive challenge, if that make sense because different types of technology and different approaches challenge my way of thinking, and the way which perhaps I would engage with my students. So, it’s a challenge but not a bad challenge, it’s a good thing…it’s getting me to think about how I deliver, how I do things, how I interact with students. So that is a good thing.” ~ Academic C2

5.3.3 The Academic Experience

5.3.3.1 The VLE: Blackboard

Blackboard is the widely used VLE among academic and student cohorts in UoG. Most of the course materials can be accessed via Blackboard and it acts as a basic, easy access and organised learning materials repository and delivery platform. It is also a useful communication tool for learning and teaching at Glamorgan. These benefits are described by the following academics:

“I like Blackboard in the way you can keep teaching materials, you can review them and etc.” ~ Academic C7
“My use of Blackboard at the moment is very basic. I will use it as communication tools, announcement tools, and discussion board and put up course materials.” ~ Academic C2

“Blackboard is the basic and standard format now within faculty...at the moment it is easier for me to go through the lecture, it's all there, PowerPoint is all there, it's all provided. I know they can have access to it. If there is something that I forgot, they are going to be there, I know all the information is there...you know everything is organised!” ~ Academic C4

Academics have experienced Blackboard as a very useful tool, from students’ engagement and support to a powerful mechanism for monitoring student development. Such positive experiences are clearly presented by the following voices:

“Blackboard is good because from my perspective as a tutor, I like having the history of all the messages. I like to go back over someone’s development and to see how they developed over time...So I think you use Blackboard to monitor the development, I think that's a very powerful mechanism.” ~ Academic C7

“I have used Blackboard as support material for engaging dialogue with students. I found that very helpful.” ~ Academic C5

“Blackboard is the one I found the most useful.” ~ Academic C1

“You are using them as a supporting tool...provide the students more access to relevant information.” ~ Academic C4

Apart from these successes, the findings also include several challenges and frustrations from the academics’ experience:

(1) Problem with the accessibility at the early stage:

“...in the early stages of Blackboard...it was very frustrating because we had problems with all sorts of access issues “ ~ Academic C2

“...the students were very frustrated by the earlier version of Blackboard. Invalid passwords, kick you out, you have to log in again...it was much more reliable now.” ~ Academic C7

Again, many academics experienced this during the earlier stage of introducing the VLE. These technical problems, however, would normally be resolved after a period of time. In the context of business IT, it is usual to have an ‘adapting’ period when a new system is introduced – either caused by technical immaturity or the human learning curve. In the educational context, the tolerance toward similar problem is less from academics from ICT-based disciplines.

(2) Issue with the variation of usage among the academics:
“...But I think part of the problem with Blackboard is that variation of usage within the scheme, between lecturers.” ~ Academic C1

One of the problems in Glamorgan is that within a faculty, some academics may only use the basic functions of Blackboard such as putting online announcements and uploading teaching materials, whereas some academics may use Blackboard extensively with discussion boards and other advanced facilities. This issue would lead to the demand-led disruption discussed above or to the students’ disappointment and complaints about the variation of usage within the faculty.

(3) Communication and technical problems between academics and support team - the educational technologists. This often happened due to the lack of interaction and mutual understanding on learning and teaching. This issue will be further discussed in the next chapter.

“Half way through one of the courses that I was teaching, ISeLS released the new version of Blackboard and didn’t realise is there anyone who was using the old version and just chopped the course completely!” ~ Academic C7

(4) There was an inclination that academics would perceive the “hits” or “view” of module pages as learning. The assumption that visiting and downloading learning materials means the students take the initiative to read and learn is a common misapprehension. Downloading learning materials or visits to the web pages, conversely, are not equivalent to reading and learning. For example a student visited the particular module pages many times for exploring and for fun without reading and reflecting the learning materials; whereas another student visited the module pages only once and printed out the learning materials without downloading them, read and learned from the printed materials. In this sense, which student is learning and which student is not? The following academic expressed this issue firmly:

“You can see whether have they downloaded the documents for example on Blackboard, but that doesn’t mean that they read it!” ~ Academic C2

(5) The rigidness of the Blackboard template. The Blackboard template was introduced in a faculty and then gradually across the institution. It is helpful in the
sense of convenience and standardisation - especially for those academics with lower IT competency. The Blackboard template would speed up the preparation and standardise the presentation of course materials for the benefit of students.

"I think the template helps...a lot of our staff are in a backward step because Blackboard is clumsy to use. Be able to edit it in HTML is much easier but we fully understand not everyone know how to do that. So, having that template is a little bit easier to use and to catch up." ~ Academic C8

Nevertheless, there is also resistance from academics. Academics may perceive this as a kind of ‘oppression’ and ‘tick boxes’, and continue to be resistance. Those with basic web alteration capability would prefer to personally design and edit their web pages with own preference. To use the term from an academic in University of Leicester, this is not a “blanket approach” to suit everyone.

"I don’t think that’s a problem for the ex-School of Electronics. I am not sure about the Faculty of Humanities and Social Science, a bit of resistance there.” ~ Academic C8

Rigidity, no freedom and “why should I follow” is the immediate feedback. Two academics expressed their arguments as follows:

"The template is a bit too rigid, I think if you are really going to do blended learning eventually you are going to let people be free to think. But not so free to think to do all this thing and they have to come up with something at the end of it!” ~ Academic C7

"I’m alright with IT, just tell me what to do, how to log in, click on this and that. I am not going to be stupid and start changing things. I thought I got the knowledge to do that but I can’t because they won’t let me to do that you know! So I kicked off.” ~ Academic C9

5.3.3.2 Confirming and Disconfirming Experience

Most of the Glamorgan development discussed in 5.3.1 aimed to enhance the learning and teaching experience. Academics’ responses to the initiatives are relatively positive. They perceived that such development had added value to their learning and teaching experience across the institution:

"I think it’s very exciting. It’s very exciting because the university was taking the opportunity not just to change in technology enhancement but to change the learning and teaching. And using blended learning, like the trojan horse... get people thinking about blended learning, and get them to start talking about all of the ways they do learning and teaching, not just as the technology enhancement...it’s something which is quite new to the culture in the University of Glamorgan.” ~Academic C6

"I certainly found it beneficial for those types of technology that encourage students to talk and contribute and get involved a little bit more.” ~ Academic C2
Blended learning promotes formative feedback, attractive visual aids, soft skills evaluation and holistic learning. Such powerful changes and enhancement are presented by the following experience:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Descriptive Experience</th>
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<tr>
<td>Both formative and summative feedback enhanced by online assessment application</td>
<td>“I am quite excited about the prospect of being able to use Questionmark Perception...I would like to be able to use something like that to give students formative feedback and summative feedback as well...I am quite interested in the technology that can be interactive.” ~ Academic C2</td>
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<tr>
<td>Multimedia presentation such as Flash enhances text-based learning materials.</td>
<td>“One thing that impressed me from the E-college Wales project is the flash part in one of the material. No words needed, just flash fading in... When I was teaching the instructional design, the basic is when you are using the computer, what you put up is line and diagram, not much text; you don’t want pages and pages of words but a picture worth a thousand words.” ~ Academic C8</td>
</tr>
<tr>
<td>Blogs act as a powerful tool for student monitoring and holistic assessment:</td>
<td>“I give you an example: if I set a piece of group work and I ask them to go away to do this, I can’t see how that group is functioning because I am not with them. I don’t know if there is a very dominant character or two of them aren’t doing anything. If I monitor their progression with something like online discussion board or they have to keep a blog for their experience, I can see who is participating and who isn’t, I can see who is giving leadership and how the leadership is being challenged and where the conflict within the team. And none of that is open to me in the traditional situation where they just gone off and done the work. So I think they are very powerful tools.” ~ Academic C7</td>
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</table>

Table 5.20 UoG-Examples of What and How Technology Enhanced Learning and Teaching

Glamorgan academics stress that disciplinary-tailored support and development in a group is excellent as it results in greater interest, impact and peered-support for academics:

“So all the Historians have gone along or the English people have gone along, by subject area. And the fact that CELT has been good enough to provide us with tailored made courses has been great. That’s been excellent.” ~ Academic C2

The resistance of the “unconverted group” may be lessened if they were grouped and trained with academics from their own discipline. If one of them is “converted” and initiated the discussion and disruption, they would sort out their problems among themselves and stimulate the ideas and interest between one another:

“…what they organised there was called Blackboard courses for Historians or for whatever. The point here was that they found that better...because they were all there together, and then they were talking to each other, thinking about how they could use it in their subject area...Blackboard doesn't become the enemy but become the focus of the discussion... and they solve the problems among themselves.” ~ Academic C1
Apart from these positive experiences, the findings also include several disconfirming experiences:

(1) It is not working as expected due to technical competency, problem and constraint:

   "I guess sometimes I just think, oh no…it's not working!" ~ Academic C2

Academic C2's experience is very common to all users of technology. As a software engineer, I believe that the claim "it's not working" is due to two reasons: either it is caused by the technical competency of the user or the constraint of the technology itself. The former is the lack of technical competency, knowledge or experience to use that particular technology; the latter is that educational technology does not meet the user requirement when it was designed and developed. Logically, the former can be resolved by proper training, individual interest and is a matter of time. The latter, however, is the miscommunication during the requirement engineering stage in the system development between the educator/teacher and technologists. **Different disciplines may cause contrasting experience in designing or using a particular educational technology:**

   "There are two kinds of technology, there is technology which is written by the technologist and it does drilled repetition and it is dreadful, but the graphics are good. And there are software written by teachers, where it's really interesting education application but the graphics are rubbish!" ~ Academic C3

However, the frustration and problems will be resolved by times and peer-support:

   "Although it takes time perhaps to put things on there in the first place, but once you get used to it, it's not too bad and you know everything is organised!" ~ Academic C4

   "…It's only probably my own lack of knowledge of that time…when I was mumbling with someone and they said you could do that by doing this and this and it's solved." ~ Academic C7

(2) One common frustration is that time was spent on technical problem solving rather than the curriculum. Time was wasted for both educators and students on the technical problem due to instable technology or accessibility:

   "…remember once the students were trying to access the electronic library. They have to come out and then go back and then come out again…We probably spent more time counseling students on actually sorting out issues than delivering content…I think people get
fed up with this, the students get fed up with this and then once they got fed up, it turns them off.” ~ Academic C1

(3) Good academics always have ambition to research and keep themselves up-to-date on what they are investigating. The emerging technology, however, makes it difficult for them to keep up-to-date with the best and more suitable educational technology:

“The negative challenge I would say is just trying to keep on top of everything, just to make... you know... there are so many things going on and just making sure that you are taking advantage of different thing which is available. So that is a big challenge… a challenge in terms of using technology!” ~ Academic C2

(4) Value f2f more than communication in the virtual world due to the hidden messages which may “hide” behind the technology. An academic values f2f interaction by looking at non verbal clues. Sometimes, there may be hidden message behind the asynchronous communication mediated by technology:

“I never use discussion board... I don't know how it is used and what things come forward from there but I think people do value the f2f contact and discussion. I think it is always... like email, you like to hide behind your email, hide behind your point, you know. I like to see people reaction, to discuss an issue... in situation where you can talk about them much more freely.” ~ Academic C4

5.3.3.3 Wish List Related to Blended Learning

The following academics explicate their “wish list” of ideas related to blended learning:

(1) Exemplars of blended learning good practice and case studies in an editable and appendable form. The case studies present what educational technology is useful, how it works - the good practice and reflections in a simple manner:

“I think the big part of the blended learning agenda, is about case study, about good practice. If we can get up those, get them presented in an editable format.” ~ Academic C1

(2) Advertise and make known the reason and benefits of blended learning with full support. This reason would be initiated by benefits and the personalised support. That would slowly become an institutional culture and the “natural” reason for academics to adopt blended learning as discussed above.

“...you have got to have some reason to make them do it. But you have got to encourage the lecturers to do it with some reason... If they don’t have reason to do it they won’t do it unless they know the major benefits are... it’s only really had benefit from discussion
board if the students see the rational behind it... If you are going to take the action say look, we want you to change the role and you got to say there is a tool and I will support you.

~ Academic C9

(3) More disciplinary-tailored support and customised awareness raising on the possibilities of blended learning. More research on the new development of educational technology to share among the academics in an effective way:

“I think providing people with targeted support which I think it’s useful. Support that they feel is useful to them...what CELT can do is make us aware of the possibilities...of what the technology can do of being giving us sort of expertise and advice…” ~ Academic C2

“I think another aspect is probably to be the awareness raising. I know that I am not aware of anything like that where I should be aware of. The things in that sort of packages that I would be interested for doing but I just don’t know they are there.” ~ Academic C5

5.3.4 The Student Experience

Glamorgan students who participated in the research expressed both their satisfaction and dissatisfaction of being a student in this university:

“Yes, I am pretty happy and satisfied.” ~Student C3

“I feel quite good because I have some friends from XX University. They told me that many lecturers in XX University discriminate against races...whereas in Glamorgan, they are more supportive and friendly to us.” ~Student C3

A supportive and friendly environment is the strength for Glamorgan according to the student experience. I believe this is due to the international partnership, friendly culture and clear strategy in the university. The finance and administrative issues such as enrollment, however, appear to be disorganised:

“Honestly speaking, it’s a bit disappointed because this university is disorganised, very disorganised... (a story about a bad enrollment experience was described)” ~Student C2

“The management here is poor...especially in the area of Finance such as collecting money. They have an independent control and manage system in each faculty. Therefore the overall administration is slightly confusing.” ~Student C3

Since Glamorgan has implemented many good practices concerning blended learning, especially the institutional commitment to blended learning (i.e. Blackboard), the student experiences are positive:

“Blackboard is the one that impresses me the most...because all the course material, past examination papers and the tutorials are all listed on Blackboard.” ~Student C1
“I think Blackboard is quite impressive and good. I can get learning materials there and they would teach us how to do assignment, announcement and etc. I think that is very good.” ~Student C2

“SPSS…I think that is very helpful.” ~Student C3

“In Barry, there is software called interactive whiteboard, it’s quite good.” ~Student C2

“Of course I prefer Blackboard simply because I will not drop or miss any copy of the teaching materials! It's always there.’ ~Student C3

Blackboard, SPSS and interactive whiteboard are the educational technologies which are helpful and good based on the student experiences in Glamorgan. The automated attendance system is impressive but a student perceived that system is redundant and confused for such innovative implementation.

“There is a thing, at the moment, for students’ attendance – they use a key card for attendance. I think that is redundant and useless... Because I could hand over that key card to my friend and ask them to swipe for me, isn’t it easier to skip the class with attendance signed?” ~Student C2

Similarly, there is an interesting voice expressed that Blackboard is “too impressive”, meaning that she could possibly skip the f2f lectures:

“When I first came here, I don't know what is Blackboard and when I accessed to Blackboard, is like, ‘wao..., very impressive’, it's got everything on it, like I can skip lectures also!” ~Student C1

This issue has been discussed by other academics and students; how values could be added into f2f classroom to ensure there are important gains to attend the lectures than merely read from the online learning materials. Blended learning is helpful but having a computer and Internet connection became the minimum requirement for students in the university in this sense:

“This university...is like...you have to be independent. The lecturers will not put a notice on the physical notice board in the campus. They would only publish those announcements on Blackboard. So, having Internet connection and a computer at home is very important!” ~Student C2

The problem of the digital divide may be resolved by staying nearer to the campus in order to access the PCs in the lab or library.

Students would expect all lecturers to put their learning materials on Blackboard, otherwise, students would be disappointed. The issue is indicated by the following voice:
“In Glamorgan…although they claim that most of the lecturers were using Blackboard, but not all the lecturers are actually putting their teaching materials on Blackboard.” ~Student C3

Generally, students would separate “life” and “studying” – “life is fun and closely related to me but studying is boring”. They only do what is required to do from the syllabus and assessment. For instance, a Glamorgan student is reluctant to contribute if the blog or online discussion board is not part of the assessment that will “add value” to their certificate at the end of the day. Blog and online discussion board or forum is for fun and personal life, not for studying:

“No! At the end everything will be rubbish because the assignment is already rubbish…we will only write it for the sake of writing… I don’t like the idea of blog and discussion board. The reason is don’t have to write one more thing and blog is for fun you know, not for study!” ~Student C1

The students in Glamorgan suggested two things in their wish list: firstly, a system that help them to find and to manage a placement; Secondly, an electronic signboard for clearer campus direction and activities:

“Another thing is I think that that it would be good that if the university has clearer and bigger sign board…perhaps like those electronic sign board on the street. I couldn’t find any signboard. Most of the notice boards are full of activities, say Student Union.” ~Student C2

“I also wish that we could have a system that will help us to manage the placement and internship.” ~Student C2

5.3.5 The Summary of Practice and Experience in Case Study II

Blended learning at Glamorgan has brought discourse, revisiting and rethinking of learning and teaching. However, technology is not the focal point but learning is; technology shall not be “threatening” in a way that “everyone has to embed”. Such threatening would definitely upset academics. In the context of blended learning, academics do not necessarily need to adopt the available technology provided by the University after a thoughtful reflection. Two experienced academics on blended learning asserted:

“...blended learning has allowed people to actually say, ‘No I am not going to use this technology because I believe my current teaching practice is better and why it is better.’ As long as we achieve that kind of personal reflections, and we get people to engage with blended learning, this is exciting for the university and also exciting for me.” ~Academic C6

“Yes, non threatening. If they don’t work, don’t make them feel it was someway that form, you know make it non threatening so that there isn’t any...sometime you have to fail to find out
what works. And I think, that’s probably a lot of pressures, I think a lot of people think that to do blended learning it has to be like e-college. And it doesn’t.” ~ Academic C7

Tables below reprise the Glamorgan institutional practice and experience:

<table>
<thead>
<tr>
<th>Blended Learning model / e-Learning Strategy (refer to Section 5.3.1)</th>
<th>UoG</th>
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<tbody>
<tr>
<td>- VC’s vision and a series of institutional strategies (refer to Table 5.19)</td>
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<tr>
<td>- Jones’ Continuum of blended learning (embedded in Glamorgan Learning, Teaching and Assessment Strategy)</td>
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<table>
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<tr>
<th>VLE Implemented Across Institution</th>
<th>Blackboard</th>
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<tbody>
<tr>
<td>- Newly introduced Blackboard templates across the faculties and plan to provide a PLE (Personalised Learning Environment) in the future.</td>
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<tr>
<td>- Only basic functions of Blackboard are used.</td>
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<table>
<thead>
<tr>
<th>Academic Awareness and Perceptions (refer to Section 5.3.2)</th>
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<tbody>
<tr>
<td>- Clear awareness due to institutional commitment such as VC’s vision and Blended learning Champions as endorsement</td>
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<tr>
<td>- Link between scholarly recognition and teaching excellence acts as motivation</td>
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<tr>
<td>- Yet to reach out the “unconverted” group and break through the impression of “too much technology” - by bringing people into education, not technology alone; and demand-led disruption.</td>
<td></td>
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<tr>
<td>- ICT Competency and Supporting Resources Form the “Natural Reason” for Embedding Blended Learning.</td>
<td></td>
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<tr>
<td>- Time consuming.</td>
<td></td>
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<tr>
<td>- Blended Learning Challenge and Transform Teaching Practice</td>
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</tbody>
</table>

Table 5.21 The UoG’s Institutional Practice and Challenges (Summarised from Section 5.3.1 and 5.3.2)

<table>
<thead>
<tr>
<th>The Academic Experience (refer to Section 5.3.3)</th>
<th>The Student Experience (refer to Section 5.3.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Blackboard:</strong></td>
<td></td>
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<tr>
<td>- Accessible, flexible and organised learning materials repository and delivery platform.</td>
<td></td>
</tr>
<tr>
<td>- Blackboard templates provide standardisation and convenience.</td>
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</tr>
<tr>
<td>- Engage dialogue and interaction</td>
<td></td>
</tr>
<tr>
<td>- Powerful tool for recording history of students’ development.</td>
<td></td>
</tr>
<tr>
<td>2. Change educators’ attitude and values on teaching and learning practice like Trojan Horse.</td>
<td></td>
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<tr>
<td>3. Evidence of “technologies enhance learning and teaching” by positive experience and successful case studies:</td>
<td></td>
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<tr>
<td>- Blog and discussion board are powerful tools not only assess the task accomplishment but the hidden and high order thinking and communication skill - help in evaluating soft skills and promoting holistic learning and assessment.</td>
<td></td>
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<tr>
<td>- Both formative and summative feedback enhanced by online assessment application, i.e. QMP.</td>
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<tr>
<td>- Rich media presentation (PowerPoint and Flash) enhances text-based learning materials.</td>
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<tr>
<td>- Handheld voting system successfully engaging students.</td>
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</table>

1. **Blackboard:**  |
| - Useful and helpful in learning. |
| - Will not miss or lose any learning materials. |
| - Too impressive VLE and ‘enable’ student to skip f2f lectures. |
| 2. SPSS and interactive whiteboard are useful. |
| 4. Supportive and friendly learning environment. |
| 5. The rigidness of the Blackboard template |
4. Discipline tailored and peer support results in greater interest and evangelises the "unconverted" group.

<table>
<thead>
<tr>
<th>Disconfirming Experience</th>
<th>1. Blackboard:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Resistant to Blackboard template.</td>
<td></td>
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<tr>
<td>- Problem with the accessibility at the early stage.</td>
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<tr>
<td>- Issue with the variation of usage among the academics.</td>
<td></td>
</tr>
<tr>
<td>- Template issue due to ICT competency and disciplinary differences.</td>
<td></td>
</tr>
<tr>
<td>- Communicative and technical problem between academics and support team - technologists.</td>
<td></td>
</tr>
<tr>
<td>- Webpage visit rates and duration is an indicator but do not equate to &quot;learning&quot;.</td>
<td></td>
</tr>
<tr>
<td>2. It is not working as expected due to technical competency and technological constraint - expectation versus reality.</td>
<td></td>
</tr>
<tr>
<td>3. Disciplinary variations would cause contrasting experience in designing or using a particular educational technology</td>
<td></td>
</tr>
<tr>
<td>4. Time was spent on technical problem solving rather than curriculum.</td>
<td></td>
</tr>
<tr>
<td>5. Difficult to keep up-to-date to the best and suitable educational technology.</td>
<td></td>
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<tr>
<td>6. Value f2f more than communication in the virtual world due to the hidden messages behind the technology.</td>
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</table>

1. Computer and Internet connection became the minimum requirement for students in the university in this sense. |
2. Redundancy and confusion for such innovative implementation. |
3. Students would "naturally" expect lecturers to put their learning materials on Blackboard. They would compare who did and who did not. |
4. Students would normally separate "life" and "studying". |
5. Blog and online discussion board or forum is for fun and personal life, not for studying. |

**Table 5.22 The UoG’s Academic and Student Experience**
*(Summarised from Section 5.3.3 and 5.3.4)*

<table>
<thead>
<tr>
<th>Wish List</th>
<th>Academic</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exemplar of blended learning good practice and case studies in an editable and appendable form – reusable learning objects.</td>
<td>1. A system that help students to find and to manage placement.</td>
<td></td>
</tr>
<tr>
<td>2. Advertise and make known the reason and benefits of blended learning with full support.</td>
<td>2. Electronic signboard for clearer campus direction and activities.</td>
<td></td>
</tr>
<tr>
<td>3. More disciplinary-tailored support and customised awareness raising on the possibilities of blended learning - more research on the new development of educational technology to share among the academics.</td>
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</table>

**Table 5.23 Wish List of the UoG’s Academics and Students**
*(Summarised from Section 5.3.3.3 and 5.3.4)*
5.4 Case Study III: University of Malaya (UM)

5.4.1 Strategy and Practice

The e-Learning strategy in Malaysia was enforced by the Ministry of Higher Education (MoHE). University of Malaya is a public university which is directly monitored and governed by the Ministry. Hussain (2004) states that millions of Ringgit were spent to provide the ICT infrastructure and to develop e-learning delivery and management systems in all HEIs. Consequently, most of the public universities in Malaysia have some form of ICT strategic plan with a well-established infrastructure of e-learning. Many of them, however, have yet to draw up and implement an institutional-wide plan specifically for the use of ICT in teaching, learning and assessment. The University of Malaya (UM) is a typical traditional and research-led university that has a well-established ICT infrastructure and services (UM ICT, 2008) with less association with learning, teaching and assessment. There is an in-house built VLE, UM e-Learning, which has been around for approximately 10 years developed by UM Centre for Information Technology or locally known as Pusat Teknologi Maklumat (PTM). However, the institutional adoption is rather slow. It could be due to the proprietary platform that they used and the institutional culture that emphasises research rather than learning and teaching. The idea of blended learning or e-learning to the policy maker is, perhaps, a mere alternative way of accessing learning and teaching materials. This is clearly stated on the introduction section of the UM e-learning website: “UM E-Learning is an alternative means of providing online notes to student at large” (UM e-Learning, 2008). Periodic emails will be sent out to all academics for workshops and training for this established VLE.

A centralised unit, the Academic Development Centre (ADeC), was re-established in 2007 as a one-stop centre for improving and developing learning and teaching among the academics. According to the information given by the Director of ADeC, the history of ADeC dated back to 10 years ago, when
academic staff development was deemed necessary by the management. However, there was a change in the top management in 2000, the centre was closed and it took another 7 years to revive it. ADeC aims to apply technology to the teaching and learning processes especially in the designing and developing comprehensive delivery systems (UM ADeC, 2008).

Interestingly, ADeC developed and maintained another VLE in recent years, namely ADeC e-Learning. It can be viewed in 6 languages and claims to provide an excellent learning experience for academics, ensuring the availability of professional development opportunities for all staff, and supporting innovations in teaching and learning, focusing on innovation and the importance of new technologies (UM ADeC Learning, 2008). ADeC e-learning runs on Moodle and it has more features than UM e-Learning that allows for more flexibility for both lecturers and students. ADeC e-Learning was introduced to the campus community in 2007 and training and support has been given to the users. Similar to the idea of a champion in UoG, ADeC have a few champions on campus who are able to share their best practice with others. Before ADeC e-Learning was introduced, few faculties and departments were using Moodle as their e-learning platform. Recently the top management of UM has agreed to let the staff have a free choice to go with UM e-learning or use ADeC e-Learning.

There is a long tradition of f2f and campus-based instructional culture in an old university like UM. Lectures are delivered in a big lecture hall with small group discussion. Practical and interactive sessions are held in labs or tutorials. Conventional classroom setting with the f2f interaction are the major assets and practice. Such culture can be quite exclusive and is all about scholarly research and intellectual excellence. Blended learning could be an innovative idea but a mere complementing “tool” to many academics. Most of the academics in this university understand and agree on the benefits of teaching mediated by technologies at certain levels. None of the research participants, however, mentioned they used UM e-Learning. ADeC e-Learning was introduced after my
research visit. From the ADeC’s vision and the communication with the Director of Centre, ADeC might act as an agent for change to the learning and teaching culture in the institution in the future.

5.4.2 Awareness and Perception of Blended Learning

5.4.2.1 Poor Awareness - Awareness before Change is Proposed
Based on the statistic published on the official website of UM e-Learning on 8 April 2008, the statistic revealed only 178 staff and 3456 students were accessing UM e-Learning (UM e-Learning, 2008). The university has a total number of 1,921 academic staff and 27,498 students. If I compared the statistic of user accessing with the total numbers of academics staff and students, only 9.3% of the staff and 12.6% students used UM e-Learning. The voice of the academics also indicates that they have not been keen to embed this facility in their teaching practice:

“I have heard about this from a colleague from another faculty but I never use it.” ~ Academic A8

“I never use the university e-learning system.” ~ Academic A2

“Now in UM, there is a course content management. It seems that can be done but I have not tried yet. So, I don’t know how sophisticated it is.” ~ Academic A4

The awareness raising among academics is rather poor as disclosed by the following academic who has worked in the institution for more than 5 years:

“Recently they developed this thing called UM e-learning system and they are conducting training. I received an email today saying that they are conducting training for this UM e-learning system.” ~ Academic A8

The academic considered that UM e-learning, which has existed for about 10 years, was a recent development. Poor awareness seems to be the phenomenon of blended learning. There will be no changes if academics are not aware of the availability and benefit of UM e-learning. The concept of awareness before change (ABC) is essential in this respect. This point is highlighted,

“Awareness before Change...You want them to change but they cannot change without knowing what it should be, what to change. So you have to give them awareness! That's why you have to understand what you are doing. ABC is very important, awareness before change. When you want to introduce change in anything, you have to make the people aware.” ~ Academic A2
5.4.2.2 Blended Learning and E-learning are Synonymous – to Enhance Communication and Feedback

From my interviews, in general, the academics in UM perceived that blended learning and e-learning are synonymous. E-Learning is learning with technology that will enhance communication and feedback. An experienced academic in e-learning concludes this with an insightful view:

“To me, e-learning is not just a static website…this is just what they called information access. That is not e-learning! E-learning should be the platform for communication because we don't have enough time to really interact with the students here, right? We only have 2 hours lecture plus 1 hour tutorial, it’s very limited. If our class is big, you don't know the students. At the end of the semester you can't even remember the students' names, unless the most outstanding one or the worst…why not we make full use of the technology which is available…Not just to give more information, I mean feedback. The most important thing in the learning process is feedback.” ~ Academic A2

5.4.2.3 Blended Learning is not a Total Solution for all Disciplines

An experienced academic has recognised the disciplinary differences for learning and teaching practice as follows:

“…I believe some types of learning are very suitable for certain area of study, but not encompassing all kinds of subject. For example blended learning is probably very suitable for history. Or blended learning is probably good for the language study.” ~ Academic A9

Thus blended learning is perceived as one of the learning types that may only be suitable for certain disciplines but not encompassing all disciplines.

5.4.2.4 Educational Technology is merely a Tool to Complement but not to Replace f2f; or to be seen as a Symbiotic Relationship

Most of the interviewees agree that learning and teaching will be enhanced when the process is mediated by technology. However, they claim that it emphatically plays a supplementary role to complement f2f rather than replacing it. A lecturer who teaches networking in a computing subject uses a different computing simulator to facilitate students in their understanding of a complicated networking concept. His experience, however, made him affirm that traditional tutorials and a lab setting can never be replaced by online learning:

“The experience the students gain is very different when you compare with the flash simulation and the packet trace. The latter is much better than the former because the packet
trace got a lot of flexibility. When compared to the actual physical devices, the actual physical
devices will actually build confidence within the students because they can touch and see
and smell the devices… **Of course we can use technology to complement our teaching
but not to replace our f2f teaching!** ~ Academic A7

E-learning can never replace the f2f instruction. This perception is agreed by the other UM academics:

“I am not encouraging this 100% without f2f, maybe a certain portion can be online. We still
need f2f, we still need f2f!” ~ Academic A4

“I don’t really believe in e-learning because…we were trying to make use of what we call a
learning space, where lecturer can upload their lecture notes, and then they can have the
chat room and so on…you can only use this to complement but not to replace.” ~ Academic
A6

According to the UM academics, there are two elements in a blended learning context: f2f and technology-mediated instruction. Rather than in a form of “either-
or”, they could be used in blended manner. They can also be seen as a
tsymbiosis or conflating for better teaching and learning experience:

“Blended Learning makes use technology and also the humanity values, f2f…the technology
alone is not enough, with the human alone also has certain constraint, as we are now in a
technological world. So we need to combine both.” ~ Academic A3

This is the reason that makes blended learning important and valuable –
educators need to combine both f2f instruction and educational technology. It
also clarifies the confusion of the definition of blended learning – it means the
combination of f2f learning and teaching mediated by technology.

5.4.2.5 Academics are Interested in Educational Technology; Try It Out by Self-Initiative and Are Driven by Confirming Experience

Interestingly UM has no clear institutional-wide policy to embed blended learning. However, most of the academic staff that I interviewed are aware of blended learning and recognise its benefits. From my observations, their awareness came from individual research interests, the culture and facilities at the faculty level, and above all, from the individual passion for enhancing the learning and teaching quality:
“...when you get your hands on the digital one such as computer, I think you can't go back anymore. I mean you just have to use it...it is so effective! I think I can do so many things with technology and with my students!” — Academic A3

5.4.2.6 Active Learning can be Promoted by Blended Learning – a Breakthrough in Cultural Barriers

Confucius' values hold important implications for Asian education (Hawkins and Su, 2003). The "absolute" authority of the educator has been rooted in the culture of "teacher-speak-student-listen and take notes". The idea of active learning and of the educator as a facilitator is suffering from the ideal versus the realism of such culture. It is signified that blended learning can promote active learning by UM academics:

“The new terminology, blended learning...as an educator, I would see more in terms of how does it helps the intellectual learning, helps to change the students’ attitude. How does it help students to be motivated in learning?” — Academic A9

“Our problem here is the students' problem - the culture, which is called passive learning. They were trained since young: it is 'wrong' to ask question, negative impression if you were very out-spoken or aggressive to ask question. So, we tend to be polite and quiet, listen to what the lecturer has to say. The culture has to be changed to active learning! After you have corrected their mind, make them aware, and then make them realise - you also have to change the culture. Active learning can be promoted by blended learning!” — Academic A2

5.4.3 The Academic Experience

5.4.3.1 The Confirming Experience

UM academics generally use PowerPoint in teaching and digital library and world-wide-web in research. Most often, PowerPoint is one of the controversial technologies used in teaching. One lecturer may be impressed by its animation and usefulness, whereas another one may prefer not to use it due to the serious lack of interaction and flexibility. Some of the UM academics solely depend on PowerPoint in the process of teaching. I could imagine the strong criticism from educationists to a lecturer who “cannot teach without PowerPoint” as follows:

“I think PowerPoint is something very useful because you can put up all the important points then after that you can explain from there. After using it for so many times and so long, I cannot imagine if I have to teach without PowerPoint. It would be much more difficult.” — Academic A8
The term “luxurious research” is used by a senior academic. Compared with “those were the days” without world-wide-web and a digital library, the researchers today have more luxury on the flexibility and accessibility in conducting research:

“Compared to our older generation, I think today students and lecturers - their accessibility to various sources of information is much better. I remember when I did my masters; I have to go down to Singapore National Library to get permission to photocopy journal articles, or to do some research because it is the best library in Asia. But today we can do research almost anywhere. For example in University of Malaya, we do subscribe to IEEE journal, which is a luxury compared to twenty years back. Now we have the entire set of IEEE. And these resources, web blog, wikipedia and whatever resources you mentioned or electronic journal…” ~ Academic A7

There are exemplars and successful case studies of different useful applications used in teaching practice, initiated by experience or by peers’ recommendation. The following voices demonstrated good examples of what and how educational technologies enhance the learning and teaching experience:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Descriptive Experience</th>
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</table>
| **Simulator - subject-related learning and teaching** – used to demonstrate and visualise certain concepts in computer science subject. | “We have a simulator in our course, called packet tracer. We allow the students to download the tracer, from there they can actually draw the topology, switchers, hubs and router and they can actually do a real life configuration…The number of configuration is limited but this is enough to demonstrate lots of networking concept.” ~ Academic A7  
“Actually they created the simulation using the PowerPoint, so you can see the stack, the queue, so that the students can actually visualise. I think that is something very good.” ~ Academic A8 |
| **Free Video conference and chat room** – used for distance communication and discussion. | “When I was having a sabbatical in South Korea, I couldn’t see my students in Malaysia f2f except through online discussion and emails. At once, I actually ask one of the students using this skype to discuss about the problem. I think this skype is very useful when you are apart, when you need to do the discussion. You can have the voice, the communication and you can also show your software, captured it in camera and then send it over…they are very useful…So, it's free technology, just whether you adopt it or not.” ~ Academic A4 |
| **Mobile Coaching (shared by peer’s recommendation)** – used to enhance language skill. | “…everyone actually carries a hand phone. So, I have this friend who actually is the one who made me aware of this situation. She came to me and she said, ‘I have these materials on the Internet. Through sms the system, people can actually receive the information on your mobile and you can actually access it from anywhere and at any time.’ So, I thought of using this system with my students.  
As you know, Malaysia, we are on the transition period for delivering Maths and Science in English. And my students are mainly future science teachers. Their command of the language is rather weak. What we plan together was I gave my students a writing assignment on being a biology teacher. I gave them this sms number; they sms and they got 8 short messages, each giving a tip on how to...” ~ Academic A8 |
write in English. A tip for example, ‘keeps your sentences short’. Things like that, you know.

My students sent the sms and they got the tips and I gave them reading material and they read it. And then they started writing why I would like to be a Biology teacher. And they wrote in short simple sentences, they actually got it done quite well. I told them just one page and they did it. They had grammatical errors but much lesser because they are guided by the tips. When I ask them to keep the sentence short it is easier and fewer mistakes. So, that how I use the mobile coaching in my lesson, it's working. So I have used this mobile coach for enhancing language skill of my students… I am using it and I can see the prospects for the hand phone is fantastic. “ ~ Academic A3

Table 5.24 UM - Examples of What and How Technology Enhanced Learning and Teaching

A few UM academics have no bad experience in embedding technology in teaching practice due to their technological competence – they viewed the frustration of the process as a learning curve that will be resolved over time:

“Most of the technologies that I have encountered personally impress me. And I don't have any bad experience.” ~ Academic A2

“So far no frustration caused by educational technology. It's just a matter of time. The first time when you use it may be difficult but after you get used to it you would find it is more efficient and effective than if you are doing it manually.” ~ Academic A8

As indicated by Garrison and Vaughan (2008), blended learning could actually change educators' attitude and values on teaching and learning practice. Such personal experience are offered from an academic described next:

"I got ‘enlightenment’ in the sense that assessment actually can be done continuously by using CASTLE - we are trying to assess our students in the process of teaching and learning and not assess them towards the end of the semester - This was what my understanding...the wrong mindset in the earlier years of my teaching. CASTLE is adopting assessment from learning principles and this assessment from learning principles is actually started by the assessment reform group in the UK – formative assessment.

I am very happy because CASTLE actually helps me and enlightens me a lot on how to build up the holistic learners. While we are building, we are also building ourselves. Because we as the lecturers we are not only teach...we motivate students along the way.” ~ Academic A6

The educational philosophy and practice of Academic A6 was changed after embedding a system, CASTLE, stands for Classroom Assessment System for Teaching and Learning (2009). “This is a very impressive system we have developed because we have actually changed the mind set of teachers”, says Academic A6. The common understanding on assessment for lecturers in UM is: lecturers teach students and then students will be assessed at the end of the semester (or at the end of the year for the medical school) by examination,
assignment or presentation. After embedding CASTLE, Academic A6’s teaching practice was challenged and changed from summative assessment to formative assessment; her mindset and values on learning and teaching, or even her epistemology – what is knowledge and how to acquire and assess knowledge had transformed.

5.4.3.2 The Disconfirming Experience

An academic from a strong technical background with more than ten years lecturing experience in HE made the following statement:

“However, I can't think of any impressive technology in learning and teaching.” ~ Academic A5

There are three possibilities behind the view: first, he has vast or unique experience in learning and teaching. Therefore no educational technology could satisfy such pedagogical requirements. Second, he is a computer expert and no educational technology could impress him in terms of flexibility and intelligence. Third, he never uses any educational technology in learning and teaching due to first or second reason, or is trying to remain in his comfort zone. At this point, I do not want to judge or draw any conclusion but this response provokes three critical issues related to the strategy of blended learning: (1) how does blended learning satisfy the pedagogical requirement by the experienced educationist? (2) how does blended learning provide a flexible and intelligent setting for educators with technology competence? (3) how does blended learning enable an educator to revisit and redesign curriculum?

UM academics also had disconfirming experience as discussed next:

(1) Academics are unfamiliar with UM e-Learning and ADeC e-Learning: the below are two voices in response to a question concerning any impressive educational technology that they have encountered:

“CAL (Computer Aided Learning) setting because you can use tools associated with the computer to deliver teaching materials.” ~ Academic A1

“Wel also have the courseware design here, courseware packages from UM. I think UM provide Kursus (Course) Online.” ~ Academic A4
The university provides two VLEs and they would probably enhance the academics’ teaching practice across the university. However, the above responses are two examples which presented an unsure or unspecific impression of the VLE. None of them mentioned they have used the university VLE, UM e-learning or ADeC e-learning.

(2) *Network down or server down* is certainly the most common frustration for anyone as the most common response is, “there is nothing you can do with it until it is up again”. Below are selected a few similar voices as evidence of such disconfirming experience:

“I think this happens when you have uploaded everything online, so you think you have no need to bring your CD or pen drive and everything, but suddenly you want to access the site and it's down! So this is the most frustrating situation.” ~ Academic A4

“…when the internet connection is disrupted during classes, it can be frustrating! But I would normally have some important screen shots of what I want to show kept in a file in case this happens.” ~ Academic A1

“Sometimes the server is down, so we can't really get the things up...depending on the school because our school network system, so they are always controlled by one system. If it is down then they can't do anything. This is the major problem that I face!” ~ Academic A6

A thoughtful academic prepared a backup plan in case the network or VLE is down; however, I would assert that this is not the final solution. ICT infrastructure and technical support of an institution or a country are the fundamental issues to be improved.

(3) *Educational designing issue:* Many VLE or educational technologies were designed by technologists without being underpinned by educational theory, mutual understanding of technical competence and pedagogical requirement between academics and technologists. Technologists are advised to seek the specific requirements from academics, in particularly the pedagogical considerations:

“The system is a failure. Why is it totally a failure? Because they never ask us: our user requirement. That's why my website is only to put up notice but not everything.” ~ Academic A2
“It is not so much interactive, the interactivity is not there. For example, I plan to prepare a course, I want to put the content, all those images that I can adjust but I will not be able to do so. It’s more like only upload your final slides. You can upload images but you can't do it like in the courseware...I still see there are many aspects to be improved.” ~ Academic A4

(4) Age Constraint: Not only time constraint but age also is a constraint for some senior academics, especially when technology changes so fast:

“...the academics in the older generation, they would like to pick up the new technologies but they have no time to sit down there just to try it out.” ~ Academic A8

“Yes, there are many technologies that would frustrate us. When we grow older, even though we are in computing field but many things are getting complicated...and you need time to pick up and you would realise the time limit and our learning ability is much decreasing due to age. This is the facts.” ~ Academic A5

(5) Time-consuming: This is the most common and practical problem faced by academics:

“...it will actually takes more times...the lecturer needs to spend a lot of time on reading. Once you are given a thing like a blog, you have to write a lot of things.” ~ Academic A8

“Actually I am very interested in that but I don't really have the time to read and try further about blended teaching. Now we have so many kinds of systems and choices of technologies, you don't know which one is good. And if you want to assess which one is the best then it takes time.” ~ Academic A4

“It takes up a lot our time - the lecturers' time when we need to manage such learning space, in electronic environment.” ~ Academic A7

However, students will be the beneficiaries if academics put themselves in students’ shoes, and are willing to spend more time on the “thoughtful integration” of blended learning. From the below conversation, this academic prefers to mark on paper but she is willing to spend more time to blend online assessment with f2f instructions for the benefit of students:

Academic A4: You can save a lot of students' time. Sometimes, you have to think from the students' perspective - like they are staying in Cyberjaya, so far for them to come here and traffic jam especially. If they have written few pages, they don't have to send the hard copy over here to let me read, I can do it online... for example we delete certain things, it's just like you cancel thing on paper, strike through…"

Interviewee: You are generous with your time.

Academic A4: Yes, it consuming a lot of time.

Interviewee: Comparing marking online and marking on paper, which one do you prefer?"

Academic A4: Of course is on paper. If possible paper would be faster, I just mark and cross, it's faster to just cross something with pen…”
(6) No culture of providing assessment feedback: One of the practices of UM is that it does not reveal the marks of a module to students. They would only obtain the final grade and normally without feedback of the assignments or essays being marked. Academics that are used to study in Western countries would be trained to provide feedback. Educational technology actually provides such a facility, especially for personalised feedback.

“When I was in the US, each of my assignment that sent to my professor, I would get feedback in writing or in discussion. But here...at first I was very shocked, not to reveal the marks to students, you can only reveal their grade... It's really important that students submit the assignment either in the form of soft copy or hard copy and then we can provide feedback to students, we can communicate with students, we can let them know what are your weaknesses through the technology. However, that is not the culture here.”
~ Academic A2

5.4.3.3 Wish List Related to Blended Learning

The following voices show the “wish list” of ideas gathered from UM academics related to blended learning. Above all, they wished to have an all-in-one blended learning system which is an upgraded version of what a current VLE could offer. “Upgraded version” in terms of the inclusion for web 2.0 technology and the capability to communicate with the time tabling system and student registration system:

“VLE - students can manage their own learning in 24 x 7.” ~ Academic A1

“If you can have them in one system, I think it would be fantastic.” ~ Academic A3

“Lecturer portal that you want to put everything here, rather than going to different places, we have a one-stop centre... I think assessment is very important to this lecturer portal with online forum, online discussion, online chat if you have time. I really like blog. Video conference is good, if the students miss the class, they can go to our system and download the lecturer for that day. E-community means the class community. If we can have all these things in one system, that would be a perfect system.” ~ Academic A2

“Until now we still cannot find a system where we can have all the good things... if there is one system like this, it would be fantastic. I want CMS, online assignment, online quiz, online exams and of course skype, chat room and scheduling.” ~ Academic A4

“It definitely must have course management system, e-forum for discussion. It will be very helpful that it can be linked to the student's registration system. From there we can actually capture the attendance report. A module to do self assessment, like the common question, simple MCQ question and they will get the feedback. The time tabling module, administrative facilities such as attendance, report, can easily check the time table. For example if I want to know the students' time table, any clashing or not. Let say I pick 3 subjects and I want to see whether these 3 subjects are clashing or not.” ~ Academic A8
As a summary, their ideal blended learning system is an all-in-one educational system that embraces all educational technologies available, if possible. Furthermore, improved facilities such as personalised learning environment (PLE) with integrated ability and Facebook-like applications that allow users to plug-in educational applications they need:

“Maybe the integrated system is something that you have certain standard, then people can actually build different type of application and plug into your learning environment...a concept of learning object with certain standard....I think we do need to do research to look into the possibility of having an integrated system.” ~ Academic A7

5.4.4 The Student Experience

UM students who participated in the research, in general, expressed their dissatisfaction of being students in this university due to a number of reasons such as the institutional and national educational system and culture:

“...sometimes I feel very sad... I heard from 9 out of 10 students that they do not like their study and the university life...the whole educational system and the culture are not able to develop a learning environment that makes the students enjoy the study." ~ Student A1

“I think it is sad that the whole education system is not moralising a student but demoralise a student. So, basically we already have no feeling to such vision or philosophy of the higher education...Honestly speaking, unless the student seeking his or her own path otherwise the student will be in a dead end.” ~ Student A1

This may be a personal view from a student that the educational system in Malaysia does not promote an enjoyable learning experience but “demoralises” him. I feel students’ voices reveal certain possibilities of why the university’s position was having a sharp fall in the World’s ranking (refer to Table 5.8). Consider this conversation:

Interviewer: “As a student in this university and in this country, how does it feel?”
Student A2: “No feeling...”
Interviewer: “Can you please elaborate more why you have no feeling?”
Student A2: “I have no freedom of speech, I cannot freely voice out my opinions. It has no liberty. Can I criticise?”
Interviewer: “Of course you can. This will be published abroad and don't worry, I will be caught not you.” (laugh)
Student A2: “...(some criticism on political issues)...we are so used to being oppressed so we slowly become silence.”
Student A2 “naturally” seeks for permission to criticise and that disclosed indirectly the long oppression on free speech. Freire’s (1970) pedagogy of the oppressed could provide insights into this issue. This problem, however, is too big and not the subject of this research, but perhaps blended learning can help to prevent the “oppressed” or “demoralised” learning experience.

Among the student research participants, the most confirming technology to enhance their learning experience is merely Google and the digital library:

“…searching for resources from online library, PowerPoint and websites.” ~ Student A3

“Google: Finding information and resources when we were doing assignment… Honestly speaking, I can tell you that I do not know how to seek for knowledge. Sometimes we are just ‘cut and paste’” ~ Student A2

This reminds me about the discussion in Section 3.1.2.2 related to Brabazon’s idea: the University of Google – a worrying phenomena and attitude of a modern student. Students nowadays may be adapted to the “culture of fast food”. Some of them neither like to think in a higher order level nor to reflect on reading and writing. The above students’ responses also showed that their lecturers rarely adopt technology in their teaching practice (refer to Section 5.4.3). From my observation, generally, personal websites and PowerPoint are the two things that lecturers embed the most in their teaching practice:

“Lecturers seldom use any technology, the most is PowerPoint.” ~ Student A2

“...one lecturer has a website and allows the students to post a message or forum...but poor responses as I also did not invoive in it.” ~Student A2

Students are not keen on additional “e-tivities” since there are so many ‘real’ activities to be involved. Only with extra time availability or through individual interest, would students go further to pick up new technology or to participate in blended learning such as an online discussion. One of the students described a stressful circumstance in her learning experience:

“There are too many activities in the University of Malaya. We are the ‘machine’ of organising / joining activities and the ‘machine’ of doing assignments...For those students who stay in the college, they have to join the activities in the college, plus their own interest and then there are activities in the individual department. Therefore they will be more selective for their time.
I remember when I first came to the university, I found it very difficult to use PowerPoint and adapt into the technology environment. We did not use PowerPoint and we need not use it during high school. Unless you are very free or interested in them, otherwise you already very tired after all sorts of activities. You will have no energy or time to post any notes or join in any online discussion.” ~ Student A2

As a summary, the above voices showed that the research participants, both academics and students, rarely practiced blended learning. Some academics, described that they used different technologies to enhance learning and teaching experience. However, students’ learning experiences may not be enhanced. A tone of anger enters a students' assertion:

"I think the management shall make more effort to hire more quality lecturers instead of making those marketing and advertisement claims of ‘the best university’ in the country..." ~Student A3

“‘The problem now is not because of the technology - UM are not short of any technology; the problem is the lecturers themselves. The lecturers do not know how to integrate all these. Perhaps the lecturers know how to use them but it is useless if their idea of and passion on education is not strong. It is the lecturer who does not impress me, not the technology!”’ ~Student A1

It is not the use of technology which impresses the student or otherwise – it is the lecturer. Technology is not the problem but the lecturer is. This critical viewpoint will be further discussed in the next chapter. UM students further expressed their wish list in two general ways: first, pedagogical perspective such as teach innovatively and keep themselves up-to-date; and secondly, physical campus setting that promote “thinking space” for better skills of appreciation and evaluation.

"I hope the lecturer can teach other than the conventional way, more things other than the subject area itself. I think many lecturers are not up-to-date!” ~Student A2

“The environment of the campus is not well designed and developed. University is unique from other place because of its "thinking space" wherever you walk. We should have a free and beautiful environment...The students produced by the university are not merely know how to do business for example, but also possess certain skills of appreciation and evaluation. This is very important!” ~Student A3

5.4.5 The Summary of Practice and Experience in Case Study III
Voices from UM academics provide evidence to affirm that various technologies had enhanced their teaching experience. For example technologies are able to provide mobile coaching and to visualise learning materials for a better learning
and teaching experience. Educator’s attitudes and values of learning and teaching have been transformed by embedding a good educational assessment system into traditional f2f instructions. However, students’ voices show that the national and institutional educational culture and individual educator demotivate their learning experience. The University has no shortage of technologies but it is the lecturers who do not integrate them in daily teaching practice. The tables below summarises UM’s institutional practice, academics and students’ experiences related to blended learning:

<table>
<thead>
<tr>
<th><strong>UM</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blended Learning model / e-Learning Strategy</strong> (refer to Section 5.4.1)</td>
<td>- No institutional-wide commitment but there is a blended learning strategy by a newly established support centre, ADeC’s aims to apply technology to the teaching and learning processes especially in the designing and developing comprehensive delivery systems.</td>
</tr>
<tr>
<td><strong>VLE Implemented Across Institution</strong></td>
<td>- <strong>UM Elearning</strong>, an in-house built web-based learning management system with learning content management facilities that have existed for 10 years and supported by centralised ICT centre. - <strong>ADeC e-Learning</strong>, a recently developed VLE in Moodle – developed and maintained by ADeC.</td>
</tr>
<tr>
<td><strong>Academic Awareness and Perceptions</strong> (refer to Section 5.4.2)</td>
<td>- Poor Awareness – Awareness before Change is proposed - Blended learning and e-learning are synonymous – to enhance communication and feedback - Blended learning is not a total solution for all disciplines - Educational technology is merely a tool to complement but not to replace f2f; or to be seen as a symbiotic relationship - Academics are interested in educational technology; try it out by self-initiative and driven by confirming experience - Active learning can be promoted by blended learning – a breakthrough in cultural barrier.</td>
</tr>
</tbody>
</table>

**Table 5.25 The UM’s Institutional Practice and Challenges**  
(Summarised from Section 5.4.1 and 5.4.2)

Since e-learning is only an alternative platform to provide online notes and there is no institutional commitment to blended learning, academics used technologies respectively where they see fit. Most of them, from the student experience, do not use any except PowerPoint. A key theme highlighted by students that the academics (educators) themselves are the major issue in blended learning, not technology.
Chapter 5: The Blended Learning Experience in 4 HEIs

PART II: THE RESEARCH DESIGN AND INSTITUTIONAL INVESTIGATION

The Academic Experience
(refer to Section 5.4.3)

<table>
<thead>
<tr>
<th>Confirming Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Impressed by PowerPoint and solely depend on it.</td>
</tr>
<tr>
<td>2. Luxury research compared with the old days.</td>
</tr>
<tr>
<td>3. Successful case studies of these technologies enhance learning and teaching:</td>
</tr>
<tr>
<td>- simulator - used to demonstrate and visualise certain concepts in computer science subject.</td>
</tr>
<tr>
<td>- video conference, chat room – used for distance communication and discussion.</td>
</tr>
<tr>
<td>- mobile coach - used to enhance language skill.</td>
</tr>
<tr>
<td>4. No frustration at all due to technology competence – “it is a matter of time to pick up”.</td>
</tr>
<tr>
<td>5. Change educator’s attitude and values on teaching and learning practice, or even the epistemology.</td>
</tr>
</tbody>
</table>

The Student Experience
(refer to Section 5.4.4)

| 1. Confirming educational technology is Google and digital library. |
| 2. Personal website and PowerPoint are the two things that lecturers embed the most in their teaching practice. |

<table>
<thead>
<tr>
<th>Disconfirming Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Never impressed by any educational technology</td>
</tr>
<tr>
<td>2. Academics are unfamiliar with UM e-Learning and ADeC e-Learning:</td>
</tr>
<tr>
<td>3. Network down or server down,</td>
</tr>
<tr>
<td>4. Educational designing issue caused by lack of mutual understanding of technical competence and pedagogical requirement between educationists and technologists.</td>
</tr>
<tr>
<td>5. Age-constraint and time-consuming for the lecturer but benefit to the students’ time.</td>
</tr>
<tr>
<td>6. No culture of providing assessment feedback but this can be developed and enhanced by blended learning</td>
</tr>
</tbody>
</table>

| 1. Institutional and national educational system and culture demoralise student’s learning experience. |
| 2. ‘Machine’ of doing assignments. |
| 3. Too many activities and no time allocated for blended learning. |
| 4. Educators lack of educational passion or ability - thus, “it not the use of technology which impresses me or otherwise, - it is the lecturer!” |

Table 5.26 The UM’s Academics and Student Experience
(Summarised from Section 5.4.3 and 5.4.4)

Interestingly, students required no innovative technologies to be used but emphasised on innovative pedagogical considerations and deeper educational insights in terms of physical space and logical space for learning.

<table>
<thead>
<tr>
<th>Wish List</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An all-in-one blended learning system, which is an upgrade version of what current VLE (e.g. Blackboard and Moodle) could offer.</td>
</tr>
<tr>
<td>2. Improved facilities such as personalised learning environment (PLE) with integrated ability.</td>
</tr>
</tbody>
</table>

| 1. Pedagogical perspective such as teach innovatively and that may keep educators up-to-date. |
| 2. Physical campus setting that promotes “thinking space” for better skills of appreciation and evaluation. |

Table 5.27 Wish List of the UM’s Academics and Students
(Summarised from Section 5.4.3.3 and 5.4.4)
5.5 Case Study IV: University of Tunku Abdul Rahman (UTAR)

5.5.1 Strategies and Practice

The UTAR is a private, new and teaching-led university governed by a ruling political party. One of the mission goals of UTAR is to “promote the use of ICT and IT-intensive learning through innovative courses and learning support systems” (UTAR, 2008). The Web-based Learning Environment (WEBLE), an in-house built VLE, is available in the university to fulfil this goal. All ICT infrastructures including the WEBLE are centralised, coordinated and maintained by the ICT support centre. WEBLE is supported via a help-line and f2f upon academics’ requests. One of the academics walked me through the WEBLE during the field visit:

“…we use a system called Web-based Learning Environment (wble.utar.edu.my). This is our e-learning site. I can show you now. It is built by UTAR ICT department. We can put all our notes up there, post the schedule, announcement and e-forum.” ~Academic B7

All academics are aware of the existence of WEBLE due to the encouragement from the management via emails, workshops and training sessions. Pedagogical training such as “refining lecturer’s skills” was provided for academic staff development. However, the former workshops were run by the ICT support centre in an instrumental manner whereas the latter training sessions were conducted by a professional educator. There was less relationship between the development of learning and teaching mediated by ICT. UTAR, similar to UM, has a complete ICT infrastructure without an institutional-wide commitment to e-learning or blended learning. WEBLE is an option but not ‘default’ learning and teaching environment for both academics and students. Academics may not fully utilise what has been provided by WEBLE and only use its basic facilities such as for uploading teaching materials. This phenomenon is similar to the finding at Leicester and Glamorgan, that only the basic facilities of VLE are used by academics such as uploading teaching materials and making announcements. Advanced functions such as online assessment and video conferencing are rarely used:

“I do use WEBLE but I only want to upload some teaching materials and notes to them. The old ways are people give me a folder and I create few subfolders such as lecture notes,
tutorial and project. Then I upload them at once, this would be very sufficient for me. This is what I need for the WEBLE.” ~Academic B9

“I heard that there is such function of online submission in WEBLE but I never use it.”
~Academic B7

5.5.2 Awareness and Perception of Blended Learning

5.5.2.1 Not Aware of Blended Learning and Perceive It Is the Same as e-Learning
Many research participants frequently use the term “e-learning” rather than blended learning, and they commonly perceive that e-learning is the system, WEBLE. They rarely embed blended learning into their teaching practice due to disciplinary practice. Some of them had never heard of blended learning: “I have never heard about the term blended learning”, says Academic B7. (However, the term “blended learning” is used in all discussions to show a consistency in the work).

5.5.2.2 Academics should not be the Developer but the Director of Blended Learning
UTAR academic perceived that a multidisciplinary team to support blended learning is as essential as a film director is supported by a team of crew. An interesting metaphor to elaborate this:

“Lecturers are just like a director. They need a team of people to support them. The director would possibly commit suicide if he needs to worry about the lighting, or need to be in charge of the film recording, editing and also the equipment and all the field work”
~Academic B8.

The academics raised an issue here: are academics in blended learning (e-learning in their term) playing a role as directors or developers? It would be good if an academic is the director with a team (including a developer) to back them up. Academics need a lot of time to design thoughtful blended learning experience: when they want to use what technology; when f2f instruction is best to suit students for a particular topic; when they want to blend tutorial with assignments or mini project; or when they want the field work or lab experiment. At the same time there is a critical consideration made by the academics: do they develop
those multimedia or educational applications themselves? This involves the personal ability and ICT competency and if not, who will help them? Can the university afford such support resources?

5.5.2.3. In Education, f2f Learning and Teaching is the Main Stream and Technology is only Considered as a Supplementary Tool.

F2f can never be replaced by the technology – they compensate each other and are not exclusive. Some conservative academics even refused to accept the view that higher education can happen virtually without a f2f campus. The following academics and students expressed such a view with firm convictions:

“To me, there is always the main stream and supplementary tool in education. And the main stream will never change, from the very beginning till the end, the things which are changed are the supplementary and tools. Regardless the technologies, or chalks or paper, the main stream would never change. Tools are the things that may be changed…E-learning can always be the supplementary tool but it will never become the main stream…f2f is better to be the main stream although I am in IT line. I believe we still need f2f. This is a matter of main and supplementary.” ~Academic B7

“I do not believe technology will replace f2f especially when come to final year in the degree or postgraduate level. Communication, debate and everyone come together are very effective learning. I think f2f and technology are compensating each other but definitely not excluding.” ~Academic B6

“It’s good it is supplemented with a bit of e-learning but I still prefer f2f.” ~Student D5

It could be argued that communication and debates, however, are not only carried out effectively in f2f setting. Written communication and debates, in the past centuries, were just as effective. All written dialogues and arguments could be revisited and reflected in further details without the time and space constraint. It also can be reproduced/reprinted unlimited times. Similarly, educational technology today provides such benefits. I understand the concept of “main stream and supplementary” expressed by UTAR academics, and the latter will never replace the former. Sometimes, however, the supplementary would “naturally” become part of the mainstream. For example, mobile phones used to be a supplementary tool for communication. It was optional to the household and only owned by the rich. Two decades later, nearly everyone has a mobile phone for easy communication – this is where the supplementary stream becomes part
of the mainstream. Of course there are arguments and limitations along the way but unavoidably a symbiotic relationship is formed (refer to Section 5.4.2.4).

**5.5.2.4. Community of Enquiry is Recognised**

This again supports Garrison and Vaughan’s perception discussed in Section 2.2.2.5:

“People are living in a community; we can’t be isolated from each other. We are a community entity…Personally I think this (blended learning) is depending on the different needs, different problems and different subjects. It can’t fit everything.” ~Academic B6

“It is easier for us, lecturers from IT to pick up, but not for the lecturers from Art and Social Science. They need more time for the learning curve.” ~Academic B7

However, disciplinary differences lead to different needs, problems and learning curve. I would suggest that the community of inquiry grouped by disciplines is a bonus (similar to Leicester’s practice).

**5.5.3 The Academic Experience**

**5.5.3.1 The Confirming Experience**

UTAR academics expressed their interest and positive experience towards WEBLE:

“The management encourages academic staff to use…Not compulsory but encouraging. They have conducted a few workshops…I believe most of the lecturers are using it now.” ~Academic B7

“Yes, WEBLE is very good.” ~Academic B6

“WEBLE is very convenient…I will look for the ICT people directly. Sometimes it’s difficult to communicate over the phone. It’s better to explain to them f2f and then they will help you on the spot.” ~Academic B4

Several confirming experiences related to blended learning are shared by the participants. These successful case studies are listed in the following:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Descriptive Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual aid</strong> enhanced learning exclusively</td>
<td>“Without the visual aid, the students find it hard to understand and visualise the content I taught.” ~Academic B4</td>
</tr>
</tbody>
</table>
| Blending **PowerPoint with** | “PowerPoint has many animation functions. In fact, it can help a lot in explanation. However, I still think that white board and marker are needed because most of the
### Table 5.28 UTAR-Examples of What and How Technology Enhanced Learning and Teaching

<table>
<thead>
<tr>
<th>Technology Type</th>
<th>Example</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Whiteboard</strong></td>
<td>In instruction enhanced elaboration and explanation</td>
<td>time we cannot teach only from the PowerPoint slides. If the students have further questions from the teaching materials, I need to use white board to explain and elaborate.” ~Academic B7</td>
</tr>
<tr>
<td><strong>Test bank or questions repository by topic area</strong></td>
<td>provide convenience for educators.</td>
<td>“I don't think there is any impressive educational technology except Test Bank… it is a software from the publisher and is quite convenient - we select which topic we want and then questions will be listed out by the topic and then we just select the questions. This is the best technology I have used for teaching.” ~Academic B10</td>
</tr>
<tr>
<td><strong>Computer simulation</strong></td>
<td>enhanced understanding on abstract concept.</td>
<td>“…the computer simulation would be very useful if we are teaching modeling.” ~Academic B8</td>
</tr>
<tr>
<td><strong>Web 2.0 technology such as blog and wiki</strong></td>
<td>facilitated social networking, inspire insights discussion and enhance reflective skill and critical thinking.</td>
<td>“...because they are expressing themselves. Some of them are socially constructed...although they do not like to mix around. I feel that that can help the language, reading or writing is good.” ~Academic B2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I am involved in some Journalism students' blog these days. They write quite good articles...Definitely the relationship with them would get closer through such communication. I think this helps as I could understand the students' comprehensive feeling, what they face daily, the things happens around them with their critical thought and their sharp opinions to the political issues. They are excellent in writing blog and articles....They are a very close and small group, about twenty plus...this is an outstanding and talented group. I think this is good compared with those common blog...it would be very beneficial to me and the students if a blog is something like the blog I mentioned. This kind of blog which can inspire and facilitate the participants to discuss about insight views on political issues, life agenda, evaluation and lesson from a movies and etc...Their articles are varied as they have different interest...If you are afraid of technology and reluctant to spend more time on it you will not participate in any blog.” ~Academic B4</td>
</tr>
</tbody>
</table>

**5.5.3.2 The Disconfirming Experiences**

From the research findings, I summarised a few major obstacles related to academic learning and teaching practice with WEBLE:

(1) Academics need to register with the centralised ICT centre in order to obtain an account to use WEBLE. As described by the following academic, this tedious process has erected a barrier to the academics for embedding WEBLE into their teaching:

Academic B4: “WEBLE is registered based on the subject. If that particular lecturer...
applies to use WEBLE then the students will have to register that subject with WEBLE.”

Interviewer:  “The lecturers have to “apply” to use the WEBLE?”
Academic B4: “Exactly. You have to apply and then they will create the account for that subject for you. It’s not by default. The student registration is also not by default. You have to tell ICT personnel how many students from which group are going to register, you have to give them the name list and then they will upload. Due to such tedious process, some of the lecturers prefer not to use that.”

(2) Some academics are unwilling to step out from the traditional instruction method due to time constraint or comfort zone. This is not surprising as everywhere is the same – people are reluctant to change.

“I heard of many educational technologies but sometimes if you want to try something new, you need time. Since I am already comfort and confident in what I am doing and using now, I’ll not spend more time to pick up new things.” ~Academic B9

“Basically I think WEBLE is too complicated and take lots of my time.” ~Academic B8

“I don’t use WEBLE…a person like me, I am interested in the traditional way.” ~Academic B2

(3) Disciplinary culture and ICT competency caused a digital divide between science-based and social science-based departments. From the findings, I found that the usage of WEBLE varied between science-based discipline and social-science-based discipline. The gap of variation is caused by the technological competency and the nature of the discipline.

“It is easier for us, lecturers from IT to pick up, but not for the lecturers from Art and Social Science. They need more time for the learning curve.” ~Academic B7

“Art streams such as psychology or elective units do not use WEBLE at all...Not even uploading notes...Only me and very few more lecturers use this. The students also don’t know what WEBLE is. I have to explain to them when I use WEBLE.” ~Academic B4

(4) The lack of support led academics to explore WEBLE independently without personalised support. Again, this is related to the above problem – many academics from a social science-based disciplines will be demotivated for further research and self-learning for WEBLE; similarly, academics with less ICT competence will not leave their traditional comfort zone:

“The basic functions for WEBLE are for the students to download the lecture notes or documents, read the announcement or join the forum. You can also set the test questions or a survey but you have to learn or research how to do that…the training provided is a kind of basic briefing.” ~Academic B4
“I am encouraged to use WEBLE…it’s not compulsory…they send us the information from
time to time…I think we didn’t get much support.” ~Academic B2

(5) Since WEBLE is not widely used by all academics and it has yet to be part of
an institutional culture, students do not visit WEBLE frequently or read the
announcement posted. Such infrequent students’ visits and responses
necessitate academics to perform double tasks and, annoyingly, that may make
both students and educators use WEBLE less:

“The students will not notice if I put an announcement online. I have to make an
announcement in the class because the students do not visit the WEBLE very often. Some
even ask their friends to download and print out for them. I found that this happens to many
students here.” ~Academic B9

Other than issues with WEBLE, a few disconfirming experiences emphasised by
academics: (1) One of the major frustrations mentioned by participants is that
lecturers in UTAR need to setup the ICT hardware and equipment prior to the
class. Lecturers have to spend at least 5-10 minutes to set up the LCD and
laptop before the lectures. This is due to the fact that the permanent campus is
yet to be developed and has insufficient hardware. Annoyingly, this is not the job
for an academic:

“I need more time to set up everything before the class started…it would cause a very
headache if there is any problem with the LCD or any fault with the wire, or if there is no
electricity. We can’t use all these technologies if there is some technical problems occur. I
faced similar problems before. There was some problems with the laptop and LCD, I just
forgot about all these and taught them by discussion and by speech. ~Academic B4

“In UTAR, our problem is we have no fixed equipment in all classrooms. All these would
frustrate me as a lecturer.” ~Academic B6

(2) There is a mis-use of the forum and blog for gossiping, plagiarism and
seeking model answers for assignments and tutorial questions. Students use
web 2.0 technology for information exchange and that frustrates the academic:

"I found that many students misused the forum…very often they will put some
irresponsible messages on there…For example they will say you do not teach well in the
class, which lecturer is more beautiful and etc. Originally the forum is for them to exchange
ideas and communication. So I think this is not a good platform. Another example is the
students will post the assignment topic or tutorial questions and seek for the model
answers. It is good if you are only seeking for help or suggestion but many times they just
want the answers… They didn't learn at all! I do not object to people downloading program
codes but some students they only copy and paste without thinking and learning.”
~Academic B9
(4) Accessibility problem and expectation versus reality. Network failure is one of the frustrations, especially as it is widely expected to be available at all the time:

"...you need to teach something tomorrow and you want to upload now but you have a problem with Internet access, this would be a big frustration to me...I think when we have technologies to help us everyday, and we need them everyday but suddenly it doesn't work as we expected, this is a big frustration." ~Academic B7

"Sometimes they change the password and install the new system without our knowledge. I couldn’t log on to the computer in the class. I made many phone calls and realised they had changed the system. More than half an hour was spent on this!" ~Academic B6

Nevertheless, well prepared techniques may overcome the problem caused by technological failures in classroom. It could be argued, however, that it is a waste of time to make double preparation - for both online and offline. Academics could most probably choose the traditional way and the most stable route.

"I will use white board and marker pen instead if it is not working in the class. If my preparation was sufficient, I can still achieve the teaching and learning although the plan was interrupted. I think the preparation in prior is very important. We can still deliver as prepared although there are some set back with the technologies failures." ~Academic B7

(5) Again, the issues of educational technology which may not fit into different disciplinary needs is noticed by UTAR academics. Compared with Leicester, this is a similar disciplinary issue raised by academics concerning problems with mathematic symbols and format:

"We normally use Microsoft Word and personally I didn’t use PowerPoint. I only use Microsoft Word. It’s better to use white board to teach mathematics. We seldom use a computer but white board to explain mathematical issues.” ~Academic B5

"Mathematic equation does not show as it should...it is very inconvenient to use PowerPoint or computer to teach a mathematics subject...it is very impractical if you insist to use PowerPoint. The first problem is to type in all the algorithm and notes to the slides. The second problem is too tiring if you entering all the steps on the slides. Too simplified and the students will not understand you enter the steps in brief. So, the best way is the whiteboard!” ~Academic B8

Another academic who teaches English prefers to use traditional methods and perceived educational technology as not necessary in this subject:

“What happens is I am teaching English so I haven’t really made use of any technology, software or whatever because whatever we need is already in the books and the things we do. It’s all deals with stuff like grammar, tenses etc. So, I still prefer the traditional methods, the f2f, plus I like the interactions with people...So far I print a lot of hand outs for the students so I don’t really need PowerPoint. And the OHP is enough for the images....people are now all using PowerPoint but I don’t want to loose the interactions with the students. I still prefer the traditional method.” ~Academic B2
I agree with the constraint of educational technology in mathematics subjects. It could be argued that, Sharma and Barney (2007) have vast and positive experience and recommendation for blended Learning in and beyond the language classroom. Disciplinary needs may be an issue but are not exclusively a constraint. It is sometimes depends on the individual educator’s practice, preference and habit.

5.5.3.3 Wish List Related to Blended Learning
The following show the “wish list” of ideas suggested by UTAR academics related to blended learning:

(1) An online repository is one of the wish list items for UTAR academics. A template for lecture notes preparation, a database for teaching materials and a test bank provide an organised resources for learning and teaching:

“The template of preparing lecture note, like test bank…which can help me to select some topics I want to build the framework to prepare my lecture note.” ~Academic B10

“To me, the database for slides, lecture notes is important. The database for teaching materials is important. I can re-organise and edit those slides that were prepared by the previous lecturer. If there is such an expert system, I would be very much curious how the previous lecturer or the senior lecturer delivered the course.” ~Academic B7

(2) An academic wishes that the students would be able to learn and think critically and independently with the aid of educational technology:

“I wish to see the students to think critically and to differentiate the black and white aided by active learning and e-learning…the students have to learn and think independently.” ~Academic B8

(3) “Smart pen” and interactive whiteboard for academics from Mathematics department. This would compensate the limitations of the current VLE.

“What I need is a very simple smart pen. This pen acts as a mouse to input the thing I wrote to the computer. For example I can keep lecturing while I was writing, and whatever I wrote will be projected to the screen. The students can see everything I have written and I can save them all and post to the website for them to reference later. The problem with mathematics is equation. We often have the wrong mathematical symbol on the computer screen. This is a very simple. The problem is we are not getting used to drawing and writing mathematics equation with a mouse. The more important thing is portable. This pen can be used by any computer, not only that computer with pre installed driver and software. I want it to be convenient.” ~Academic B8
(4) Console management – this is very similar to the concept of a Personal Learning Environment (PLE).

“I have seen a Console Management in the business world. They will consolidate multiple resources. Perhaps it is not up to the critical circumstances that we need such software as we have no financial critical or business critical at national level. However, I have seen this software.” ~Academic B6

(5) Online Assessment will benefit the tedious marking processes for certain subject such as programming. Two academics expressed their views:

“I prefer the online assignment and online assessment. I think this is very convenient. Online test that are randomly generated and with the time limit for students.” ~Academic B9

“For programming, we may need some tools to help us to mark.” ~Academic B10

(6) Media-rich search engine and repository, and web 2.0 technologies that are able to make the learning convenient, interesting and enjoyable:

“The system that I long for is a system that can collect and play back many useful documentaries. I don’t like text-based search engine because the students nowadays do not like reading. They would prefer to watch movies…the teaching materials can be more interactive and multimedia. For example I am lecturing political science, there are some movies are about the wars. We can upload the movie and be able to cut and paste for the students. This will be better for them rather than reading…They need to look for the dictionary a lot as they are less competent in English. Movies are completely different as they have visual language. So they would prefer to watch.” ~Academic B4

(7) A VLE similar to WEBLE developed in UTAR. This academic must be impressed by WEBLE:

“Just like the WEBLE implemented in UTAR.” ~Academic B8

5.5.4 The Student Experience

In students’ eyes, UTAR lecturers are generally perceived to be good but the management has much room to improve. WEBLE provides a promising learning experience for UTAR students. Some of them expressed such confirming experience:

“To me, it is very convenient.” ~Student B3

“WEBLE is impressive - where we submit our assignments.” ~Student B2

However, the impact of educational technology varied by disciplines. Consider the below conversation:

Interviewer: “Is there any educational technology that has helped you a lot in the past two or three years learning experience in UTar?”
Student B3: “Yes, the WEBLE, where we submit our assignments.”
Interviewer: “The online Web Learning Environment.”
Student B2: “This is the one.”
Interviewer: “Why?”
Student B3: “…it is very convenient.”
Student B1: “I never use this before.”
Student B2 & B3: “What? You never use this before? It has all the lecturer notes and tutorial questions.”
Student B1: “We, students from XXX studies (a social-science based discipline) are slightly different. In our class, we have a group email account. The lecturer will email the lecture materials to all of us and then we print our by our own.”
Student B2 & B3: “Never use WEBLE?”
Student B1: “No, different way of doing it.”

Student B2 and student B3 came from science-based discipline. They felt surprise when another student from a social science-based discipline, student B1, had never used the university VLE, the WEBLE. On the other hand, student B2 read the forums set up by lecturers as a “lurker” without contributing messages. Contrastingly student B1 writes blogs whereas student B2 and B3 have never heard about blogs:

Interviewer: “What do you think about WEBLE? ”
Student B2: “Convenient. It seems to have a forum in it. “
Interviewer: “Did you use it? ”
Student B2: “No but I read others’ writing on the forum.”
All: (laugh....)
Interviewer: “Have you heard about e-community, wiki and blogs?”
Student B1: “Yes, I write a blog.”
Student B2 & B3: “No, never heard of.”
Interviewer: “Some of the lecturers in the UK use blogs to communicate with the students or ask the students to reflect on their learning and life. What do you think about this idea? “
Student B1: “I think this is a good idea as this is a two way communication. The students will feel much more comfortable.”

Interestingly, a phenomenon revealed here is that science-based students used educational technology in a more instrumental manner, such as downloading learning materials or reading learning materials and discussion online, compared with social science-based students. The latter may not use educational technology in the same way. Blog writing and forum discussion, which involve discussion and reflection, appear to be more interesting and of value to them. Some lecturers in UTAR established a forum related to the subject area and tried to help students’ doubts and queries through the forum discussion.
“The lecturers’ opinions are in their forum, so it’s very interesting...the students can write anything, including your questions related to the subject. The lecturers would respond to your questions.” ~ Student B2

This seems to be reasonably helpful and interesting to the student experience. Online assessment is another educational technology that they used in learning and teaching practice which is helpful in terms of instant feedback:

“We already have the online assessment system, the lecturer will feedback immediately for what we need to improve. We will take the online exam at home and everyone has different set of questions. We will email to the lecturers and they will respond back very soon.” ~ Student B3

All student participants expressed that they have no frustrating experiences with educational technology in learning and teaching. Also, they do not specify a particular wish list from the technological perspective but commented on the poor management of the university on certain issues such as finance and loans. I did not include in the discussion because it is beyond the research focus.

5.5.5 The Summary of Practice and Experience in Case Study IV

The concept of blended learning is yet to be developed in UTAR. Some academics have practiced blended learning, embedding WEBLE with f2f teaching, without recognising that is blended learning. The tables below summarise the blended learning practice and experience in UTAR:

<table>
<thead>
<tr>
<th></th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blended Learning model / e-Learning Strategy and Practice</strong> (refer to Section 5.5.1)</td>
<td>- No institutional-wide commitment or strategy to blended learning.</td>
</tr>
<tr>
<td></td>
<td>- Academics are encouraged to use WEBLE from the management via emails and training.</td>
</tr>
<tr>
<td></td>
<td>- WEBLE trainings were provided by ICT Support Centre instrumentally whereas pedagogy workshops were conducted for academics staff development – no relationship between learning and teaching with ICT.</td>
</tr>
<tr>
<td><strong>VLE Implemented Across Institution</strong></td>
<td>- WEBLE, an in-house built web-based Learning Environment.</td>
</tr>
<tr>
<td></td>
<td>- Only basic functions of WEBLE are used.</td>
</tr>
<tr>
<td><strong>Academic Awareness and Perceptions</strong> (refer to Section 5.5.2)</td>
<td>- Not aware of blended learning and perceive blended learning and e-learning as synonymous.</td>
</tr>
<tr>
<td></td>
<td>- Academic should not be the developer but director of blended learning supported by a crew team.</td>
</tr>
<tr>
<td></td>
<td>- In education, f2f learning and teaching is the mainstream and technology is only considered as a supplementary tool.</td>
</tr>
<tr>
<td></td>
<td>- Community of enquiry is recognised.</td>
</tr>
</tbody>
</table>

Table 5.28 The UTAR’s Institutional Practice and Challenges

(Summarised from Section 5.5.1 and 5.5.2)
### The Academic experience
(refer to Section 5.5.3)

1. Positive experience with WEBLE.
2. Blending PowerPoint with Whiteboard in instruction enhance elaboration and explanation.
4. Test bank or questions repository by topic area provide convenience for educators.
5. Computer simulation enhances understanding on abstract concept.
6. Web 2.0 technology such as blog and wiki facilitate social networking, inspire insights discussion and enhance reflective skill and critical thinking.

### The Student experience
(refer to Section 5.5.4)

1. Lecturers are generally good.
2. Experience with educational technology such as WEBLE, blog and forum varied by disciplines - Different disciplines use educational technology in different ways.
3. Some lecturers in UTAR established a forum related to the subject area and tried to help students’ doubts and queries through the forum discussion.

### Disconfirming Experience

1. **Problem with WEBLE:**
   - The tedious WEBLE registering process may be a barrier to the academics for embedding WEBLE into their teaching.
   - Time constraint
   - Prefer traditional way and not willing to step out from comfort zone.
   - Disciplinary culture and ICT competency caused a digital divide between science-based and social science-based department.
   - The lack of support caused academics need to explore WEBLE independently – demotivate social science-based academics.
   - Students do not visit WEBLE frequently or rarely read the announcement posted.

2. Lecturers in UTAR need to setup the ICT hardware and equipment prior to the class.
3. Seeking model answers for assignment and tutorials questions via online forum.
4. Mis-use the forum and blog for gossiping,
5. Problem with accessibility - expectation versus reality.
6. Educational technology may not fit into different disciplinary needs - Does not support Maths symbols.

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**Table 5.29 The UTAR’s Academic and Student Experience**
(Summarised from Section 5.5.3 and 5.5.4)
Chapter 5: The Blended Learning Experience in 4 HEIs

PART II: THE RESEARCH DESIGN AND INSTITUTIONAL INVESTIGATION

The learning and teaching experience with educational technology obviously varied between science-based and social science-based disciplines in UTAR (refer to section 5.5.3.2 and 5.5.4). Instrumental support from the centralised ICT Centre is insufficient to promote blended learning across institution. An inter-disciplinary support is needed to deal with the disciplinary requirements. These disciplinary issues will be further discussed in the next chapter.

<table>
<thead>
<tr>
<th>Wish List</th>
<th>Academics (refer to Section 5.5.3.3)</th>
<th>Students (refer to Section 5.5.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Template, database for teaching materials and test bank.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Students be able to learning and think critically and independently.</td>
<td></td>
<td>No particular wish list from technological perspective but commented about the poor management of the university on certain issues such as finance and loan.</td>
</tr>
<tr>
<td>3. “Smart pen” and interactive whiteboard for academics from Mathematics department.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Console management – PLE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Online Assessment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Media-rich search engine and repository, and web 2.0 technologies that are able to make the learning convenient, interesting and enjoyable.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.30 Wish List of the UTAR’s Academics and Students (Summarised from Section 5.5.3.3 and 5.5.4)
Chapter 6

The Priming of the Blend

This chapter compares and contrasts the blended learning strategies, awareness and experiences of all four case studies. The summary tables of each theme present the cross case comparison where the columns are case studies and the rows are related attributes and findings. Disciplinary issues were analysed based on the findings from all case studies and as a result, a blended learning model is proposed.

6.1 Cross-case Reflection

6.1.1 The Disruption: The Blended Learning Strategy and Awareness

Table 6.1 summarises the cross-case comparison for blended learning strategy and practice in four case studies discussed in Chapter 5.

<table>
<thead>
<tr>
<th></th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blended Learning</td>
<td>- Salmon’s 4 quadrants in the Media Zoo</td>
<td>Jones’ Continuum of blended learning</td>
<td>- No institutional-wide commitment but there is a blended learning</td>
<td>- No institutional-wide commitment or strategy</td>
</tr>
<tr>
<td>model / e-Learning</td>
<td>(separated from the institutional learning and teaching strategy for traditional f2f setting)</td>
<td>(embedded in Glamorgan Learning, Teaching and Assessment Strategy)</td>
<td>strategy newly established by ADeC</td>
<td></td>
</tr>
<tr>
<td>Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VLE</td>
<td>Blackboard</td>
<td>- UM Elearning</td>
<td>ADeC</td>
<td>WEBLE</td>
</tr>
<tr>
<td>Centralised support</td>
<td>Beyond Distance Research Alliance</td>
<td>CELT (celt.glam.ac.uk)</td>
<td>PTM (ict.um.edu.my)</td>
<td>ICT centre</td>
</tr>
<tr>
<td>unit</td>
<td>(<a href="http://www.le.ac.uk/beyonddistance">www.le.ac.uk/beyonddistance</a>)</td>
<td></td>
<td>ADeC (adec.um.edu.my)</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.1 Cross Case Comparison - Strategy (Based on Table 5.15, 5.21, 5.25 and 5.28)

There are two VLEs implemented in the UM and the other three case studies (UoG, UTAR and UoL) only have one VLE per institution. Choices VLEs cause confusion to the academics and students as to which VLE to use; or which course is on which VLE. UoL has two independent learning and teaching strategies for f2f setting and e-learning. In UoG, there is only one Learning, Teaching and Assessment Strategy that has adopted blended learning as the key agent for change. There are reasons why policymakers of the HEIs
separated/combined the learning and teaching strategy for f2f setting and e-
learning. Two separate strategies appear that treat e-learning as a separate
entity from traditional f2f instruction; whereas one strategy leads to the
impression that both approaches are equally important and towards the same
direction. Blended learning is part of learning and teaching practice and I would
argue that it ought to be embedded in one institutional strategy.

<table>
<thead>
<tr>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasises the term “e-learning” instead of blended learning.</td>
<td>Clear awareness</td>
<td>Lack of awareness</td>
<td>Perceive blended learning and e-learning are as synonymous</td>
</tr>
<tr>
<td>Confusion over the definition of blended learning</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.2 Cross Case Comparison – The Blended Learning Awareness
(Based on Table 5.15, 5.21, 5.25 and 5.28)

Table 6.2 summarises the awareness of academic interviewees related to
blended learning. Most of the research interviewees from UM and UTAR
perceive blended learning and e-learning as synonymous; many participants
from UoL are confused by the blurred definition of blended learning and they
would rather use e-learning instead; whereas all participants in UoG are aware of
the term “blended learning” due to the clear institutional commitment such as the
VC’s vision and Blended Learning Champions in each faculty as an endorsement.

Reflection 1: I would assert that one blended learning strategy and one VLE per
institution is essential to prevent confusion for academics and students. It is also
strategic to provide institutional-wide commitment towards the same practice and
direction.

Reflection 2: Many research participants (except those from UoG) were confused
over the term blended learning. This give evidence to the criticism of blended
learning such as the term lacks clarity (refer to Section 2.2.1). A blended learning
model is needed in this sense.

Comparatively, Salmon’s 4 quadrants of the Media Zoo appear to be more
interesting and have more research elements than Jones’ Continuum. There is a
critical comment raised by an academic from UoL related to the Continuum:
"I do not believe in stage-like embedding process such as today you are trying to put all your notes on the PowerPoint. Tomorrow you can use blackboard for announcement and a little discussion. The day after probably you would improve to heavily e-learning type of instruction method and finally the whole module is conducted online. This is not the way we are working here.” ~Academic D9

On the other hand, the boundary of each quadrant can be confusing. There is neither a clear line nor standard to differentiate “existing technology” and “new technology”. For example, is it new technology in the science and research lab? Or new technology used in the commercial world? Or technology that is new to the HE context? Moreover, quadrant categorisation may be stereotypic and market-technological-driven; whereas Jones’ Continuum of Blended Learning provides a clearer and simpler model for institutional-wide adoption. It shows the different way of doing things in two UK HEIs – one focuses on the research of technology enhanced learning and the other one emphasises on institutional adoption of blended learning. I would argue that both aspects are equally important in an institutional strategy.

Reflection 3: The finding shows that Institutional strategy and practice should highlight research into technology enhanced learning to inform institutional adoption or vice versa. It ought to be clear and simple, but flexible for institutional-wide adoption.

All HEIs have established ICT support units. UoL, UoG and UM have a further multi-disciplinary centralised department to support blended learning both technically and pedagogically; whereas UTAR has only an ICT support unit to support the VLE. In this sense, blended learning would be easily “watered down” to a technological-focus or a mere alternative platform other than f2f classroom without pedagogical considerations.

Reflection 4: The multi- or interdisciplinary centralised support in UoL and UoG provide evidence to support that it is necessary to provide both technical and pedagogical support at the same weight.

UM and UTAR have no institutional-wide commitment to any blended learning strategy whereas UoL and UoG have clear institutional strategies. Nevertheless,
research participants from all institutions experienced technology enhanced learning and teaching. Consider Table 6.3, there is a list of technologies that enhanced the research participants’ educational experience in institutions whether or not there is a blended learning strategy.

<table>
<thead>
<tr>
<th>Technologies that enhanced learning and teaching experience</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLE, digital library, web 2.0, video conference, email, podcasting, tablet PC, video and online journal.</td>
<td>VLE, PowerPoint, blog, discussion board, online assessment tool (QMP), Flash, handheld voting system, SPSS.</td>
<td>Digital library, video conference, simulator, chat room, mobile coaching, google, lecturers’ personal website.</td>
<td>VLE, PowerPoint, simulator, web 2.0 (blog and wiki), test bank.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Highlight of good practice</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Emphasise on funded research projects and make them exemplars.</td>
<td>- Blended learning project bids proposed by academics.</td>
<td>The blended learning practice are up to the faculty or individual academic interest and initiative.</td>
<td></td>
</tr>
<tr>
<td>- ‘Carpe Diem’: disciplinary and pedagogy tailored workshop in group.</td>
<td>- Monthly CELT seminars and yearly road show.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The introduction of four Excellent Awards for academic staff related to blended learning.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.3 Cross Case Comparison - Technologies and Highlight of Practice

Reflection 5: Technology has impacted on academics and students in all HEIs even before any blended learning policy or strategy has been made. The academics’ or students’ confirming experiences can be a bottom-up approach for change policy.

Another exemplar is the UoL’s “Carpe Diem” and external funded research projects - they have positively empowered academics to embed blended learning in discipline-tailored manner and in groups. UoL has successfully won some external research funding related to learning innovation. This inevitably underlines the external recognition as well as the motivation to the centralised team and academics. Comparatively, UoG is lacking in funded and collaborative research. In summary:

Reflection 6: There is no blanket approach for a blended learning strategy – disciplinary or individual tailored support; institutional policy or individual interest and initiatives; external funded research or internal projects are helpful.

It is no surprise that funded research project can effectively be the motivation for blended learning projects and provide exemplars for peers. There are Teaching
Excellence Awards implemented in UM but is without a direct relationship with blended learning. Interestingly, UoG’s newly introduced Excellence Awards relate to blended learning – to complement a missing link between teaching innovations and academic recognition. There is a formal reward system across the faculties which would directly motivate blended learning practice to be widely embedded.

Reflection 7: It is a good practice for the top management to recognise teaching excellence as well as research excellence in academia to promote blended learning.

6.1.2 The Blended Learning Experience

Based on the qualitative data discussed in Chapter 5, the table below consolidates all confirming experiences of blended learning (BL):

<table>
<thead>
<tr>
<th>Confirming Experience</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL enabled learning accessibility, flexibility and organisation (e.g. BL enabled repeatable learning for lectures)</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>BL engaged dialogue and interaction</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>BL enhanced motivation, satisfaction and enjoyment</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>BL enhanced visualisation and teaching of complex or abstract knowledge</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>BL enhanced high order thinking, critical and reflective skills</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>BL enhanced independent learning</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>BL enhanced personalised learning</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>BL enhanced the recording history of students’ development</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td></td>
</tr>
<tr>
<td>BL enhanced the design and preparation of learning materials</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td></td>
</tr>
<tr>
<td>BL enhanced research experience</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td></td>
</tr>
<tr>
<td>BL enhanced assessment for soft skills</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td></td>
</tr>
<tr>
<td>BL enhanced formative assessment</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td></td>
</tr>
<tr>
<td>BL transformed educators’ attitude and values (or epistemology)</td>
<td>☀</td>
<td>☀</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:

☀ = both academic(s) and student(s) had that experience

😊 = only student(s) had that experience

✓ = only academic(s) had that experience

Table 6.4 Cross-case Comparison for the Confirming Experience
(Based on Table 5.16, 5.22, 5.26, 5.29 and Appendix E)

According to the research participants’ voices, blended learning did enable and enhance learning of the academic and the student experience in all four case studies. In addition, two evidences from UoG and UM indicate that one’s attitude and values in learning and teaching can be transformed by blended learning.
Consider the two cases in UM and UoG, **technology alone does not transform one’s attitude. It is the act of revisiting and redesigning teaching practice, facilitated in the process of embedding technology into f2f instruction, that transforms one’s professional ethos and values in learning and teaching.** Interestingly, UM has no clear blended learning direction and environment. This contrasts with UoG. Academics’ personal educational values and individual passion for enhancing the learning and teaching quality, alternatively, lead them to blended learning (refer to Section 5.4.2.5 and Section 6.2)

**Reflection 8:** Blended learning transformed educators’ attitudes and values by facilitating educators during the process of revisiting and rethinking their professional ethos, the teaching practice where necessary (or vice-versa: the rethinking of professional ethos and teaching practice facilitated the awareness and practice of blended learning).

An interesting comparative finding between Table 6.4 and 6.5 is that both academic and student confirming experiences are similar. However, students may not encounter the same disconfirming experience as academics. The student cohort in this research may not be quantitatively significant; nevertheless, their qualitative experience demonstrates that there is a potential gap between academic and student disconfirming experience.

**Reflection 9:** More research on the student disconfirming experience is needed. The strength of a chain is the strength of the weakest link. The strength of blended learning will be further enhanced by addressing the “weakest link” in a constructive and pedagogical-focused approach with sound educational theories.

Based on the research participants’ voices, Table 6.5 consolidates all disconfirming experience of blended learning. Accessibility, time constraint and disciplinary issues are the top three disconfirming experiences encountered by most of the case studies. The first two problems are old issues discussed by researchers such as Salmon (2000, 2004) and Brabazon (2002, 2007); whereas disciplinary discourse is one of the investigated areas in this research.
Disciplinary differences may lead to different needs, perceptions, problems and learning curve related to blended learning. Most of the research participants in UoG, UoL and UTAR recognise such disciplinary gaps but only UoL has long introduced the practical and organised disciplinary-tailored workshop and support.

<table>
<thead>
<tr>
<th>Disconfirming Experience</th>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem with accessibility</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Communicative, educational and technical issues caused by lack of mutual understanding of technical competence and pedagogical requirement between educationists and support team (technologists).</td>
<td>😞</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Time constraints</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Disciplinary variation would cause contrasting experience in designing or using a particular educational technology</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Technological variation / expectation versus reality</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Resistant to blanket approach - ONE type of technology or one way of doing things</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Webpage visit rates and duration is an indicator but do not equate to “learning”.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Technology in HE is “plumper” than in industry.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Time was spent on technical problem solving rather than curriculum.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Difficult to keep up-to-date which the best and suitable educational technology</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Age constraint</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Prefer traditional way and not willing to step out from comfort zone</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>The rigidity of the Blackboard Template</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Mis-use of the forums and blogs</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>No synchronised and immediate response</td>
<td>😞</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Information overflow</td>
<td>😞</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Redundancy and confusion for such innovative implementation</td>
<td>😞</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Students would normally separate “life” and “studying” – “get out from MySpace”</td>
<td>😞</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Educators lack of educational ability or pedagogical consideration - “It is the lecturer that does not impress me, not the technology!”</td>
<td>😞</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

**Legend:**

- ✔️ = both academic(s) and student(s) had that experience
- 😞 = only student(s) had that experience
- ✔️ = only academic(s) had that experience

Table 6.5 Cross-case Comparison for the Disconfirming Experience related to BL
(Based on Table 5.16, 5.22, 5.26 and 5.29)

Participants’ voices from UTAR reveal such disciplinary culture and ICT competency caused a digital divide between science-based and social science-based departments. Such a finding discloses a disciplinary gap for blended learning. Participants from UoG further assert that the communication barriers between educationists and technologists are one of the biggest disconfirming experiences. UoG’s newly introduced template across all faculties for
standardisation and convenience received some critical responses. Disciplinary requirements and differences, however, must be considered in this respect:

"I think the Faculty of Advance Technology works almost the same in that sense. I can see it is much easier to adopt the template...but take the Faculty of Humanities, it's psychology, criminology, you know, public policy, education...they are so different, you know that it's much more difficult if you put people into packages and they don't really feel comfortable with." ~ Academic C7

The further exposition for this theme shows that it is not merely rhetorical expressions but a real indication for a suggestive line of further thought about disciplinary and individual differences in blended learning. This is revealed as follows:

"I think blended learning is dependant on the different needs, different problems and different subjects. It can't fit everything." ~ Academic B6

"I just think that different people do respond in different ways...have different learning...I mean some may demand more guidance than others for example, some need a tremendous amount of scaffolding and support." ~ Academic C2

"I always speak from the perspective of XXX School because a different faculty is going to be different..." ~ Academic C1

"Students from FCT (Faculty of Communication and Technology) always deal with absolute answers, so they would normally request me to give them an absolute answer but there is no such model answer in my subject...there is no absolute or exact answers in the Art stream. It's all depending on your critical thinking. The way you think would lead you to decide certain level of your own answer....So I know this is a very different group of students based on their discipline." ~ Academic B4

Thus, I would like to underline an important issue in this sense: disciplinary differences and epistemological conflict is the major issue yet to be considered by blended learning researchers. The following section critically analyses and discusses the cross-disciplinary differences for blended learning discourse.

Reflection 10: Above all, disciplinary issues encountered by research participants such as the lack of mutual understanding and communication between educators and technologists, or disciplinary variations that cause contrasting experience, are the major challenge for blended learning.
6.2 Cross-disciplinary Comparison of the Blended Learning Experience

It has been an assumption, from both myself and colleagues, and from the preliminary discussions in Section 5.3.2.4, that academics from science-based, especially ICT-related discipline such as computing and engineering, appear to have advantages in embedding technology in learning and teaching practice due to their ICT competency by the very nature of their discipline. They could easily adopt blended learning. The following conversation describes this analogy:

Interviewer: Is there any educational technology that frustrates you the most?
Academic D6: I have no frustration at all.

Interviewer: You must be good in IT I think...because when I asked the same question to the educationist or lecturers from social science, they would have a lot of frustration.

Academic D6: Yes, could be a bit of technical stuff. I work a lot with X, and so when we were developing this little thing on Backboard...I have done a lot of fitting around Blackboard, so I sort of know how it works. Therefore there is no hindrance at all...I was quite impressed by Blackboard.

Academic D6 is a technologist. In contrast, an educationist, Academic C3, states that “...to be impressed with Blackboard one has to be ignorant of pedagogy!” That again provide evidence to the debates between different disciplines (refer to Section 3.1.2.1). A social science academic, explains his attitude towards blended learning in a realistic manner - although he understood the benefits of embedding technology into learning and teaching, but he lacks ICT competency and this is an issue for his further exploitation of technology:

“I am impressed increasingly by the possibilities that the interactive electronic media can provide in learning and teaching...but how well I can exploit that is another matter.”
~ Academic D5

Here the degree of blended learning adoption, in some respects, is influenced by its disciplinary nature. Academics from a social science discipline appear to experience more disconfirming experiences than academics from science disciplines because the educational technology is “far beyond their control, knowledge and practical skill”. Academics from science disciplines, especially engineers do not think “in control” is an issue.
Another example of disciplinary differences is from two contrasting responses towards PowerPoint. Academic A8 is an educator from a science-based discipline who is solely dependent on PowerPoint:

“I cannot imagine if I have to teach without PowerPoint. It would be much more difficult.”
~ Academic A8

Conversely, there is an academic from a social science-based discipline who perceives that she does not need PowerPoint for teaching at all:

“I print lots of hand-outs for the students so I don’t really need PowerPoint…many people are now all using PowerPoint but I don’t want to lose the interactions with the students. I still prefer the traditional method.” ~ Academic B2

Students from different discipline also had contrasting perceptions based on their individual learning experience:

“My opinion is that those lecturers who use PowerPoint normally do not teach well. Indeed, I think those who are well-spoken need no PowerPoint and will not use PowerPoint. When they use PowerPoint they would rely on it and this give me an impression that that lecturer has less confidence in teaching.” ~ Student A3

“I think PowerPoint, which is something new from school. You can go through it after the lecture. That’s been helpful.” ~Student D2

All the above voices clearly give evidence that “contrasting blended learning experiences is due to disciplinary differences”. Consider Table 6.6. It compares the educational technologies that are used by the academic interviewees with confirming experiences (according to the disciplinary nature).

<table>
<thead>
<tr>
<th>Science-based Academics:</th>
<th>Social Science-based Academics</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLE (e.g. Blackboard), PowerPoint; Video; Email; Video Conference (Used by both disciplines:)</td>
<td></td>
</tr>
<tr>
<td>Podcasting – engineering and medical</td>
<td>Podcasting – foreign language</td>
</tr>
<tr>
<td>Simulation – programming and networking</td>
<td>Mobile coaching – education and language</td>
</tr>
<tr>
<td>Tablet PC – mathematics and economics</td>
<td>Flash</td>
</tr>
<tr>
<td>Chatroom (i.e. skype)</td>
<td>Handheld voting system</td>
</tr>
<tr>
<td>Test bank</td>
<td>Blog</td>
</tr>
<tr>
<td></td>
<td>Wiki</td>
</tr>
<tr>
<td></td>
<td>Online discussion board</td>
</tr>
</tbody>
</table>

Table 6.6 List of Educational Technology used by Academic Research Participants
(Refer to Table 5.14, 5.20, 5.24 and 5.28 for detailed usage)
All academic interviewees recognise the importance of face-to-face instruction rather than complete e-learning but at the same time, most of them acknowledge the benefit of integrating educational technology, for more or for less, with the face-to-face instruction. The difference between the blended learning experiences of two disciplinary natures, both science and social science, inevitably confronts with their ICT and educational competency. However, consider Table 6.6. It appears that academics from a social science-based discipline embed slightly more variety of educational technology compared with science academics in their teaching practice. The products of technology are expressions of individual and cultural values of their users (Luppicini, 2005). Those educational technologies used by science academics are tools that help in instruction and “preaching”; whereas social-science academics make use of educational technologies in a wider and social context - to facilitate students’ engagement and reflections. Interestingly, some of them (mainly social-science-based academics) further recognise the deeper value of blended learning in terms of social networking, recording students’ development history, transforming teaching practice and epistemology as reported in Chapter 5. Thus, the value of technology reflects the ethos of those who use it. In this case, social science-based academics appear to embrace a potentially wider educational ethos than science-based academics (refer to Table 6.6).

There are cases where science-based academics recognise the complexity of technology and experienced frustrations due to “technical problem”:

“...although we are in computing field but many applications are getting complicated. Although their usefulness are increased, for example software A is very complicated. Its function that we use is probably only 15% out of what it could provide. We do not expose to the rest of the functions. When we know there are such facilities and we do not know how to use due to the learning curve, we would be frustrated.” ~ Academic A5

“Of course when you come to certain multimedia tools, slides or presentation...have to wait for the thing to run, the connection, the run time...We use Internet simulation tools... the simulation was failed. I was quite frustrated and back to the normal lecture.” ~ Academic B6

Both A5 and B6 are very experienced academics from a science-based discipline and they deal with technology everyday yet there were times when they felt
frustrated about technology - it is “far beyond the control knowledge and practical skill”. Consequently, this resulted in them quitting blended learning and returning to a “normal lecture” without using that particular technology. Disciplinary nature has influenced the practice of blended learning. Although it makes more sense for science-based academics to practice blended learning (the disciplinary “natural”). Social science-based academics, however, also recognise the benefits of blended learning and practice it once they have experienced it. Two academics from a social science discipline shed light on this:

“...when you get your hands on the digital one such as computer, I think you can’t go back anymore. I mean you just have to use it...it is a so effective! I think I can do so many things with technology and with my students!” ~ Academic A3

“I think this thing make life easier, more flexible and more accessible and so on...” ~ Academic D1

The above voices are evidence suggesting that academics from a non-ICT background who have embedded technology in their learning and teaching practice would never look back after such confirming experience – the blended learning sweet spot. Science-based and social science-based disciplines are different in their competency in technology. **Such a disciplinary gap, however, has a lesser impact than individual confirming experiences and belief.**

Consider Table 6.7, science-based academics who are suppose to have more confirming experiences in blended learning due to the disciplinary nature, nevertheless, merely perceived blended learning as nothing more than a computer system and a “supplementary” tool in education for instruction. Less social and wider consideration on the deeper values of blended learning is made. The discussions in Section 5.5.4 also provide evidence of the different technology usage of science-based and social science-based from the student experience.

I would like to highlight that all research participants who experienced blended learning as transforming their teaching attitudes and practice (refer to Table 6.4) are social science-based academics. Academics who used education technology
as more than a “supplementary tool” would experience such enhancement and transformation are primarily those who understand the more socio-humane side of learning or educational theory due to their disciplinary nature.

This is a surprising finding and is contrary to the presumption that academics from science-based disciplines would have more variety of positive experiences than social science-based disciplines. Academics from science-based disciplines may have an advantage at the superficial and instrumental level of educational technology usage due to their disciplinary nature. However, social science-based academics tend to use technology not only as a supplementary tool but in a wider and deeper social context in terms of facilitating students’ engagement and reflections in learning and teaching values and practice – “I think I can do so many things with technology and with my students!”

Table 6.7 Disciplinary Comparison for the Confirming Experience (Based on Appendix E)

<table>
<thead>
<tr>
<th>Confirming Experience</th>
<th>Science-based Disciplines</th>
<th>Social Science-based disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL enabled learning accessibility, flexibility and organisation (e.g. BL enabled repeatable learning for lectures)</td>
<td>☺</td>
<td>☺</td>
</tr>
<tr>
<td>BL engaged dialogue and interaction</td>
<td>☺</td>
<td>☺</td>
</tr>
<tr>
<td>BL enhanced motivation, satisfaction and enjoyment</td>
<td>😊</td>
<td>☺</td>
</tr>
<tr>
<td>BL enhanced visualisation and teaching of complex or abstract knowledge</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BL enhanced high order thinking, critical and reflective skills</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>BL enhanced independent learning</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>BL enhanced personalised learning</td>
<td>😊</td>
<td></td>
</tr>
<tr>
<td>BL enhanced the recording history of students’ development</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BL enhanced the design and preparation of learning materials and test</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>BL enhanced research experience</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>BL enhanced assessment for soft skills</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>BL enhanced formative assessment</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>BL transformed educators’ attitude and values (or epistemology)</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- ☺ = both academic(s) and student(s) had that experience
- 😊 = student(s) had that experience
- ✓ = lecturer(s) had that experience
By seeking insights into the meaning of embedding technology in education - its relation to the trans-technical aspect: art, humanities and socio-cultural issues, the social science-based academics would begin with a non-technical aspect of education and consider how technology may (or may not) fit in or correspond to enhance the learning experience. Education is always the highest priority in blended learning; pedagogy, not technology, is the main consideration. **Such thoughtful consideration and redesign of learning and teaching would lead to blended learning – realising “blended learning enhanced learning and teaching” or even “transformed learning and teaching”.**

This also provides evidence to the debate between two discourses – the engineering philosophy of technology and the humanities’ philosophy of technology (refer to Section 3.1.2.1). Some social science academics from UoG (refer to Section 5.3.2.3) perceive that the campaign for blended learning or “technology enhanced learning” has too much emphasis on technology. Therefore, the emphasis on “education in technology” rather than “technology in education” is crucial (refer to Table 3.2). To summarise the disciplinary comparison of blended learning experience in four case studies, it is necessary to have a blended learning model that is grounded on sound principles with the humanities’ philosophy of technology. It would be a confirming blended learning experience for academics, regardless which discipline they are from. They should have the professional ethos, attitudes and values of humanities’ philosophy of technology (like some of the social science-based academics); followed by the technical competency or digital literacy (like science-based academics).

**6.3 Blended Learning Model**

**6.3.1 Priming the Blended Learning Model**

Arising out of the above discussion, it is necessary to paraphrase the cross-case and cross-disciplinary findings to inform a blended learning model. Based on the literature review and these findings, I made an attempt to consolidate the
Theoretical context of blended learning - to what extent can blended learning enhance learning and teaching? (with the experience extracted from four case studies): There are two dimensions of the proposed blended learning model: (1a) **Confirming experience**: positive and supporting experience of blended learning enhanced learning and teaching; (1b) **Disconfirming experience**: negative and disapproving experience of blended learning enhanced learning and teaching; (2a) **Educational-focused blended learning (which the ideas “naturally fits the educationists)***: prone to the humanities’ philosophy of technology with a wider consideration on the trans-technical aspect such as humanities and socio-cultural agenda; more social science-based academics fall into this dimension; focus on “education in technology”, ideally both pedagogy and basic technology competence; (2b) **Technological-focused blended learning (which the ideas “natural fits” the technologists)**: prone to the engineering philosophy of technology with the consideration of the technical and instrumental aspect; more science-based academics fall into this dimension; focus on the “technology in education” and technological competence. Figure 6.1 depicts the two dimensions:
The horizontal line and continuum in grey represents the blended learning experience from disconfirming to confirming experiences. The vertical line represents the focus and practice during the blend. In the literature review in Chapters 2 and 3, the major current blended learning research remains in the technological-focus and only a small number of researchers critically consider wider and more complex areas of education. In this research, most of the evidence points to a confirming experience of blended learning, that is to enable access, flexibility and learning organisation (area C and D in Figure 6.2). When a wider consideration on the trans-technical aspect such as social engagement issues is focused, learning and teaching would be engaged and enhanced (area D in shade). The idea of fundamental transformation of learning and teaching by blended learning is only experienced by social science-academics when educational-focused process with the blend of technology is in place and in a symbiotic relationship (area E). It is less possible for technological-focused blended learning to enhance or transform learning and teaching practice (area X).
Most of the research participants experienced disconfirming experiences, regardless of which focus or which disciplines they are from (area A and B). However, the study shows that if the student benefits and student experience is the priority of an academic, more patience or more time would be spent on the “thoughtful integration” of blended learning to triumph over the disconfirming experiences - “you have to think from the students' perspective” ~ Academic A4 (refer to Section 5.4.3.2). Thus, the investigation of the student experience, especially their disconfirming experience is the proposed future research.

Consider Figure 6.3, the shaded area is the proposed arena of blended learning principles for practitioners or theorists. The research evidence suggests that social science-based academics are more likely to fall into this area compared with science-based academics due to the disciplinary nature which is prone to trans-technical aspects such as socio-cultural considerations and educational ethos.

![Figure 6.3 The Proposed Principles](image-url)
6.3.2 The Proposed Definition and Principles of Blended Learning

Since the amorphous nature of blended learning leads to different definitions and dimensions, there is a need to suggest a definition that is more meaningful than simply blending technology with learning and teaching, or easily mixing e-learning with f2f instruction. To summarise the perceptions of various blended learning researchers (Section 2.1.1) and the research participants (Chapter 5) towards the term “blended learning”, I present them in chronological order as follows:

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Definitions of Blended Learning</th>
</tr>
</thead>
</table>
| Driscoll’s (2002) | (1) Combining or mixing web-based technology to accomplish an educational goal.  
(2) Combining pedagogical approaches (e.g. constructivism, behaviorism, cognitivism) to produce an optimal learning outcome with or without instructional technology.  
(3) Combining any form of instructional technology with face-to-face instructor-led training.  
(4) Combining instructional technology with actual job tasks. |
| Thorne (2003) | Represents an opportunity to integrate the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning |
| Graham, Allen and Ure (2003); Graham (2006) | (1) combination of delivery media and tools employed (Singh and Reed, 2001; Orey, 2002);  
(2) combination of a number of pedagogical approaches or instructional methods (Driscoll, 2002; Rossett, 2002); and  
(3) combination of face-to-face traditional learning with online instruction (Reay, 2001; Rooney, 2003; Ward and LaBranche, 2003).  
The first two definitions provide an amorphous idea that almost anything can be defined as blended learning. Graham argues that the third stance specifies more precisely the meaning of blended learning. |
| Vaughan and Garrison (2005) | The thoughtful integration of face-to-face classroom (spontaneous verbal discourse) and Internet based (reflective text-based discourse) learning opportunities is neither an add-on to a classroom lecture nor an online course. It is the fundamental redesign and an optimal (re)design approach to enhance and extend learning by rethinking and restructuring learning and teaching to create blended learning. |
| Jones (2006) | The blend as the use of online medium increases from basic ICT use to intensive ICT use. (refer to Figure 2.8) |
| Sharpe et al. (2006) | Avoid reaching own definition, noting instead 8 dimensions of blend implicit in the definition they found: delivery, technology, chronology, locus, roles, pedagogy, focus and direction. |
| Allan (2007, | (1) The use of different internet-based tools including chat rooms, |
Consider Table 6.8, the term “blended learning” is evolved from a simplistic meaning such as the mere mixture of online activities with f2f learning to pedagogical and fundamental redesign activities to enhance and extend learning by rethinking and restructuring learning and teaching with technology. None of them indicate the disciplinary consideration nor are they underpinned by an educational theory. As a new contribution to the knowledge, at this point, I would like to propose a definition for blended learning with two principles which have been derived from the study. The proposed blended learning model is founded on the qualitative evidence that satisfied blended learning experience and focus. It necessitate the relationships between learning and teaching, educational
technology and educational theories. This model brings attention to the blended learning principles which have been neglected by previous definitions listed in Table 6.8. The proposed definition and principles aim to draw together a clear notion for blended learning researchers and practitioners in the complex educational context:

Blended learning is an educational idea and educational-focused process which aims to enhance and transform f2f learning and teaching experience with the blend of technology in a symbiotic relationship. It should not be grounded on technological considerations alone but on trans-technical aspects such as inter-disciplinary or social considerations (i.e. Vygotsky's theory).

(1) Principle 1: Educational-focused process
Blended learning is not about technology but education. It is an educational idea and a process. Academics are recommended to possess a humanities philosophy of technology (Mitcham, 1994) with a wider consideration on the trans-technical (beyond the solely technical consideration) aspects such as the student experience, inter-disciplinary and socio-cultural issues. In this sense, Vygotsky's theory fits in nicely with this blended learning idea that emphasises social interactions, language and culture of the learner’s total learning environment, with the educator’s and more-skilled peers' facilitation in the learner’s ZPD (refer to Reflection 9 and Section 3.2.3). When educators teach students certain knowledge or skills which are above their current level, educators would utilise technologies and supporting techniques with different time/activity/space/media blends, to facilitate students to excel beyond their current level. Such a facilitating process is not focused on technology but the educational process in ZPD. For Vygotsky, learner’s knowledge is developmentally constructed in a social or cultural interaction. In the process of blending technology with f2f learning and teaching, the emphasis on social interactions and making full use of technological advantage to create ZPD, would lead to the confirming experience – where the learning and teaching are
enhanced (or even transformed). Similarly, the disconfirming experience could be overcome with the focus on learners’ benefits. There is much to be learned from the trans-technical attributes, humanities’ philosophy of technology and educational theories which can be transferred to blended learning that is currently technological-prone. Regardless of science-based or social science-based discipline, an educational-focused process is the core principle for blended learning practice.

(2) Principle 2: Symbiotic Relationship
Symbiosis is defined by *Cambridge Advanced Learner's Dictionary* as the relationship between two types of organisms in which each provides for the other the conditions necessary for its continued existence. The proposed symbiotic relationship in this research context is between learning and teaching, and technology; or between educators who design learning and teaching and technologists who design technology; or between educationists and computer scientists. If these relationships are perceived as two detached elements, I would argue that (1) technology would be watered down as merely a “supplementary tool” or an alternative content delivery platform. This would also lead to Clark’s (1983) criticism of “the truck does not enhance nutrition but the groceries do”; (2) different languages will be spoken and endless debates will take place between educationists and technologists. Borrowing McLuhan’s (1964) term, I would argue that technology is much more than a supplementary tool but “extension of educators”. It is about learning and teaching with technology in modern education, as a whole. *Educationists and technologists, or learning and teaching and technology, need further integration and heavily depend on each other – a symbiotic relationship is recommended.*

There are interesting jobs’ title called “educational technologists”, “senior lecturer in blended learning” or “learning technologists” in two of research institutions (UoG and UoL) to provide both pedagogical and technological support in learning and teaching with technology. Richey (2008) defines “educational technology” as
a field and ethical practice of developing and using technological process and resources to facilitate and enhance learning and teaching experience. Thus, these roles could fulfill the proposed principle, a “symbiotic relationship”. However, if learning technologists or educational technologists do possess such symbiotic relationship and only focus on the technological process and resources, it would fall into the boundary of the “technological-focused blended learning (see Figure 6.2) - prone to the engineering philosophy of technology with the consideration of the technical and instrumental aspect.

The research evidence suggests that disciplinary issues such as the lack of mutual understanding and communication between educators and technologists; or disciplinary differences that cause contrasting experience, are the major challenges for blended learning (refer to Reflection 10). It is necessary for educators and technologists to be “symbiotic” - each provides for the other the conditions necessary for its continued excellence - either in an integrated manner where educators have the professional ethos of trans-technical aspects (i.e. the humanities’ philosophy of technology or the social-science academics’ attributes) plus the technical competency (i.e. the engineering philosophy of technology or the science academics’ attributes). I would assert that the same condition applies to learning technologists or educational technologists. Both educators and technologists need to have mutual understanding and provide for the other “the conditions necessary” during the design of educational technology and the process of blended learning.
Chapter 7: Conclusion and Reflection

This chapter reflects and concludes the research, summarises the major findings in response to the research questions, and highlights the contributions to the field of blended learning. Future directions, potential developments and some personal reflections are offered in the concluding section.

7.1 The Summary
There are burgeoning models and frameworks for blended learning design and development. However, various schools of literature reviews demonstrate a few research gaps: (1) Blended learning means different things to different people and this leads to various definitions, models and interesting debates; (2) Many blended learning definitions lack theoretical ground. The relationship between blended learning and educational theories or learning theories is vague; (3) Much blended learning research focuses on massive growth in educational technology, its effectiveness and impacts rather than educational values and considerations.

Other than these known problems, I would insert one more concern: the current literature concerning blended learning also shows less consideration to the potential disciplinary gaps and cross-institutional/country studies. Many blended learning researchers do not address disciplinary issues and educational theory in great detail, thereby lacking evidence from cross-institutional/country and cross-disciplinary investigations for blended learning experience. Technological innovations impact on f2f learning and teaching experience in HE and are often perceived as a “catalyst for change”; however, has blended learning enhanced the learning and teaching in different disciplines and institutions?
Thus, the research explored, analysed and compared the blended learning experiences in four HEIs in the UK and Malaysia. The study is reflected in three research questions: (1) What are the current blended learning experiences in the selected HEIs in the UK and Malaysia? (2) How the experiences in question (1) vary in different disciplines (social science-based academics and science-based academics)? (3) What are the reflections on the comparative experiences in questions (1) and (2)? In order to obtain in-depth findings for the research questions, the qualitative case study with comparative methods was used.

The term “blended learning” was chosen as the research domain (rather than e-learning) due to its provocative definitions which highlight f2f instruction with e-learning or learning with technology. Summarising from Chapter 2 and 3, current literatures show that the amorphous nature of blended learning leads to definitional and dimensional complexities. In the last decade, key terms such e-learning, blended learning and technology enhanced learning have been increasingly used in the UK higher education. The ideas and disruption behind these terms have challenged institutional and individual practice. In response to the challenges, several blended learning models, opportunities, benefits and problems were reviewed in Chapter 2; followed by the discussion of the institutional or national research that is related to blended learning. This recent literature review exhibits two foci on blended learning trends and research: educational-focused or technological-focused practice. Since blended learning involves the combination of two fields of concern: educational technology and education; or two groups of people: technologists and educationists, the different blended learning focuses and experiences appear to be the nature of disciplinary differences.

To investigate the blended learning experiences in a greater detail, four HEIs in the UK and Malaysia were visited and the research participants from contrasting disciplines were sampled. Chapter 4 discussed an overview of the social research philosophies and approaches, followed by the strategies and method
applied (i.e. case study with comparative method) in this research with the consideration of the reliability and validity of the findings. Chapter 5 presented the blended learning practice of each individual’s institution and the students’ and academics’ voices. Each case provides both good practices and lessons for other institutions to adopt. Chapter 6 further captured and compared the cross-case and cross-disciplinary experiences to inform the blended learning model, definition and principles that are educationally and disciplinary focused. I recapitulated the major findings as the “original contribution to the knowledge” in response to the research questions as follows:

7.2 The Original Contribution to the Knowledge - Major Findings of the Research Questions

7.2.1 Research Question 1 - What are the current blended learning experiences in the selected HEIs in the UK and Malaysia?

Chapter 5 presented four case studies for trans-national experiences which related to blended learning. Section 5.2.5, 5.3.5, 5.4.5 and 5.5.5 summarised the confirming and disconfirming experiences in each case study. The study used four HEIs’ experiences to provide insights which can be compared and contrasted with the experiences in other institutions to inform others who are researching blended learning development in the similar environments (Chew et al., 2009a). As a summary, I captured 8 main findings from the cross-case comparisons:

Confirming and disconfirming experiences

**Finding 1** - The top four confirming experiences demonstrated by both academics and students in all case studies are that blended learning (1) enabled learning accessibility, flexibility and organisation; (2) engaged dialogue and interaction; (3) enhanced motivation, satisfaction and enjoyment; and (4) enhanced visualisation and teaching of complex or abstract knowledge. (Refer to Table 6.4)
Finding 2 - The top four disconfirming experiences encountered by most academics in four case studies are: (1) problems with accessibility; (2) communicative, educational and technical issues caused by the lack of mutual understanding of technical competence and pedagogical requirement between educationists and support team (technologists); (3) time constraints and (4) disciplinary differences among academics and students cause a contrasting experience in designing or using a particular educational technology. (Refer to Table 6.5)

Finding 3 - Both academics' and students' positive experiences of blended learning are similar. However, academics and students may not encounter the same disconfirming experiences. A further investigation (i.e. the disconfirming experiences between academics and students) is proposed to tackle this interesting phenomenon. (Refer to Table 6.6)

Finding 4 – It is not the technology, but the idea of blended learning that does transform educators’ attitudes and values by facilitating educators during the process of revisiting and rethinking their professional ethos and the teaching practice, where necessary; or vice-versa: the rethinking of professional ethos and teaching practice, facilitates the awareness and practice of blended learning. (Refer to reflection 8 in Section 6.1.1)

There is no surprise in the top four confirming experiences derived from the studies (finding 1). However, the top disconfirming experiences (finding 2) provide strong evidence of the necessity of interdisciplinary integration and discourse. It is interesting to learn that both academics and students share the similar confirming experiences but differ in their disconfirming experiences (finding 3). The research finding 4 presents evidence to support Vaughan’s and Garrison’s (2005) claim - blended learning is a fundamental redesign approach to transform learning and teaching by rethinking and revisiting current practice; and further expand the argument in a vice-versa way.
Good practice and lessons learnt for institutional blended learning adoption

Finding 5 – Blended learning has impacted on academics and students in all HEIs even before any blended learning policy or strategy has been made. An individual academic’s or student’s experience of blended learning enhanced learning can be a bottom-up approach to change policy. (Refer to the reflection 5 in Section 6.1.1)

Finding 6 - Institutional strategy and practices should highlight more educational research on blended learning to inform institutional adoption or vice versa, thereby resulting in more blended learning research and more blended learning adoption across an institution (Refer to the reflection 3 in Section 6.1.1). It is good practice (by senior management) to recognise teaching excellence as well as research excellence to promote blended learning. (Refer to the reflection 7 in Section 6.1.1)

Finding 7 - Multi- or inter-disciplinary support is necessary to provide both technical and pedagogical support ensuring equal weighting is placed on these different approaches. The cross case findings showed that a dynamic institutional-wide blended learning adoption is ideally be accompanied with a multi-disciplinary support centre and centralised unit (e.g. UoG). Otherwise blended learning research can be perceived as nothing more than an ICT support unit without institutional and educational commitment (e.g. UTAR) - this would “water down” blended learning to being technological-focused, a mere alternative platform other than f2f classroom and similar to the role of estates and facilities in a university, i.e. an instrumental and operational unit. (Refer to the reflection 4 in Section 6.1.1)

Finding 8 - There is no blanket approach for an institutional blended learning strategy in both countries. A number of factors need to be considered, namely, disciplinary and individual tailored support; institutional policy or individual interest and initiatives; externally funded research or internally promoted project
are helpful for holistic embedding of blended learning across the institution. (Refer to the reflection 6 in Section 6.1.1). Disciplinary issues such as the lack of mutual understanding and communication between educators and technologists are the major challenge for blended learning. (Refer to reflection 10 in Section 6.1.2)

Finding 5 to 8 highlight several key good practices for an institutional embedding of blended learning such as using students’ experiences to change policy; an university must recognise both research excellence and teaching excellence and establish an inter-disciplinary centralised unit to provide both technical and pedagogy support. Disciplinary issues must be taken into consideration in the embedding process.

7.2.2 Research Question 2 - How such experience varies in different disciplines (social science-based academics and science-based academics)?

Academics from science-based and social science-based disciplines are different in their level of competency in technology and educational ethos. The different blended learning focuses are determined by the nature of disciplinary differences, thereby causing different experiences among academics. Academics from science-based disciplines have an advantage at the instrumental level of using educational technology due to their disciplinary background. However, social science-based academics would use technology not only as a supplementary tool for “preaching”, but in a context of social engagement and reflection. Such wider consideration and redesign of learning and teaching would lead to blended learning that enhanced learning and teaching or even transformed learning and teaching. The value of technology reflects the ethos of who uses it. In this case, social science-based academics in the studies embrace the trans-technical aspects, such as humanity and educational ethos, to a greater extent than did the science-based academics (Refer to Table 6.6). In the study, the idea of fundamental transformation of learning and teaching by blended learning was only experienced by social science-academics when the educational-focused
process with the blend of technology is put in place in a symbiotic relationship. It is less possible for technological-focused blended learning to enhance or transform the learning and teaching experience. (Refer to Figure 6.2)

7.2.3 Research Question 3 - What are the reflections on the comparative experiences in (1) and (2)?

Many research participants in the investigation were confused over the term blended learning. This evidently aligned with the blended learning criticism such as the lack of clarity of the term as discussed in Section 2.2.1 (Refer to Reflection 2). Since blended learning is an inter-disciplinary research area, at the heart of its practice is the need for a deeper understanding of the education (or educational theories) and technology. Only through that understanding can initial principles emerge. A blended learning model and definition is proposed in Section 6.3. The blended learning model consists of two dimensions: (1) educational-focused or technological-focused blended learning; and (2) confirming or disconfirming experiences in blended learning (refer to Figure 6.2, 6.2 and 6.3). Blended learning is proposed to be defined as “an educational-focused process aimed to enhance and transform learning and teaching experiences with the blend of technology in a symbiotic relationship. It should not be grounded in technological considerations alone but on trans-technical aspects such as inter-disciplinary or social consideration (i.e. Vygotsky’s theory)”. Two principles derived from the definition: (1) educational-focused process which is grounded in Vygotsky’s theory and (2) a symbiotic relationship between learning and teaching, and technology; or between educators who design learning and teaching; and technologists who design technology. (Refer to Section 6.3.2)

Therefore blended learning is not e-learning, it focuses more on the ‘blend’ – a deeper integration of education and technology towards what/how to enhance the quality of learning and teaching. This research demonstrates that blended learning adds much more educational meaning than does “e-learning” or “technology enhanced learning” that focuses on the “e” or the technology. Arising
out of these findings, I would like to urge educationists and technologists to consider further inter-disciplinary integration, deeper communication and higher mutual understanding of the educational theories, ethos and technological agenda. Both parties need to heavily depend on each other – a symbiotic relationship is recommended.

There are two main reflections from the cross-country study. First, those research participants from the UK and Malaysia had similar confirming and disconfirming experiences (refer to Table 6.4). Comparatively, UK academics and students expressed more disconfirming experiences in a wider and deeper way whereas Malaysian academics and students expressed fewer disconfirming experiences. This difference could be explained by the amount of experience, Malaysian universities have less blended learning experience universities in the UK. In addition, the different cultural background of the two countries impact on the willingness of the sample to discuss disconfirming experiences, in the UK both staff and students were more willing to express negative views. Secondly, academics from both countries, with or without a clear institutional strategy, confirmed that blended learning enhanced and transformed the learning and teaching experience. I would assert based on this finding that blended learning did enhance and transform learning and teaching experiences in different countries with the proviso that the blended learning principles and disciplinary differences detailed earlier, are considered.

7.3 Direction for Future Research: Wish List and Future Development

The directions for future studies are derived from this research in two ways - either from the wish list from academics’ and students’ voices (based on the evidence from Table 5.17, 5.23, 5.27 and 5.30); or the reflection from the cross-case and cross-disciplinary investigation. A few major and possible future directions for blended learning research are described next:
1. Create more opportunities for educationists and technologists to establish the symbiotic relationship and the inter-disciplinary integration. For example, to develop inter-disciplinary curricula, inter-disciplinary higher degrees (e.g. MSc in Education in Technology; MSc in Blended Learning) and inter-disciplinary academic departments (e.g. Blended Learning Department or Education and Computing Department); to promote special interest groups or conferences to facilitate inter-disciplinary discourse and arguments, that impact on the individuals’ thinking and practice beyond their own disciplinary territory; and to research more on the “marriages” of educational theories and educational technologies.

2. Students’ expectations of blended learning is not “technology enhanced learning” alone but educators who practice blended learning with both technological and pedagogical competence. It is proposed to conduct research on how to develop educators from different disciplines in an integrated manner to inform the professional ethos of trans-technical aspects and pedagogical competence (i.e. social-science academics’ attributes) plus the technical competence (i.e. science academics’ attributes).

3. It is suggested to conduct further quantitative research on large-scale cross-institutional and cross-country studies to provide empirical findings to affirm/reject the proposed blended learning model.

4. The investigation of students’ experiences is crucial. This research gives evidence to suggest a potential gap between the academics’ and the students’ disconfirming experiences. More research on students’ disconfirming experiences of blended learning is proposed for future investigation. The strength of a chain is the strength of the weakest link. The strength of blended learning will be further enhanced by addressing the “weakest link” in a constructive and pedagogical-focused approach with sound educational theories. (Reflection 9 in Section 6.1.1)
5. Both academics and students wish to have an all-in-one blended learning system, which is an upgraded version of what current VLEs (e.g. Blackboard and Moodle) could offer with improved facilities – a Personalised Learning Environment (PLE) with integrated services such as (i) learning object or web 2.0 technology plug-in; (ii) FAQ or knowledge-based system to avoid students repeatedly asking the same questions on related subject; (iii) integration with administrative systems such as student registration, attendance and timetabling system (Chew et al., 2009a).

6. Bonk and Graham (2006) predict that in the future, the term “blended learning” will fade when the educational technology becomes mature and stable, and everyone learns and teaches in a blended mode. At this point, however, the educational theories remain the fundamental foundation for any educationist as well as any educational technologist. Thus, I would assert that further research to investigate more educational theories underpinning the principles of blended learning, especially the meaningful ways of configuring learning and teaching mediated by technology in different disciplines is necessary (Chew et al., 2009a). Theories of education provide insight into important components of blended learning principles. However, it is an empirical question as to whether blended learning can be structured yet have the same benefits for practitioners from different disciplines using the similar model and if so, how (Chew et al., 2008b)? It is also a practical question of how to translate the educational tenet into blended learning practice.

### 7.4 Closing Notes

In the most recent prominent international conference in the research area (the Computer-aided Learning Conference 2009), the keynote speaker Taylor (2009) asserted that educational values should be driving technology development, not the other way round. Based on various literature reviews and cross-case findings in the research, I agree with Taylor’s assertion and would further argue that the term, blended learning should be retained rather than the term “e-learning” or
“technology enhanced learning” which would misleadingly imply the “e” or technology is driving the educational values.

I would suggest that blended learning research should gain ground in educational theory with the understanding of both disciplinary needs and diversity. This has been a major struggle for me, being a cross-disciplinary researcher. However by “seeing” the gaps, the distinct views and debates for both areas are at the heart of this research. Such struggling indeed sparks many thoughts and ideas along the way, and the most, to transform my epistemology. Educationists need a lot of social imagination and it is not solely obtained through logic. Education cannot be simply expressed in “one or zero” or “if-then-else” logic like those computer algorithms I used to apply in computer science research. Blended learning is possibly an endless debate of ideas and educational process that cannot be logically captured, mathematically measured and perhaps never be fully modeled by technology, although I used to interpret education in that way. Many e-learning, technology enhanced learning or blended learning researchers have attempted to “model or improve education by technology” but I strongly disagree with them (1) if the technology is the sole focus; (2) if such effort does not gain ground in educational theories and (3) recognise the disciplinary differences. I am again struck by the finding that blended learning would change and transform educators provided a pedagogical-focused blend is given priority over a technological-focused process.

In summary of the cross-case and cross-disciplinary investigation, I would propose that blended learning model should be grounded in Vygotsky’s educational ideas and Mitcham’s (1994) humanities philosophy of technology. I would assert that educators, regardless which disciplines they are from, should have the professional ethos, educational attitudes and the values of the humanities philosophy of technology. It would be a plus if they have the technical competence or digital literacy (like the science-based academics in this research).
Such integrated practice in a symbiotic relationship would lead them to a blended learning sweet spot – “the extension of educator”.

Of all of the lessons I have learnt from the cross disciplinary research, it is a strong message to urge educators to prioritise the benefits to the learners, not to the educators themselves. Educators are responsible for fostering a climate of learning experience for the learners’ benefit, not solely focusing on educational technology. Educators are the ones who continue pursuing learners and are willing to take into consideration any environmental condition or disciplinary variation to enhance the learners’ experiences, including the level of embedding educational technology, and to determine which blend will be the most effective. The value of an educational technology reflects the values of those who use it (Luppicini, 2005). Therefore, educators’ attitudes and values are the major disruption, not educational technology, when educators practice blended learning without pedagogical competency and no wider consideration of disciplinary and socio-cultural issues is made. By interpreting, once again, the student’s voice in this study - “it is not the use of technology which impresses me or otherwise, it is the lecturer!” This student made his experience clear by saying that it was never technology alone which impressed him, but always the educator who integrates the technology. In closing, I shall borrow a quote from my favourite movie:

“In many ways, the work of a critic is easy. We risk very little yet enjoy a position over those who offer up their work and themselves to our judgment. We thrive on negative criticism, which is fun to write and to read. But the bitter truth we critics must face is that, in the grand scheme of things, the average piece of junk is more meaningful than our criticism designating it so. But there are times when a critic truly risks something, and that is in the discovery and defence of the new...Last night, I experienced something new, an extraordinary meal from a singularly unexpected source. To say that both the meal and its maker have challenged my preconceptions is a gross understatement. They have rocked me to my core” ~ Ratatouille

As a computer scientist to describe my feeling in this cross-disciplinary research, I need to paraphrase the above quote – in the last 3 years, I experienced something new and extraordinary research. To say that both the educational theories and blended learning research have challenged my preconceptions about education and technology is a gross understatement. They have rocked me to my core.
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## Appendix A

### Publications Extracted from the Research (Self-Citations)

<table>
<thead>
<tr>
<th>No.</th>
<th>Publications</th>
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<td><strong>Book Chapters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Journal, Book Review and Recommended Post – Conference Publication</strong></td>
<td></td>
<td></td>
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<tr>
<td>Chapter</td>
<td>Reference</td>
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<tr>
<td></td>
<td><strong>Conference Proceedings</strong></td>
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</table>

The following tables summarising selected profound educationists’ concepts comprise the role of educators and learners.

<table>
<thead>
<tr>
<th>Century</th>
<th>Pre - 18th Century</th>
<th>18th Century</th>
<th>19th Century</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leading Theorist</td>
<td>Plato &amp; Aristotle</td>
<td>John Locke</td>
<td>Rousseau</td>
</tr>
<tr>
<td>Year of Born</td>
<td>B.C</td>
<td>1632</td>
<td>1712</td>
</tr>
<tr>
<td>Aim of Education</td>
<td>- To nurture the life of virtue and for development and adjusting human being’s surroundings to his higher needs. - It is the fulfillment of the natural aim of civil cities and political science for democratic empowerment and social justice realisation. - Emphasising on the society in which the individual lived.</td>
<td>- People have no innate virtue, thus practical education is important for the social and political demands of the learner concerned with the affairs of the modern world. - To fit men for life, for society, for the world, rather than for the university or for the government. - Emphasising on the society in which the individual lived. - A well-being.</td>
<td>- To cultivate human kind natural tendencies - The education system shall be adjusted to suit and acknowledging stages through the nature growing of a person and to what they are capable of at the different levels. - To learn how to live. - Emphasising on preparing better individuals to construct a better society.</td>
</tr>
<tr>
<td>Role of Educator and Learner</td>
<td>- Educator can feed or starve, nourish or poison the learner. - Educator provides proper nurture to the growing learner, for development &amp; adjusting his surroundings to his higher needs. - Knowledge cannot be acquired by passively from educator. - Learner must work through problems and assess the merits of competing theories with an independent mind. - Tabula rasa concept. - Learner is as in a blank State and the educator is like parents instill the virtue/ knowledge into the learner’s blank state. - The knowledge is based on the experience by sensation and reflective. - The learner is submissive and subservient to the educator.</td>
<td>- Educator is to create an autonomy and nature learning environment. And develop the learner in such a way as to have a healthy sense of self-worth and morality, not by any techniques to instill the knowledge to learner. - Learner learns from reasoning and is shaped to conform to necessity, not to the authoritative instructions from educator.</td>
<td>- Educator is responsible for creating learning conditions to promote educative experience for learners. - Educator is encouraged to give students more opportunities to learn on their own. - Educator shall ensures the learner’s come to understand their limitations and potentialities through their critiques of learner’s performance and feedback - Community-centered type of learning environment for learners. - Learner learns by doing.</td>
</tr>
</tbody>
</table>

Table B1: Summary Table for Leading Educational Theories from Pre-18th Century to 19th Century
<table>
<thead>
<tr>
<th>Century</th>
<th>20\textsuperscript{th}</th>
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</thead>
<tbody>
<tr>
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<td>Piaget</td>
</tr>
<tr>
<td>Year of Born</td>
<td>1896</td>
</tr>
<tr>
<td>Aim of Education</td>
<td>- To refine the learner's cognitive skills that have emerged. - Helping learners to develop knowledge and skills in a sequence.</td>
</tr>
<tr>
<td>Role of Educator and Learner</td>
<td>- Educator's role is as observer of how to create a proper environment for learners to construct knowledge for themselves. - Educator shall understand the levels of cognitive maturity of learners and the type of knowledge to be developed. - Learners are social beings and they do not develop cognitive isolation from peers. - Through the active and interactive processing of information in the social environment which the learners can construct and reconstrukt knowledge more efficiently than just questioning and explanations by the educator.</td>
</tr>
</tbody>
</table>

Table B2: Summary Table for Leading Theories in 20\textsuperscript{th} Century
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</tr>
<tr>
<td>Year of Born</td>
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</tr>
<tr>
<td>Aim of Education</td>
<td>- To assist learners to achieve self-actualisation and thus fulfil their potential for personal growth in this context</td>
</tr>
<tr>
<td>Role of Educator and Learner</td>
<td>- Through the social interaction, learners feel loved and sense of belonging to the learning group. - Educators can contribute to feelings of belonging and self-esteem by ensuring that learners engage in learning community which is socially and academically reinforcement</td>
</tr>
</tbody>
</table>

Table B3: Summary Table for Leading Theories in Contemporary Century
Appendix C

Background of the Four Case Studies

A. University of Leicester

The University of Leicester (UoL) is a civic university in middle of England. Founded in 1921, Leicester gained its university status in 1957 when it was granted its Royal Charter. In order to obtain further details of the case study, I visited this old university in March 2007 and was impressed by a unique and enchanting graveyard built in the middle of the university. The University of Leicester has 19,000 students drawn from 150 countries and over 3,000 staff. It is the UK’s largest provider of distance learning education after the Open University. Leicester is a leading UK University and their research changes the world. The following presents several achievement of Leicester: (1) According to Thomson Scientific, Leicester has the tenth highest number of highly cited researchers amongst the UK’s universities. The discovery of DNA Genetic Fingerprinting is the university most famous research achievement; (2) The University has the joint highest scores for overall student satisfaction in England amongst mainstream universities (National Student Survey 2007); (3) The University of Leicester is, according to the Times newspaper "an award winning institution attracting top academics". Almost three quarters of subjects in Leicester are in their subject top 10; (4) Leicester is ranked amongst the top 20 universities in the UK by the UK Good University Guide, Sunday Times University Guide and Guardian University Guide. Leicester is one of just 21 UK universities to feature in the world’s top 200 universities; (5) The research conducted by the University has the strongest impact of any Midlands university and the tenth greatest impact amongst universities in England according to the Guardian on 30th October 2007. Overall, the UoL is committed to delivering high quality undergraduate, postgraduate and professional education and to creating research that is of international significance. (Source from UoL, 2005; 2007; 2008)
B - University of Glamorgan

The University of Glamorgan (UoG) was founded in 1913 as a School of Mines to serve the large coal mining industry in the South Wales valleys. It was known as Glamorgan Polytechnic and then later became the Polytechnic of Wales. University of Glamorgan gained the university status in 1992 and recognised as a post-90s or new university in the country. It has more than 21,000 students and 1,244 staff. The University has been a major contributor to the widening participation agenda of the Welsh assembly, and provides a range of academic programme from foundation certificate courses to postgraduates. There are several key achievements of UoG: (1) Business school is ranked as the best in Wales and the 12th in UK; (2) In May 2001, the Times 'Higher Education' supplement numbered Glamorgan amongst the top Business Schools for teaching quality/Business studies, placing it with Warwick, Cranfield and London Business School; (3) Research partner for the Global Entrepreneurship Monitor (GEM), world’s largest and most prestigious entrepreneurship research project; (4) Research in bio-hydrogen production and wastewater treatment is internationally recognised; (5) 12 of the University's departments have been rated as "excellent" by the National Teaching Quality Assessments; (6) The University of Glamorgan, with Cardiff University and South Wales Police, forms the Universities Police Science Institute (UPSI) - a unique organisation in the UK dedicated to research and training in police related matters. The University of Glamorgan's BSc in Police Sciences is the only one of its kind in the UK. Specialists in police and forensic related matters are organised within the Glamorgan Centre for Police Sciences; (7) Glamorgan is the 1st university in Wales, and only the 8th in the whole of the UK, to have been awarded the nationally recognised Investor in People status, the UK's premier award for staff training and development.

Besides, Glamorgan is the only university in Wales to be awarded the Environmental ISO 14001. It has been rated the "most environmentally friendly
university" in Wales, and 4th "greenest" facility in the UK. Hence, the University of Glamorgan is a dynamic institution with learning, teaching and environmental excellence. From the research perspective, I noticed that there are rooms for improvement among researchers based on Table 5.3. Overall, Glamorgan is the best new university in Wales and is committed to the delivery of a first class learning environment incorporating the highest standard of blended learning, tutor facilitation and use of cutting edge learning facilities - a learning environment in which students flourish and grow, academically and socially, and are sought after by employers eager to acquire their evaluative and analytical skills and their determination to succeed in their chosen vocation.

(Source from UoG, 2007; 2008; UoG LTA, 2007)

**C- Universiti Malaya – University of Malaya**

Universiti Malaya (in Malay) or University of Malaya (UM) is known as the oldest and the best university in the country. I visited this old university in December 2006 to gather research data. The university has its roots in Singapore with the establishment of King Edward VII College of Medicine in 1905. University of Malaya was established in April 1949 in Singapore with the merger of the King Edward VII College of Medicine (founded in 1905) and Raffles College (founded in 1928). The growth of the university was very rapid during the first decade of its establishment and this resulted in the setting up of two autonomous Divisions in 1959, one located in Singapore (NUS, 2008) and the other in Kuala Lumpur. In 1960, the Governments of Singapore and the Federation of Malaya that the Singapore Division and the Kuala Lumpur Division of the University of Malaya should become autonomous national universities in their respective countries. Legislation was passed in 1961 and the University of Malaya in Kuala Lumpur and National University of Singapore was known separately in 1962. The University of Malaya derives its name from the term 'Malaya' as the country was then known. The Carr-Saunders Commission, which recommended the
setting up of the university, noted in its Report in 1948: “The University of Malaya would provide for the first time a common centre where varieties of race, religion and economic interest could mingle in joint endeavour. For a University of Malaya must inevitably realise that it is a university for Malaya.”

The university has more than 27,498 students from over 69 countries and 5,456 staffs. The following presents several achievements of UM: (1) In 1962, University of Malaya celebrated the installation of its first local Chancellor, the Tunku Abdul Rahman Putra Al-Haj, who was also the country first prime minister. The first Vice-Chancellor was Professor Oppenheim, a world-renowned Mathematician; (2) University Malaya has been successful in obtaining the IPEM (Institute of Physics and Engineering in Medicine) accreditation of the Master of Medical Physics Program. This program is the only such accredited program outside UK and Ireland; (3) UM was ranked amongst the World's top 200 universities by the Times Higher Education in 2005-2006. Overall, the University of Malaya is committed to be an internationally renowned institution of higher learning in research, innovation, publication and teaching - to advance knowledge and learning through quality research and education for the nation and for humanity.

(Source from UM, 2008)

D - University of Tunku Abdul Rahman

The Establishment of University of Tunku Abdul Rahman (UTAR) began with the story of Kolej Tunku Abdul Rahman (KTAR). In 1964 the Malaysian Chinese Association (MCA), a ruling political party mooted the idea of setting up a college which was subsequently named after the first Prime Minister of Malaysia, Tunku Abdul Rahman. The vision of the founding fathers was to establish an institution of higher learning for young Malaysians who have, for one reason or another, been deprived of the opportunity to seek further education, as well as to meet the rising demand from the private sector for trained professional, sub-professional and technical personnel in the task of nation building. The college is one of the
country’s major tertiary education institutions with modern teaching and support facilities. It has a strong tradition of professional and sub-professional education and has established an international reputation for its high quality and wide range of courses offered. On 10 June 2002, Tun Dr Mahathir, the fourth Prime Minister of Malaysia officially launched the UTAR. In the same year, UTAR welcomed its first intake of 411 students. Set to be a premier university in the future, UTAR would have to achieve global standards. To serve as a platform for international affiliations, the International Advisory Council (IAC) consisting of eminent scholars and scientists was established. With this array of distinguished scholars and scientists, UTAR has since then been working towards building a strong international base for its research programmes and courses of studies, which provided an excellent start for a new university like UTAR.

In order to conduct the qualitative interview, I visited UTAR in January 2007 and found this university is rather new and small compare with UM, UoL and UoG. However, all UTAR programmes have been approved by the Ministry of Higher Education (MoHE) of Malaysia. All UTAR Bachelor degree programmes assessed by the MoHE have received full accreditation status. Today, UTAR has an enrolment of about 17,000 students. Overall, UTAR is committed to be a premier university aspiring to achieve excellence in the advancement and dissemination of knowledge and expertise, emphasising nurturing and holistic development of the individual towards nation building.

(Source from UTAR, 2008; TARC, 2008)
Appendix D

Interview Questions

Semi-structured Interview Protocol – Academic Staff

<table>
<thead>
<tr>
<th>Name of Interviewee</th>
<th>Faculty</th>
<th>University</th>
</tr>
</thead>
</table>

Introduction

*Recording starts…*

Good morning! Thank you for agreeing to meet with me and share your views.

As you may know, the purpose of this interview is to help us understand your learning and teaching with technology practices and experiences.

Before we begin, let me review some important considerations. I am recording this interview to ease the further analysis for qualitative data but will keep all responses highly confidential. I am just as interested in both negative and positive comments and often the more challenging and in depth comments are the most helpful.

1. How long have you been a lecturer?
   - Probing: have you always been a lecturer in this country?

Section 1: Educational Technology

2. In your opinion, which educational technologies impress you the most?
   - Probing: why?

3. In your opinion, which educational technologies or the situations caused by them frustrate you the most? Please explain in detail.
   - Probing: do you have any suggestions or solutions to the situation described?

Section 2: Educational Experiences

4. What is your aim as a lecturer in the university?
   - Probing: do you think you have / will achieve this aim?
5. In general, what do you understand about the way your students learn?
   ▪ Probing: do you have any recommendations to them?

6. Do you think that the national education policy in your country has any impact to you/your students/university? (Show the different paragraph below to interviewee from different country.)

<table>
<thead>
<tr>
<th>Purposes of Higher Education in the UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ To enable people to develop their capabilities and fulfill their potential, both personally and at work;</td>
</tr>
<tr>
<td>▪ To increase knowledge, and understanding for their own sake and to foster their application for the benefit of the economy and society;</td>
</tr>
<tr>
<td>▪ To play a major role in shaping a democratic, civilised, and inclusive society.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Philosophy of Higher education in Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Ongoing effort towards further developing the potential of individuals in a holistic and integrated manner; so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God.</td>
</tr>
<tr>
<td>▪ To produce Malaysian citizens who are</td>
</tr>
<tr>
<td>▪ knowledgeable and competent</td>
</tr>
<tr>
<td>▪ possesses high moral standards</td>
</tr>
<tr>
<td>▪ responsible and capable of achieving a high level of personal wellbeing</td>
</tr>
<tr>
<td>▪ able to contribute to the betterment of the society and the nation at large (e.g. social and economic society).</td>
</tr>
</tbody>
</table>

Section 3: Blended Learning Practices

7. Blended Learning is a phrase which is increasingly being used in education. In our context, it means “the combination and blend of face-to-face and technology-mediated instruction”

- Do you think that the role of lecturer will be changed by embedding educational technologies into the teaching and learning practices?

- Do you think that the blended learning (such as embed blog, wiki, e-community, email in learning and teaching) can help in developing your students in a holistic manner?

8. If there is ONE educational system which can help you in teaching experience and further development for students in a holistic manner, what functions/facilities you wish it to have?

   - PowerPoint
   - Personal Website
   - CAA
   - Practical Simulation
   - VLE
   - Online Forum
   - Online Discussion board
   - Online Chat Room
   - Blog
   - Video Conference
   - E-community
   - Real Time Polling system
   - Rich Media Learning
   - Object
   - Podcasting
   - Webquest
   - Wiki

   Other:

9. In your opinion, how does it feel to be a lecturer in this university/country?

10. Please share any other comment or suggestions you have on the way learning can be blended.

   Thank you for your time. Your value input is greatly appreciated.
Semi-structured Interview Protocol – Student

<table>
<thead>
<tr>
<th>Name of Interviewee</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td></td>
</tr>
</tbody>
</table>

**Introduction**

*Recording starts...*

Good morning! Thank you for agreeing to meet with me and share your views.

As you may know, the purpose of this interview is to help us understand your learning and teaching with technology practices and experiences.

Before we begin, let me review some important considerations. I am recording this interview but will keep all responses confidential. The transcript will be emailed to you for data validity assurance. I am just as interested in both negative and positive comments and often the more challenging and in depth comments are the most helpful.

11. Which academic year ARE you in?

**Section 1: Educational Technology**

12. In your opinion, which educational technologies impress you the most?

13. In your opinion, which educational technologies or the situations caused by them frustrate you the most?
   - Probing: do you have any suggestions or solutions to the situation described?

**Section 2: Educational Experiences**

14. What is your aim as a student in the university?
   - Probing: do you think you have / will achieve this aim?

15. In general, what do you think about the way your lecturers teach?
   - Probing: do you have any recommendations to them?
16. Do you think that the national education policy in your country has any impact to you/your faculty/university? (Show the different paragraph below to interviewee from different country.)

**Purposes of Higher Education in the UK**

- To enable people to develop their capabilities and fulfill their potential, both personally and at work;
- To increase knowledge, and understanding for their own sake and to foster their application for the benefit of the economy and society;
- To play a major role in shaping a democratic, civilised, and inclusive society.


---

**Objectives of Higher Education in Malaysia**

- Ongoing effort towards further developing the potential of individuals in a holistic and integrated manner; so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God.
- To produce Malaysian citizens who are
  - knowledgeable and competent
  - possesses high moral standards
  - responsible and capable of achieving a high level of personal wellbeing
  - able to contribute to the betterment of the society and the nation at large (e.g. social and economic society).

Section 3: Blended Learning Practices

17. Blended Learning is a phrase which is increasingly being used in education. In our context, it means “the combination and blend of face-to-face and technology-mediated instruction”

- Do you think that the role of your lecturer will be changed by embedding educational technologies into the teaching and learning practices?
- Do you think that the blended learning (such as embed blog, wiki, e-community, email in learning and teaching) can help you to develop yourself in a holistic manner?

18. If there is ONE educational system in this university, for example an expert system which can help you in learning experience, what functions/facilities you wish it to have? (The below list is only for interviewer’s reference and the interviewer will provide example if the interviewee having problem to answer.)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerPoint</td>
<td></td>
</tr>
<tr>
<td>Personal Website</td>
<td></td>
</tr>
<tr>
<td>CAA</td>
<td></td>
</tr>
<tr>
<td>Practical Simulation</td>
<td></td>
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<tr>
<td>VLE</td>
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<tr>
<td>Online Forum</td>
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<tr>
<td>Online Discussion board</td>
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<tr>
<td>Online Chat Room</td>
<td></td>
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<tr>
<td>Blog</td>
<td></td>
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<tr>
<td>Video Conference</td>
<td></td>
</tr>
<tr>
<td>E-community</td>
<td></td>
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<tr>
<td>Real Time Polling system</td>
<td></td>
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<tr>
<td>Rich Media Learning</td>
<td></td>
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<tr>
<td>Object</td>
<td></td>
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<tr>
<td>Podcasting</td>
<td></td>
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<tr>
<td>Webquest</td>
<td></td>
</tr>
<tr>
<td>Wiki</td>
<td></td>
</tr>
</tbody>
</table>

19. In your opinion, how does it feel to be a student in this university/country?

20. Please share any other comment or suggestions you have on the way learning can be blended.

Thank you for your time. Your value input is greatly appreciated.
**Appendix E: Matrix Tables for Cross-disciplinary and Cross-case Comparison**

<table>
<thead>
<tr>
<th>Confirming Experiences</th>
<th>Science-based Disciplines</th>
<th>Social Science-based disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL enabled learning accessibility, flexibility and organisation (e.g. BL enabled repeatable learning for lectures)</td>
<td>D6, C4, C8, A8, A4, B6</td>
<td>D2, C7, C2, B4</td>
</tr>
<tr>
<td></td>
<td>Stu: D1, D4, D5, C1, C2, B2, B3</td>
<td>Stu: D2, D3, C3, A2, A3</td>
</tr>
<tr>
<td></td>
<td>☸</td>
<td></td>
</tr>
<tr>
<td>BL engaged dialogue and interaction</td>
<td>A4</td>
<td>D2, C2, C5, A3, B2, B4</td>
</tr>
<tr>
<td></td>
<td>Stu: D1, D4</td>
<td>Stu B1</td>
</tr>
<tr>
<td></td>
<td>☸</td>
<td></td>
</tr>
<tr>
<td>BL enhanced motivation, satisfaction and enjoyment</td>
<td>Stu D4</td>
<td>C1, A3, B4</td>
</tr>
<tr>
<td></td>
<td>☸</td>
<td></td>
</tr>
<tr>
<td>BL enhanced visualisation and teaching of complex or abstract knowledge</td>
<td>D6, C8, A7, A8, B7, B8, B6</td>
<td>D1, B4</td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
<tr>
<td>BL enhanced high order thinking, critical and reflective skills</td>
<td></td>
<td>C7, B2, B4</td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
<tr>
<td>BL enhanced independent learning</td>
<td></td>
<td>D3 (voiced on behalf of Geology)</td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
<tr>
<td>BL enhanced personalised learning</td>
<td>Stu D1</td>
<td>C7</td>
</tr>
<tr>
<td></td>
<td>☸</td>
<td></td>
</tr>
<tr>
<td>BL enhanced the recording history of learners’ development</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>☸</td>
<td></td>
</tr>
<tr>
<td>BL enhanced the design and preparation of learning materials and test</td>
<td>B10</td>
<td>C7</td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
<tr>
<td>BL enhanced research experiences</td>
<td>A7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
<tr>
<td>BL enhanced assessment for soft skills</td>
<td></td>
<td>C7</td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
<tr>
<td>BL enhanced formative assessment</td>
<td></td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
<tr>
<td>BL transformed educators’ attitude and values (or epistemology)</td>
<td></td>
<td>C6, A6</td>
</tr>
<tr>
<td></td>
<td>☻</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

- ☸ = both academic(s) and student(s) had that experience
- ☼ = student(s) had that experience
- ✓ = lecturer(s) had that experience

Table E1. Cross-disciplinary Experiences
Appendix E

- Learners’ expectation such as blended assessment feedback.

- Reject “blanket approach” for blended learning - individual and disciplinary differences must be recognised.

- Empowerment is the important theme - to practically empower educators to make their choices of blended learning: (1) exemplar or successful case studies; (2) The tailored workshops in disciplinary group for better and practical peer-support.

- Link between scholarly recognition and teaching excellent act as motivation

- Yet to reach out the “unconverted” group and breakthrough the impression of “too much technology” - by bringing people into education, not technology alone; and demand-led disruption.

- ICT Competency and supporting resources form the “natural reason” for embedding blended learning.

- Time consuming.

- Blended Learning challenge and transform teaching practices

- Awareness before Change is proposed

- Blended learning is not a total solution for all disciplines

- Educational technology is merely a tool to compliment but not to replace f2f; or to be seen as a symbiotic relationship

- Academics are interested in educational technology; try it out by self-initiative and driven by confirming experience

- Active learning can be promoted by blended learning – a breakthrough cultural barrier.

- Academic should not be the developer but director of blended learning supported by a crew team.

- In education, f2f learning and teaching is the main stream and technology is only considered as a supplementary tool.

- Community of enquiry was recognised

---

Table E2. Cross Case Comparison – The Blended Learning Perception

<table>
<thead>
<tr>
<th>UoL</th>
<th>UoG</th>
<th>UM</th>
<th>UTAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Learners’ expectation such as blended assessment feedback.</td>
<td>- Link between scholarly recognition and teaching excellent act as motivation</td>
<td>- Awareness before Change is proposed</td>
<td>- Academic should not be the developer but director of blended learning supported by a crew team.</td>
</tr>
<tr>
<td>- Reject “blanket approach” for blended learning - individual and disciplinary differences must be recognised.</td>
<td>- Yet to reach out the “unconverted” group and breakthrough the impression of “too much technology” - by bringing people into education, not technology alone; and demand-led disruption.</td>
<td>- Blended learning is not a total solution for all disciplines</td>
<td>- In education, f2f learning and teaching is the main stream and technology is only considered as a supplementary tool.</td>
</tr>
<tr>
<td>- Empowerment is the important theme - to practically empower educators to make their choices of blended learning: (1) exemplar or successful case studies; (2) The tailored workshops in disciplinary group for better and practical peer-support.</td>
<td>- ICT Competency and supporting resources form the “natural reason” for embedding blended learning.</td>
<td>- Educational technology is merely a tool to compliment but not to replace f2f; or to be seen as a symbiotic relationship</td>
<td>- Community of enquiry was recognised</td>
</tr>
<tr>
<td>- Time consuming.</td>
<td>- Blended Learning challenge and transform teaching practices</td>
<td>- Academics are interested in educational technology; try it out by self-initiative and driven by confirming experience</td>
<td></td>
</tr>
</tbody>
</table>

291
Appendix F: Details of the Research Participants

**Academics**

<table>
<thead>
<tr>
<th>Label</th>
<th>Gender</th>
<th>Title</th>
<th>Disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Female</td>
<td>The Associate Deans of the Faculty, PhD</td>
<td>Computer Science</td>
</tr>
<tr>
<td>A1</td>
<td>Female</td>
<td>Associate Professor, Former deputy dean,</td>
<td>Computer Science</td>
</tr>
<tr>
<td>A3</td>
<td>Female</td>
<td>Associate Professor, PhD</td>
<td>Education and Pedagogy</td>
</tr>
<tr>
<td>A4</td>
<td>Female</td>
<td>Associate Professor, Deputy Dean, PhD</td>
<td>Computer Science</td>
</tr>
<tr>
<td>A5</td>
<td>Male</td>
<td>Senior Lecturer, PhD</td>
<td>Computing and Math</td>
</tr>
<tr>
<td>A6</td>
<td>Female</td>
<td>Senior Lecturer, PhD</td>
<td>Education</td>
</tr>
<tr>
<td>A7</td>
<td>Male</td>
<td>Senior Lecturer, PhD</td>
<td>Computing and Math</td>
</tr>
<tr>
<td>A8</td>
<td>Female</td>
<td>Senior Lecturer</td>
<td>Computer Science</td>
</tr>
<tr>
<td>A9</td>
<td>Male</td>
<td>Dean of the Faculty, PhD</td>
<td>Education</td>
</tr>
<tr>
<td>B1</td>
<td>Female</td>
<td>Assistant Professor, PhD</td>
<td>Psychology, IT, Multimedia</td>
</tr>
<tr>
<td>B2</td>
<td>Female</td>
<td>Assistant Professor, PhD</td>
<td>Language Studies</td>
</tr>
<tr>
<td>B3</td>
<td>Male</td>
<td>Assistant Professor</td>
<td>Mathematics</td>
</tr>
<tr>
<td>B4</td>
<td>Female</td>
<td>Lecturer</td>
<td>Arts and Social Science</td>
</tr>
<tr>
<td>B5</td>
<td>Male</td>
<td>Assistant Professor, PhD</td>
<td>Computing and Engineering</td>
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<tr>
<td>B6</td>
<td>Male</td>
<td>Assistant Professor, PhD</td>
<td>Computing</td>
</tr>
<tr>
<td>B7</td>
<td>Male</td>
<td>Course Tutor Assistant Professor</td>
<td>Computing and Engineering</td>
</tr>
<tr>
<td>B8</td>
<td>Male</td>
<td>Assistant Professor, Course Tutor, PhD</td>
<td>Applied Mathematics</td>
</tr>
<tr>
<td>B9</td>
<td>Female</td>
<td>Lecturer</td>
<td>Computing</td>
</tr>
<tr>
<td>B10</td>
<td>Female</td>
<td>Lecturer</td>
<td>Computing</td>
</tr>
<tr>
<td>C1</td>
<td>Male</td>
<td>Head of Learning and Teaching, PhD</td>
<td>Learning and Development</td>
</tr>
<tr>
<td>C2</td>
<td>Female</td>
<td>Head of Learning and Teaching, PhD</td>
<td>Education and Educational Technology</td>
</tr>
<tr>
<td>C3</td>
<td>Male</td>
<td>Professor, PhD</td>
<td>Engineering and Education</td>
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<tr>
<td>C4</td>
<td>Female</td>
<td>Head of Learning and Teaching, PhD</td>
<td>Computer Science</td>
</tr>
<tr>
<td>C5</td>
<td>Male</td>
<td>Head of Division, PhD</td>
<td>Psychology and Education</td>
</tr>
<tr>
<td>C6</td>
<td>Male</td>
<td>Associate Head, Principal Lecturer</td>
<td>Knowledge Management and Educational Technology</td>
</tr>
<tr>
<td>C7</td>
<td>Female</td>
<td>Manager and Principal Lecturer</td>
<td>Education and blended learning</td>
</tr>
<tr>
<td>C8</td>
<td>Male</td>
<td>Associate Dean, PhD</td>
<td>Computer Science</td>
</tr>
<tr>
<td>C9</td>
<td>Male</td>
<td>Senior Lecturer, PhD</td>
<td>Computing Science</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>Title and Position</td>
<td>Disciplines</td>
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**Students**

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