A QUASI-EXPERIMENT INVESTIGATING THE IMPACT OF
LETTER BINGO ON HONG KONG JUNIOR PRIMARY SCHOOL
STUDENTS’ SPELLING PERFORMANCE WITH REFERENCE TO
PERCEPTIONS OF MOTIVATION IN LEARNING ENGLISH AS L2

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Abstract

This quasi-experiment investigates the impact of Letter Bingo (a modified Bingo game encompassing phonics instruction) on the spelling performance and perceived motivation in learning English of 27 Hong Kong Primary 3 students. Three volunteer groups (Experimental Group, n=8; Placebo Group, n=9; Control Group, n=10) participated over one school term. Quantitative data for measuring spelling performance were drawn from 5 sets of dictation scores and qualitative data for measuring motivation were drawn from 3 interviews with students, parents and teachers. Unexpectedly, all groups experienced a decline in spelling performance over the duration of the study. For the Experimental Group, findings drawn from the quantitative data show no positive impact of Letter Bingo on spelling performance and findings drawn from the qualitative data reveal that some students perceived a positive impact of Letter Bingo on their spelling performance and motivation (however, this finding is not supported by parent and teacher perceptions, and more importantly, is not supported by the quantitative data). Noting that in this quasi-experiment, the quantitative data are the main data and the qualitative data are interpreted in the context of the quantitative data, the qualitative data alone might suggest that limited positive impact is rendered unreliable by the power of the quantitative data. Caution is needed when interpreting findings of this study because of the methodological concerns including the small sample size, the lack of randomization and breadth of interview questions as well as data relating to the perceived motivation of the Control Group. It is firmly concluded that the efficacy of Letter Bingo has not been robustly demonstrated in this study. Acknowledging that generalizations of the findings to the wider population are limited and are not the objective of this study, this quasi-experiment demonstrates some methodological insights into the investigation of using games in educational settings thus providing groundwork for further research on the impact of learning games particularly with language learning.
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### List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Treatment of groups</td>
</tr>
<tr>
<td>2</td>
<td>Run-down of each Bingo session</td>
</tr>
<tr>
<td>3</td>
<td>Results of groups in pilot Bingo session</td>
</tr>
<tr>
<td>4</td>
<td>Descriptive statistics for D1 and D2 scores among groups</td>
</tr>
<tr>
<td>5</td>
<td>Wilcoxon signed rank test for paired data (D1 and D2 mean scores)</td>
</tr>
<tr>
<td>6</td>
<td>One-way ANOVA for the mean scores of D1 and D2 (without SEN)</td>
</tr>
<tr>
<td>7</td>
<td>One-way ANOVA for the mean scores of D1 and D2 (with SEN)</td>
</tr>
<tr>
<td>8</td>
<td>Descriptive statistics for dictations among groups</td>
</tr>
<tr>
<td>9</td>
<td>Wilcoxon signed rank test for paired data (average of D1 and D2, D5)</td>
</tr>
<tr>
<td>10</td>
<td>Mann-Whitney U-test (over one school term)</td>
</tr>
<tr>
<td>11</td>
<td>Mann-Whitney U-test (at each observation)</td>
</tr>
<tr>
<td>12</td>
<td>Internal reliability of 5 sets of dictation scores</td>
</tr>
<tr>
<td>13</td>
<td>Test-retest for dictation scores</td>
</tr>
<tr>
<td>14</td>
<td>The composition of words in D1-D5</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>15 Percentage of KS2 words in dictations and dictation scores in ranking order among groups</td>
<td>268</td>
</tr>
<tr>
<td>16 Total number of words in dictations and dictation scores in ranking order among groups</td>
<td>269</td>
</tr>
<tr>
<td>17 Interview questions for students</td>
<td>275</td>
</tr>
<tr>
<td>18 Reasons for learning English as indicated by groups at Interview 3</td>
<td>277</td>
</tr>
<tr>
<td>19 Desire for learning English as indicated by the Experimental Group at Interview 3</td>
<td>278</td>
</tr>
<tr>
<td>20 Desire for learning English as indicated by the Placebo Group at Interview 3</td>
<td>279</td>
</tr>
<tr>
<td>21 Change in desire for learning English between groups</td>
<td>280</td>
</tr>
<tr>
<td>22 Strategies employed by the Experimental Group as indicated at Interview 3</td>
<td>281</td>
</tr>
<tr>
<td>23 Strategies employed by the Placebo Group as indicated at Interview 3</td>
<td>282</td>
</tr>
<tr>
<td>24 Change in strategies between groups</td>
<td>283</td>
</tr>
<tr>
<td>25 Views on spelling as indicated by the Experimental Group at interviews</td>
<td>284</td>
</tr>
<tr>
<td>26 Views on spelling as indicated by the Placebo Group at interviews</td>
<td>285</td>
</tr>
<tr>
<td>27 Change in views on spelling between groups</td>
<td>287</td>
</tr>
<tr>
<td>28 Views on phonics as indicated by the Experimental Group at interviews</td>
<td>288</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>29 Views on phonics as indicated by the Placebo Group at interviews</td>
<td>289</td>
</tr>
<tr>
<td>30 Overall views on phonics between groups</td>
<td>290</td>
</tr>
<tr>
<td>31 Views on dictation results as indicated by the Experimental Group at interviews</td>
<td>291</td>
</tr>
<tr>
<td>32 Views on dictation results as indicated by the Placebo Group at interviews</td>
<td>292</td>
</tr>
<tr>
<td>33 Change in views on dictation results between groups</td>
<td>293</td>
</tr>
<tr>
<td>34 Time spent in preparing for dictation for the Experimental Group</td>
<td>295</td>
</tr>
<tr>
<td>35 Time spent in preparing for dictation for the Placebo Group</td>
<td>296</td>
</tr>
<tr>
<td>36 Change in time spent in preparing for dictation between groups</td>
<td>297</td>
</tr>
<tr>
<td>37 Views on Bingo game between groups</td>
<td>298</td>
</tr>
<tr>
<td>38 Views on Bingo game in relation to dictation between groups</td>
<td>300</td>
</tr>
<tr>
<td>39 Views on phonics in relation to dictation between groups</td>
<td>302</td>
</tr>
<tr>
<td>40 Interview questions for parents</td>
<td>308</td>
</tr>
<tr>
<td>41 Parents’ view on child’s spelling performance for the Experimental Group</td>
<td>309</td>
</tr>
<tr>
<td>42 Parents’ view on child’s spelling performance for the Placebo Group</td>
<td>311</td>
</tr>
<tr>
<td>43 Change in child’s spelling performance as perceived by parents between groups</td>
<td>313</td>
</tr>
<tr>
<td>44 Parents’ view on child’s phonics skills for the Experimental Group</td>
<td>314</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>45</td>
<td>Parents’ view on child’s phonics skills for the Placebo Group</td>
</tr>
<tr>
<td>46</td>
<td>Change in child’s phonics skills as perceived by parents between groups</td>
</tr>
<tr>
<td>47</td>
<td>Parents’ view on child’s dictation results for the Experimental Group</td>
</tr>
<tr>
<td>48</td>
<td>Parents’ view on child’s dictation results for the Placebo Group</td>
</tr>
<tr>
<td>49</td>
<td>Change in child’s dictation results as indicated by parents between groups</td>
</tr>
<tr>
<td>50</td>
<td>Strategies employed by the Experimental Group as indicated by parents</td>
</tr>
<tr>
<td>51</td>
<td>Strategies employed by the Placebo Group as indicated by parents</td>
</tr>
<tr>
<td>52</td>
<td>Change in child’s strategies for preparing for dictation as indicated by parents between groups</td>
</tr>
<tr>
<td>53</td>
<td>Time spent in preparing for dictation as indicated by parents for the Experimental Group</td>
</tr>
<tr>
<td>54</td>
<td>Time spent in preparing for dictation as indicated by parents for the Placebo Group</td>
</tr>
<tr>
<td>55</td>
<td>Change in time spent in preparing for dictation as indicated by parents between groups</td>
</tr>
<tr>
<td>56</td>
<td>Child’s view on Bingo class as indicated by parents between groups</td>
</tr>
<tr>
<td>57</td>
<td>Parents’ view on Bingo class between groups</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>58 Parents’ view on phonics between groups</td>
<td>333</td>
</tr>
<tr>
<td>59 Interview questions for teachers</td>
<td>338</td>
</tr>
<tr>
<td>60 Teachers’ view on students’ motivation for the Experimental Group</td>
<td>339</td>
</tr>
<tr>
<td>61 Teachers’ view on students’ motivation for the Placebo Group</td>
<td>341</td>
</tr>
<tr>
<td>62 Teachers’ view on change in students’ motivation between groups</td>
<td>345</td>
</tr>
<tr>
<td>63 Teachers’ view on students’ performance in dictation for the Experimental Group</td>
<td>346</td>
</tr>
<tr>
<td>64 Teachers’ view on students’ performance in dictation for the Placebo Group</td>
<td>347</td>
</tr>
<tr>
<td>65 Teachers’ view on change in students’ academic performance between groups</td>
<td>349</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Diagrams</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Assignment of groups</td>
</tr>
<tr>
<td>2</td>
<td>Students signed up for each group</td>
</tr>
<tr>
<td>3</td>
<td>Number of boys and girls among groups</td>
</tr>
<tr>
<td>4</td>
<td>Age of students among groups</td>
</tr>
<tr>
<td>5</td>
<td>Classes of students among groups</td>
</tr>
<tr>
<td>6</td>
<td>Overview of the implementation procedures</td>
</tr>
<tr>
<td>7</td>
<td>Mean score differences between D1 and D2 among groups</td>
</tr>
<tr>
<td>8</td>
<td>Mean scores of D1 – D5 among groups (without SEN)</td>
</tr>
<tr>
<td>9</td>
<td>Mean scores of D1 – D5 among groups (with SEN)</td>
</tr>
<tr>
<td>10</td>
<td>Pre-treatment and post-treatment mean scores for the Experimental Group</td>
</tr>
<tr>
<td>11</td>
<td>Pre-treatment and post-treatment mean scores for the Control Group</td>
</tr>
<tr>
<td>12</td>
<td>Pre-treatment and post-treatment mean scores for the Placebo Group</td>
</tr>
<tr>
<td>13</td>
<td>Pre-treatment and post-treatment mean scores for all groups</td>
</tr>
</tbody>
</table>
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>1</td>
</tr>
<tr>
<td>Abstract</td>
<td>2</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>3</td>
</tr>
<tr>
<td>List of tables</td>
<td>4</td>
</tr>
<tr>
<td>Diagrams</td>
<td>9</td>
</tr>
<tr>
<td><strong>Chapter 1</strong>              <strong>Introduction</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 Overview</td>
<td>22</td>
</tr>
<tr>
<td>1.2 Significance of the study</td>
<td>24</td>
</tr>
<tr>
<td>1.2.1 Decline of proficiency in English in Hong Kong</td>
<td>24</td>
</tr>
<tr>
<td>1.2.1.1 Role of English</td>
<td>26</td>
</tr>
<tr>
<td>1.2.1.2 Learning English as L2</td>
<td>28</td>
</tr>
<tr>
<td>1.2.1.3 The curriculum</td>
<td>29</td>
</tr>
<tr>
<td>1.2.2 Spelling in L2 learning</td>
<td>32</td>
</tr>
<tr>
<td>1.2.3 Motivation in L2 learning</td>
<td>37</td>
</tr>
<tr>
<td>1.2.4 Junior primary education</td>
<td>40</td>
</tr>
<tr>
<td>1.2.5 Use of games as an instructional approach</td>
<td>41</td>
</tr>
<tr>
<td>1.2.6 Bingo as a specific language game</td>
<td>49</td>
</tr>
<tr>
<td>1.3 Objectives of the study</td>
<td>53</td>
</tr>
<tr>
<td>1.4 Research Questions and Hypotheses</td>
<td>54</td>
</tr>
<tr>
<td>1.5 Organization of the study</td>
<td>58</td>
</tr>
<tr>
<td>Chapter 2</td>
<td>Literature Review</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------</td>
</tr>
<tr>
<td>2.1</td>
<td>Overview…………… ................................................. 59</td>
</tr>
<tr>
<td>2.2</td>
<td>Theoretical underpinnings……………………………………… 63</td>
</tr>
<tr>
<td>2.3</td>
<td>Spelling in language learning…………………………………… 68</td>
</tr>
<tr>
<td>2.3.1</td>
<td>Words to be spelt…………………………………………………………… 69</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Spellers……………………………………………………………………… 70</td>
</tr>
<tr>
<td>2.3.2.1</td>
<td>Developmental nature………………………………………………………… 71</td>
</tr>
<tr>
<td>2.3.2.2</td>
<td>Conceptual nature…………………………………………………………… 72</td>
</tr>
<tr>
<td>2.3.2.3</td>
<td>Motivation in spelling………………………………………………………… 73</td>
</tr>
<tr>
<td>2.3.3</td>
<td>Methods of instruction………………………………………………………… 74</td>
</tr>
<tr>
<td>2.3.3.1</td>
<td>Rote learning…………………………………………………………………… 74</td>
</tr>
<tr>
<td>2.3.3.2</td>
<td>Phonics instruction…………………………………………………………… 76</td>
</tr>
<tr>
<td>2.3.3.3</td>
<td>Game-based learning…………………………………………………………… 80</td>
</tr>
<tr>
<td>2.4</td>
<td>Motivation in language learning……………………………………… 85</td>
</tr>
<tr>
<td>2.4.1</td>
<td>Motivation from the cognitive perspectives………………………… 86</td>
</tr>
<tr>
<td>2.4.2</td>
<td>Types of motivation…………………………………………………………… 90</td>
</tr>
<tr>
<td>2.4.2.1</td>
<td>Intrinsic / extrinsic motivation……………………………………… 91</td>
</tr>
<tr>
<td>2.4.2.2</td>
<td>Self-motivation…………………………………………………………………… 92</td>
</tr>
<tr>
<td>2.4.2.3</td>
<td>Instrumental / integrative motivation……………………………………… 94</td>
</tr>
<tr>
<td>2.4.3</td>
<td>Effective means to enhance motivation…………………………………… 95</td>
</tr>
<tr>
<td>2.4.4</td>
<td>Teachers’ role…………………………………………………………………… 97</td>
</tr>
<tr>
<td>2.4.5</td>
<td>Cultural differences…………………………………………………………… 100</td>
</tr>
</tbody>
</table>
2.5 Games in learning in general

2.5.1 Conceptual frameworks of educational games

2.5.2 Classifications of games in relation to pedagogical values

2.5.2.1 Strategy for drill-and-practice

2.5.2.2 Strategy for introducing new contents

2.5.2.3 Strategy for reflection

2.5.2.4 Motivational stimuli for learning

2.5.2.5 Strategy for developing tasks

2.5.2.6 Strategy for developing collaboration and social skills

2.5.2.7 Strategy for developing problems and problem-solving skills

2.6 Games in language learning

2.6.1 Linguistic games focusing on accuracy

2.6.1.1 Vocabulary games

2.6.1.2 Spelling games

2.6.1.3 Pronunciation games

2.6.2 Communicative games focusing on fluency

2.6.3 Games focusing on both accuracy and communication

2.6.4 Practical and organizational considerations

2.6.5 Potential concerns of games

2.7 Bingo as a learning game

2.7.1 Elements of Bingo

2.7.1.1 Forms and targets

2.7.1.2 Active participation

2.7.1.3 Chance

2.7.2 Theoretical underpinnings of Bingo

2.7.3 Game functions of Bingo
2.7.4 Motivation in Bingo………………………………………………… 149
2.7.5 Research design…………………………………………………… 150
2.7.6 Related issues and concerns……………………………………… 151
2.7.7 Practical and organizational aspects…………………………… 155
2.8 Summary of literature review in relation to Research Questions …………………………………………………………… 159

Chapter 3 Methodology
3.1 Overview…………………………………………………………… 163
3.2 Research design…………………………………………………… 164
3.3 Sampling……………………………………………………………. 166
3.3.1 Assignment of groups………………………………………… 168
3.3.2 Students in each group………………………………………… 169
3.3.3 Experimental Group / Placebo Group / Control Group……… 172
3.3.4 Control for extraneous factors…………………………………… 174
3.4 Procedures…………………………………………………………… 178
3.5 Instructional intervention………………………………………… 181
3.5.1 Bingo sessions…………………………………………………… 181
3.5.2 Letter Bingo………………………………………………………. 183
3.5.2.1 Gaming of Letter Bingo……………………………………… 183
3.5.2.2 Attributes of Letter Bingo…………………………………… 184
3.5.3 Letter Bingo versus common Bingo…………………………… 188
3.5.4 Analytic phonics…………………………………………………. 189
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5.5</td>
<td>Pre-dictation</td>
<td>190</td>
</tr>
<tr>
<td>3.6</td>
<td>Instruments and measures</td>
<td>192</td>
</tr>
<tr>
<td>3.6.1</td>
<td>Measure of spelling performance</td>
<td>192</td>
</tr>
<tr>
<td>3.6.2</td>
<td>Measure of motivation</td>
<td>193</td>
</tr>
<tr>
<td>3.7</td>
<td>Data collection</td>
<td>198</td>
</tr>
<tr>
<td>3.7.1</td>
<td>Dictation scores</td>
<td>198</td>
</tr>
<tr>
<td>3.7.2</td>
<td>Interviews</td>
<td>199</td>
</tr>
<tr>
<td>3.8</td>
<td>Data analysis</td>
<td>201</td>
</tr>
<tr>
<td>3.8.1</td>
<td>Gain score analysis</td>
<td>202</td>
</tr>
<tr>
<td>3.8.2</td>
<td>Dictation scores</td>
<td>202</td>
</tr>
<tr>
<td>3.8.2.1</td>
<td>Differences between D1 and D2 scores</td>
<td>203</td>
</tr>
<tr>
<td>3.8.2.2</td>
<td>Initial group differences</td>
<td>203</td>
</tr>
<tr>
<td>3.8.2.3</td>
<td>Outliers</td>
<td>204</td>
</tr>
<tr>
<td>3.8.2.4</td>
<td>SEN student</td>
<td>204</td>
</tr>
<tr>
<td>3.8.2.5</td>
<td>Treatment effect within groups</td>
<td>204</td>
</tr>
<tr>
<td>3.8.2.6</td>
<td>Treatment effect between groups</td>
<td>205</td>
</tr>
<tr>
<td>3.8.2.7</td>
<td>Reliability of dictation scores</td>
<td>206</td>
</tr>
<tr>
<td>3.8.2.8</td>
<td>Level of difficulty</td>
<td>206</td>
</tr>
<tr>
<td>3.8.3</td>
<td>Interviews</td>
<td>208</td>
</tr>
<tr>
<td>3.9</td>
<td>Validity of the study</td>
<td>210</td>
</tr>
<tr>
<td>3.9.1</td>
<td>Internal validity</td>
<td>210</td>
</tr>
<tr>
<td>3.9.1.1</td>
<td>Participants</td>
<td>211</td>
</tr>
<tr>
<td>3.9.1.2</td>
<td>Researcher, game conductors, interviewers</td>
<td>214</td>
</tr>
</tbody>
</table>
### 3.9.1.3 Instrument

### 3.9.2 External validity

### 3.9.3 Face/content validity

### 3.10 Reliability of the study

### 3.11 Strengths and limitations of this quasi-experiment

### 3.12 Pilot studies

#### 3.12.1 Pilot interview

##### 3.12.1.1 Interview questions

#### 3.12.2 Pilot Bingo session

##### 3.12.2.1 Rules and scoring of game

##### 3.12.2.2 Duration of Bingo session

##### 3.12.2.3 Role of researcher

### 3.13 Ethical and practical issues

### Chapter 4 Findings

#### 4.1 Overview

#### 4.2 Quantitative data

##### 4.2.1 Differences between D1 and D2 scores

##### 4.2.2 Initial group differences

##### 4.2.3 Outliers

##### 4.2.4 SEN student

##### 4.2.5 Treatment effect within groups
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.5.1</td>
<td>Treatment effect in percentages</td>
</tr>
<tr>
<td>4.2.5.2</td>
<td>Significant difference of treatment effect</td>
</tr>
<tr>
<td>4.2.6</td>
<td>Treatment effect between groups</td>
</tr>
<tr>
<td>4.2.6.1</td>
<td>Treatment effect in percentages</td>
</tr>
<tr>
<td>4.2.6.2</td>
<td>Significant difference of treatment effect</td>
</tr>
<tr>
<td>4.2.6.3</td>
<td>Over one school term</td>
</tr>
<tr>
<td>4.2.6.4</td>
<td>At each observation</td>
</tr>
<tr>
<td>4.2.7</td>
<td>Reliability of dictation scores</td>
</tr>
<tr>
<td>4.2.8</td>
<td>Level of difficulty</td>
</tr>
<tr>
<td>4.2.9</td>
<td>Correlation between level of difficulty and dictation scores</td>
</tr>
<tr>
<td>4.2.10</td>
<td>Correlation between number of words in dictation and dictation scores</td>
</tr>
<tr>
<td>4.2.11</td>
<td>Summary of quantitative findings</td>
</tr>
<tr>
<td>4.3</td>
<td>Qualitative data</td>
</tr>
<tr>
<td>4.3.1</td>
<td>Interviews with students</td>
</tr>
<tr>
<td>4.3.1.1</td>
<td>Q1 ‘Why do you think you learn English, any change in your view before/after Bingo?’</td>
</tr>
<tr>
<td>4.3.1.2</td>
<td>Q2 ‘Do you want to learn English before/after Bingo? And why?’</td>
</tr>
<tr>
<td>4.3.1.3</td>
<td>Q3 ‘What do you do to improve your proficiency in English? Any change before/after Bingo?’</td>
</tr>
<tr>
<td>4.3.1.4</td>
<td>Q4 ‘How do you find English spelling? And why?’</td>
</tr>
<tr>
<td>4.3.1.5</td>
<td>Q5 ‘How do you find phonics? And why?’</td>
</tr>
</tbody>
</table>

Page 16
4.3.1.6 Q6 ‘How do you find your English dictation results? And why?’ ................................. 290

4.3.1.7 Q7 ‘How much time do you spend in preparing for English dictation?’ ............................. 294

4.3.1.8 Q8 ‘How do you feel about the Bingo game? And why?’ …… 298

4.3.1.9 Q9 ‘Do you think the Bingo game helps improve your dictation results? And why?’ ......................... 300

4.3.1.10 Q10 ‘Do you think phonics helps improve dictation results? And why?’ ........................................ 301

4.3.1.11 Summary of findings for the Experimental Group (S10 – S18) .................................................. 303

4.3.1.12 Summary of findings for the Placebo Group (S1 – S9) …….. 305

4.3.2 Interviews with parents ........................................ 307

4.3.2.1 Q11 ‘Does your child speak/use English at home?’ ………. 308

4.3.2.2 Q12 ‘Has your child received any additional tutoring for English between Dictation 1 and Dictation 5?’ ………… 308

4.3.2.3 Q13 ‘How do you find your child’s performance in spelling?’ 309

4.3.2.4 Q14 ‘How do you find your child’s performance in phonics?’ 313

4.3.2.5 Q15 ‘How do you find your child’s performance in English dictation?’ ................................. 317

4.3.2.6 Q16 ‘How does your child prepare for English dictation?’……… 320

4.3.2.7 Q17 ‘How long does your child take to prepare for English dictation?’ ................................. 325

4.3.2.8 Q18 ‘What did your child say about the Bingo class?’ ………328

4.3.2.9 Q19 ‘Do you think the Bingo game helps your child in English dictation? And how?’ ......................... 330
4.3.2.10 Q20 ‘Do you think phonics helps your child in English Dictation? And how?’ ................................................................. 332

4.3.2.11 Summary of findings for the Experimental Group (P10-P18).................................................................................. 334

4.3.2.12 Summary of findings for the Placebo Group (P1-P9)........ 336

4.3.3 Interviews with teachers...................................................... 338

4.3.3.1 Q21 ‘How do you find (student)’s performance in English class, in terms of motivation? Any example?......................... 338

4.3.3.2 Q22 ‘How do you find (student)’s performance in spelling / dictation?................................................................. 345

4.3.4 Summary of qualitative findings........................................ 350

Chapter 5 Discussion

5.1 Overview ............................................................................ 354

5.2 Discussion on treatment effects within groups...................... 355

5.2.1 Treatment effects within Experimental Group................. 355

5.2.1.1 Treatment effects on spelling performance within Experimental Group .......................................................... 355

5.2.1.2 Treatment effects on perceived motivation within Experimental Group .......................................................... 355

5.2.2 Treatment effects within Control Group............................. 361

5.2.3 Treatment effects within Placebo Group............................. 364

5.2.3.1 Treatment effects on spelling performance within Placebo Group .......................................................... 364

5.2.3.2 Treatment effects on perceived motivation within Placebo Group .......................................................... 367
Discussion on treatment effects between groups

5.3.1 Q1: Is there any difference in spelling performance between the Experimental Group and the Control Group after treatment? 368

5.3.2 Q2: Is there any difference in spelling performance between the Experimental Group and the Placebo Group after treatment? 372

5.3.3 Q3: Is there any difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment? 375

Discussion on additional findings

5.4 SEN student 380

5.4.1 Reasons for the decline in spelling performance 381

5.4.2 Types of motivation 387

5.4.3 Students’ perspectives 390

5.4.4 Parents’ perspectives 392

5.4.5 Strengths and limitations of the study 395

Chapter 6 Conclusion

6.1 Overview 399

6.2 Summary 400

6.2.1 Intervventional impact 400

6.2.2 Implications of this study 404

6.2.3 Classroom practices and other applications 405

6.3 Emergence of new knowledge 406
6.4 Future implications……………………………………………… 407
6.5 Recommendations for further research……………………..409

Appendix 1 Summary of strategies from Dörnyei (1994a)………….. 412
Appendix 2 Classification of games……………………………………..413
Appendix 3 Game functions from Dempsey et al. (1993)………………414
Appendix 4 Game functions from the constructivist learning perspectives ………………………………………………….. 415
Appendix 5 Linguistic games focusing on accuracy…………………. 416
Appendix 6 Summary of empirical studies on vocabulary games focusing on accuracy…………………………………… 417
Appendix 7 Summary of empirical studies on spelling games focusing on accuracy…………………………………… 418
Appendix 8 Summary of empirical studies on language games focusing on communication ……………………………… 420
Appendix 9 Summary of an empirical study on language games focusing on both accuracy and communication……………. 422
Appendix 10 Summary of empirical studies on language games …….. 423
Appendix 11 7 questions for consideration for language games from Hong (2002)…………………………………………………… 424
Appendix 12 Practical and organizational aspects of choosing language games ………………………………………………… 425
Appendix 13 Summary of empirical studies on Bingo in various subject disciplines ……………………………………………… 426
Appendix 14 Sign-up form I…………………………………………… 428
Appendix 15 Completion form………………………………………… 429
Appendix 16  Sign-up form II................................................................. 430
Appendix 17  Copy of dictation revision sheet.............................. 431
Appendix 19  Rules and scoring of Letter Bingo............................ 433
Appendix 20  Copy of Letter Bingo sheet....................................... 434
Appendix 21  Extracts of interviews with students......................... 435
Appendix 22  Extracts of interviews with parents.......................... 436
Appendix 23  Extracts of interviews with teachers......................... 437
Appendix 24  Extracts of back-translation...................................... 438

References..........................................................................................439

CD  with transcriptions in English and Chinese of Interviews 1, 2 and 3 with
students, parents and teachers, 5 dictation revision sheets and school
calendar (attached)
Chapter 1    Introduction

1.1 Overview

This quasi-experimental study investigates the impact of Letter Bingo (a modified Bingo game encompassing phonics instruction) on Hong Kong junior primary school students’ spelling performance and perceived motivation in learning English as a second language (L2). The primary objective of this study is to examine the impact of Letter Bingo on spelling performance and the secondary objective is to examine the impact of Letter Bingo on perceived motivation. Being situated within the constructivist perspectives, the impact of Letter Bingo as an instructional strategy for drilling spelling is established on learners’ active engagement in learning through meaningful activities such as games and motivation being a key determinant of successful L2 learning. In this study, the impact on learning comprises cognitive learning outcomes (including spelling acquisition and retention) and affective learning outcomes (including thoughts, beliefs and motivation).
The rest of Chapter 1 presents the justifications of the significance of this study by addressing the perceived decline of English proficiency in Hong Kong, spelling and motivation in L2 learning, the employing of games in learning in general and Bingo as a specific game to facilitate learning. The justifications are followed by the objectives of this study and the future implications. Research Questions are then addressed before outlining the organization of this study.
1.2 Significance of the study

The significance of this study is based on the following premises:

(a) the decline of proficiency in English in Hong Kong

(b) spelling in L2 learning

(c) the role of motivation in L2 learning

(d) the employing of games as an instructional approach in learning in general

(e) the employing of Bingo as a specific instructional game.

The rest of Section 1.2 will present the justifications of the above premises thus providing a solid theoretical basis for the present study of investigating the impact of Letter Bingo on the spelling performance and perceived motivation in learning English of students in Hong Kong.

1.2.1 Decline of proficiency in English in Hong Kong

The significance of this study primarily rests upon the perceived decline of students’ English proficiency in Hong Kong since the 1970s. Despite the fact that most local students start learning English at kindergarten level and that the government of Hong Kong has been implementing massive education reforms to
improve the situation over the past few decades, evidence in ‘A Review of Research in English Language Education in Hong Kong in the Past 25 Years: Reflections and the Way Forward’ (Poon, 2009) shows that the decline of English proficiency persists. As also shown in studies conducted in Malaysia (Gaudart, 1999), Oman (Al-Issa, 2009), Taiwan (Wang, 2010) and Vietnam (Nguyen and Khuat, 2003) where English is learnt as L2, the reasons for the proficiency decline of English in Hong Kong include the text-book based and teacher-centred instructional approach, the examination-oriented nature of schooling, the traditional physical classroom settings, the class size of over 35 students of mixed abilities and students’ lack of motivation in learning English (Board of Education, 1997; Fung, 2007; Green, 1993; Man, 2003; Morris et al., 1995; Richards, 1993; Wong, 1995). Other researchers note the use of mixed code - “Cantonese with English words inserted” (Education Commission, 1994, p.11), the different medium-of-instruction (MOI) policies in different periods, the decline of teachers’ English proficiency as well as the qualifications of the teaching profession (in terms of the percentage of English teachers holding a first degree in English plus a diploma in education specializing in English) account for the proficiency decline (Biggs and Watkins, 1993; Boyle, 1997; Li, 2008; Lin, 2000; Poon, 2010).
The reasons above can be grouped into three dimensions: policy and curriculum (e.g. MOI policies, mixed-coding, examination-oriented nature of schooling), school and organization (e.g. teaching profession, classroom setting and size, students of mixed abilities in the same class) and pedagogy (e.g. instructional approach, learning contents, motivation of students). Among them, the dimension of pedagogy is the personal interest of the researcher of the present study. Before presenting the justification of the choice of spelling and motivation as the topics of this study, the role of English and the related issues of L2 learning in Hong Kong need to be addressed.

1.2.1.1 Role of English

The crucial role of English has been well established by Hong Kong’s colonial background since 1842. English was the sole official language until 1974 when “the Official Language Ordinance declared both Chinese and English to be official languages ‘for the purposes of communication between the Government or any public officer and members of the public’ ” (Education Commission, 1994, p.16).
The Hong Kong 2011 Population Census - Main Report: Volume 1 (Census and Statistics Department, HKSAR, 2012) shows the total population in mid-2011 exceeds 7.07 million and among the 6.81 million population in the group ‘aged 5 and over’, 89.5% speak Cantonese (a dialect mainly spoken by southern Chinese), 3.5% speak English and 1.4% speak Putonghua (the official language of mainland China) as their ‘usual language’. While Cantonese is ubiquitous in the “racially homogeneous, largely monolingual society” (Evans, 1996, p. 36) and is dominantly used both socially and culturally, English is learnt as L2 and has crucial socio-economic significance due to Hong Kong’s well-established status as an international centre of trade, finance and commerce.

Following Hong Kong’s handover to mainland China in 1997 and the phenomenal rise of China’s political and economic power globally, there is a growing dominance of the Chinese language, particularly Putonghua, in Hong Kong. Nonetheless, English continues to be a major language in the worldwide economic, financial, scientific and technological domains. The investigation of learning English as L2 in Hong Kong is thus significant in the present study.
1.2.1.2 Learning English as L2

In language learning, the difference between L1 acquisition and L2 acquisition must be acknowledged. L1 acquisition operates within the learner’s natural mind and is part of the learner’s life whereas L2 acquisition operates within the learner’s conscious mind and is not an essential life-skill; L2 learners therefore require consciousness and motivation to develop the knowledge of L2 and affective factors such as self-concept, beliefs, anxiety and enjoyment play a determining role during the learning process (Cook, 2007; Crookall and Oxford, 1990; Dörnyei, 1994a, 1994b; Gardner, 1985; Ellis, 1994; Ushioda, 2009).

Taking into consideration the social nature of learning, Williams and Burden (1997) stress that learning a second language involves “an alternation in self-image, the adoption of new social and cultural behaviours and ways of being” (p.115). Also because of the multifaceted nature of language, L2 learning is more complex than the acquisition of new information in that it is a learning process involving personal traits and social components.

Acquisition and learning also need to be distinguished. Although writers have not yet agreed on a shared definition, researchers like Krashen (1987) suggest that
‘acquisition’ is the subconscious process of picking up a language through exposure whereas ‘learning’ involves consciousness and effort. In view of the above, English learning in Hong Kong is considered to be L2 learning because consciousness and motivation are required in Hong Kong students’ learning of English.

1.2.1.3 The curriculum

Since this study focuses on elementary education, the official English Language curriculum, CDC (2002), currently employed by primary schools in Hong Kong must be noted. CDC (2002) is published by the Curriculum Development Council (CDC) - an advisory body giving recommendations to the Hong Kong government on matters relating to curriculum development for the school system.

In support of the curriculum reform put forward by the Education Commission (2000) advocating lifelong learning and whole-person development, CDC (2002) is supplemented by CDC (1997) and CDC (2004) and readers are recommended to make cross-reference to all three Guides.

Being an official document, CDC (2002) not only provides the fundamentals and
assumptions of the learning theories underpinning the primary and junior secondary school curriculum in Hong Kong but also curricular guidelines for classroom practices. Although most Hong Kong students start learning English at kindergarten levels, the free and universal education only begins at junior primary education. The curricular guidelines for classroom practices provided by CDC (2002) are therefore of utmost importance in relation to the proficiency of English in Hong Kong because the primary education is the stage at which the foundation of L2 learning is laid.

However, two major concerns are noted regarding CDC (2002): the theoretical frameworks underpinning the curriculum are implicit and there is a lack of empirical evidence to support the curricular guidelines for classroom practices put forward by CDC (2002). The specification of the theoretical frameworks of a document or a study is highly significant because different theoretical perspectives bring about different assumptions by which interpretations, strategies and pedagogical practices are underpinned and empirical evidence is vital to support the theoretical underpinnings. The lack of specification of the theoretical underpinnings of CDC (2002) brings ambivalence to classroom
practices. An example is the notion of motivation, a significant aspect contributing to L2 learning. In CDC’s (2002) Reference List, works of Gardner and Lambert (1972) and Ellis (1985, 1994) are cited but it is not specified if CDC (2002) is underpinned by the theoretical positions of motivation of Gardner and Lambert (1972) or those of Ellis (1985, 1994). Ambivalence arises because Gardner and Lambert’s (1972) motivation theory is based on the socio-psychological perspectives focusing on the social and pragmatic aspects of motivation while Ellis’ (1985, 1994) motivation theory aligns with the cognitive perspectives focusing on the role that learners’ thoughts, beliefs and affect play during the learning process.

Guidelines for classroom practices suggested by CDC (2002) are based on the implicit beliefs and assumptions of various learning theories; throughout the document, there is a lack of empirical evidence to support the suggestions for practices. Related concerns have in fact been raised in the Education Commission Report No. 6 (Education Commission, 1995) regarding Hong Kong’s language education policy: the policy “does not set out clear goals supported by research into children’s language development and patterns of the acquisition of
language skills in a bilingual context” (p.17).

In the following sections, references to CDC (2002) will be made when appropriate because CDC (2002) is highly relevant to English learning and the proficiency issue in Hong Kong.

1.2.2 Spelling in L2 learning

This section justifies the choice of spelling as the primary topic of the present study. Being a teacher at a private educational organization, the researcher encounters students who have difficulty and lack motivation in learning English. The fact that many secondary school students fail to make a simple sentence in English (there are either grammatical errors or words misspelt) causes concern given that most Hong Kong students start learning English at kindergarten level. Bunton’s (1992) study examining Hong Kong secondary school students shares this view, writing that “poor grammar and spelling may be difficult to ignore in a real-world communicative situation where the comprehensibility is vital” (p.383).

When learning a language, the acquisition of the four language skills (reading,
writing, speaking and listening) is essential. Spelling is chosen because it is highly related to vocabulary which is “one element that links the four skills of speaking, listening, reading and writing all together” (Nguyen and Khuat, 2003, p.1). The significance of vocabulary is highlighted by Wilkins (1972) who asserts “while without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (p.111). Vocabulary covers words which are the building blocks of a language: words form phrases, phrases form sentences, sentences form texts. When vocabulary is concerned, accuracy in both meaning and spelling of words is required. Accuracy in spelling underpins the intelligibility of written work (Bear and Templeton, 1998; Graham et al., 2002; Westwood, 2005); for instance, ‘The woman saw the men holding a pan’ is lexically different from ‘The women saw the man holding a pen’. Studies have shown there is a strong relationship between reading and spelling ability (Ehri, 2000; Morris, 1992). However, over-emphasizing accuracy in spelling may have a negative impact on learners’ willingness to write by diminishing self-esteem and confidence (Gentry and Gillet, 1993; Huxford et al., 1992).

Language learning outcomes are influenced by factors such as age, gender,
motivation, personality, individual’s learning style and preference as well as learning strategies (Bremner, 1999; Dörnyei, 2001a; Gardner, 1985; Oxford, 1990; Schunk et al., 2008). With regard to spelling, learning strategies include rote memorization, and various phonological, orthographic and morphological processes (Bruck and Waters, 1988; Nunes et. al., 1997; Rittle-Johnson and Siegler, 1999). Studies (such as Man, 2003; Nguyen and Khuat, 2003; Wang 2010; Yu, 2005) show L2 learners commonly employ traditional approaches like drill-and-practice and rote learning to acquiring vocabulary, spelling and grammar; results indicate that students’ learning outcomes in L2 were related to the didactic approaches they employed and students were not motivated by traditional approaches. Other studies show that phonological knowledge facilitates spelling (Elliott and Rietschel, 1999; Johnston and Watson, 2003; Leong, 1998; Wagner and Barker, 1994). Learning strategies for spelling are therefore worth investigating in this study.

In Hong Kong, spelling is considered as an important skill in the primary school curriculum but students encounter difficulty in spelling (Leung, 2003; Man, 2003; Yeung, 2006). Findings in Man (2003) show that 30% of the 147 Primary One
students investigated found English difficult to learn and “identified pronunciation, reading, spelling and dictation as difficult to master” (p. 343). Studies show drilling and rote learning are employed as the dominant approach to learning vocabulary and spelling in Hong Kong (Leung, 2003; Rao, 2002; Tinker Sachs and Mahon, 1997). The lack of phonics skills makes spelling difficult because Chinese and English are two different language systems: the former is an ideographic language and the latter is a phonetic one. Although there are inconsistencies in the writing systems of English, Treiman (2006) argues “many probabilistic patterns are available to readers and spellers who are willing to go beyond simple letter-sound associations and who are willing to use patterns that do not apply in every case” (p.30). Nevertheless, the importance of phonics and spelling is not to be over-emphasized because the use of phonics “does not necessarily help learners read for meaning, especially in second language learning” (CDC, 2004, p.151).

Given the relation between phonics and spelling in L2 learning, the problematic issue in Hong Kong is the little attention paid to phonics and spelling by both the curriculum and the field of research. The curriculum guide stresses the teaching
of “phonics in meaningful contexts to develop learners’ speaking (pronunciation),
writing (spelling) and reading skills” (CDC, 2002, p.9). However, in terms of
learning strategies for spelling, only a few broad recommendations for phonics
teaching are suggested in CDC (1997) Section 3.3.6. In the field of research,
Poon’s (2009) review concludes that empirical studies on English learning in
Hong Kong are scanty and outdated; 33 empirical studies on English Language
Teaching are identified and none of these studies investigate the language aspect
of phonics and spelling. The present study on phonics and spelling is hoped to
add some knowledge to the existing gap of the understanding of L2 learning in
Hong Kong.

It must be stressed that the choice of spelling as the topic of this study does not
imply that the developing of spelling skills is a panacea for enhancing the overall
learning outcomes in second language learning or for the decline of proficiency in
English in Hong Kong. However, while spelling is only part of literacy
development and learning in general, learning to spell is not to be considered as
an isolated process; spelling is not only closely related to the development of
vocabulary but also to the affective aspects of learning. Because spelling
facilitates reading and writing, when learners read and write with ease, learner autonomy, confidence and motivation are enhanced (Share, 1995). Keen (1983) stresses that “a child’s effort to acquire correct spelling skills cannot be separated from his felt need to spell as accurately as possible” (p.9). Many researchers share the view that both cognitive and affective factors play a crucial role in L2 learning (Clement, 1994; Crookes and Schmidt, 1991; Dörnyei, 1994a, 1994b, 2001a; Miserandino, 1996; Williams and Burden, 1997; Ushioda, 1996b). The present study on spelling is hoped to provide grounds for further investigation on L2 learning in Hong Kong.

1.2.3 Motivation in L2 learning

This section presents the justification of motivation as the secondary topic of this study. Motivation is considered to be a key determinant of successful L2 learning and numerous studies indicate that motivation is a notion contributing significantly to academic performance (Clement et al., 1977; Gardner, 1988; Gardner and MacIntyre, 1993; Marsh, 1990; Marsh et al., 2000). In Hong Kong, findings in Fung (2007), Lai (1993) and Wong (1998) indicate that motivation, self-efficacy and attitude are some of the factors affecting students’ achievement.
As noted in the last subsection, learning strategies and motivation are among the factors that influence language learning outcomes. Many studies show that learning strategies have an impact on motivation in L2 (Anyaegbu et al., 2012; Conati, 2002; Liu, 2007; Malone and Lepper, 1987; Okada et al., 1996; Terrell and Rendulic, 1996). In the Hong Kong context, researchers (Bremner, 1999; Leung, 2003; Poon, 2009; Wong, 1995; Yeung, 2006) note that learning strategies and motivation in learning English in Hong Kong are closely related.

Acknowledging that motivation is dynamic and developmental in nature, Gardner (1985) argues “the source of motivating impetus is relatively unimportant, provided that motivation is aroused” (p.169). Similarly, Dörnyei (2001c) remarks that what is more important is “not what motivation is but rather how it can be increased” (p. 51). Brophy (2004) and Cordova and Lepper (1996) note that many students begin schooling with enthusiasm but their motivation decreases with age as they encounter difficulties and academic challenges.

While L2 learning requires effort and persistence, Deci and Ryan (1985) argue that intrinsic motivation is potentially a central motivator of the educational process. Lepper et al. (2005) conclude that students’ intrinsic motivation at
schools declines with age, specifically from third to ninth grades. In the case of Hong Kong, Richards (1993) demonstrates that those secondary students with intrinsic motivation used English more frequently and in a greater variety of contexts than those who were motivated by instrumental reasons like passing an examination. Similar findings are noted in Lai (1999) and Pennington and Yue (1994); Hong Kong students learn English for pragmatic reasons such as better career and study prospects rather than for intrinsic rewards such as enjoyment and satisfaction, with Biggs (1998) asserting that Hong Kong students want to learn English but they “feel forced to learn it” (p.419). With regard to the dynamic nature of motivation, Hong Kong students are generally positive about learning English but studies demonstrate that many students lose motivation in learning English in the early primary years while some students’ self-concept in learning English drops as they promote to higher grade levels (Leung, 2003; Man, 2003; Poon, 2009; Sze and Wong, 1999). Sze and Wong (1999) highlight that some students “begin to show serious problems in learning English in Primary Four” (p.253). In view of this, Man (2003) suggests that “early intervention is needed, and the earlier the better” (p.345) before learners’ motivation is lost.
Given the predominant role that motivation plays in academic achievement, the importance of learning strategies and motivation as well as the dynamic nature of motivation, the relevance of investigating the impact of a language game as an instructional strategy on motivation in this study is established.

1.2.4 Junior primary education

The researcher of the present study shares her view with regard to the decline of students’ English proficiency and students’ lack of motivation in Hong Kong. Inspired by her personal teaching experience and driven by her own interest in pedagogy, the researcher chooses to investigate the plausibility of integrating a game-based learning approach to learning English into Hong Kong classrooms. The choice of spelling and motivation as the topics of this study is justified in previous sections. The researcher decides to focus her study on elementary education, a choice based on:

(a) the consideration of L2 learning at the concrete operational stage (beginning around the age of 7) when students’ cognitive development allows them to gain a better understanding of mental operations and to think logically (Piaget, 1983)
(b) the recommendation by the official curriculum, CDC (1997), that “assuming that, by the age of six, a child in Hong Kong has had reasonable exposure to his/her first language and developed a reasonable level of competence in it, it is recommended that he/she should start learning a second language at Primary 1” (p.9)

(c) students’ motivation at school decreases with age (Brophy, 2004; Lepper et al., 2005).

After discussing the decline of English proficiency and establishing the significance of spelling and motivation in this study, the next section addresses the rationale of employing games as an instructional approach to learning in general.

1.2.5 Use of games as an instructional approach

While language learning is hard work and requires effort to sustain the learning process, language learning strategies are one of the important factors influencing learners’ language outcomes (Lee, 1995; Liu and Chu, 2010; Oxford, 1990; Wright et al., 1984). In L2 attainment, Nikolov (2002) stresses that “persistence and hard work are the keys to success rather than aptitude” (p.149). Learning is
effective when learning is “active, experiential, situated, problem-based and provides immediate feedback” (Connolly et al., 2012, p.661). This aligns with the broadly accepted views that games are fun, entertaining and thus enhance engagement in learning. In relation to the present study, Hong Kong classrooms are often characterized as didactic, non-interactive and course-content orientated, and much time is devoted to class work (Biggs and Watkins, 1993; Evans, 1996; Lai, 1993). It is also noted that students lack motivation in learning English (Fung, 2007; Man, 2003; Poon, 2009). In view of the above, this investigation of using games as a viable learning strategy for learning English is justified.

Significant bodies of research on gaming have been conducted in a wide range of fields including medical education, business management studies, mathematics, history, language learning and engineering (Neville et al., 2009; Randel et al. 1992; Wideman et al., 2007). The following aspects are noted regarding the published works on games in learning:

a) most published works are descriptive and anecdotal, relatively few empirical studies of games in learning are found

b) empirical studies investigating the effectiveness of games in learning yield
mixed results

c) few empirical studies investigate the effect of games on academic achievement
d) many studies of games in learning lack relevance to the school curriculum
e) very few empirical studies on games in language learning are noted
f) more studies related to games and learning have been developed and conducted in the west than in the Asian world
g) educational games in many studies are technology-related

The effectiveness of games is argued to be largely anecdotal and the assumptions are generally descriptive and speculating; there is either a lack of coherent learning theories to ground the potential benefits of games or a lack of empirical evidence to demonstrate the positive attributes of games (Blakely et al., 2008; Facer, 2003; Kirriemuir and McFarlane, 2004; Mitchell and Savill-Smith, 2004; Uberman, 1998; Vogel et al., 2006). Even where there is research-based evidence in some studies, mixed results are yielded; either there is a lack of consensus on definitions and classifications of games or the methodological concerns in some research works inhibit strong arguments for employing games in learning (Hays, 2005; Ke, 2008; McFarlane et al., 2002; Miller and Robertson,
2011; Mitchell and Savill-Smith, 2004; Randel et al., 1992; Torrente et al., 2009; Wideman et al., 2007). For example, studies relying heavily on teacher and student self-reports as the prime source of data and the self-reports are more in terms of beliefs and attitudes of teachers and students than in terms of academic attainment (Facer, 2003; McFarlane et al., 2002; O’Neil et al., 2005; Sandford et al., 2006). While research works in mathematics demonstrate the strongest link between gaming and academic attainment, many studies did not demonstrate such a link (Randel et al., 1992). As much of the effect of games has not been thoroughly investigated, there exists an information gap.

In the case of Hong Kong, very few empirical studies focusing on the effect of games on learning in general are noted, let alone on language learning, or even on spelling. Even when games are involved in studies pertaining to L2 learning, the focus is on a variety of activities covering songs, drama, and writing competitions (Leung, 2003; Man, 2003). When the effect of games is reported, it is based on teacher or student self-reports more than on academic achievement. Thus, little is known about the effect of games on academic performance in L2 learning in Hong Kong.
With regard to games in learning in general, many research studies do not concern the use of games in classroom contexts (Egenfeldt-Nielsen, 2006; Ke, 2008; Wastiau et al., 2009; Williamson, 2007). In the report based on computer games, McFarlane et al. (2002) stress that much of the content of the games is of limited educational relevance to the curriculum. Moreover, very few detailed accounts of the pedagogical, practical and organizational aspects of games in classroom settings are noted (Williamson, 2007). The relevance of games to curriculum content and the understanding of games in classroom settings are both significant because classrooms are the authentic learning settings where formal instruction takes place. For example, little is known in relation to the specific factors contributing to the effectiveness of games. More importantly, Crookes and Schmidt (1991) assert particularly in ESL classes, “motivation arises from the relevance of the content” (p.487). Although some writers identify game elements that students find interesting and useful in computer games (for example, Amory et al. (1999) show that the most important game elements as rated by students were logic, memory, visualization and problem-solving), the cognitive functions of games have not been thoroughly investigated.
Again, because of the paucity of empirical studies investigating the effects of games on learning in Hong Kong, much about the use of games in Hong Kong classrooms is to be explored including the relevance of games to school curriculum and the specific factors contributing to the effect of games on students in Hong Kong.

Although empirical studies investigating the effectiveness of games yield mixed results, there are examples of empirical studies that align the aspects of games with learning principles and that demonstrate the pedagogical values of games as instructional tools in different learning disciplines, both in formal and informal contexts (Aldrich, 2009; Gee, 2005). These examples are examined in Chapter 2 Literature Review of this study. Moreover, findings in Laleh and Nasrin (2011) show that “there are hardly any negative opinions given against games by teachers and students” (p.558). This again justifies the investigation of the use of games as an instructional approach in this study.

Few empirical studies examining the use of games in language learning are noted. Although Wastiau et al. (2009) report that language lessons “are the subjects most
often selected for digital games” (p.40), most studies are descriptive and very limited empirical evidence is noted to support the effectiveness of games on academic achievement in language learning. With special reference to language learning, Schultz and Fisher (1988) remark that stress is a major hindrance. Given that games provide a condition where players engage themselves in a relaxed atmosphere, the investigation of the impact of games on learning is further justified.

It is again emphasized that little is known about the pedagogical potentials of games in Hong Kong classrooms because there are too few empirical studies conducted in Hong Kong. Most of the research and studies related to games and learning have been developed and conducted in the west; relatively few studies have been done in the Asian world (Tüzün, 2007) and as Kin and Crookall (2003) note, “we must avoid the easy assumption that somehow the Euro-America model is the norm” (p.339). Therefore it is hoped that the present study of investigating the use of games in L2 learning will add knowledge to help fill the existing gap outside the western societies.
Educational games in many studies are technology-related. Some of these studies focus on the effectiveness of computer technology rather than the effectiveness of games; Din and Calao (2001), Carron et al. (2008) and Lyytinen et al. (2007) are a few examples. In the systematic review of CALL in English as a second language, Macaro et al. (2012) note that many studies do not yield sufficient and robust evidence of the effect of technology on linguistic outcomes due to the loose link between technological applications and conclude that many studies “were driven by policy rather than by SLA or educational theory” (p.24).

The employment of technology-related games in classrooms involves considerable costs (including time and monetary costs) in designing, licensing, implementing, maintaining the programs plus supporting personnel to address emergent technical problems specifically related to the programs employed (Tüzün, 2007). Acknowledging that technology-related games are superior to non-technology related ones in terms of flexibility, adaptability and graphics designs, costs have to be weighed against the potential benefits (Ke, 2008). Findings in Paley (2007) on the evaluation of educational software in the United States show that when comparing students who received technology related aid
with students who did not, there is no statistical difference in students’ scores on standardized tests.

With reference to Hong Kong, too few empirical studies of the effect of games on learning are noted, whether technology-related or non-technology related games. Regarding the school infrastructure in Hong Kong, as from 2007, “all primary and secondary schools have been equipped with campus wireless Internet connection” (Census and Statistics Department, HKSAR, 2012b, p.44) and according to OER Symposium (2012), the student-computer ratio in Hong Kong primary schools is 4.66:1. Although the school infrastructure in Hong Kong is comparable to that of other developed countries (such as Singapore where all schools were equipped with computers and internet access by 2002), the choice between the employing of non-technology related games and technology related games should rest upon the pedagogical values of games instead of the cutting-edge that technologies can provide. In view of the above, the choice of a non-technology related game in the present study is justified.

1.2.6 Bingo as a specific language game

Not “all games are effective for all learners in all learning situations” (Wilson et
Garris et al. (2002) remark there is “little consensus on game features that support learning, the process by which games engage learners, or the types of learning outcomes that can be achieved through game play” (p.442). Because different games serve different learning objectives and thus produce different learning outcomes (Gardner, 1993; Hays, 2005; Hong, 2002; Rosas et al., 2003), the investigation of a specific language game is significant. As discussed in Section 1.2.5, little is known regarding the specific factors contributing to the effectiveness of educational games and particularly in the L2 classroom, Gardner (1987) stresses that “Little space is devoted to discussing the rationale of specific games” (p.19). It is hoped that investigating an individual game in the present study may add knowledge to this gap. When the significance of investigating a specific game is justified, the choice of the specific game Bingo needs to be addressed.

Bingo is chosen as the specific game for four reasons. Firstly, in existing literature, empirical and classroom-based studies demonstrating the effects of
Bingo on learning are identified in mathematics, pharmacy, psychology and sociology; Chang et al. (2009), Coco et al. (2000, 2001), Tietze (2007) and Vanags et al. (2012) are some examples. Thus, the plausibility of employing Bingo as a classroom game is established. In some of these examples, the learning theories underpinning Bingo are specified, thus providing a theoretical basis for the employing of Bingo as an instructional approach. Moreover, in the identified empirical studies, Bingo is generally well received by both students and teachers. However, as Lo and Tseng (2011) note, very few empirical studies investigating the effects of Bingo on language learning are identified and Kirby et al. (1981) is one of the few examples. The specific game Bingo is therefore chosen so as to add knowledge to this gap in existing literature. Secondly, since educational games have to embrace pedagogical values and be fun, the easiest way to ensure entertainment is to choose or adapt from existing games that fit the particular learning targets (Dempsey et al., 1996; Garcia et al., 2008). Because Bingo is a well-known and popular game with simple rules (Delind, 1984; Lo and Tseng, 2011; Swank, 2008), Bingo can be easily adapted to reviewing topics or contents in mathematics (Forman and Forman, 2008), biochemistry (Willmott, 2001) and English vocabulary (Liao et al., 2005; Lo and Tseng, 2011). Thirdly,
Bingo being a phonics game is a purposeful classroom activity as suggested by the Hong Kong official curriculum - CDC (1997). In linguistic terms, Bingo easily fits into the learning target of spelling – by changing random numbers to random letters in the grids on the Bingo sheets, the drilling of spelling skills by employing phonics instruction can be achieved. Fourthly, in terms of management and organization, Bingo is easy to administer, is not costly and is easily portable as only pens/markers and Bingo sheets are needed.

In summary, the significance of the present study is justified by the importance of learning English as a second language in Hong Kong and by the perceived decline of English proficiency as well as the lack of motivation in learning English among students. The significance is further justified by the growing attention in research studies on the use of games in learning. However, little is known about the link between the pedagogical potentials of games and types of learning, and limited empirical evidence supporting the effectiveness of games is noted. These gaps show that much of the area remains unexplored and this justifies the significance of the present study.
1.3 Objectives of the study

There are two objectives of this study: the primary objective is to examine the impact of Letter Bingo on spelling performance and the secondary objective is to examine the impact of Letter Bingo on perceived motivation in learning English as L2 in Hong Kong.

Implications of this study include the call for revisiting the formal systematic phonics instruction in the Hong Kong primary curriculum when spelling is concerned and the consideration of employing educational games as an alternative instructional approach to learning English as L2.
1.4 Research Questions and Hypotheses

This study examines the impact of Letter Bingo on learning in terms of spelling performance and perceived motivation in learning English. A quasi-experimental design is employed, and both quantitative and qualitative outcomes are investigated. The quantitative outcome is spelling performance (measured by students’ dictation scores) and the qualitative outcome is perceived motivation in learning English (measured by comments collected from interviewing students, parents and teachers). Letter Bingo encompassing phonics skills was employed as the instructional intervention or treatment. The impact of Letter Bingo on learning is established by the difference in spelling performance and perceived motivation before and after treatment.

The focus of this study is games in language learning. Many studies in existing literature measure the effectiveness of educational games on attitudes rather than academic attainment. This study therefore focuses on the impact of Letter Bingo on spelling performance by comparing the dictation scores for the Experiment Group (the group receiving treatment) and that for the Control Group (the intact group receiving no treatment at all). Literature review also shows that the
meaningfulness of educational games depends upon the integration of learning contents and their relevance to school curriculum. Letter Bingo being an instructional strategy to drilling spelling therefore encompasses phonics skills. In order to demonstrate that the impact of learning is attributed to the gaming elements of Letter Bingo on top of phonics skills, a Placebo Group receiving phonics instruction and playing the non-spelling, non-phonics related Bingo was included in this study. Two main research questions are thus formulated:

Q1: Is there any difference in spelling performance between the Experimental Group and the Control Group after treatment?

Q2: Is there any difference in spelling performance between the Experimental Group and the Placebo Group after treatment?

Corresponding to Research Questions Q1 – Q2, the following hypotheses are formulated:

H1: The Experimental Group will demonstrate a more positive change in spelling performance than the Control Group after treatment.

H2: The Experimental Group will demonstrate a more positive change in spelling performance than the Placebo Group after treatment.
The result of H1 will answer Q1. It is hypothesized that the Experimental Group will demonstrate a more positive change in spelling performance than the Control Group after treatment.

The result of H2 will answer Q2. It is hypothesized that the Experimental Group will demonstrate a more positive change in spelling performance than the Placebo Group after treatment.

Apart from spelling performance, this study examines the impact of Letter Bingo on perceived motivation because literature review shows motivation is a key determinant of successful L2 learning and a construct contributing significantly to academic performance. The third research question is thus formulated:

Q3: Is there any difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment?

Corresponding to Research Question Q3, the following hypothesis is formulated:

H3: The Experimental Group will demonstrate a more positive change in perceived motivation in learning English than the Placebo Group after treatment.
The result of H3 will answer Q3. It is hypothesized that the Experimental Group will demonstrate a more positive change in perceived motivation in learning English than the Placebo Group after treatment.
1.5 Organization of the study

This study covers six chapters. Chapter 1 ‘Introduction’ provides the background that establishes the significance of the present study and addresses the three Research Questions. Chapter 2 ‘Literature Review’ provides a review on the existing literature of approaches to phonics and spelling skills, motivation, the use of games in learning with special reference to language learning and the use of Bingo as a specific learning game. Based on the nature and the purpose of the study, Chapter 3 ‘Methodology’ outlines and justifies the employing of the quasi-experimental design. Chapter 4 ‘Findings’ presents the quantitative and qualitative data gathered from the research method. Drawing on the findings, Chapter 5 ‘Discussion’ examines the implications and acknowledges the strengths and limitations of this study. Finally, Chapter 6 ‘Conclusion’ highlights the original knowledge that has emerged in the present study and suggests future implications and recommendations.
Chapter 2  Literature Review

2.1 Overview

This study investigates the potential effects of Letter Bingo (a modified Bingo game encompassing phonics instruction) on students’ spelling performance and perceived motivation in learning English in Hong Kong classrooms. A literature review was conducted using the search engine ‘Google Scholar’ and the following databases: AEI (Australian Education Index), BEI (British Education Index), ERIC (Educational Resources Information Center), HKALL (Hong Kong Academic Library Links), PsycARTICLES, PsycINFO and Scopus. Keywords covering 'classroom games', 'educational games', 'game-based learning', 'learning', 'language learning', 'spelling', 'phonics', 'motivation' and 'Bingo' were searched.

This chapter begins with Section 2.2 specifying the constructivist learning theories as the theoretical perspectives underpinning the present study. Section 2.3 and 2.4 explicate the issues of spelling and motivation from the constructivist perspectives thus linking the underpinning learning theories to the learning
outcomes in this study. In order to gain broad insights into games in learning, Section 2.5 examines the classifications and characteristics of games in learning in general from the constructivist perspectives. Focusing on the link between the pedagogical potentials of games in learning and the theoretical learning frameworks, Section 2.6 critically examines empirical studies of games in language learning in existing literature. The search for empirical studies in Section 2.6 and 2.7 is extensive but by no means exhaustive. In existing literature, there are few empirical studies examining the effect of educational games on academic attainment. The following are the inclusion criteria for empirical studies in Section 2.6 and 14 studies were identified:

a) the effectiveness of learning game(s) is the focus of the study; therefore studies of games without this focus are excluded

b) the effectiveness of learning game(s) includes at least some objective measures of academic learning results; therefore studies containing merely self-reported perceptions and beliefs are excluded

c) the learning game(s) investigated in the study is/are targeted at language learning
d) the learning game(s) investigated in the study is/are employed in classroom contexts; therefore studies of games in laboratory settings and studies of massively multiplayer online role-playing games / MMORPGs which involve players outside classrooms are excluded.

e) at least some empirical components or some forms of quantitative and/or qualitative data are provided for evaluation; therefore descriptive articles or articles containing merely discussions and arguments are excluded.

f) the study is published in English between 1980 (January) and 2012 (December).

g) ‘grey literature’ studies (GL’99 Conference Program, 1999) such as reports, theses, conference proceedings that are not published commercially.

Aiming at gaining evidential understanding of the features of Bingo as a learning game, Section 2.7 critically examines empirical studies of using Bingo in learning in existing literature. Unlike Section 2.6 that examines studies of games in L1/L2 learning, Section 2.7 examines studies of employing Bingo with reference to the subject discipline. Yet similar to Section 2.6, Section 2.7 also examines the empirical studies with reference to the learning theories underpinning the
game(s) involved, the game types (e.g. individual games, group games), the game functions (e.g. for drilling and practising learning contents, for introducing new contents), the learning outcomes (e.g. cognitive learning outcomes, affective learning outcomes), the research design and the general findings (i.e. the main findings as reported by the authors) as well as methodological concerned noted.

As Letter Bingo is a modified version of Bingo, the inclusion criteria for studies in Section 2.7 cover the seven criteria stated above except that criterion ‘c’ is replaced by: Bingo as a specific learning game is the focus of the study. The strict inclusion criteria yielded only 6 studies because studies using Bingo as a learning game are mostly descriptive. Nonetheless, empirical support is essential for the appropriateness and plausibility of employing Bingo as an instructional game to facilitate spelling and motivation in this study.
2.2 Theoretical underpinnings

It is crucial to make explicit the theoretical underpinnings of a study because different theoretical frameworks bring about different assumptions by which interpretations, strategies and pedagogical practices are underpinned. This study is underpinned by the constructivist learning theories emphasizing students’ active role during the learning process. Constructivism asserts that motivation is essentially an integral aspect of learning and motivation comes from within the students. While learning takes place in authentic situations, students construct new knowledge of information, concepts and relationships through questioning, discovering and interacting with other people and the environment (Bruner, 1986; Gardner, 1993; McGroarty, 1998; Piaget, 1970, 1977; Vygotsky, 1978, 1986; Williams and Burden, 1997). The teachers’ role is to guide, assist and encourage, instead of providing answers to, students while students make connections, apply new information and use higher order thinking skills to solve complex problems.

Being a social activity, learning is inextricably intertwined with language during the process; students learn through internal dialogue and through interacting and
conversing with significant others like teachers, peers and family. By taking interdisciplinary perspectives, the constructivist learning theories take into account the students’ affects, including thoughts, beliefs, attitudes and motivation during the learning process. The classroom is considered to be “a minisociety, a community of learners engaged in activity, discourse, and reflection” (Fosnot, 1996, p. ix). The learning experience that students undergo requires external objects such as meaningful activities to keep students motivated. Meaningful activities need to engage both the students’ mind and hands because students use sensory inputs during the meaning-making process and the action of constructing meaning is not only mental but also physical (Egenfeldt-Nielsen, 2006; Palmer, 2005).

According to Piaget (1977, 1983), the learners’ cognitive development results from the individual child’s actions on the objects in his social and physical environment and progresses through assimilation (the process of incorporating new information into one’s existing schemas) and accommodation (the process of altering one’s existing schemas in light of new information). As Schiamberg (1985) puts, “the interaction of assimilation and accommodation in the process of attaining equilibrium accounts for cognitive development from birth to death” (p. 733). As for Vygotsky (1978), cognitive development is initially found not within the individual but within the social and cultural surrounds. Provided with adult-guided activities known as guided participation, the child’s ‘Zone of Proximal Development’ (ZPD) is therefore created. While Piaget (1983) and Vygotsky (1978) discuss the important role that the social dimensions plays in learners’ cognitive development, researchers like Wertsch (1985) note that Vygotsky’s (1978) theory pays relatively more attention to the cultural aspects in development.

With reference to the developmental stages of Piaget’s cognitive constructivism in
relation to L2 learning, this study examines students’ cognitive development at the concrete operational stage (beginning around the age of 7) – the stage that allows students to gain a better understanding of mental operations and to think logically (Piaget 1977, 1983). Students in this study are around 8 years old and are therefore at the concrete operational stage when learning English as L2 takes place. The learning game in this study is played by individuals thus peer collaboration is not the focus. The role of the teacher, an important aspect of Piaget’s (1983) cognitive constructivism, is to provide a meaningful environment filled with interesting things and activities to engage learners’ mind and to guide learners’ exploration. The implication of cognitive constructivism for education is that it focuses “on the way in which students reorganize their activity as they participate in a learning curriculum, and on the processes by which the curriculum is interactively constituted in the local situation of development” (Cobb, 1996, p.47).

Although this study focuses on individual’s cognitive development, it does not mean to undermine the importance of the social and cultural artefacts in contributing to learners’ cognitive development in the constructivist learning
theories. In the rest of Chapter 2, issues of spelling, motivation and games in learning will be explicated in relation to the constructivist learning theories, with particular reference to Piaget’s cognitive constructivism.
2.3 Spelling in language learning

This research addresses spelling as an aspect of language learning and the perceived motivation in learning English of Hong Kong students. In line with the theoretical underpinnings of this study, spelling in this section is examined from the constructivist learning perspectives. Sawyer (1991) notes that the foundation for the constructivist theory of literacy acquisition is provided by the field of psycholinguistics – the blended theories of the development of cognition and language. Within this framework, “correct spelling is expected to evolve through purposeful attention to words the person specifically wanted to learn” (Sawyer and Joyce, 2006, p.87). Formal instruction of spelling has to be within the context of purposeful reading and writing.

Research shows spelling difficulties in both L1 (such as Graham, 2000; Keen, 1983; Tompkins, 2002) and L2 (such as Garcia et al., 2008; Holm and Dodd, 1996; Man, 2003). Findings in these studies generally support that spelling is ‘teachable’ and that there are close relations between reading/writing and spelling, and between phonological awareness and spelling. According to Keen (1983), research in spelling focuses on 3 basic areas:
(a) words to be spelt

(b) spellers

(c) methods of instruction

In the rest of Section 2.3, issues of spelling in relation to this study are discussed in terms of the three basis areas that Keen (1983) notes.

2.3.1 Words to be spelt

With regard to language systems, there are differences among alphabetic orthographies in terms of spelling and phonology (Frost 1994). Languages such as Spanish and Italian are in shallow orthographies where there is a simple one-to-one correspondence between graphemes and phonemes. Languages such as English are in deep orthographies where the correspondence between graphemes and phonemes is complex and is not always consistent; some letters arrangements look alike but sound different, for example, *tour*, *sour* while other letter arrangements look different but sound alike, for example, *main*, *mane* (Adams, 1990; Birch, 2002).

With reference to learning spelling in Hong Kong where English is learnt as L2,
Chinese and English are noted to be two different language systems; English is an alphabetic deep orthography language and is a phonetic and a polysyllabic system (i.e. one word may have more than one sound) while Chinese is a non-alphabetic deep orthography language and is a morphosyllabic system (i.e. the basic unit of the Chinese writing system is the character and each character is a monosyllabic morpheme - one word with only one sound) (Hu and Catts, 1998; Perfetti and Zhang, 1995). Since there is no correspondence between graphemes and phonemes in Chinese, the Chinese writing system is therefore different from the English writing system (Wang and Geva, 2003). However, Hong Kong teachers “taught English modelled upon the way Chinese was taught” (Poon, 2010, p.29). This explains part of the reason that students find spelling difficult.

2.3.2 Spellers

From the constructivist perspectives, spellers or learners are actively involved in the integration of new information as well as prior knowledge and experience during the meaning-making and construction of knowledge. Because the learning theory is learner-centred, the understanding of the developmental, conceptual and motivational aspects of the learning of spelling is therefore vital.
2.3.2.1 Developmental nature

Research shows learning to spell is a complex and developmental process and there are various stages of spelling development although writers vary in the numbers and nature of stages (Bear and Templeton, 1998; Ehri, 1987, 1992, 2000; Gentry, 1978, 1982; Joshi and Aaron, 2003). Sawyer and Joyce (2006) remark that the stage models are related to the Piagetian theory of cognitive development which “holds that qualitatively different skills characterize successive stages of cognitive development” (p.83) and “at each stage, the learner constructs rules to organize and define the regularities embedded in the orthography” (p.83). At the initial stage, instead of using letters and words, learners use visual cues such as numbers and drawings. As learners develop some understanding of the sound-letter relationship, spelling is restricted to partial sound information in words, for example, learners will substitute the initial sound of the letter ‘d’ as in *dog* for *desk*. Gradually and progressively, spelling development reaches the mastery level when learners acquire all the relevant processes including the phonological, orthographic and morphological knowledge of words (Nunes *et al.*, 1997; Treiman and Bourassa, 2000) and this is the stage when learners analyse the words more deeply and use all letters and sounds.
From the cognitive perspectives, the development in spelling is a multifaceted process which changes gradually and continuously in multiple forms and frequencies. Findings in research (Kwong and Varnhagen, 2005) show that students employed multiple strategies (such as sounding out, writing alternative spellings, looking up in the dictionary) to spell, and findings in Graham’s (2000) review of research on spelling instruction support that a combination of incidental learning and direct instruction is the most beneficial.

In relation to the curriculum in Hong Kong, CDC (2002) suggests that children should start learning English as L2 at the age of 6 (the Piagetian preoperational stage) while researchers such as Collier (1989) suggest the age of 8-12 (the Piagetian concrete operational age, when children’s conscious awareness of language starts to develop and when children’s logical thinking begins).

2.3.2.2 Conceptual nature

Apart from being a developmental process, the learning of spelling is a conceptual process. Through reading and writing, spellers develop recognition of
differences and similarities of word types and apply such concepts when they read
and spell (Morris et al., 1995). In this respect, spellers or students have to relate
their existing prior knowledge and experience, make connections of concepts,
internalize and apply them when solving complex problems; in other words,
active participation and engagement of students are required in the learning of
spelling.

Considering that spelling development is a conceptual process, no structured and
explicit approach to learning spelling is noted in the curriculum (CDC, 2002) in
Hong Kong. As Man (2000) notes, junior primary schools in Hong Kong
employ dictation as an assessment of spelling rather than a practice of spelling as
recommended by CDC (1997). The lack of guidelines for classroom practice
and the ineffective use of dictation account for part of the difficulty that Hong
Kong students encounter in the learning of spelling.

2.3.2.3 Motivation in spelling

From the constructivist perspectives, motivation is integral in learning and
therefore is essential in the development of spelling. Keen (1983) asserts “a
child’s effort to acquire correct spelling skills cannot be separated from his felt need to spell as accurately as possible. Motivation cannot be separated from a child’s sense of fun and meaningfulness” (p.9). Motivation is closely related to the methods of instruction (to be discussed in Section 2.3.3). Students are less motivated when the learning of spelling relies on rote memorization or mechanical drilling and practices (Richards, 1993; Yeung, 2006). An alternate method of instruction to rote memorization is phonics skill development.

2.3.3 Methods of instruction

The most broadly applied methods of instruction for spelling are rote learning and the development of phonics skills.

2.3.3.1 Rote learning

Keen (1983) remarks that rote learning is “where the burden remains to learn a list of words through drills” (p.3). Sawyer and Joyce (2006) and Keen (1983) note that rote learning was the dominant approach to learning spelling in the US until the 1970s. In other parts of the world, learning English by rote is an approach commonly employed (Man, 2003; Nguyen and Khuat, 2003). Studies show that
learning spelling by rote is insufficient because, rather than being a passive learning process, spelling is a conceptual process during which learners are actively involved in making judgments about sounds and spelling patterns as well as meanings (Bloodgood, 1991; Massengill, 2006; Zutell, 1996). However, as Nassaji (2007) notes, very few studies are found on the development of spelling knowledge in learning English as L2.

In the Hong Kong context, learning English (including spelling) by rote memorization is a common and dominant practice (Watkins and Biggs, 1996). Findings in Wong (1995) show both high and low achievers learnt English spelling by rote and repetition, the difference is low achievers relied more on repetition and had a higher tendency to use rote learning and repetition than high achievers. In Hong Kong, isolated letter sounds are not taught and formal and regular English phonics training in primary schools is not seen (McBride-Chang and Treiman, 2003; Yeung, 2006). As motivation is closely related to the methods of instruction, the employing of rote learning as a dominant approach to L2 learning may lead to difficulty in spelling in Hong Kong students.
2.3.3.2 Phonics instruction

It is argued that phonological knowledge and spelling performance are integrally related; studies (Dietrich and Brady, 2001; Kamhi and Hinton, 2000) show that one of the reasons for spelling difficulties is the lack of phonological knowledge. While there are studies showing that phonological knowledge can enhance the accuracy in spelling (Elliott and Rietschel, 1999; Johnston and Watson, 2003; Wagner and Barker, 1994), others show no significant improvement in spelling achievement with the employment of phonics programs but do show that students were more involved and active in class and that students found reading English easier and more enjoyable. (Keen, 1983; Leung, 2003).

Phonics instruction, defined as a set of literacy teaching approaches that focus on letter-sound relationships, helps students decode words when reading (Torgerson et al., 2006). There are traditionally two approaches to phonics instruction: analytic and synthetic (Johnston and Watson, 2003; Stahl et al., 1998; Torgerson et al., 2006). In analytic phonics, students begin with whole words and then break words down into parts before figuring out the sounds that go with the letters; this is the ‘whole-to-part’ approach by which children are taught to analyse
letter-sound relations once the word is identified. In synthetic phonics, students first learn the sound of individual letters or groups of letters before applying the knowledge to blend these letter sounds together to form words. Synthetic phonics is a ‘part-to-whole’ approach by which children are taught to convert letters into phonemes. With regard to analytic and synthetic approaches, Stahl et al. (1998) point out that the differences in coverage and practice, not in method, may account for the differences in the effect on reading. Further, from the constructivist perspectives, Stahl et al. (1998) argue that learners act upon the information and that “if the information is similar, the learning should be as well” (p.350) and that this explains why the differences among phonics instruction programs are small.

Specifically in relation to spelling, Ehri et al.’s (2001) meta-analysis on phonics instruction demonstrates that there is an overall statistically significant positive effect size for phonics instruction on reading and conclude that systematic phonics instruction (of whatever variety) “benefited decoding, word reading, text comprehension, and spelling in many readers” (p.393) more than unsystematic or no phonics instruction. Camilli et al. (2003), a meta-analysis replicating Ehri et
al. (2001), conclude that phonics instruction and other approaches have similar value. Torgerson et al. (2006) remark that differences in the two conclusions (Camilli et al., 2003 and Ehri et al., 2001) are due to differences in coverage and practice and stress that evidence shows systematic phonics instruction has positive impact on reading accuracy but not on reading comprehension and spelling. Moreover, Torgerson et al. (2006) highlight that the findings of the two reviews need to be treated with caution as there are differences in the lengths of the intervention and generally the trials were small in number and also conclude that there is no evidence for “one common objection to the use of phonics” (p.49).

With regard to the stages of spelling development (discussed in Section 2.3.2.1), research shows what makes phonics instruction programs effective does not depend on which approach of phonics instruction is used but on the fact that it is systematically introduced and that it is introduced in the early stage of spelling development (Dahl and Freppon, 1995; Ehri et al., 2001). As noted before, the developmental stages of spelling are in line with the Piagetian theory of cognitive development and it is in the initial stages that learners develop some understanding of the sound-letter relationship, thus phonics instruction is helpful
in the initial stages. However, when spelling development gradually and progressively reaches the mastery level, learners acquire not only the phonological process but also the orthographic and morphological processes. In view of this, it is acknowledged that enhancing phonics skills and spelling alone cannot tackle the whole issue of the proficiency in language learning.

In Hong Kong, no explicit and structured approach to learning spelling is noted in the curriculum (CDC, 2002) except that it is suggested that “dictation is an activity that helps learners practice the skills of listening, spelling and handwriting under controlled or guided situations” (p.74) and that learners are to make use of phonics skills to develop spelling skills at an early stage. As an instructional approach, Bingo is suggested as one of the “short, interesting and purposeful games or activities which help learners work out the correspondence between spelling and pronunciation” (CDC, 1997, p.76).

In terms of phonological awareness, findings in Holm and Dodd (1996) show that Hong Kong ESL students were significantly less competent when compared with other ESL groups including Chinese Mandarin readers. Wang and Geva (2003)
note that the fact that Hong Kong students learn Chinese characters by copying and memorization should have an impact on their learning of English spelling. Making spelling even more difficult for Hong Kong students is the inconsistencies in the English spelling system; in other words, there are always words not covered by phonics rules and there are always exceptions. In reviewing the commonly taught phonics rules, Clymer (1996) asserts that these rules are seldom applicable to more than 75% of the words that learners come across. Apart from such inconsistencies, Stahl et al. (1998) acknowledge that developing phonics skills may not help learners read for meaning, thus phonics skills alone will not solve all problems when proficiency of language is concerned. However, findings in Adams (1990) support that vowel sounds are more consistent to phonics rules thus phonics instruction facilitates the learning of the regular of letter-to-sound relationships. Therefore, phonics skills are helpful in enhancing the accuracy of those English words that letter-sound correspondences may apply.

2.3.3.3 Game-based learning

From the constructivist perspectives, learners actively construct knowledge through participation and interaction with the world, including teachers and
learning materials. Thus teachers play an important role in guiding the students during the knowledge construction process and in selecting the instructional approaches for students (Stahl et al., 1998). As previously discussed, phonics skills development is an alternate approach to rote learning when spelling acquisition is concerned. However, it is again the teachers’ role to decide how phonics instructions are to be carried out: by standard classroom instruction or by alternate instructional approaches such as game-based instruction.

Game-based learning aligns with the motivation theory and can act as a mediator to facilitate learning. Meaningful games potentially keep students motivated; games require students to actively participate in order to achieve the goals, students also need to actively build on their prior knowledge, master rules, carry out procedures, predict and test conditions, make generalizations and resolutions as well as justify decisions in a fun and anxiety-free environment (Bragg, 2003; Caswell, 2005; Oldfield, 1991; Weisskirch, 2009). In existing literature, very little research on spelling games as an instructional approach is noted; Cassar and Jang (2010), Keen (1983) and Rosas et al. (2003) are some of the few examples of empirical studies of employing games in fostering spelling and motivation.
To sum up, the above discussion on spelling from the constructivist perspectives covering the three basic areas (words to be spelt, spellers and methods of instruction) demonstrates that these aspects of spelling are inextricably intertwined in the learning process. The interconnectedness and interrelationship further demonstrate that although spelling is only part of language learning, its impact on language learning as a whole is undeniable.

Before examining the notion of motivation in language learning in the next section, this section will conclude with a summary of spelling in relation to this study. The focus of this study is the effectiveness of games, not phonics instruction, on learning; comparing and contrasting analytic phonics and synthetic phonics is not within the scope of this study. As noted by Cassar and Jang (2010), “an infusion of phonological instruction often assists students in developing word recognition and spelling skills” (p.193). Therefore in this study, the learning content – spelling – is facilitated by phonics instruction and is ‘intrinsically integrated’ (Habgood et al., 2005; Kafai, 2001) into Letter Bingo so as to substantiate the pedagogical values of the game. Participating students in
this study are aged around 8 and the age corresponds to Piaget’s (1983) concrete
operational stage of cognitive development. Analytic phonics is employed in
the phonics drilling sessions before each Letter Bingo game. Analytic phonics
aligns with the constructive learning theories in that learners integrate their
existing knowledge into the new knowledge and learners do not pronounce sounds
in isolation but in association with similar letters and sounds (Johnston and
Watson, 2003). During each phonics drilling session, students learn “how to
deduce the common letter and sound in a set of words which all begin (or, later,
end) with the same letter and sound” (Torgerson et al., 2006, p.5). Only words
on the dictation revision sheets prepared by the school are covered in the phonics
drilling sessions; the phonics instruction given is therefore embedded in the
context of students’ actual school learning. At times when students are
unfamiliar with the spelling of a particular word, they can still guess the meaning
from the context of the passages in their school textbooks and this further
enhances the meaningfulness of the phonics instruction.

Letter Bingo embodies the conceptual aspect of development; during game play,
the teacher being the facilitator poses clues such as ‘What is the sixth letter of the
word territories?’ Students subsequently relate their existing prior knowledge of phonics skills, make connections of concepts, and apply them to solve the clues in a designated period of time. Not only active participation and engagement are involved, but also cognitive aspects (as in organizing, applying and problem-solving) and affective aspects (as in attention, concentration and confidence) of learning. Being a specific instructional strategy, Letter Bingo sustains and enhances students’ motivation in an enjoyable, meaningful, purposeful and hands-on activity.
2.4 Motivation in language learning

In relation to the theoretical underpinnings of the present study, the following aspects of motivation are examined:

(a) motivation from the cognitive perspectives

(b) types of motivation

(c) effective means to enhance motivation

(d) teachers’ role

(e) cultural differences

Before discussing the different aspects of motivation, the definition of motivation needs to be addressed. In existing literature, a consensus on the definition of motivation has not been reached. Although researchers conceptualize motivation differently, it is mostly agreed that motivation is complex and multifaceted in nature. Schunk et al. (2008) define motivation as a process rather than a product: “a process whereby goal-directed activity is instigated and sustained” (p.4). Dörnyei (2001a) remarks that motivation by definition concerns both direction and magnitude, being responsible for “the choice of a particular action; the effort expended on it and the persistence with it” (p.7). From the constructivist
perspectives, motivation is “a necessary prerequisite and co-requisite for learning” (Palmer, 2005, p.1855) because learning requires effort and students will not make the effort to learn if there is no motivation.

2.4.1 Motivation from the cognitive perspectives

Within constructivism, the present study is closer to Piaget’s cognitive developmental perspectives of understanding motivation in terms of the individual’s role in acting on and responding to the environment. Motivation in this study is situated at the micro-level of the education-centred tendencies: motivation is related to the actual learners’ behaviours in the classroom environment and the notion of motivation incorporates cognitive concepts such as learners’ cognition, beliefs, values and affects (Brophy, 2004; Crookes and Schmidt, 1991; Dörnyei, 2001a; McGroarty, 2001; Oxford and Shearin, 1994; Schunk et al., 2008; Ushioda, 1996b; Williams and Burden, 1997). Motivation is viewed to be “a function of a person’s thoughts” (Dörnyei, 1994a, p.276) and more importantly, “most students’ motivation can be ‘worked on’ and increased” (Dörnyei, 2001b, p. 118).
With regard to language learning, this study shares the view that the notion of motivation is a major determinant of successful L2 learning and it affects the extent of learners’ participation, the intensity and frequency of effort that learners put in as well as the learning strategies that learners choose in the learning process (Gardner, 1985; McGroarty, 2001; Oxford and Shearin, 1994; Ushioda, 1996b). It is sometimes argued that motivation may override learners’ language aptitude (Gardner, 1985, Gardner and Lambert, 1972; Nikolov, 2002).

This study also resonates with Dörnyei (1994a, 2001a) and Ushioda (1996b) in that the classroom environment has important impact on the effectiveness of language learning, and that the cognitive perspectives draw attention to the dynamic nature of motivation, and that teachers’ skills in motivating learners are crucial to teaching effectiveness. Because of the dynamic nature of motivation, motivation can not only be aroused and enhanced (Dörnyei, 1994a, 1994b; Dörnyei and Csizer, 2002; Gardner, 1985; Ushioda, 1996b) but also be decreased (Anderman and Maehr, 1994). Brophy (2004) points out there are “age-related changes in students’ motivational patterns” (p. 345); most students start schooling with enthusiasm but motivation and school-related attitudes begin to deteriorate at
around age seven when students begin to experience failure during the learning process.

In Hong Kong, studies (Leung, 2003; Man, 2003; Poon, 2009; Sze and Wong, 1999) provide evidence of the dynamic nature of motivation: students’ motivation in learning English decreases in elementary schooling. Given this dynamic nature of motivation, this study is interested in examining if students’ motivation may be enhanced when there is a change in the classroom environment such as learning strategies and teaching skills.

According to Crookes and Schmidt (1991), motivation in relation to L2 learning is considered at four levels:

(a) the micro level relating to the motivational effects on the cognitive processing of second language stimuli

(b) the classroom level relating to techniques and activities

(c) the syllabus level dealing with content decisions

(d) considerations relevant to informal, out-of-class, and long-term factors.
Corresponding to Crookes and Schmidt’s (1991) levels of motivation, the present study deals with motivation at the micro level and the classroom level while the syllabus level and out-of-class context are not within the scope of the study. At the micro level, the present study deals with students’ ‘attention’ which is closely linked with students’ motivation because what learners “attend to and become aware of (ie, notice) is what becomes intake” (Crookes and Schmidt, 1991, p.484).

At the classroom level, this study focuses on activities that are engaging and enjoyable and with relevant content which is particularly important in L2 classrooms. Traditional teaching practices are avoided because “change is an essential part of maintaining attention” (Crookes and Schmidt, 1991, p.489).

Findings in Nikolov (1999) support that children choose to engage in and to pay attention to what they feel worth it. It is not within the scope of the present study to deal with the syllabus level (where L2 course design is to meet learners’ needs thus making learning more motivating, more efficient and more successful) and outside classroom (where students are more motivated if they have the chance to contact and interact with native speakers of the target language).

It is again emphasized that by taking the cognitive perspectives of understanding
motivation. This study does not mean to undermine the importance of the social psychological implications of motivation in L2 learning; it only offers an alternate perspective of understanding motivation focusing on learners’ thoughts, beliefs, affect and values and the pedagogical implications of motivation in the classroom contexts.

2.4.2 Types of motivation

Different researchers put forward various kinds of motivation. The present study acknowledges the complex nature of motivation and shares with Oxford (1996) that learners can simultaneously be motivated by multiple motives. Various studies (Duda and Allison, 1989; Markus and Kitayama, 1991; Noels et al., 2000; Syed, 2001) demonstrate that multiple motives operate at the same time and cultural differences in competence and achievement also motivate people in L2 learning. As Dörnyei (2001c) remarks, what is more important is “not what motivation is but rather how it can be increased” (p.51). Nonetheless, understanding the kinds of motivation from the cognitive perspectives remains significant.
2.4.2.1 Intrinsic / extrinsic motivation

Deci and Ryan’s (1985) ‘self-determination theory’ distinguishes intrinsic motivation and extrinsic motivation and emphasizes autonomous learning in L2 learning. Intrinsic motivation, driven by internal rewards such as joy and satisfaction, is considered the central motivator of the educational process and autonomy comes from within learners when interacting with the environment.

Extrinsic motivation is driven by extrinsic rewards such as good grades or avoidance of being punished. Brown (1990) notes that extrinsic motivation tends to be cultivated by the traditional teacher-centred approach emphasizing correctness and competitiveness.

Sharing Deci and Ryan’s (1985) notion of autonomy, Ushioda (1996a) stresses “autonomous language learners are by definition motivated learners” (p.2).

While Dickinson (1995) argues that autonomy precedes motivation and in turn leads to greater success in L2 learning, others such as Cotterall (1999), Littlewood (1996) and Spratt et al. (2002) assert that motivation precedes autonomy because motivation is the key factor that determines learners’ readiness to learn autonomously.
In relation to Hong Kong, findings in Lin et al. (1991) resonate with Deci and Ryan's (1985) self-determination theory in that high English attainment and intrinsic motivation in English learning are closely related. In the present study, it is felt that it is more important that the drive comes from “within” individual learners (Deci and Ryan, 1985; Ushioda, 1996a) than what the kinds of motivation are. Besides, the relationship between motivation and L2 achievement is not linear and unidirectional.

2.4.2.2 Self-motivation

Central to motivation is the notion of self because individuals are under study and individuals’ perceptions of self are highly correlated to their actions, behaviours and involvement in learning (Clement, 1980, 1994; Markus and Nurius, 1986; Syed, 2001; Weiner, 1984). From the cognitive perspectives, Ames and Ames (1985) distinguish two conceptions of motivation: motivation as a quantitative variable that is observable in what learners do and how they behave, and motivation as a qualitative variable in terms of learners’ patterns of thinking and beliefs that make them act and behave. The former kind of motivation is
generated by external factors and the latter is constituted by what learners think for themselves and this leads to self-motivation. Sharing a similar view, Ushioda (1996a) stresses that “autonomy implies being involved in and taking responsibility for one’s learning in all its aspects, self-motivation implies taking charge of the affective dimension of that learning experience” (p.4).

In view of self-motivation, this study is interested in understanding how individual learners differ in the way they perceive the aspects of learning and how such differences in motivational thinking affect their engagement in learning. Such engagement covers the choice and use of learning strategies which in turn influence language performance (Oxford, 1990, 1996; Wenden, 1987). Studies (O’Malley et al., 1985; Skehan, 1991; Wong, 1995) demonstrate that the choice, frequency of use, range and management of learning strategies and learning proficiency are correlated. As noted by the researcher of the present study, there is no study on employing games as a learning strategy for English spelling in Hong Kong. It is thus worth exploring if and how such a learning strategy might impact learning proficiency.
2.4.2.3 Instrumental / integrative motivation

Also related to Hong Kong in terms of the types of motivation is instrumental motivation. Instrumental motivation and integrative motivation are put forward by Gardner (1988) from the social psychological perspectives. Instrumental motivation refers to the kind of motivation that is characterized by “a desire to gain social recognition or economic advantages through knowledge of a foreign language” (Gardner and Lambert, 1972, p. 14) whereas integrative motivation refers to the kind of motivation that is characterized by a “willingness or a desire to be like representative members of the ‘other’ language community” (p.14). Gardner (1988) stresses that those who are integratively motivated “will probably be more successful in learning the second language than individuals not so motivated” (p.106). Findings in Lau (2006) and Wong (1995) show primary school students were motivated by instrumental factors such as better career prospects and the need for further study and support Gardner (1985) in that integrative motivation is the better predictor for examination scores. Nonetheless, findings in Man (2003) show junior primary school students were integratively motivated in learning English thus both instrumental motivation and integrative motivation are noted in Hong Kong.
The various kinds of motivations are not necessarily mutually exclusive, and as Gardner (1985) stresses “the source of motivating impetus is relatively unimportant, provided that motivation is aroused” (p.169). The present study is more interested in examining if students’ motivation can be aroused more than in examining the types of motivation that correlate with learning.

2.4.3 Effective means to enhance motivation

It is noted that in the 1990s, the approach of understanding L2 motivation shifted from the social psychological perspectives focusing on the macro-level of the broad social tendencies to the cognitive perspectives focusing on the micro-level of the more situated, education-centred tendencies and the needs for practical instructional implications for L2 classroom practice are called for (Brophy, 2004; Crookes and Schmidt, 1991; Dörnyei, 1994a, 1994b, 2001a; McGroarty, 2001; Oxford and Shearin, 1994; Ushioda, 1996b; Wenden, 1987; Wigfield et al., 2002; Williams and Burden, 1997). Since then motivational strategies for classroom practices have received growing attention. One of these strategies is Dörnyei’s (1994a, 2001b) model of motivational impact consisting of
three levels – the language, the learner and the situation – that were crucial in motivating students in the classroom context. Man (2002) provides evidence that, by employing different learning strategies, such as the introduction of phonics skills, the use of music, rhymes and story-telling as class activities, students’ motivation in learning English was enhanced; students were eager to try harder, both in dictation and guessing new words, students were more involved in participating and asked more questions. This demonstrates at the situation level that the specific course and classroom components are influential in students’ motivation in L2 learning.

In his model, Dörnyei (1994a) proposes a list of strategies to motivate L2 language learners at three levels: the L2 language level, the L2 learner level and the L2 learning situation level (see Appendix 1). With reference to Dörnyei’s (1994a) strategies, various motivational strategies are adopted in the present study. At the language level, Strategy (4) is employed – by encouraging students to score better marks and grades in dictation, instrumental motivation is to be developed. At the learner level, Strategies (5), (6), (7), (8) and (9) are employed – self-confidence and self-efficacy are to be developed by involving students in
more engaging activities (such as the game Letter Bingo) in a more supportive environment. Also during gaming, by providing praise and encouragement and by guiding students to solve clues (as discussed in Section 2.3.3.3), self-perceptions of competence in L2 are to be developed. At the learning situation level, Strategies (12), (14), (15), (18) and (24) are highlighted. By infusing phonics skills into the spelling game, the learning activity is authentic and relevant to the curriculum. The game activity varies from routine classes thus arousing curiosity and attractiveness and sustaining attention. During gaming, every student scoring Bingo will receive applause from the rest of the class as a celebration and recognition of success. Feedback in the form of debriefing (a facilitator-led guided reflection that produces long-term learning as described by Crookall, 2010) will be employed to maintain motivation.

2.4.4 Teachers’ role

While the constructivist view of learning is a student-centred theory, the role of the teacher is relatively peripheral (Palmer, 2005) although crucial to teaching effectiveness (Dörnyei and Csizer, 2002; Dörnyei and Ushioda, 2009).

According to Dörnyei’s (1994a) L2 motivational strategies in Appendix 1, the
teacher’s personality, behaviour, teaching style and practice have a great impact on how and to what extent the strategies at the learning situation level are employed. Similarly, Crookes and Schmidt (1991) remark that the teachers’ choice of methodology affects students’ motivation at the classroom level.

The teachers’ personality includes their own enthusiasm in creating a pleasant and conducive classroom environment for learning, their sensitivity to students’ needs and their commitment to maintain student motivation. Findings in Man (2003) show that uncaring teachers is one of the factors causing students’ negative attitude towards English.

Teachers’ expectations and attitudes affect students’ desire to learn and participate. Richards (1993) notes that students are instrumentally motivated when it is the teachers’ attitude that doing well in an examination is important for social mobility. It is also teachers’ attitude that creates a low-anxiety learning environment and it is the choice of the teacher to develop the intrinsic or extrinsic motivation of students (Green, 1993).
As for practices and strategies, teachers determine the kind of feedback and comments necessary to generate students’ positive feelings of success and self-perception (Ushioda, 1996a, 2009). It is the teachers’ choice to employ the kind of error treatment practices and the strategy to lead learners to reflect and evaluate their own learning experiences. Drury and Hewitt’s (2006) study shows that the teacher wanted to prompt “an initial act of engagement” (p.22) thus chose “not to correct students’ imperfect conjectures immediately”(p.21-22). Feedback can be in form of debriefing: “the occasion and activity for the reflection on and the sharing of the game experience to turn it into learning” (Crookall, 2010, p.909). Debriefing provides reflection of the learning process involved in gaming and it is where the real learning comes from, not the game (Crookall, 2010; Kolb, 1984).

In this study, the teacher / game conductor being the facilitator will create an anxiety-free, supportive, entertaining environment to maintain and enhance motivation during gaming. The teacher will be sensitive to learners’ needs, for
example, when the clue ‘What is the seventh letter of the word refrigerator?’ requires the spelling of a longer word, the designated 10 seconds for students to determine the answer will be lengthened by counting the 10 seconds more slowly. By doing so, the difficulty of spelling various words can be matched.

2.4.5 Cultural differences

As previously mentioned, although motivation in this study is closer to Piaget’s (1983) cognitive constructivist theories, the importance of the social and cultural aspects of motivation are not to be undermined. Understanding that learning is essentially a social activity, motivation in language learning is socially and culturally situated and the relations between individuals’ behaviours / perceptions and the social / cultural environments are mutually constitutive (Bandura, 2001; McGroarty, 2001; Ushioda, 2009). Constructs developed in the Western contexts may not translate easily into the Asian contexts because of cultural differences (Dimmock, 2000; Kemp, 1993; Richards, 1993). In relation to motivation in L2 learning, the notion of success is an example. In the West, achievement is a highly individualistic notion and students attribute success to one’s ability. In Hong Kong, students are characteristically representatives of the
Confucian-heritage cultures (Watkins and Biggs, 2001). In the Confucian tradition, achievement is a collectivistic notion and students attribute success to one’s effort and motivation to succeed. Success is interpreted by a collective of significant others including teachers, parents and peers (Dimmock, 2000; Littlewood, 1996; Watkins and Biggs, 2001).

An example of cultural differences is Hong Kong’s classroom context. Class sizes of forty students, crowded classrooms, traditional physical settings and a teacher-centred teaching approach are unfavourable conditions for teacher-student interactions and feedback. The feelings of satisfaction and security are hampered and the development of self-concept is affected.

In view of the above, by employing games, this study turns the teacher-centred teaching approach into the student-centred learning approach so as to provide favourable conditions for teacher-student interactions and feedback. The design and the nature of Letter Bingo make it feasible for every single student to participate and teacher-student interactions are heightened because teachers mark every single answer of every student.
2.5 Games in learning in general

Reviews show that the use of games in learning has been a research topic in a wide range of fields such as medicine and nursing, social sciences, mathematics, physics, biology, computer science, psychology, and education (Connolly et al., 2012; Dempsey et al., 1996; Hays, 2005; Kirriemuir and McFarlane, 2004; McClarty et al., 2012; McFarlane et al., 2002; Mitchell and Savill-Smith, 2004; Sauvé et al., 2007a; Wilson et al., 2009). The results of research studies are inconclusive; empirical evidence in some studies demonstrates positive effects of games on learning while others conclude the impact is either limited or not prominent (Blakely et al., 2008; Miller and Robertson, 2011; Young et al., 2012).

Several reasons account for the mixed results: the lack of consensus on definitions and classifications of games, the lack of coherent theories of learning in some studies and methodological concerns in other studies (Hays, 2005; Ke, 2008; Kirriemuir and McFarlane, 2004; McClarty et al., 2012; Sauvé et al., 2007a).

In order to gain a broad insight into educational gaming, this section presents the frameworks and classifications of games in learning in general from the constructivist perspectives. Gaming is a popular form of play. Play being a
meaningful activity and an integral component of children’s cognitive and social development is acknowledged in both Piaget’s (1970, 1972, 1983) cognitive constructivist learning theories and Vygotsky’s (1978) socio-constructivist learning theories. According to Piaget (1983), play performs an important role in the processes of assimilation and accommodation by engaging children in cognitive operations such as memory, organization and classification. Unlike Piaget’s focus on individual cognitive development, Vygotsky’s (1978) socio-constructivist perspectives highlight the social and cultural factors in children’s development by arguing that "learning is a necessary and universal aspect of the process of developing culturally organized, specifically human psychological function" (p. 90). Through playing with others, social interactions and communications are established. A child’s ‘Zone of Proximal Development’ is therefore created and enhanced as adult guidance and collaboration with more capable peers contribute to the child’s cognitive development.

Within constructivism, the game Letter Bingo in this study is deployed at the third and final stage of Piaget’s (1977, 1983) cognitive developmental stages (the operational stage which begins at around the age of 7). At this stage, children’s
cognitive development allows them to gain a better understanding of mental operations and to think logically. Thus at this stage, children are able to make sense of games with rules and they are appropriate for L2 learning.

In relation to formal curricular classroom contexts, games are educative when they are targeted at achieving particular curriculum contents (Conati, 2002; McFarlane et al., 2002). Researchers on motivation (including Dörnyei, 1990; 1994a, 2001a; McGroarty, 2001; Schunk et al., 2008) suggest that motivation is vital in sustaining a learning process which requires a lot of effort, and that meaningful classroom games keep students motivated because games require students to actively participate while achieving the given curriculum contents. Researchers on learning games such as Lepper and Malone (1987), Malone and Lepper (1987) and Prensky (2003) emphasize that motivation is the predominant condition in successful learning and games happen to provide that condition. Participation requires students to actively build on their prior knowledge, master rules, carry out procedures, predict and test conditions, make generalizations and resolutions as well as justify decisions in an environment of fun and enjoyment, without the fear of failure (Bragg, 2003; Caswell, 2005; Oldfield, 1991;
In this respect, both affective and cognitive aspects of learning are supported and constructive learning is achieved.

2.5.1 Conceptual frameworks of educational games

Williamson (2007) suggests that when evaluating educational games, the pedagogical, the practical and the organizational aspects of games should be investigated. The pedagogical aspects include the theoretical underpinnings and the educational implications of games. In order to explore the educational implications of games, the definition of ‘game’ and the characteristics and the classifications of games need to be addressed.

The term ‘game’ must be defined and ‘games’ and ‘simulations’ be distinguished. Little consensus has been reached on either the definition or the characteristics of games but there are three mostly agreed key elements of games as an organized play activity (i) a goal (ii) rules (iii) an element of fun (Deesri, 2002; Dempsey et al., 1996; Hadfield, 1999; Mitchell and Savill-Smith, 2004; Prensky, 2001). On top of these three key elements, different researchers embrace various attributes in ‘games’, for example, outcomes and feedback, conflict / competition / challenge /
opposition, interaction, representation or story (Prensky, 2001); the challenge that
games offer, the sensory and cognitive curiosity that games create, the sense of
control felt by students, the fantasy that students use to reinforce the instructional
goals (Lepper and Malone, 1987; Malone and Lepper, 1987); player(s), conflict,
the artificial nature and the pedagogical nature of the game (Sauvé et al., 2007a,
2007b). Unlike other learning activities, all educational games comprise “the
notion of winner/loser in a competition” (Sauvé et al., 2007b, p.253). Similar to
attributes, Crookall (2010) puts forward a number of ‘game ingredients’
contributing to the achievement of learning: the player (the person’s engagement
and the person as a whole, covering the affective and cognitive dimensions), game
facilitator (covering attitude, training and experience) and the game (covering the
theoretical underpinning, the specific learning goals, the design and the
organizational aspects and debriefing).

In view of the above, Letter Bingo in the present study is appropriately defined as
a game with pre-determined goal and rules and in which players are put in a
position of conflict. Sauvé et al.’s (2007b) six attributes of games (players,
conflict, rules, predetermined goal, the artificial nature and the pedagogical nature
of the game) form the conceptual framework of Letter Bingo. Crookall’s (2010) ‘game ingredients’ are coherent with Dörnyei’s (1994a) motivational strategies (as discussed in Section 2.4.3, some of these strategies are adopted in the present study): players’ engagement in the game and the game itself correspond to the learner level (at which ‘easier’ activities like games act as a mediator to develop students’ self-confidence and promote self-efficacy) and the game facilitator corresponds to the learning situation level (at which the teachers’ training, perception and choice of strategies help generate and maintain motivation). In Chapter 3 Section 3.5.2.2, Sauvé et al.’s (2007b) six attributes of games will be elaborated in relation to Letter Bingo of this study.

The lack of consensus on the definitions of games and simulations is one of the reasons causing mixed results in empirical studies on gaming (Ke, 2008). The distinction between games and simulations is generally based on the representation of reality; games do not intend to represent any real-world system whereas simulations represent some real-world systems (Crookall and Saunders, 1989; Crookall et al., 1987; Sauvé et al., 2007b; Wilson et al., 2009). Sauvé et al. (2007b) stress that a simulation may not involve conflict or competition and
specify that “Bingo or card games do not refer to reality” (p.250). In this regard, Letter Bingo being a fictional and fictitious game involving competition among players is therefore a game rather than a simulation and it is noted that simulation and simulation games are not within the scope of this study because they may not involve conflict or competition.

Before extrapolating from existing literature the classifications and the educational implications of games, it must be noted that educational games discussed in this study include classroom games (covering both non-technology-related games – e.g. pen-and-paper games, board games – and technology-related games – e.g. video games, electronic games, computer-assisted learning games and ‘commercial off-the-shelf’ / COTS computer games) – and exclude massively multiplayer online role-playing games / MMORPGs which involve players outside classrooms.

2.5.2 Classifications of games in relation to pedagogical values

The use of games as an instructional approach is generally believed to benefit skills, knowledge, cognitive and affective developments (Gagne, 1984; Kraiger et
Games appear to have considerable potential to enhance learning. However, in existing literature, there is limited direct evidence on the effectiveness of educational games in classroom settings, and particularly little evidence based on academic attainment. Many studies investigating the pedagogical values of games are descriptive and anecdotal reportage and are about the implicit beliefs of teachers and students (Facer, 2003; McClarty et al., 2012; McFarlane et al., 2002; Sandford et al., 2006; Wilson et al., 2009). As mentioned earlier, the pedagogical aspects of games cover the theoretical frameworks and the educational implications. In the rest of this section, the educational implications of games will be exemplified by the classifications of games. Researchers assert that the essence of games lies in the context and activities associated with games, not the games per se (Allery, 2004; Conati, 2002, deHaan, 2010; Garris et al., 2002; Habgood et al., 2005; Lepper and Malone, 1987; Malone, 1984; Malone and Lepper, 1987; Tüzün, 2007). As Brougère (1999) notes, games “cannot be designed to directly provide learning” (p. 142) and associated activities like ‘debriefing’ offering reflexivity are what in fact “make transfer and learning possible” (p.142). Findings in Scanlon et al. (2005) demonstrate that the gains that games brought about proved to be “superficial and
short-lived” (p.137) as students “fail to link the gaming elements with the learning which children are required to undertake” (p.137). The classification of games therefore facilitates the understanding of the link between the educational implications of games and the aspects of learning.

Different researchers propose different taxonomies of games. As suggested by researchers in current literature, classifications of games include the genres of titles, the kinds of experience that games provide and the nature of games (see Appendix 2). The classification that fits into the present study is one that implicates the pedagogical values of games and that aligns with the constructivist learning theories in which learners take a crucial and active role in learning and development. The classifications in Appendix 2 do not appear to fit. Noting that different games are appropriate for different curriculum targets, findings in Rosas et al. (2003) show tutorial gaming programs used for teaching and demonstrating appear to play a greater role in motivating students while drill-and-practice gaming programs appear to facilitate achievement gains. Further, Connolly et al. (2012) suggest three primary functions of games: games for entertainment, games for learning, and serious games for changing behaviours.
Regarding games for learning, categorizing learning outcomes may be difficult because knowledge acquisition, perceptual and cognitive outcomes tend to overlap. In this respect, classifying games according to game functions may first facilitate the choice of games and second, better understand the link between the games and the desired learning outcomes, if there is any. Dempsey et al.’s (1993) examination of games based on game functions (see Appendix 3) is found to be helpful.

Dempsey et al.’s (1993) review of gaming literature notes that ‘learn new skills’ and ‘practice existing skills’ constitute the highest percentage of game functions of the studies reviewed but the game functions of as many as 14% of the studies reviewed could not be determined. When game function is implicit, the intent of the research is unclear thus making it difficult for evaluation. This resonates with Kirriemuir and McFarlane (2004) and McFarlane et al. (2002) in that the evidence supporting the potential values of games in learning is neither extensive nor robust.

Dempsey et al.’s (1993) classification is adapted in this study because the
classification facilitates both the choice of games (including Letter Bingo in this 
study) and the understanding of the desired learning outcomes which tend to 
overlap because of the multifaceted and interconnected nature of games (Connolly 
et al., 2012; Tüzün, 2007). Learning outcomes are examined in terms of three 
broad categories: the skill-based, cognitive and affective outcomes (Connolly et 
al., 2012; Garris et al., 2002). These learning outcomes reflect individuals’ 
learning and development. Skill-based outcomes are the technical or motor 
skills development achieved in the learning process. Cognitive outcomes 
include the declarative knowledge to reproduce items, the procedural knowledge 
to apply and to perform a task, and the strategic knowledge to apply the learned 
theories and concepts to different contexts. The affective outcomes cover 
attitudes, beliefs, feelings, confidence, self-efficacy, preferences and dispositions.

In order to support the theoretical underpinnings of the present study, the 
following subsections present some examples of empirical studies in learning in 
general (other than language learning) with reference to Appendix 4 ‘Game 
functions from the constructivist learning perspectives’ as adapted from Dempsey 
et al. (1993). Game functions in these studies are linked with learning
outcomes in terms of skill-based, cognitive and affective outcomes. Due to the relevance of this study, an in-depth review of empirical studies focusing on games in language learning will be presented in Section 2.6.

2.5.2.1 Strategy for drill-and-practice

Resonating with Dempsey et al. (1993), more empirical studies use games as a strategy for drill-and-practice and introducing new contents than as other strategies. Repetitions and rehearsal are cognitive strategies that help students memorize and apply knowledge and techniques (Forman and Forman 2008). Examples include studies in mathematics (Chang et al., 2009; Miller and Robertson, 2009) and in geography (Virvou et al., 2005) demonstrating that games are particularly useful for practising very specific and well-defined contents like addition, facts, problems and arithmetic accuracy as suggested by McFarlane et al. (2002), Mitchell and Savill-Smith (2004) and Squire and Jenkins (2003). The use of games as a strategy for drilling abstract concepts in chemistry is also noted. In Hassan and Poopak (2012), the effects between teacher-made card games and computer games are compared. Findings show a significant improvement in students’ learning in the experimental groups, by both
teacher-made card games and computer games, but no significant difference between the two kinds of games is noted. It is concluded that games help students create better intangible associations between different topics in chemistry.

2.5.2.2  Strategy for introducing new contents

Games as a strategy for introducing new contents also bring overlapping learning outcomes. While employing games to introduce new contents in mathematics, Bragg (2003) notes games are also considered to be motivating, ensuring engagement, “particularly through reflection and discussion, on which constructive learning depends” (p.160).

2.5.2.3  Strategy for reflection

Although by definition, games have no reference to reality (Sauvé et al., 2007b; Wilson et al., 2009), by employing board games such as Life and Monopoly, games in Glasberg et al. (1998) demonstrate the ideology that “individual effort (and sometimes pure luck) determines whether one is wealthy or poor, successful or unsuccessful …. we are all ultimately responsible for our own fate” (p.133).
2.5.2.4 Motivational stimuli for learning

Examples of using games as motivational stimuli for learning are seen in geography (Tüzün et al., 2009) and biology (Franklin et al., 2003). Findings in Tüzün et al. (2009) indicate gains in both geography knowledge and intrinsic motivation. Findings in Franklin et al. (2003) indicate a stronger positive response to the use of crossword puzzles which seem to appeal to more motivated students thus demonstrating “a variety of learning resources need to be available for students” (p.79) to cater to learning differences among students.

2.5.2.5 Strategy for developing tasks

Games as a strategy for developing tasks bring about strategic learning outcomes. An example is Amory et al.’s (1999) study of the use of commercial games in biology; students rated “game elements such as logic, memory, visualization and problem solving as the most important game elements” (p.311) thus providing evidence to support the elements that promote intrinsic motivation and effective learning.
2.5.2.6  Strategy for developing collaboration and social skills

Glasberg et al. (1998) employ a variety of board games to allow students to reinforce abstract concepts in a socialization process that includes race, class, gender and political socialization. Findings show that students were eager to participate in the discussion and were enthusiastic about connecting the sociological concepts and perspectives to the games. Social skills (such as taking turns, following rules and fair play) were acquired during gaming.

By examining some empirical studies in various disciplines, this section supports the classification of games based on game functions from the constructive perspectives thus providing a theoretical framework for linking games with learning outcomes. In Section 3.5.2, the classification of Letter Bingo in the present study is elaborated with reference to the function-based classification of games in relation to the learning outcomes.
2.6 Games in language learning

As with the studies of games in other subject disciplines, much that has been
written about the effectiveness of games on language learning is anecdotal and
based on the implicit belief that benefits naturally emerge with the use of games
(Keen, 1983; Uberman, 1998). This section reviews how, in existing literature,
the empirical studies of games in language learning align with the game functions
shown in Appendix 4 thus establishing the theoretical underpinnings and
conceptual frameworks of Letter Bingo in the present study. Based on the strict
inclusion criteria presented in Section 2.1, 14 empirical studies were identified.

On top of the broad definition of ‘game’ (being an organized play activity with a
goal, rules and an element of fun), language games “have specific linguistic
language outcomes to achieve” (Yu, 2005, p. 35). As with games in learning in
general, different language games are appropriate for different language learning
targets. The classifications of language games help understanding the link
between the elements of games and learning outcomes. Specifically related to
the taxonomy of language games, games are classified in terms of focus: linguistic
games focusing on accuracy, communicative games focusing on fluency and the
exchange of information and ideas using the target language (Hadfield, 1999; Rama et al., 2007). According to Yu (2005), there are also games with mixed goals of accuracy and fluency. In the rest of this section, empirical studies are reviewed based on the focus of games (1) linguistic games focusing on accuracy (2) communicative games focusing on fluency. The focus of games is discussed in relation to the pedagogical aspects of games covering the theoretical underpinnings and the educational implications (in terms of game functions and learning outcomes) as discussed in Section 2.5.

2.6.1 Linguistic games focusing on accuracy

Referred by Hadfield (1996) as ‘structural games’ and by Littlewood (1981) as ‘pre-communicative games’, games focusing on accuracy of language are useful in fostering the learner’s linguistic abilities in vocabulary, spelling, pronunciation, grammatical rules or structures (Richard-Amato, 1988; Yu, 2005). This also applies to foreign language learning – “language games serve as an important instrument for attaining proceduralisation of morphological and syntactical structures in a foreign language” (Macedonia, 2005, p.140). The following discussion on games focusing on accuracy is based on the linguistic targets:
vocabulary, spelling, grammar. Appendix 5 shows the number of empirical studies of linguistic games identified in this section and no game targeted at grammar was identified.

2.6.1.1 Vocabulary games

3 empirical studies of vocabulary games met the inclusion criteria and a summary is provided in Appendix 6. Appendix 6 shows there are relatively more studies of vocabulary games in L2 learning than in L1 learning. Only Laleh and Nasrin (2011) employ a computer game. Resonating with Dempsey et al. (1996) and Garcia et al. (2008), all three studies either employ readily available games or adapt from existing games to ensure entertainment.

Laleh and Nasrin (2011) specify how the digital game SHAIEx relates to the cognitive learning theories underpinning the study, for example, the systems allow each player to “freely explore the knowledge (information) appropriate or not to the student’s cognitive level” (p. 556). The theoretical underpinning of Alemi (2010) is implicit and the pedagogical aspects of the five word games involved in the study are not specified. The lack of explanation affects the evaluation of the
effect of games on learning outcomes. Kirby et al. (1981) is based on
behavioural principles but how the game Bingo relates to these principles is not
discussed although some organizational aspects of the game are presented. As
McFarlane et al. (2002) assert, little is known about how particular types of games
might relate to specific curriculum contents in existing literature; thus how the
elements of the games involved are linked to the theoretical underpinnings need to
be specified.

In terms of the game functions noted by Dempsey et al. (1993), most games are
used for practising existing skills or teaching new skills, and all three studies
employ vocabulary games for either one of these two functions. Similar to
games in learning in general (as discussed in Section 2.5), games in language
learning are useful for drilling very specific, well-defined materials. Vocabulary,
the learning content of all three studies, is very specific and well-defined and
vocabulary acquisition or retention is the cognitive learning outcome.

All three studies employ an experimental design and students’ academic
performance is measured by vocabulary tests. This aligns with the remark of
Chang et al. (2009) and Tüzün (2007) that studies on games in learning mostly employ experimental designs. General findings in all three studies show a positive impact of games on vocabulary acquisition or retention, with statistically significant differences in Alemi (2010) and Laleh and Nasrin (2011).

Some issues and concerns are identified in each study of vocabulary games. The title of Alemi (2010) is problematic: while the study is titled ‘Educational games as a vehicle to teaching vocabulary’, it is stressed that “the word games were to be used for practicing not teaching purposes” (p.432). The theoretical underpinning of Alemi (2010) is implicitly related to using “games with reference to the motivation that they can provide for the students” (p.428) and how the pedagogical aspects of the five different word games relate to learning theories is not specified. The evidence supporting the pedagogical values of the games in Alemi (2010) is therefore weakened. Findings show that the experimental group performed significantly better than the control group in post-test; however, methodological concern arises because the results could have been attributed to the fact that the experimental group had more reinforcement of words in games while the control group, receiving no treatment at all, had none.
The Bingo game in Kirby et al. (1981) was played by individuals but participants “were encouraged to seek their neighbour’s help if they had difficulty locating the word” (pp.320). How the pedagogical potentials of peer assistance and the aspects of Bingo relate to the behavioural theories underpinning the study is not explicit; results could have been attributed to peer assistance rather than the game. Thus, the evidence is not robust for the claim that “noticeable improvements occurred for the word sets receiving the game treatment” (Kirby et al., 1981, p.317). Also, the small sampling size and the lack of control group make it difficult for generalization.

In Laleh and Nasrin (2011), it is not explained why only girls participated in the study and the randomization is unclear; these cause methodological concerns. The claim “children in the experimental group were more motivated than children in the control group” (Laleh and Nasrin, 2011, pp.558) is also questionable because motivation was not measured in the study.
2.6.1.2 Spelling games

5 empirical studies of spelling games met the inclusion criteria and a summary is provided in Appendix 7. Appendix 7 shows there are more studies of spelling games in L1 learning than in L2 learning. All studies, except Cassar and Jang (2010), employ technology-related games. Cassar and Jang (2010) specifically encompass phonics instruction in the games. All studies of spelling games specify and elaborate (to some extent) how the games in the studies relate to the learning principles. Below are examples of specifications:

- cognitive theories as in Cassar and Jang (2010) - the purpose of activities like crossword puzzles was to “provide the students the opportunity to play games in a one-to-one session with the teacher within their ZPD” (p.200); Jolicoeur and Berger (1988) - the students using the games “will have exposure to only one form of problem representation and little exposure to the conceptual basis of the drill and practice exercises provided in the games” (p.14); Rosas et al. (2003) - “the games had a progressive and increasing level of difficulty, based on the presentation of antagonists and obstacles. According to the child’s performance, the game provided feedback...
indicating if he or she chose the correct or incorrect answer” (p.78).

- theories about orthography and visual memory as in Garcia et al. (2008) - “a key design restriction was to avoid showing the student wrongly spelled words, because he/she could get used to the error and learn them incorrectly ” (p.12)

- psycholinguistic and motivational theories as in Keen (1983) - the format of Boggle lends itself to a “competitive but low risk exploration of potential new words and different uses of words as compared to the usual single sentence use of a word in the textbook approach” (p.20-21).

Again, Dempsey et al.’s (1993) view on game functions is supported: spelling games in all studies either function as a strategy for introducing new contents and/or drilling spelling. All studies primarily target at the cognitive learning outcome – spelling – while Cassar and Jang (2010) also target at the affective outcome – the level of engagement in learning. In terms of design, Cassar and Jang (2010) is a quasi-experiment whereas all other studies are experiments. This again supports Tüzün’s (2007) view that studies of games mostly employ
experimental designs. As for general findings, results in Keen (1983) and Jolicoeur and Berger (1988) demonstrate there is no significant difference in spelling performance between the group using games and the group using traditional spelling programs / tutorial format. Findings in other studies generally demonstrate some positive impact of games on spelling.

Some issues and concerns are revealed in each of the empirical studies of spelling games. Cassar and Jang (2010) specify, to a considerable extent, how the individual and group games involved align with the Vygotskian principles of the ZPD (‘zone of proximal development’) during the learning process. The effect of the games on spelling and level of engagement is therefore established. However, the sample size of six students makes generalization difficult.

To some extent, Garcia et al. (2008) specify how the Pac-Man like game relates to the theories of orthography and visual memory. However, some students in the study played the game individually while some had to play in pairs due to the lack of equipment. It is unclear how the sharing of computers was administered and if every participant had equal access to the game in the designated sessions. This
causes concern because students’ post-test performance might have been different if every participant had had equal access to a computer or the game.

Investigating the effect of software programs consisting tutorials and games on L1 spelling, findings in Jolicoeur and Berger (1988) demonstrate in the post-test (Test 3) that there is no significant difference in spelling performance between students using the tutorial format and students using the game format. Stemming from the cognitive principles, the hypothesis ‘the tutorial format was expected to be more effective than the game format’ was rejected. However, in the two-week delayed test, the difference between the two groups was not indicated. Therefore, the conclusion is difficult to be assessed as comparison cannot be made.

Keen (1983) investigates the effect of the commercially produced game Boggle on spelling achievement. Extensive elaboration of how Boggle aligns with the psycholinguistic principles and the motivational theories is noted. There are two methodological concerns in Keen (1983). For the 5th grade level, a difference in treatment is noted: because of scheduling conflicts, the textbook group “met only twice during the week (Tuesday and Thursday or Monday and Wednesday) and
were grouped as being totally boys or totally girls” (Keen, 1983, p.58).

Although it is noted that the group “spent the same amount of time per week in
the study of their weekly spelling lesson”, the fact that they only met twice a week
would have lengthened each spelling lesson thus affecting spelling performance.

Another concern is the possible impact of peer learning among the Boggle groups:

“in each grade level for this group the students were randomly assigned to
‘Boggle’ groups to play a minimum of four games a day, Monday through
Thursday” (Keen, 1983, p.59). Such grouping is not noted among the textbook
groups. Thus it is assumed that students for the textbook groups participated
individually in the daily activities. The fact that the implementation procedures
and arrangements were different between groups causes threat to the reliability of
the study.

In Rosas et al. (2003), findings show positive impacts of games on motivation and
no negative impact of games on academic achievement in both reading and
mathematical skills. However, acknowledging that there is no data “to support
the existence of implicit learning underlying the cognitive tasks hidden in video
games” (p.91), it is clear that implicit learning is yet to be supported and measured.
It is not known how “regular classes” (Rosas et al., 2003, p.80) were taught in the IC groups of the experimental schools and the EC groups of the outside schools; this causes methodological concern because the impact of games could have been caused by extraneous factors such as multi-treatment interference.

In Appendix 10, a summary of empirical studies on language games covering linguistic games, communicative games and games focusing on both accuracy and fluency is provided.

2.6.2 Communicative games focusing on fluency

Yin and Jang (2000) argue that “the emphasis in the games is on successful communication rather than on correctness of language” (p.1). Communicative games focusing on fluency of language allow learners to appreciate the beauty in a foreign language and when language use comes before language practice, games bring the classroom closer to the real world (Alemi, 2010; Al-Issa, 2009; Celce-Murcia and Hilles, 1988).

5 empirical studies of communicative games met the inclusion criteria in this
section and a summary is provided in Appendix 8. All studies identified in this section, except Rama et al. (2007), target at L2 learning. Resonating with Dempsey et al. (1996) and Garcia et al. (2008), all five studies either employ or adapt from readily available games. All studies specify (except Gardner, 1987) and elaborate (except Rama et al. 2007) how the games involved relate to the underpinning learning theories. Below are examples of specification according to the learning principles:

- constructivism as in Liu and Chu (2010) – the system design is based on ubiquitous learning that “not only enables students to achieve their learning goals … but also cultivates their ability to gain new knowledge and develop problem-solving abilities” (p.632)

- communicative language teaching approach as in Nguyen and Khuat (2003) – “students tried to use as many phrases and words they had learnt as possible. Thus, through this kind of activity students may be able to remember their vocabulary better” (p.6)

- various vocabulary presentation and revision techniques as in Uberman (1998) – to complete the crossword puzzle, “learners had to ask each other for the explanations, definitions, or examples to arrive
Games in all five studies are played in groups; this is very different from linguistic games that are mostly played by individuals. Like linguistic games, games in all studies function as a strategy for drilling and practising and/or introducing new contents.

Similar to linguistic games, learning contents in the communicative games in the five studies are mostly specific like vocabulary, pronunciation and grammar, and the intended learning outcomes cover both cognitive (such as vocabulary building) and affective aspects (such as motivation, perceptions and attitudes). Unlike linguistic games that mainly employ the experimental design, studies of communicative games employ the experimental design and action research. The methodology in Gardner (1987) is not specified but is assumed that one data collection covers a questionnaire – “Students were asked to complete a short questionnaire” (p.20) – and “error counting” (p.20). General findings of the five studies show that there is a positive impact of games on learners’ language proficiency and that the games in the studies are well-received by learners.
Regarding issues and concerns, a number of concerns are noted in Gardner (1987) which, by employing the single game Describe and Arrange, tests a number of claims made about communication games by writers. The theoretical underpinning of the study is not specified although peer learning is implied. The methodology including sampling, randomization, pairing of groups and data collection is not known but “the most disappointing result of this work was that which merely showed questionnaires to be a doubtful way of gathering information” (Gardner, 1987, p.23). Generalizations are also limited because the study focuses on “one game, played in one context, with one group of students” (p.22).

In Liu and Chu (2010), students from two classes were assigned to the experimental group using game-based learning (employing ubiquitous games) or the control group using non-gaming learning (using printed materials and CD players). Methodological concern arises when students were assigned to the experimental and control groups that “were formed using students from the same class so that team members share a good rapport with one other” (p.631); in each group, students formed into teams but no control for differences in terms of
language proficiency is noted. Findings show, out of five phrases, the average test scores of the experimental group in Phase 1 (the preparation phase), Phase 3 and Phase 5 were significantly better than the grades of the control group; this evidently shows the experimental group is initially a group with better performance.

In Nguyen and Khuat (2003), positive feelings and attitudes of students towards learning vocabulary through games are generally supported. However, because the study was conducted “in a limited time of two weeks and it was hard to assess what [our] students had achieved because vocabulary learning is a cumulative process” (p.7), very limited objective measure of the progress in vocabulary is noted – “Our students got eleven correct answers out of twelve job cards which were passed out” (p.7). Similar to what is noted by Keen (1983) and Uberman (1998), conclusions were mainly drawn based on teachers and students’ perceptions and beliefs. Evidence on the impact of games on academic results is not robust.

In Rama et al. (2007), two classes of “high ability” pupils participated in the study.
Although findings show the experimental group achieved a higher mean score in the post-test than the control group, “21% of the pupils in the experimental group felt that they were not able to communicate better at the end of the lessons compared to the 11% of pupils in the control group” (p.9). This undermines the effect of the communicative games on oral communication skills. Another concern is that although Rama et al. (2007) is underpinned by collaborative learning, it is not specified how the different games in the study are linked to the learning outcomes.

Uberman (1998) claims “the group which had learned vocabulary through games performed significantly better” (p.24) without providing the statistically significant difference; the conclusion is drawn based on the provision of simple figures - “Group I received an average mark of 3.9 as compared to 3.4 obtained by group II” (p.24). The lack of specification of the methods of sampling, randomization and grouping also causes concerns; it is noted that students of various abilities were grouped in games when students were expected to “cooperate in completing the activity successfully in order to expand their vocabulary with, in this case, colloquial expressions” (p.23). Another concern is
the incomplete data for analysis, for example, in the vocabulary presentation game Vocabulary Picture-Puzzle, the number of students participating in the gaming group and the non-gaming group was unknown. The above methodological concerns affect the drawing of conclusions.

In Appendix 10, a summary of empirical studies on language games covering linguistic games, communicative games and games focusing on both accuracy and fluency is provided.

2.6.3 Games focusing on both accuracy and communication

Acknowledging the multifaceted and interconnected nature of games, there are language games focusing on both accuracy and communication. Based on the inclusion criteria in this section, one study was identified – Yu (2005) investigating the effect of 13 non-computer games on L2 learning (see Appendix 9).

As for the theoretical underpinnings, Yu (2005) aligns with the communicative practices and specifies the games as “communicative grammar games” (p. 38) focusing on both accuracy and fluency. Yu (2005) also points out that the games
involved relate to Dörnyei and Csizer’s (2002) motivation theories; however, there
is limited elaboration on how the 13 games fit into Dörnyei and Csizer’s (2002)
motivation theories except that the games “provide an initial incentive at the start
of a lesson when the teacher announces that it will contain a game: they offer a
welcome variation on the usual lesson routine; and they count on cooperative
learning” (p.50).

The games in Yu (2005) function as a strategy for drilling and practising as well as
introducing new contents while the expected outcomes are in terms of cognitive
aspects (grammar accuracy) and affective aspects (motivation and classroom
atmosphere). Similar to linguistic and communicative games, the learning
contents in Yu (2005) are specific - grammatical aspects of German – and the
quasi-experimental design is employed. Findings show that for the experimental
group, the games have a positive impact on grammatical accuracy (though the
improvement is insignificant) and significant improvement in motivation and
classroom atmosphere. Although Yu (2005) describes in detail the grammatical
features, sentence structures, functions and language skills of the games involved,
it is not known what elements of these games attribute to the impact and whether
it has to be a combination of all games that attributes to the learning outcomes.

One methodological concern is noted in Yu (2005): among the students in the experimental group and control group, 17 students in each group selected German as their first choice of L2 after entering college and another 29 students in the experimental group and 30 students in the control group “were assigned to German classes because of their lower entrance examination scores” (p.61). Students of each group were then divided into three language levels: high, middle and low. However, the number of students selecting German as their first choice and the number of those being assigned to German classes in each high / middle / low language level group was not known. In this regard, initial differences on both the academic results and the motivation level in learning German may affect the result of treatment.

Before discussing the practical and organizational considerations as well as the potential concerns of games in language learning, a summary of the empirical studies examined in Section 2.6 is presented below and a table showing this
summary of empirical studies on language games is shown in Appendix 10.

The inclusion criteria yielded 14 empirical studies on language games in Section 2.6. More empirical studies of the use of language games in L2 than in L1 are identified, in contrast to the view of deHaan (2010) that more attention has been drawn to L1 development than L2 learning with regard to educational gaming.

Resonating with Dempsey et al. (1996) and Garcia et al. (2008), the majority of studies of language games employed or adapted from readily available games and Rosas et al. (2003) is the only study with specifically designed video games.

While linguistic games are mostly played by individuals and/or in groups, communicative games are mostly played in groups and the only language game focusing on accuracy and fluency is a group game. One linguistic game (Alemi, 2010) and one communicative game (Rama et al., 2007) did not specify the game types. All studies (except Gardner, 1987) of language games made explicit the theoretical underpinnings of the studies and related the games, to various extents, to the learning theories (among the 14 studies reviewed, 5 studies are underpinned by the constructivist / cognitive theories). This contrasts with researchers’ views that a lot of studies of educational games lack theoretical frameworks to ground
the potential benefits of games (Blakely et al., 2008; Facer, 2003; Kirriemuir and McFarlane, 2003; Mitchell and Savill-Smith, 2004; Uberman, 1998; Vogel et al., 2006). In terms of game functions, all language games were used for introducing new skills and/or practising existing skills, resonating with Dempsey et al. (1993). Cognitive outcomes were the primary learning outcomes in studies of language games and affective outcomes were mostly additional learning outcomes. The majority of language games employed experimental design and few employed action research. As with general findings, the view still holds that there are mixed and inconclusive results due to methodological concerns in some research works (Hays, 2005; Ke, 2008; McFarlane et al., 2002; Miller and Robertson, 2011; Mitchell and Savill-Smith, 2004; Torrente et al., 2009; Wideman et al., 2007) although most studies on language games generally support the positive impact of games on academic results and affective aspects.

2.6.4 Practical and organizational considerations

Different writers highlight different considerations when choosing games in learning in general. These considerations include: ‘appropriacy’ corresponding to students’ age and level, the length and time necessary for the conducting of
games and at which particular stage games are to be used (Uberman, 1998), organizational processes, the mechanics of games and the materials required (Lengeling and Malarcher, 1997; Nguyen and Khuat, 2003), the number of students, classroom factors such as settings and the suitability of games in the ‘timetabled classroom environment’ (Kirriemuir and McFarlane, 2004), time for debriefing during or after games (Brougère, 1999; Franklin et al., 2003), computer-related or non-computer related games (Egenfeldt-Nielsen, 2006; Kraus, 1981; Prensky, 2001), teachers’ knowledge of games (Williamson, 2007), the equilibrium of entertainment and learning (Ke, 2008), different cultural contexts in the western and Asian societies (Kin and Crookall, 2003).

Specifically related to language games, Hong (2002) proposes 7 questions for consideration (see Appendix 11). Hong’s proposed considerations fit into the constructive perspectives in that students’ needs and participation are of significance. Integrating (i) the game functions in Appendix 4 (ii) Hadfield’s (1999) classification of linguistic and communicative games (iii) considerations for choosing games in learning in general (iv) Hong’s (2002) considerations of choosing language games, the researcher of the present study takes into account 8
considerations (see Appendix 12) when choosing language games from the constructivist perspectives. These considerations provide the theoretical framework for the game Letter Bingo in the present study.

2.6.5 Potential concerns of games

While much has been written about the positive attributes of educational games, potential concerns of games in learning in general (which also apply to games in language learning) need to be addressed. First, playing games may not appeal to every student, individuals have their own preferences of learning patterns and strategies and this view is supported by findings in Keen (1983). Second, anxiety and embarrassment may arise in competition among peers (Blakely et al., 2008). When the pedagogical values of games in learning have not been thoroughly explored, acknowledging the potential concerns of games is therefore significant.
2.7 Bingo as a learning game

The pedagogical aspects (including the theoretical underpinnings and the educational implications) of games and the practical and the organizational aspects of games are examined in Section 2.5 ‘Games in learning in general’ and Section 2.6 ‘Games in language learning’. As Bingo is the chosen game of the present study, this section will focus on how these aspects are related to Bingo in classroom settings and will highlight the practical and organizational specifics of Bingo as an instructional tool.

Games have been employed in EFL classroom for many years but the rationale of specific games is seldom discussed (Gardner, 1987). Different games target at different learning goals thus providing different learning outcomes (Rosas et al., 2003); McFarlane et al. (2002) suggest more studies investigating how particular types of games might relate to specific curriculum contents are needed. The choice of the specific game Bingo is justified in Section 1.2.6. Like studies of games in learning in general, studies of Bingo in learning mostly report the implicit assumptions of the pedagogical potentials of the game, very little empirical evidence of the effect of Bingo on learning is noted. Based on the
inclusion criteria mentioned in Section 2.1, 6 empirical studies of the effects of Bingo on learning were identified, covering studies in mathematics (Chang et al., 2009), English language (Kirby et al., 1981), social studies (Klepper, 2003), pharmacy (Tietze, 2007) and psychology (Vanags et al., 2012 and Weisskirch, 2009). A summary of the 6 studies is provided in Appendix 13. Based on the strict inclusion criteria, no empirical study of the effect of Bingo on L2 learning was identified. To the researcher’s knowledge, this study is a novel study investigating the pedagogical effects of the specific game Bingo on L2 learning in classroom contexts.

A general description of Bingo needs to be addressed. According to Connolly et al.’s (2012) categorization of the primary function of games (as discussed in Section 2.5.2), Bingo is a game for entertainment. Being popular and simple, the common Bingo is “a game of chance in which numbers, called at random, are plotted on cards to form patterns and to win prizes” (Delind, 1984, p.149). Unlike chess or bridge requiring players’ strategic skills or most forms of betting requiring players’ active calculations of odds, Bingo does not require players’ strategic skills and active interpretation (Swank, 2008). Relying “almost
exclusively on chance” (Delind, 1984, p.150), Bingo is a sort of passive and repetitious competition and is basically a solitary game involving limited conversation and social interaction. By critically examining the 6 empirical studies in this section, Bingo in learning shares more differences than similarities with the common Bingo described by Delind (1984) and Swank (2008).

2.7.1 Elements of Bingo

The following subsections will examine how the elements of Bingo are linked to the empirical evidence gathered in the 6 studies identified thus supporting the pedagogical values of Bingo as a learning game. This examination provides the theoretical basis for investigating the effect of Letter Bingo in the present study.

2.7.1.1 Forms and targets

Unlike the common Bingo, Bingo in learning occurs in a variety of forms and targets at different learning goals. Except in Chang et al. (2009) where Bingo is used for facilitating mathematics learning, Bingo in the other 5 studies do not use numbers in the grids as the common Bingo does. Bingo in the other 5 studies uses subject-related words: Kirby et al. (1981) uses sight words for students with
reading deficiency, Tietze (2007) uses activities related to the pharmacy course, Klepper (2003) uses social studies vocabulary, Vanags et al. (2012) uses physiological terms in psychology and Weisskirch (2009) uses psychological concepts. This demonstrates that Bingo can be adapted in a wide range of forms to fit various learning targets in various subject disciplines. Letter Bingo in this study is in the form of random letters to facilitate the learning of specific and curriculum-related content – English spelling.

2.7.1.2 Active participation

Similar to what Delind (1984) describes as a ‘solitary game’, Bingo games in all studies, except Vanags et al. (2012), are played by individuals. However, different from being a “passive and repetitious competition … involving limited conversation and social interaction” (Delind, 1984, p.150), learning through conversing with significant others such as the teacher is noted in Bingo in Kirby et al. (1981), Vanags et al. (2012) and Weisskirch (2009). Although Bingo is being played by individuals, students in Kirby et al. (1981) “were encouraged to seek their neighbour’s help if they had difficulty locating the word” (p.320) thus peer interaction and assistance are encouraged. The Brain Bingo activity in Vanags et
al. (2012) is played by participants in teams of two or three. Particularly in Experiment 2 where the experimental group received feedback to assist learning (there being no feedback in Experiment 1), it is stressed that feedback is “beneficial because it allows students to focus on errors in interpretation and improve their own error identification ability” (Vanags et al., 2012, p. 31).

Conversation and interaction with the game conductor is noted in the Bingo in Weisskirch (2009) during which the conductor followed up by saying “tell me something about” (p. 2) or “someone help him/her out” (p. 2) after posing each clue for the students to look for the Psychological concepts on their own Bingo sheets. Feedback in Vanags et al. (2012) and Weisskirch (2009) performs a similar function as debriefing (Crookall, 2010; Franklin et al. 2003) as discussed in Section 2.4.3 and 2.4.4.

The above evidence demonstrates:

(a) Bingo, instead of being a passive game with little conversation and interaction (Delind, 1984), can be a highly active and interactive game involving on-site conversation and interaction between teachers and students or among students,

(b) the essence of games lies in the context and activities associated with games,
not the games *per se* (Conati, 2002, deHaan, 2010; Garris *et al*., 2002; Habgood *et al*., 2005; Lepper and Malone, 1987; Malone and Lepper, 1987), (c) computer technology is not a prerequisite for students’ active participation and on-site interaction; all Bingo games involving discussions, reflections and interactions are non-technology related or non-computer games such as Kirby *et al*. (1981), Klepper, (2003) and Weisskirch (2009).

The above evidence thus supports the use of Letter Bingo in this study as a non-computer game played by individuals, involving players’ active participation and incorporating teacher-student interactions in terms of instant feedback or debriefing.

2.7.1.3 Chance

Bingo in learning is also different from the common Bingo in the aspect of chance. While the common Bingo relies “almost exclusively on chance” (Delind, 1984, p.150), Bingo in all 6 empirical studies reviewed relies almost exclusively on players’ active participation and engagement during the game playing process even though a certain amount of luck is still required. On top of participation and engagement, cognitive skills (including higher order thinking skills such as
problem solving and decision-making) and affective skills (such as concentration and attention) are required.

Bingo in Chang *et al.* (2009) requires mathematics skills in arithmetical calculations, speed for fluency and attention for accuracy to prevent slips or careless answers. Bingo in Kirby *et al.* (1981) requires skills in locating sight words and the interaction skills in seeking and offering help. Bingo in Klepper (2003), Vanags *et al.* (2012) and Weisskirch (2009) requires skills in processing questions posed by the game conductor and in reproducing course-related terms or concepts and interaction skills in receiving feedback. Bingo in Tietze (2007) relies almost exclusively on students’ active participation and interaction with course material; students have to fulfill tasks and activities arranged on the bingo card so as to achieve bingo before earning “a 5-point (5%) bonus added to the final course grade” (p.2).

In view of the above, participation and engagement are the key components of Bingo while luck or chance adds a bit of spice to the game. The evidence above therefore supports that students’ active participation and engagement are
prerequisites in Letter Bingo of this study; Letter Bingo requires cognitive skills including higher order thinking skills in solving clues posed by teachers, in applying phonics skills when deciding on the spelling of words and affective skills like confidence, concentration and attention when spotting random letters on the grid. The evidence also supports the inclusion of chance in Letter Bingo since chance may lessen “the frustration of those students who lose” (Chang et al., 2009, p.346) the game.

2.7.2 Theoretical underpinnings of Bingo

Compared with Kirby et al. (1981) and Weisskirch (2009), learning theories underpinning Bingo in Chang et al. (2009), Klepper (2003), Tietze (2007) and Vanags et al. (2012) are relatively more specific thus providing a stronger theoretical basis for the integration of Bingo into classroom practice. The learning flow in Chang et al. (2009) putting emphasis on 1:1 classroom practice, the information-processing for retaining social sciences vocabulary in Klepper (2003), the variety of theoretical frameworks to “increase students interaction with course material” (p.1) in Tietze (2007) and the deeper learning for ‘backward recall’ of terminology in Vanags et al. (2012) all share resemblance with the
theoretical underpinnings of Letter Bingo that stress individuals’ active participation in meaningful activities which engage learners’ mind and hands.

2.7.3 Game functions of Bingo

With regard to game functions shown in Appendix 4, Bingo is a strategy for drill-and-practice in the 6 empirical studies (Chang et al., 2009; Kirby et al., 1981; Klepper, 2003; Tietze, 2007, Vanags et al., 2012, Weisskirch, 2009). This supports Dempsey et al.’s (1993) view that games mostly function as a strategy for drilling and practising contents and/or introducing new contents. As for learning outcomes, Bingo in all 6 empirical studies mainly aims at producing cognitive outcomes including the acquisition and retention of words, terms or concepts. Deep learning is stressed in Vanags et al. (2012). The above supports the use of Letter Bingo in the present study as a strategy for drilling and practising spelling, with the intended learning outcomes of the acquisition and retention of spelling of English vocabulary.

2.7.4 Motivation in Bingo

Motivation plays a significant role in relation to learners’ thoughts, beliefs and
affect during the learning process (Dörnyei, 2001c; Ellis, 1985, 1994; Oxford and Shearin, 1994). Motivation is evaluated in Tietze (2007); findings show that 46.4% of respondents felt Bingo “took some of the pressure off the written examinations” (p.4) and 33.9% felt Bingo made the course more interesting. Narrative feedback on Bingo in Weisskirch (2009) shows students generally “found the activity engaging, worthwhile, and enjoyable” (p.6).

Hence, evidence shows that Bingo games employed in various disciplines generally bring about a positive impact on motivation in the learning process although the impact appears to be relatively less prominent than the impact on motivation in language learning (as discussed in Section 2.6).

2.7.5 Research design

In terms of design, Chang et al. (2009), Kirby et al. (1981), Klepper, (2003), Vanags et al. (2012) and Weisskirch (2009) employ the experimental design whereas Tietze (2007) employs the action research. This resonates with Tüzün’s (2007) view that research studies on the impact of games mostly employ traditional methodologies like experimental designs. General findings in the 6
empirical studies investigating the effect of Bingo on learning show positive academic improvement (including arithmetic accuracy, retention of sight words, terms and concepts). The findings also show that Bingo is positively received both by students and teachers and that the game promotes affective aspects like confidence and engagement. The above supports the quasi-experimental design of Letter Bingo in investigating the effect of the game on enhancing students’ spelling performance and perceived motivation in this study.

2.7.6 Related issues and concerns

As with the empirical studies reviewed in Sections 2.5 and 2.6, there are both key issues and methodological concerns in each study and these are highlighted in the following.

Findings in Chang et al. (2009) show, EduBingo “was an effective means to improving arithmetic accuracy but not efficiency” (p.350) and this could be attributable to the “lack of time constraint on the answering of problems” (p.350). However, the data of the two individual classes of participants (one grade-three class practising multiplication and division, one grade-four class practising
fraction arithmetic) are not presented. There is no data regarding whether there is any difference between groups in terms of abilities and improvement.

Moreover, there is no control group in Chang et al. (2009). These pose methodological concerns.

Among the studies reviewed in this section, Kirby et al. (1981) is the only empirical study of the use of Bingo in language learning. Learning English as a first language, participants in the study are identified as deficient in reading skills. This explains the small sample size of the study. Findings show noticeable improvements occurred for the word sets receiving the game treatment and it is noted that “in most instances the changes were immediate and of a magnitude that is clinically significant (i.e., 30%)” (Kirby et al., 1981, p.325). Only reading performance was measured in the study; behaviour or attitudes not are assessed. The small sample and lack of control group make generalization difficult.

Klepper (2003) employs Bingo to review social sciences vocabulary. Findings demonstrate the experimental group achieved a higher post-test mean score than the control group but the difference is insignificant. The concern regarding the
research design is acknowledged: that the scores were higher with the experimental group may have been attributed to “more reinforcement of the words in context” (Klepper, 2003, p.31) because the experimental group encountered each sentence six times (depending on the length of each Bingo) compared with the control group that encountered each sentence twice when reviewing vocabulary by worksheets.

Apart from drilling and demonstrating learning, Bingo in Tietze (2007) also functions as a strategy for developing tasks: to solicit students’ suggestions, by surveying, so as to adjust or decide on the bingo activities for the next semester. Tietze (2007) employed anonymous survey instrument to elicit opinions and ideas for further Bingo activities arrangement. A methodological concern arises when the response rate is 43%; the low response rate poses threat to the reliability of the study.

Brain Bingo in Vanags et al. (2012) highlights deeper learning which allows better retention of information; lower / surface level learning covers memorizing and identifying the material while deeper level learning is a more structural learning
that allows students to use and apply the knowledge. However, it is stressed that the activity “aims only to teach terminology and not to address more complex concepts” (p.33). Findings show the experimental group (receiving feedback during gaming) demonstrated significantly better recall for terms than the control group. However, methodological limitations are noted; in Experiment 1, it was only immediate recall that was tested and due to the design of the experiment, the control group focused on concepts rather than terminology in tutorials and had no opportunity to familiarize themselves with the terms during tutorials.

Weisskirch (2009) uses a modified Bingo exercise for undergraduates to review and re-educate developmental psychology theories and concepts. Findings in Weisskirch (2009) show both students’ self-reported improvement in knowledge of developmental theories and improved scores on their exams changed significantly. With regard to methodological concern, Weisskirch (2009) measures academic performance by employing exam scores. However, “two additional chapters’ information was included on the exam” (Weisskirch, 2009, p.6) thus posing threats to internal validity of the study.
2.7.7 Practical and organizational aspects

With reference to ‘Practical and organizational considerations of choosing language games’ in Appendix 12, some practical and organizational aspects are drawn from the Bingo games in the empirical studies reviewed in this section.

These aspects include:

(a) Learning topics in Bingo games in all empirical studies in this section are content specific and most importantly, are of high relevance to the curriculum. This differs from the view of Macaro et al. (2012) and Wastiau et al. (2009) that the learning content in games is of limited relevance to the curriculum. Depending on the learning topics, the forms of Bingo can be in grids filled with numbers, sight words, activities, terminology or concepts.

(b) ‘Appropriacy’ (Uberman, 1998) corresponding to students’ age or proficiency level is evidenced in all studies. For example, sight words are used in Bingo grids in Kirby et al. (1981) when the participants are students identified with reading deficiency.

(c) Suggestions regarding the organizational processes are provided in some studies. Bingo grids vary from the form of 3 X 3 to 5 X 5; no explanation or elaboration of the form is noted in any of the studies. Some studies specified
that the centre box of the Bingo grid was marked ‘FREE’ (Kirby et al., 1981; Tietze, 2007; Weisskirch, 2009); only Tietze (2007) explains activities “predicted to be more difficult to achieve (eg, computer animation, higher test scores) were placed in rows containing the free centre square” (p.2). Apart from Vanags et al. (2012) noting that key terms are listed “in alphabetical order across the page from top left to bottom right of the grid to make it easier for student to find them” (p.30), contents in other studies are filled in the grids randomly.

Time frames in some studies are specified: 30-second and 20-second time limits for the first and second games sessions (Chang et al., 2009); each card is shown to students for approximately 15 seconds (Kirby et al., 1981); 15 seconds between each definition, three iterations of Brain Bingo in 30 minutes (Vanags et al., 2012).

All Bingo games in the studies are played by individuals except Vanags et al. (2012) in which Brain Bingo is played in teams of two or three and without elaborating how and why the teams are formed. A classroom setting is noted
in Kirby et al. (1981), all games were played at “a small table in a secluded corner of the library” (p. 318). As for the number of students participating in Bingo, Kirby et al. (1981) specify that there is no restriction.

Winning conditions are similar in Chang et al. (2009), Kirby et al. (1981), Tietze (2007), Vanags et al. (2012), and Weisskirch (2009): a ‘bingo’ is set as one line / two lines / four lines / five lines, vertical or horizontal or diagonal, of correct answers on the board.

(d) Materials, equipment, cost involved are also practical and organizational aspects to be considered in Bingo. Being the only computer-based Bingo, Chang et al. (2009) specify that the classrooms are equipped with a wireless enabled computing device and Tablet PCs and PDAs are required, without stating the cost involved. In Tietze (2007), Bingo “required no additional University resources but did require additional faculty time for tracking student accomplishments and for working with students on the formative activities” (p.5) while a web-based course management system such as Blackboard or Angel is helpful.
Since all other Bingo games in this section are non-computer games, it is assumed that the materials involved are in general card boards, paper, markers, or “some cut up coloured, recycled paper to each student to serve as Bingo markers” (Weisskirch, 2009, p.2). However, Vanags et al. (2012) highlight the spending of “a considerable amount of time preparing laminated cards and Brain Bingo sheets” (p.33).
2.8 Summary of literature review in relation to Research Questions

To summarize, the empirical studies in Section 2.7 show that the pedagogical values (including the learning theories and educational implications) of Bingo as an instructional tool may apply to language learning and to spelling as in Letter Bingo in the present study. Studies reviewed provide evidence for active participation and engagement in Bingo games; none of the studies rely “almost exclusively on chance” (Delind, 1984, p.150). On the contrary, all Bingo games in this section rely essentially (and almost exclusively in Tietze, 2007) on students’ participation and engagement. Participation in Bingo involves interactions and conversations between teachers and students and among students even though most of the Bingo games are played by individuals. As highlighted in Vanags et al. (2012) and Weisskirch (2009), feedback or debriefing plays a beneficial role in constructing, confirming and consolidating knowledge during game playing. In view of participation, engagement and construction of knowledge, these aspects are highly relevant to the importance of language and learning in the constructivist perspectives underpinning the present study and therefore the employing of the modified Bingo game in this study is appropriate.
In terms of learning outcomes, specific games targeting at different learning goals produce different learning outcomes (McFarlane et al., 2002; Rosas et al., 2003). Bingo in the studies reviewed in Section 2.7 mostly brings about cognitive outcomes such as the acquisition and retention of contents. With regard to game functions, Bingo is mostly used for practising existing skills or contents, as suggested by Dempsey et al. (1993). In relation to the present study, spelling is noted as one of the difficulties primary school students encounter in L2 learning. While language learning requires effort and spelling acquisition and retention need practices, the employing of the modified Bingo game as a learning strategy for practising spelling is therefore appropriate.

Apart from cognitive learning outcomes, it is noted that motivation is sustained and enhanced in the game-based learning process in the studies reviewed in Section 2.7. As discussed in Section 2.3.2.3 ‘Motivation in spelling’, Bingo as a game-based learning strategy aligns with the motivation theory. Considering both the spelling difficulty and the decline of motivation in learning English in elementary schooling in Hong Kong, it is therefore appropriate to consider employing Bingo as an alternate strategy for drilling spelling and facilitating
motivation in the present study.

To conclude, the theoretical underpinnings and the pedagogical values of Letter Bingo are supported by evidence presented in Section 2.5 and Section 2.6 while the design and game elements of Letter Bingo are based on the empirical evidence demonstrated in the studies reviewed in Section 2.7.

With specific reference to Section 2.6 ‘Games in language learning’, only 2 studies (Gracia et al., 2008; Rosas et al., 2003) pertaining to the effect of linguistic games on L2 spelling acquisition were identified, showing there is a knowledge gap in the area. Gracia et al. (2008) claims that students had made significant progress after the game without showing a statistically significant difference. In view of this, Research Question 1: Is there any difference in spelling performance between the Experimental Group and the Control Group after treatment? aims to provide substantial evidence to support the impact of the game on spelling performance.

Findings in Rosas et al. (2003) show that both the experimental groups and the
internal control groups made improvement in spelling and the Hawthorne effect would explain the spelling improvement for the internal control groups. In this regard, Research Question 2: Is there any difference in spelling performance between the Experimental Group and the Placebo Group after treatment? aims at investigating the impact of the game on spelling performance by also considering the Hawthorne effect in this study.

As noted in Rosas et al. (2003), motivation plays an important role in learning from the cognitive perspectives. Thus motivation is addressed in Research Question 3: Is there any difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment?.
Chapter 3 Methodology

3.1 Overview

This study examines the impact of Letter Bingo on spelling performance and perceived motivation in learning English. In this chapter, based on the nature and purpose of the study, justifications of the research design and methods are provided. The features and design of the instructional intervention, Letter Bingo, are addressed. Validity and reliability are discussed and the ways to minimize the potential threats to validity and reliability are presented. The pilot studies (covering the pilot interview and the pilot Bingo session) are explained and the changes adopted are outlined. Ethical and practical issues and difficulties encountered are acknowledged.
3.2 Research design

This study examines the impact of Letter Bingo as an instructional strategy on students’ spelling performance and perceived motivation in learning English.

Shadish et al. (2002) remark that the experimental design is particularly useful in discovering “the consequences attributable to deliberately varying a treatment” (p.9). With regard to the present topic - educational games, most of the studies in existing literature employ traditional methodologies such as experimental designs (Chang et al., 2009; Tüzün, 2007). The employing of the experimental design in this study is thus appropriate. Acknowledging that a true experiment is an ideal design for observing the effects of an intervention that is deliberately introduced, the present study employs the quasi-experimental design because random assignment is not possible and the researcher has little control over the allocation of treatment. A quasi-experimental study is an experiment employing a pre-post test design and comprising a treatment group and a control group but without randomization of subjects (Campbell and Russo, 1999; Cook and Campbell, 1979; McMillan and Wergin, 2002). Also resonating with Tüzün (2007) that calls for studies pertaining to educational games “to go beyond and show its use in authentic classroom contexts that embrace more naturalistic design
methodologies and examine the issue from an international perspective” (p.466), it is appropriate that this study employs the quasi-experimental design to examine the impact of Letter Bingo on learning in an authentic Hong Kong classroom environment.

Acknowledging the complexity of educational contexts, both quantitative and qualitative methods are used in this study so as “to present the reader with different kinds of information” (Firestone, 1987, p.16) and “to triangulate to gain greater confidence” (p.16) when drawing conclusions. In relation to learning games, Wideman et al. (2007) assert that the success of games lies in the “understanding of game play and its relationship to the cognitive processes it evokes in users” (p.8). Again, the employing of the quasi-experimental design with both quantitative and qualitative methods in this study is appropriate because both the pedagogical impact of Letter Bingo on cognitive learning outcomes - spelling performance and affective learning outcomes – and perceived motivation are assessed.
3.3 Sampling

This study employed a small, non-probability and convenience sampling of 27 participants aged around 8 (11 boys and 16 girls). Convenience sampling was employed “on the basis of being accessible or expedient” (McMillan and Schumacher, 2001, p.175). Because the researcher of this study is not a teacher in any school in Hong Kong, she could only gain access to the participating school through personal connection with a non-profit making unit that jointly organized the spelling programme named Bingo Workshop as described in this study.

The participating school is located in the New Territories, the suburban area of Hong Kong. The sample is representative of the district which is lower middle class. Acknowledging that the non-probability, convenience sampling is not a product of randomized selection processes, the researcher of this study maximizes the representativeness of the sampling by selecting the subjects from the same grade in the same school with similar language background. All participants are ethnic Chinese aged 8 – 9. Cantonese is the mother tongue of all participants and the medium of instruction in school, including in English lessons, and English
is learnt as a second language.

Primary 3 students aged around 8 – 9 were selected for three reasons. Firstly, in accordance with Piaget’s (1983) cognitive developmental theories, it is at around the age of 7 that students’ cognitive development allows them to gain a better understanding of mental operations and to think logically. Primary 3 students in this study were at the concrete operational stage when learning English as L2 takes place. Secondly, with reference to the decline of motivation of Hong Kong primary school students as discussed in Section 1.2.3, Man (2003) suggests “it is important to provide early intervention to raise the levels of motivation and self-esteem in the early years of schooling” (p.346). Although the official curriculum, CDC (1997) recommends Hong Kong students should start learning English as L2 at the age of 6 after having had reasonable exposure to their first language, Primary 3 students were chosen instead because Primary 1 students (aged around 6) need time to adapt themselves from kindergarten to primary schooling. Thirdly, considering the use of interviews for data collection in this study, Primary 3 students were assumed to be relatively more efficient in communication than Primary 2 students based on the researcher’s personal
experience with her students at her own organization.

3.3.1 Assignment of groups

Sample selection took place at the beginning of the school term. In this study, random selection of participants and random assignment of groups were not possible because participation was entirely based on students’ interest and availability. All 66 students in three Primary 3 classes (3A, 3B, 3C) were invited to participate in an outside-class spelling programme named Bingo Workshop. The programme provided phonics instruction for drilling spelling and was co-organized by a non-profit making unit and the researcher of this study. A sign-up form (see Appendix 14 ‘Sign-up form I’) was handed out and collected through the participating school. Diagram 1 below shows the assignment of groups with the number of students in parenthesis.

Diagram 1. Assignment of groups.
26 students volunteered to participate in Bingo Workshop. In order to minimize
the potential threat to sample bias due to the lack of random assignment of groups,
the 26 volunteer students made their choice of attending either scheduled sessions
A or B based on their own availability. In other words, the 12 students
self-selected into session A and the 14 students self-selected into session B were
not informed of their treatment groups when they signed up. It was only after
signing-up that the Experimental Group and the Placebo Group were assigned to
session A and session B respectively by flipping a coin. Students were then
informed of their treatment groups before the first Bingo session.

Diagram 1 also shows those students who were not interested in participating in
Bingo Workshop were invited to provide their dictation scores of the first school
term for data collection and analysis; among those 40 students, 17 students
volunteered to provide their scores and were then assigned to the Control Group
receiving no treatment at all.

3.3.2 Students in each group

All students who signed up for this study took part in their groups but only the
data of 27 students were collected and analysed. The number of students in each group is illustrated in Diagram 2 below.

Diagram 2. Students signed up for each group.

Note: B= boys, G= girls, in parenthesis is the number of students whose data were collected and analysed.

Data collected and analysed (see Section 3.7 and Section 3.8) included 5 sets of dictation scores and 3 interviews. Some data of students were not collected and analysed because of (a) incomplete data, for example, students were absent from any of the dictations, unavailability of students/parents for interviews, missing information like parent’s signature on sign-up form (b) identification of students (confirmed by the school) receiving Special Educational Needs (SEN) in English classes at the beginning of this study. The exclusion of some data (but not participation) of students is further explained in Section 3.3.4.
For the Experimental Group, 12 students signed up and the data of 8 students were collected and analysed; 2 boys were identified as SEN students before the study, 1 boy was not available for interviews, 1 girl was absent from one of the dictations. For the Control Group, 17 students signed up and volunteered to provide their dictation scores for analysis and the data of 10 students were collected and analysed; 2 out of the 5 boys were identified as SEN students before the study and 5 out of the 12 girls had incomplete data (3 were absent from one of the dictations and 2 had incomplete sign-up forms). For the Placebo Group, 14 students signed up; 1 boy was identified as SEN student before the study and 1 boy’s parent was not available for interviews, 1 girl dropped out after the first Bingo session and her parent said her daughter did not enjoy the workshop, 2 girls’ parents were not available for interviews. The data of 9 students in the Placebo Group were collected and analysed (including the data of a boy who was identified and confirmed by the school as a student receiving SEN after the completion of Bingo Workshop and all data collection). The inclusion of the data of this SEN student is based on the authenticity of the classroom situations when students as such are yet to be identified. However, it is the researcher’s responsibility to provide readers with true and sufficient data and to draw readers’
attention to the matter so as to ensure the validity of the study. Being aware of
the identified case, the researcher takes into account the possible differences that
may have arisen when analysing and interpreting the data. Also noted in this
study is that all identified SEN cases were boys.

3.3.3 Experimental Group / Placebo Group / Control Group

This subsection outlines and justifies the three groups in this study: the
Experimental Group, the Placebo Group and the Control Group. The treatment
of groups is illustrated in Table 1 below. As noted earlier, the independent
variable or the treatment in this study is Letter Bingo encompassing phonics
instruction and the dependent variables are spelling performance and motivation.

<table>
<thead>
<tr>
<th>Activities involved</th>
<th>Control Group (n=10)</th>
<th>Placebo Group (n=9)</th>
<th>Experimental Group (n=8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>phonics instruction</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>pre-dictation</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>common Bingo (non-phonics / non-spelling related)</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Letter Bingo encompassing phonics skills</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Table 1 shows the Experimental Group received phonics instruction and played Letter Bingo as treatment, the Placebo Group received phonics instruction and had pre-dictation as treatment and the Control Group was the intact group thus receiving no treatment at all. It is stressed that the Bingo game played by the Placebo Group was \textit{not} a treatment because it was neither related to spelling nor phonics instructions; the game was played because of the Hawthorne effect (to be elaborated below). Therefore, in terms of treatment, both groups received phonics instruction and the difference was the strategy for drilling spelling: Letter Bingo for the Experimental Group and pre-dictation for the Placebo Group.

As discussed in Section 2.6 ‘Games in language learning’, one common methodological problem of studies of educational games is the lack of control groups (Egenfeldt-Nielsen, 2006; Kirby \textit{et al.}, 1981); when there is no control group, any growth in achievement may be attributed to the intervention rather than to normal, expected gain. By having a control group in this study and by ensuring that it was the least contaminated, the threat of history is minimized thus strengthening the validity of the present study.
The Placebo Group was included for three reasons. First, the purpose of this study is to investigate the impact of games on learning, not the impact of phonics instruction on learning. The integration of phonics instruction into Letter Bingo was to substantiate the pedagogical values of the game. By comparing the Experimental Group and the Placebo Group, any impact of learning (in terms of spelling performance and perceived motivation) is attributed to the gaming elements of Letter Bingo on top of phonics instruction since the difference in treatment between the two groups is the strategy for drilling spelling. Second, by playing the common Bingo that was non-phonics/non-spelling related, the Placebo Group was included to counterbalance the Hawthorne effect (Dörnyei, 2001b; McMillan and Schumacher, 2001; Rosas et al., 2003) whereby people behave or act differently because they are aware of being investigated. Third, in this study, it is unrealistic for one group to receive a special treatment while another group receives nothing, thus the Placebo Group received phonics instruction and pre-dictation as treatment.

3.3.4 Control for extraneous factors

In a quasi-experiment, the lack of random assignment of groups poses a potential
threat to the internal validity of the study; groups may differ in characteristics, and extraneous factors including age, gender and ability may affect the dependent variable (McMillan and Schumacher, 2001). Therefore, in this study, incomplete data and the data of SEN students were not collected and analysed so as to control for the extraneous factor of ability. It is again stressed that students with incomplete data and students receiving SEN were not excluded from participating in their groups; it was only their data that were not collected and analysed.

Age and gender were also extraneous factors that were controlled for in this quasi-experiment. Diagram 3 below shows that the difference in the number of boys and girls in the Control Group is greater than that in the Placebo and Experimental Groups. It is stressed that 2 out of the 5 boys who signed up for the Control Group were identified as SEN students before the study and all the other 3 boys were included in the Control Group thus no adjustment could have been done to control for the extraneous factor of gender. As with the Experimental and Placebo Groups, there is not much difference between groups in terms of gender.
With regard to the control for the extraneous factor of age, Diagram 4 below shows only 1 student in the Control Group was 9 years old. In terms of age, the three groups were almost homogeneous.

As mentioned in Section 3.3.1, the sample of this study was drawn from three Primary 3 classes (3A, 3B, 3C) and Diagram 5 below shows the classes of students among groups.
Encountering limited sign-ups for this study, it is acknowledged that the adjustment of differences in the number of students from each class was limited.
3.4 Procedures

Procedures started in July 2009 when the researcher gained access to the participating school and conducted the pilot interview, and procedures ended in January 2010 after the completion of 5 bingo sessions and 3 interviews.

Diagram 6 shows the overview of the implementation procedures.

Diagram 6. Overview of the implementation procedures.
Through personal connection, the researcher of this study gained access to the participating school which was subsidized by the Hong Kong government. At the preliminary stage, the researcher clearly explained to the principal the objectives of this study, the possible impacts of the spelling programme on students’ academic attainment and motivation, the implementation process including the Bingo sessions and interviews with students, parents and English subject teachers as well as the support and facility such as the provision of classroom required for the implementation.

With the principal’s confirmation of participation in the programme, the researcher established informed consent by assuring that all names (including the school, teachers, parents and students) were to remain anonymous and all information collected including the interviews on record would only be used for research purposes (Denscombe, 1998; Powney and Watts, 1987).

Before the implementation, dates and sessions were scheduled and a sign-up form (see Appendix 1 ‘Sign-up form I’) inviting students to participate in the programme was prepared. With the consent of the principal, a deposit of HK$50
was collected from each participant in session A and B and the full amount was to be refunded upon completing the programme (see Appendix 15 ‘Completion form’). This was done to minimize the attrition rate. For those who were not interested in participating in the spelling drill, a form (see Appendix 16 ‘Sign-up form II’) was prepared to invite them to provide their dictation scores of the first school term for data collection and analysis.

After collecting all sign-up forms in mid-September 2009, the assignment of groups was carried out (as discussed in Section 3.3.1) and the procedures were implemented according to Diagram 6 above.
3.5  Instructional intervention

The treatment of groups is illustrated in Table 1 in Section 3.3.3 ‘Experimental Group / Placebo Group / Control Group’. This section elaborates the instructional intervention covering Letter Bingo, phonics instructions and pre-dictation.

3.5.1 Bingo sessions

Referring to Diagram 6 ‘Overview of the implementation procedures’ in Section 3.4 ‘Procedures’, the Experimental and Placebo Groups each attended 5 one-hour Bingo sessions on 5 Saturday mornings (scheduled according to the school calendar) in a classroom. Table 2 below shows the run-down of each Bingo session.

<table>
<thead>
<tr>
<th>Run-down</th>
<th>Placebo Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 minutes</td>
<td>phonics instruction (same words)</td>
<td>phonics instruction (same words)</td>
</tr>
<tr>
<td>15 minutes</td>
<td>pre-dictation (same words)</td>
<td>Letter Bingo (same words)</td>
</tr>
<tr>
<td>15 minutes</td>
<td>common Bingo</td>
<td></td>
</tr>
</tbody>
</table>
In each Bingo session, each group first received 20 minutes direct and explicit phonics instruction covering the same words in the same manner. Analytic phonics was employed (see Section 3.5.4 ‘Analytic phonics’). Words were chosen from the dictation revision sheets prepared by the school (see Appendix 17 ‘Copy of dictation revision sheet’); dictation revision sheets covered words and sentences in the upcoming dictations and this ensured the relevance of learning contents to the school curriculum. Bingo 1 and Bingo 4 employed the previous dictation revision sheets in the phonics instruction because sheets for the upcoming dictations were not yet available (see Diagram 6).

As shown in Table 2, after phonics instruction (i) the Placebo Group employed the pre-dictation as a strategy for drilling spelling, after pre-dictation, the Placebo Group played the common Bingo which is non-phonics/non-spelling related (ii) the Experimental Group employed Letter Bingo as a strategy for drilling spelling. Words covered in the pre-dictation in the Placebo Group were the same as the words covered in Letter Bingo played by the Experimental Group. The difference between the two groups was therefore the strategy for drilling spelling: the Placebo Group employed the didactic approach – pre-dictation – and the
Experimental Group employed the game-based approach - Letter Bingo encompassing phonics skills.

3.5.2 Letter Bingo

Being an instructional strategy for drilling spelling, Letter Bingo is the focus of the present study. Based on Section 1.2.6 regarding the significance of Bingo as a specific language game, Section 2.7 regarding the pedagogical aspects (including the theoretical underpinnings and the educational implications) of Bingo and the empirical evidence supporting Bingo as an effective and well-liked educational game in existing literature, the following sections present the specifics of Letter Bingo as the instrumental intervention.

3.5.2.1 Gaming of Letter Bingo

Letter Bingo in this study was adapted from Sugar and Sugar’s (2002) ‘Letter Bingo’ (see Appendix 18) because this version of Bingo encourages learners to associate and discriminate an initial letter with an item or clue. The modified Letter Bingo in this study (see Appendix 19 ‘Rules and scoring of Letter Bingo’) was employed as an instructional strategy for drilling spelling by discriminating
vowels, consonants or diphthongs through applying phonics skills. During the
game, the game conductor posed questions, for example, ‘What is the fourth letter
of the word jacket?’ Players had to solve the clues before looking for the
correct letter on their own bingo sheets; all bingo sheets were different with letters
randomly located in 6x6 grids (see Appendix 20 ‘Copy of Letter Bingo sheet’).
Correct answers were marked by the game conductor and bingos were scored
when 4/5/6 letters were marked in a row either horizontally/vertically/diagonally.

3.5.2.2 Attributes of Letter Bingo

With reference to Sauvé et al.’s (2007b) six attributes of games (discussed in
Section 2.5.1 ‘Conceptual frameworks of educational games’), the conceptual
frameworks of Letter Bingo in this study are as follows:

(a) players – Letter Bingo was played by individuals as with reference to the
cognitive constructivist learning theories (Piaget, 1972, 1983) (discussed
in Chapter 2) that focus on individuals’ cognitive development and
constructive learning. Letter Bingo can be played in groups if the game
is situated within the socio-constructivist learning perspectives (Vygotsky,
1978) in which cognitive development is initially found within the social
and cultural surrounds,

(b) conflict – Sauvé (2010) remarks that the conflict of solitary games “takes the shape of a confrontation between the player and fate” (p.36).

However, as elaborated in Section 2.7.1.3 ‘Chance’, all 6 empirical studies reviewed demonstrate Bingo games rely almost exclusively on players’ active participation and engagement during gaming. The conflict of Letter Bingo is therefore between individual players and their own participation / engagement / their cognitive skills (including higher order thinking skills such as problem solving and decision making) / affective skills (such as concentration and attention),

(c) rules – rules, focused goals and choice are some of the personal skills that are developed in educational games (Squire and Jenkins, 2003).

According to Piaget (1983), at the operational stage beginning at around the age of 7, children’s cognitive development allows them to gain better understanding of mental operations and to think logically and children are able to make sense of games with rules. Thus Letter Bingo is appropriate to be employed at this stage as an instructional strategy for drilling L2 spelling,
pre-determined goals – while different games target at different learning
goals thus providing different learning outcomes (McFarlane et al., 2002;
Rosas et al., 2003), Letter Bingo is a spelling game with the goal of
achieving accuracy (as discussed in Section 2.6.1.2 ‘Spelling games’).

From the gaming perspective, the goal of players is to win the game.

When players make decisions that have consequences and learn by
experimenting, a positive attitude towards overcoming obstacles is
generated (Mitchell and Savill-Smith, 2004). From the learning
perspective, when learners are aware of their goals and purpose of L2
learning, learning becomes effective as learners’ ability to gain new
knowledge is cultivated and problem-solving abilities are developed

Similarly, the goal of Letter Bingo is to win the game by applying both
phonics skills and cognitive skills such as question-interpretation skills,
problem-solving skills and decision-making to solve clues (Ke, 2008).

When learning goals are integrated into games, players are motivated
intrinsically (Egenfeldt-Nielsen, 2006; Kraiger et al., 1993; McClarty et al.,
2012),
artificial nature – although educational games are characterized by their artificial nature (Crookall and Saunders, 1989; Wilson et al., 2009), some studies (such as Coco et al., 2000, 2001 and Glasberg et al., 1998) demonstrate games’ ability to reflect reality. Such ability does not rest upon the game *per se*, but upon how the game is employed to achieve the pre-determined goals. Letter Bingo reflects the reality by players’ active participation in applying phonics skills to spelling words that are meaningful to them, by engaging in gaming and problem-solving, by understanding individuals are to be responsible for their own choice and decisions and by realizing that effort, attention and concentration are also attributes to successful L2 learning.

pedagogical nature – Garcia *et al.* (2008) assert that the success of game-based learning experiences relies on two key characteristics: an effective pedagogical background and a sound entertaining support; “learning effectiveness of the game depends directly on the former, but also on the latter, as it deeply affects student’s motivation” (p.11). Pedagogical aspects of games include the theoretical underpinnings and the educational implications (Williamson, 2007). Letter Bingo in this
study is situated within the cognitive constructive perspectives of learning.

With spelling as the learning content, phonics instruction is integrated into Letter Bingo thus substantiating the pedagogical values of the game. The educational implications of Letter Bingo not only include the goal of accurate spelling but also the development of cognitive aspects (such as problem-solving and decision-making) and affective aspects (such as attention, concentration and motivation).

3.5.3 Letter Bingo versus common Bingo

Letter Bingo being a direct instructional intervention was played by the Experimental Group as a strategy for drilling spelling while the common Bingo played by the Placebo Group was not a strategy for drilling spelling because the game had nothing to do with phonics and spelling; the Placebo Group employed pre-dictation as a strategy for drilling spelling. The common Bingo was similar to the Bingo noted by Delind (1984) and Swank (2008), but instead of numbers, random letters were called. While playing the common Bingo, the game conductor called out a letter and the players looked for the letter on their own bingo sheets without solving any clue and no phonics skills were applied. Again,
the common Bingo played by the Placebo Group was to control for the change of
behaviours because the participants were aware of being investigated as suggested
by the Hawthorne effect mentioned in Section 3.3.3.

3.5.4 Analytic phonics

As discussed in Section 2.3.3.2 ‘Phonics instruction’, this study investigates the
effect of games on learning, not phonics instruction on learning; phonics
instruction was intrinsically integrated into Letter Bingo thereby substantiating the
pedagogical values of Letter Bingo (Cassar and Jang, 2010; Habgood et al., 2005;
Kafai, 2001). Analytic phonics was employed because it aligns with the
constructive learning theories underpinning this study; by integrating existing
knowledge into new knowledge, learners do not pronounce sounds in isolation but
by deducing the common letters and sounds in a set of words (Johnston and
Watson, 2003; Torgerson et al., 2006).

Analytic phonics was employed as part of the instructional intervention at the
beginning of each Bingo session. Learning is effective and meaningful when
learning contents are embedded in the context of students’ actual school learning.
By only using words on the dictation revision sheets, the use of analytic phonics as an instructional intervention becomes meaningful and the integration of such into Letter Bingo while gaming facilitates spelling, for example, when the game conductor posed the question ‘What is the sixth letter of the word territories?’, students required both cognitive skills and phonics skills to solve the clue before locating the right answer on their bingo sheets.

3.5.5 Pre-dictation

Pre-dictation was only conducted with students in the Placebo Group. Dictation is useful either as a testing device or a teaching device (Gladwin-Chocolaad, 1986; Tse, 1989). While Johnson et al. (1993) note dictation is an effective low level language test because “dictation reveals the students’ English proficiency or lack of it” (p.94), researchers such as Oller (1971), Stahl et al. (1998) and Tse (1989) assert that dictation is useful for practising letter-sound correspondence by engaging learners in interpreting and processing information while writing words from dictation. Irvine et al.’s (1974) study on students learning English as L2 in Iran found that dictation correlated best with students’ listening comprehension and total TOEFL (Test of English as a Foreign Language) score. Thus
pre-dictation was employed in this study as a teaching device and as the strategy for drilling spelling employed by the Placebo Group.
3.6 Instruments and measures

Dictation scores were employed to measure students’ spelling performance and interviews were employed to measure students’ perceived motivation in learning English.

3.6.1 Measure of spelling performance

McMillan and Schumacher (2001) note achievement tests measuring cognitive aspects “have a more restricted coverage, are more closely tied to school subjects” (p.254). When spelling is concerned, dictation scores are justified as a reliable, objective and accurate measure of performance because dictation measures spelling in absolute terms; spelling of a word can either be right or wrong.

Dictation scores not only provide an accurate measure but also a standardized measure of spelling performance because all students investigated in this study attended the same school and took the same dictations. Besides, the materials for each dictation were selected from students’ textbooks and this strengthens the validity of the measuring instrument as the content of dictation is “authentic and purposeful” (CDC, 1997, p.12) and is related to “learners’ needs, interests and daily life experiences” (p.12).
However, the limitation of dictation scores in this study is the unknown maximum score for each dictation. The maximum score could exceed 100 (covering Sections A and B) because students could achieve a 1-point bonus on every extra word that they provided according to instructions in Section C ‘Creative Dictation’ (see Appendix 17 ‘Copy of dictation revision sheet’). Given the two to three minutes provided for Section C, it was expected that students could provide around 15 extra words.

3.6.2 Measure of motivation

Interviews with students were used to measure the change in students’ motivation in learning English and were supplemented and triangulated by interviews with parents and English subject teachers. McClarty et al. (2012) assert that the difference between digital games in education and other learning innovations is that the former combine “motivation, engagement, adaptivity, simulation, collaboration and data collection” (p.22) in learning. Simply measuring the academic performance after gaming may miss other pedagogical potentials that gaming may bring forth. Therefore, motivation is measured in this study.
Motivation, being a complex construct and multifaceted in nature, is widely recognized as a major determinant in successful L2 learning (Dörnyei, 2001a, 2005; Gardner, 1985; Man, 2003; Okada et al., 1996; Schunk et al. 2008). L2 motivation research has traditionally relied heavily on surveys and questionnaires for the collection of quantitative, statistical data for generalizations (Ellis, 1994; McGroarty, 2001). Although questionnaires employing quantifiable rating scales produce reliable and replicable data, they are “generally less sensitive to uncovering the motivational dynamics involved than qualitative techniques” (Dörnyei, 2001b, p.193). Thus Dörnyei (2001b) calls for research that combines the virtues of quantitative and qualitative studies in an additive manner.

With regard to gaming research, Wideman et al. (2007) point out one of the methodological issues is that studies “have largely relied on teacher and student self-reports as the sole source of data” (p.8). Although such data provide valuable insights into the use of games in learning, the data cannot provide sufficient measures of learning outcomes as ‘halo effects’ (Gosen and Washbush, 2004) may occur in self-reports whereby participants report having learnt
something because they enjoy the gaming experience regardless of the actual
measures, participants can have guessed the desirable answer and some may not
provide true answers about themselves because motivational items are usually
rather ‘transparent’. As with learning games, Connolly et al. (2012) suggest that
the evaluation of games includes both learners’ performance and motivational
variables such as interest and effort, learners’ preferences, perceptions and
attitudes. Based on the above, interviews collecting qualitative data that are
quantifiable are therefore appropriate non-cognitive tests to measure students’
perceived motivation in this study.

According to Oppenheim (1992), there are essentially two kinds of interviews:
exploratory interviews which are in-depth interviews or free-style, and
standardized interviews as in public opinion polls and market research.
Aiming at gathering empirical information about the impact of the instructional
intervention, interviews in this study are of the standardized nature; the interview
questions were relatively more structured and the wording and sequence of
questions are more standardized (Kvale, 1996; Powney and Watts, 1987).
Particularly when students in this study were aged 8-9, using interviews to gather information about students’ opinions and perceptions may minimize misunderstanding of questions as in self-reports like surveys or questionnaires (Oppenheim, 1992).

Semi-structured interviews were used in this study to collect statements of students’ preferences and opinions about the effect of the instructional intervention on spelling and to “explore in some depth their experiences, motivations and reasoning” (Drever, 1997, p.8). In semi-structured interviews, interviewers are prepared to be flexible when handling the order of pre-set questions and prompts so as to encourage interviewees to express their views on related issues (Denscombe, 1998; Dörnyei (2001b). In this study, questions prepared for the interviews focused relatively more on students’ motivation in learning English spelling than academic achievement in English spelling. This is done because the primary purpose of interviews in this study is to collect information about the change of students’ motivation in learning English and the secondary purpose is to supplement the data related to the change of students’ dictation scores.
The limitations of interviews in the present study include individual differences in communication skills and the unexpected circumstance arising from the outbreak of swine flu. Although the researcher has personal experience in dealing with junior primary school students, communication skills among students in the same grade varies; while some interviewees were very articulate, others only responded ‘yes’ or ‘no’ to most questions at interviews. The outbreak of swine flu that occurred during the period of this study is another limitation of interviews; all interviews with students and parents were conducted outdoors, instead of in classroom as planned before study, for the need for better ventilation. This affected the attention and concentration of the interviewees to some extent.
3.7 Data collection

In this study, quantitative data were collected and were supplemented by qualitative data. Quantitative data were collected from dictation scores for measuring spelling performance and qualitative data were collected from interviews with students, parents and English subject teachers for measuring perceived motivation. The schedule of data collection is illustrated in Diagram 6 ‘Overview of implementation of procedures’ in Section 3.4.

3.7.1 Dictation scores

5 sets of dictation scores in the first term of the school year 2009-2010 were collected for measuring the spelling performance of students in the Experimental, Placebo and Control Groups. In other words, this study is of a repeated measure design in which each student has dictation scores at 5 time points. Dictation scores collected were used to answer the following Research Questions:

Q1: Is there any difference in spelling performance between the Experimental Group and the Control Group after treatment?
Q2: Is there any difference in spelling performance between the Experimental Group and the Placebo Group after treatment?

Acknowledging that non-randomization of participants in this quasi-experimental study poses a potential threat to internal validity, the measuring of 5 sets of dictation scores spanning over one whole school term minimizes any effect of the non-random selection process and any effect that may be attributed to novelty factors because of brief duration.

3.7.2 Interviews

Qualitative data were collected from interviews with students to gather their opinions about the effect of the instructional intervention. Interviews with students were supplemented and triangulated with interviews with parents and teachers. It should be noted that only the Experimental Group and the Placebo Group were interviewed. The Control Group was not interviewed because the group was designed to reflect the didactic, non-gaming approach to learning as it usually took place in Hong Kong standard classrooms. The Control Group in this design is significant because without ‘the untreated comparison group’
(Shadish et al., 2002), any change in learning will be attributed to the intervention thus discounting any normal, expected gain. However, in order to maintain the integrity of the intervention and to minimize the possibility of contaminating or influencing the performance of the Control Group, a minimal intervention was therefore applied and the only contact with the group was at the initial sign-up.

Three face-to-face semi-structured interviews (before, during and after treatment) were conducted. Face-to-face interviews were employed in order to capture the vividness and accuracy of information (Drever, 1997). Interviews, lasting 4 – 20 minutes, were all conducted in Cantonese and were audiotape recorded. Interviews with students and their parents were conducted after school in the school area and interviews with teachers were conducted during teachers’ free sessions in the school visitor’s room. Questions and agenda of interviews in this study were developed from a pilot interview (see Section 3.12.1) with a Primary 6 student from the centre of the researcher of this study. Data collected from interviews are to answer the following Research Question:

Q3: Is there any difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment?
3.8 Data analysis

Quantitative data collected by dictation scores and qualitative data collected by semi-structured interviews were analysed to measure spelling performance and perceived motivation in learning English respectively. Because the data in this quasi-experiment were not sampled from a normal distribution, non-equivalent groups would occur thus distribution-free or non-parametric tests were employed.

For statistical analyses, the SAS was employed for data processing including percentages, means, standard deviations, medians, one-way ANOVAs, Wilcoxon signed-rank tests and Mann-Whitney $U$-tests. In this study, the .05 level ($p < .05$) was used to determine the level of statistical significance for all results and the $p$ value was supplemented by confidence intervals (CIs) for the mean. The confidence interval provides an estimated range of values within which the unknown population parameter may lie (Attia, 2005; Byrd and Eddy, 2007; Thompson, 2002). While the $p$ value indicates the statistical significance of a finding, the confidence interval indicates to what extent a finding of statistical significance can be judged to be reliable at a specified confidence level. In this study, a 95% confidence interval was employed indicating at this confidence level findings are judged to be reliable. In other words, a wider confidence interval
indicates a lower reliability of the findings.

3.8.1 Gain score analysis

In this quasi-experiment, gain score analysis was employed because the Experimental, Placebo and Control Groups are non-equivalent groups that differ in baseline levels. Gain score analysis (addressing how each group as a whole, on average, differs in gains) is preferred to ANCOVA (with the baseline value as a covariate to remove its possible influence) when groups do not start with the same baseline or score (Fitzmaurice, 2001; Jamieson, 1999). Oakes and Feldman (2001) and Maris (1998) resonate when groups differ at pre-test, change from pre-test cannot be expected to adequately describe change at post-test; equal regressions cannot be assumed in both treatment and control groups and groups “can be expected to change differently, simply as a function of the skewness of the measure” (Jamieson, 1999, p.157).

3.8.2 Dictation scores

5 sets of dictation scores (D1 – D5) were used for measuring spelling performance. Dictation scores were used for testing the hypotheses and for measuring
differences within and between groups (before and after treatment) and these are presented in the following subsections.

3.8.2.1. Differences between D1 and D2 scores

Both D1 and D2 were pre-tests that took place before treatment. Differences between D1 and D2 scores within groups indicate the stability of spelling performance before treatment. Means and standard deviations were employed to measure the differences between D1 and D2 scores and Wilcoxon signed rank test (for paired data) was employed to test the statistical significance of the differences.

3.8.2.2 Initial group differences

After the assignment of groups and before treatment, two one-way ANOVAs (with and without the SEN student in the Placebo Group) were conducted using the mean scores of D1 and D2 to test if there is any statistically significant difference among the Experimental, Placebo and Control Groups before treatment. The mean scores of D1 and D2 were used as the scores before treatment because both D1 and D2 took place before Bingo 1 (see Diagram 6 ‘Overview of the
implementation procedures’ in Section 3.4).

3.8.2.3. Outliers

By employing the mean and standard deviation, tests for outliers in each group were run in every dictation in order to identify skewed data. Both outliers and initial group differences may pose threat to internal validity of the present study.

3.8.2.4 SEN student

Data analysis covered both with and without the SEN student in the Placebo Group who was identified after data collection. This was done to examine if the inclusion of the data of SEN student in the study would yield different results in a natural classroom setting.

3.8.2.5 Treatment effect within groups

As previously noted, in this quasi-experiment, the Experimental, Placebo and Control Groups are non-equivalent groups that differ in baseline levels and gain score analysis was employed to address how each group as a whole, on average, differs in gains. In other words, the treatment effect within groups is measured
by the change in spelling performance, i.e. the differences between pre-treatment and post-treatment mean scores. Pre-treatment mean scores were measured by the average of the mean scores for D1 and D2 while the post-treatment mean scores were measured by the mean scores for D5. A Wilcoxon signed rank test was run to test for the significance of the treatment effect within groups.

3.8.2.6 Treatment effect between groups

The treatment effect between groups is measured by comparing the spelling performance between groups (a) over one school term (b) at each observation. Mean scores and percentages were employed to test the treatment effect between groups. In order to test the significance of the treatment effect between groups, a Mann-Whitney U-test was employed. The following hypotheses were tested to answer the corresponding Research Questions:

H1: The Experimental Group will demonstrate a more positive change in spelling performance than the Control Group after treatment.

Q1: Is there any difference in spelling performance between the Experimental Group and the Control Group after treatment?
H2: The Experimental Group will demonstrate a more positive change in spelling performance than the Placebo Group after treatment.

Q2: Is there any difference in spelling performance between the Experimental Group and the Placebo Group after treatment?

3.8.2.7 Reliability of dictation scores

Reliability covers two main types of consistency: the internal consistency and the consistency over time (or stability). By using Cronbach's alpha, the internal reliability of the 5 dictation scores was tested. According to George and Mallery (2003), an internal reliability of more than 0.8 is of good internal consistency.

As for the consistency over time (or stability), a test-retest was conducted and “the acceptable range of reliability for coefficients for most instruments” (McMillan and Schumacher, 2001, p.244) is between 0.70 and 0.90.

3.8.2.8 Level of difficulty

In order to better understand the performance in dictation among groups, the level
of difficulty for dictations was examined by employing percentages for:

(a) measuring the words with reference to the ‘Wordlists for the Primary English Language Curriculum’ for KS1 (Key Stage 1) suggested in Education Bureau (2010) *Enhancing English Vocabulary Learning and Teaching at Primary Level* - a resource package produced by the Education Bureau of Hong Kong in support of the implementation of the English Language Curriculum Guide (Primary 1-6) (2004). According to CDC (1997), Key Stage 1 refers to the level of school education from Primary 1-3 and Key Stage 2 from Primary 4-6. The participating students in this study were Primary 3 students; it is assumed that words covered in D1-D5 were to be identified on the KS1 wordlist. In other words, a dictation would be of high level of difficulty when a high percentage of KS2 words were covered in dictation,

(b) measuring the number of words that recurred in D5 since D5 is a dictation examination. Presumably when words recurred, the level of difficulty for the dictation should be offset, to some extent, due to the familiarity of words.
3.8.3 Interviews

Empirical data collected by semi-structured interviews with students, parents and teachers in the Experimental and Placebo Groups were used for measuring the perceived motivation in learning English. The qualitative data drawn in the natural settings were used to supplement the quantitative data in this study. Quotations and excerpts as well as the literary modes were gathered from interviews and were transcribed in order to provide sufficient evidence to make judgments about the effect of Letter Bingo. All interviews were conducted in Cantonese and were transcribed from Cantonese to English. A back-translation from English to Cantonese was conducted at random.

With specific reference to the contents in the self-report questionnaire on students’ motivation and self-concept in English in Man’s (2003) study on the motivation of Hong Kong Primary 1 students in learning English, simple coding of key words was done to identify the aspects of motivation in learning English. With reference to the understanding of motivation from the constructivist learning perspectives, the aspects of motivation in learning English include students’ desire to learn English, the choice of action, the effort expended on learning as well as...
students’ thoughts, beliefs and feelings towards English.

Related to motivation is the type of motivation which is reflected by students’ reasons for learning English. Nikolov (1999) is employed as reference because similar to the present study, the longitudinal study of Nikolov (1999) investigated students aged 6-12 who learnt English as L2. The reasons for learning English in Nikolov (1999) were grouped into four broad types:

a. classroom-related reasons, for example, ‘because learning English is fun’

b. teacher-related reasons, for example, ‘because the teacher is nice’

c. external reasons, for example, ‘because mother wants me to learn’

d. utilitarian reasons, for example, ‘because I will be able to talk to foreigners’.

Qualitative data collected at interviews were quantified in percentages for analysing the perceived motivation in learning English.
3.9 Validity of the study

The worth of a piece of research work rests upon the validity and reliability of its findings. Validity is defined as “essentially a demonstration that a particular instrument in fact measures what it purports to measure” (Cohen et al., 2007, p.133) and is the primary concern of a study (Suter, 1998). Validity is a notion of judgment and is understood as a matter of degree rather than an absolute state.

The purpose of this quasi-experimental study is to examine the impact of Letter Bingo on spelling performance and perceived motivation in learning English. Based on the nature and the purpose, the validity (covering internal, external and face validity) of this study is elaborated and the ways to minimize their potential threats are discussed in this section

3.9.1 Internal validity

McMillan and Wergin (2002) remark that internal validity indicates “the extent to which the study is free of so-called ‘extraneous’ variables or other factors that might account for the results” (p.80). Potentially confounding variables need to be identified, removed or controlled for because their effects can threaten the
internal validity of a study (Punch, 1998; Shadish et al., 2002). The following subsections identify the potentially confounding variables in this study (including participants, researcher and instruments) and discuss how they are controlled for.

3.9.1.1 Participants

The selection of students is a potential threat to the internal validity of experimental studies because inherent group differences such as ability, motivation and background may affect the dependent variable (McMillan and Schumacher, 2001; McMillan and Wergin, 2002; Shadish et al., 2002). In a quasi-experiment, while randomization is not feasible, when one of the groups have extreme scores (either high or low), regression is a problem. In the present study, where random selection of participants and random assignment of groups were not possible and the Experimental, Placebo and Control Groups differed in baseline levels, selection bias becomes “a confounding of treatment effects with population differences” (Shadish et al., 2002, p.56).

Punch (1998) notes variables can be in physical control (be controlled in the design) or in statistical control (be controlled in the analysis of data). In this
study, in terms of physical control, differences of students (such as age, ability and background) were controlled for (i) by selecting students from the same school and same grade thus students were of similar age (ii) by selecting participants who all learnt English as L2 (iii) by identifying the SEN students in all groups before data collection. By ensuring that participants are about the same age, maturation threats are minimized. While differences in linguistic background and ability were controlled for, the potential threats to internal validity are minimized.

Regarding the SEN case in the Placebo Group that was confirmed after all bingo sessions, understanding the fact that there are cases unidentified as such in real situations, the researcher took into account the possible differences when analysing and interpreting data.

Due to limited sign-ups, another variable – gender (discussed in Section 3.3.4 ‘Control for extraneous factors’

‘Control for extraneous factors’) – was only identified and gender differences were acknowledged as no control could have been done. With regard to participation, with the consent of the principal, a deposit of HK$50 was collected and was fully refunded upon the completion of all Bingo sessions so as to control for subject attrition (McMillan and Wergin, 2002). In the end, one student dropped out
during the study and the attrition rate or ‘experimental mortality’ (Shadish et al., 2002) was controlled for so as to minimize the potential threat to internal validity.

Also related to participants is the Hawthorne effect whereby people behave or act differently because they are aware of being investigated (Dörnyei, 2001b; Rosas et al., 2003). In this study, the Placebo Group was included to counterbalance the effect by playing the common Bingo (that was non-phonics and non-spelling related) after the group received the instructional intervention – phonics instruction and pre-dictation.

Apart from the above physical control, this study also employs statistical control. Dörnyei (2001b) notes that in quasi-experiments, the effects of the initial group differences need to be taken into account. In this study, the statistical control was done by employing the gain score analysis. Since the Experimental, Placebo and Control Groups differed in baseline levels, the gain score analysis addresses how each group as a whole differs in gains thus maximizing the internal validity of the study (Jamieson, 1999; Oakes and Feldman, 2001).
3.9.1.2 Researcher, game conductors, interviewers

This study was done by the researcher of this study with the help of (i) University Graduate I who was trained to be the game conductor, phonics instructor and the interviewer (ii) University Graduate II who was trained to be the interviewer (iii) Undergraduates I and II who transcribed all interviews from Cantonese to English (iv) Undergraduate III who back-translated, at random, the transcriptions from English to Cantonese. The two game conductors were the researcher of this study and University Graduate I. To control for differences in teaching styles, a 2-hour training session was provided for University Graduate I so as to ensure the games and the phonics instruction in the two groups were carried out in the same manner and with the standardized procedures. This was done to maintain consistency across the two groups. As for the strategy for drilling spelling, words in the pre-dictation in the Placebo Group were the same as words played in Letter Bingo by the Experimental Group.

3.9.1.3 Instrument

Instruments including Letter Bingo and interviews are variables that pose potential threats to internal validity. The three interviewers were the researcher
of this study, University Graduates I and II (see also Section 3.9.1.2). To control
for differences in interviewing techniques, a 2-hour training covering
semi-structured interview questions and details was provided for University
Graduates I and II. As for Letter Bingo, the internal validity is maximized by
playing words that were chosen from the dictation revision sheets prepared by the
school so that the game was authentically related to the participants’ needs and
interests.

By interviewing students, parents and English subject teachers, the data collected
were corroborated or triangulated. The internal validity was maximized when
data from multiple levels of the situation were gathered and studied and when all
interviews were conducted in the mother tongue of the parties involved.

Interviews were transcribed from Cantonese to English by Undergraduates I and II
(see also Section 3.9.1.2). In order to maximize the internal validity, a
back-translation from English to Cantonese at random was conducted by
Undergraduate III. In this way, the outcome of the study can be confidently
interpreted.
3.9.2 External validity

External validity is defined as the extent to which the findings of a study can be generalized to the wider population, situations or settings (Cohen et al., 2007; Keeves, 1997). For quantitative studies, population external validity and ecological external validity need to be considered; the former refers to the generalization of results to other populations sharing similar characteristics such as age and ability, and the latter refers to the generalization of results to similar conditions such as the nature of independent and dependent variables, physical surroundings (McMillan and Schumacher, 2001). Shadish et al. (2002) also remark “to different degrees, all causal relationships are context dependent, so the generalization of experimental effects is always at issue” (p.5).

In this quasi-experimental study, the small sample, the lack of matching of groups and the lack of randomization pose threats to population external validity. Acknowledging that the groups were non-equivalent groups with different baseline levels, this study identified the SEN students before data collection so as to control for the differences in abilities. However, because of the lack of representativeness of the sample, this study does not aim at claiming
generalization to the wider population. The sample of the study allows generalization to be made beyond the three groups in this circumstance and the generalization may provide directions for further investigation into the topic.

In Hong Kong’s specific context, multi-treatment interference may pose a threat to ecological external validity. Students’ taking private tuition outside school is a popular practice. In this study, whether changes in learning are attributable to Letter Bingo or to private tuition becomes questionable. While preventing participants from attending private tuition is not feasible, the information of participants’ taking part in private tuition was gathered at interviews with parents in order to minimize the threat. Recognizing the possibility of multi-treatment interference of private tuition in this study, the researcher took into consideration any additional treatment other than Letter Bingo when analysing data and before claiming generalization.

3.9.3 Face/content validity

To assess face/content validity, the definition of the concept being studied must first be established, and the information being gathered must satisfy the
educational objectives and the concept being studied (Bailey, 1994). Suter (1998) resonates, with regard to studies of achievement, “the content validity of tests is important because without it, one would not know whether low achievement test scores were the result of learning deficits or learning/testing mismatches” (p.160).

In this study, the construct being investigated was spelling and the tests used were dictations. The construct of spelling is specific and precise; the spelling of a word is either right or wrong. Words covered in dictations were provided on dictation revision sheets prepared by the school. Being a test, dictation measures accurately the achievement of students’ spelling knowledge as reflected in the instructional objectives thereby ensuring the face validity.

As noted in Section 3.6.1, the fact that the maximum score for each dictation was unknown poses a potential threat. When taking this variable into account, non-parametric tests (in which medians and ranking were used in measuring) are therefore employed in analysing the data so as to maximize the face validity of this study.
As with the use of semi-structured interviews for measuring students’ change in motivation, the face validity is established because, unlike self-reported questionnaires, interviews are questionnaires in spoken form thus ensuring the authenticity of information during the process of data-gathering.
3.10 Reliability of the study

The worth of a study covers the meaningfulness, accuracy and consistency of what is investigated and is measured in terms of validity and reliability. While validity is the primary concern of a study (Suter, 1998), “reliability is a necessary condition for validity” (McMillan and Schumacher, 2001, p.250). Reliability is defined as “the ability to replicate the original study using the same research instrument and to get the same results” (Feagin et al., 1991, p.17). In quantitative studies, the reliability of findings refers to the consistency of measurement in terms of stability, equivalence and internal consistency (McMillan and Schumacher 2001; Punch, 1998; Suter, 1998). For studies involving gain scores, McMillan and Schumacher (2001) stress the most stringent type of reliability – the reliability estimates of equivalence (parallel forms) and stability (test/retest) – is especially useful, that is, by “administering to the same group of individuals one form of an instrument at one time and a second form at a later date” (p.246).

Reliability can be checked by triangulation, either by instrument (employing similar documents at two or more points in time) or by analyst (comparing results
of two or more researchers at the same point of time) (Bailey, 1994). In this study, reliability is established by instrument; based on the purpose of investigating the effect of Letter Bingo on the change in learning, the reliability estimates of equivalence and stability are employed. The variable ‘dictation scores’ used as a measure of achievement provides highly reliable scores; “a reliability of .80 or above is generally expected for achievement variables” (McMillan and Schumacher, 2001, p.249). As Punch (1998) explains, any actual or observed score consists of two parts (the true score that we want to estimate and the error) and “reliability enables us to estimate error” (p.99); the larger the reliability, the smaller the error. In this study, when dictation scores as a measure of achievement yields a high reliability score, observed scores close to true scores are produced.

While the variable ‘dictation scores’ provide a reliable measure, the reliability of this study is further enhanced by establishing standard conditions of data collection: all students took the same dictations in school within the same time frame on the same day. Cohen et al. (2007) also suggest in quantitative studies, reliability can be improved by excluding extreme responses such as outliers from
the data analysis. In this study, based on dictation scores, outliers were identified and were taken into account when data were analysed so as to ensure the reliability of the study.

As with the qualitative data collected by interviews, reliability is affected when participants are reactive as they are aware that they are being observed. Other factors like the language, wording and concepts, definition of terms as well as the sensitivity and empathy of the interviewer also affect reliability (Cohen et al., 2007; Kvale, 1996). In this study, semi-structured interviews were employed and reliability was achieved through careful planning of interview schedules and questions and training of interviewers. When the participating students are aged around 8-9, wording of the interview questions have to be short and simple, the interview sessions should not be long as the attention span of young children is short and interviewers have to be sensitive and patient while collecting information.

Social and situational factors such as the contextual setting of classroom for conducting Letter Bingo and interviews may pose a potential threat to the
reliability of the findings. The setting for interviews with students and parents was different from the classroom setting that the principal confirmed before the implementation of the study. This was due to the outbreak of the swine flu in mid-2009 when the hygienic conditions remained a concern; the interviewers had to conduct the interviews at a corner in the covered playground because (1) the school staff had to thoroughly clean up all classrooms immediately after school (2) it was advisable for the interviewers and interviewees to stay in the open for better ventilation. To minimize the potential threat, the interviewees were seated with the covered playground at their back; in this way, the interviewees were the least distracted by what was going on in the open/playground. However, since Letter Bingo was conducted in classrooms (because all Bingo sessions were held on Saturday mornings and Saturdays were not school days), the physical environment (such as noise and air-conditioning) was controlled for.
3.11 Strengths and limitations of this quasi-experiment

Acknowledging that controlling for all extraneous variables is not possible, the identification and the understanding of how to deal with them are utterly important to ensure the validity and reliability of the present study. This section presents a summary of the strengths and limitations of this quasi-experiment and how the internal validity of the study can be improved.

One of the strengths of this quasi-experiment is the employing of the treatment group and untreated control group with both pre-test and post-test designs. As Shadish et al. (2002) remark, “the joint use of a pretest and a comparison group makes it easier to examine certain threats to validity” (p.138). When the three groups in this study were non-equivalent by definition, such a design acknowledges the readers how the groups differ initially by alerting the initial selection bias in terms of size and direction.

Also one of the strengths of this quasi-experiment is the double pre-tests (D1 and D2) that allow a comparison with the pre-treatment growth rate in spelling. With the double pre-tests, an assumption can be made that the growth rate in spelling
between D1 and D2 (before treatment) will continue between D3 and D5 (after treatment). Although Shadish et al. (2002) highlight that such an assumption can only be made for the untreated group, “the second pretest can help considerably in assessing the plausibility of selection-maturation by describing the pre-treatment growth differences” (p.145).

This quasi-experiment aims at the generating results that can be used to demonstrate the impact of a specific learning game that may exist in this particular group. Acknowledging that the subjects are a non-probability sample selected without a randomization process and that this affects the representativeness of the sample, the results of the study cannot be generalized to the wider population. Nonetheless, the non-probability sampling gives strengths to this design because the results generated may provide directions for further investigation.

The major limitation of this quasi-experiment is the lack of random assignments. As the three groups are non-equivalent groups that differ at the outset, the impact of Letter Bingo would have been attributed to initial differences rather than the
treatment itself. Besides, with limited sign-ups, the matching of the three groups was not feasible. The researcher therefore controlled for other extraneous factors, for example by selecting the sample from the same grade in the same school and by identifying the SEN students before data collection so as to control for initial differences. Understanding that random assignment may not be practical in some naturalistic settings, this limitation can be improved by matching schools so that the sample size can be increased thereby minimizing the initial group differences.

Another limitation of this design is the lack of data to measure the perceived motivation for the Control Group. While the initial design of this study is to examine the impact of a specific game instead of comparing the impact of gaming and non-gaming and based on the purpose of maintaining the Control Group as the untouched group with the least contamination, only the data for measuring motivation for the Experimental and the Placebo Groups were collected. To improve this limitation, the data for measuring the motivation for the Control Group can be collected when further investigation is carried out. In this case, comparisons can be made between the impact of employing learning games and
not employing learning games.

The unknown maximum scores for each dictation is another limitation of this study. The design of this study therefore can be improved by collecting more detailed data of the dictation scores, for example, instead of the collective score for each dictation, the scores for each part in the dictation can be collected for further analysis.
3.12 Pilot studies

Two pilot studies (pilot interview and pilot game) were conducted for the purpose of better planning and revising interview questions and for the smooth running of Letter Bingo.

3.12.1 Pilot interview

Before the actual study, a pilot interview was done with a Primary 6 school student. Since parents and teachers are grown-ups and attain better communication skills, the interviewer may adjust efficiently the sequence and wording of questions during the actual interviews. Nonetheless, the main participants in the present study were primary school children aged around 8, a pilot interview with student was therefore necessary for the validity and reliability of the study. The pilot interview investigated the relevance and the appropriateness of questions proposed in the semi-structured interviews as well as the length of the interview with students.

3.12.1.1 Interview questions

The researcher is not a teacher in any Hong Kong school but runs a training centre
providing Letter Bingo sessions for learning spelling; a Primary 6 student from her centre was invited to participate in the pilot interview. The researcher had never met the interviewee before, as with all students in this study. As the interviewee had participated in some Letter Bingo sessions, the pilot interview covered questions on both the before-game and after-game interview agendas.

Acknowledging that the interviewee was two or three years older than the students in this study, the pilot interview aimed at establishing the relevance and appropriateness of proposed questions. The interviewee demonstrated understanding of all questions, elaborated his views efficiently and provided sufficient examples for his answers. The pilot interview also allowed the researcher to grasp the necessary rapport when conducting interviews with primary school students. After the pilot interview, the researcher fine-tuned the wording of some of the interview questions.

3.12.1.2 Length of interview

The interview was estimated to take 15 – 20 minutes and the pilot interview finished in 8 minutes. The researcher estimated a 5 – 10 minute interview with each student in the study. The researcher decided that the duration was
appropriate for either the before-game or after game interview agenda because of young students’ short attention span.

3.12.2 Pilot Bingo session

Although Bingo is a popular game, a pilot Bingo session was conducted so that players learnt the specific rules and scoring of the game in this study. The pilot session investigated: the actual conducting of the phonics instruction and the Bingo games (Letter Bingo and common Bingo), the suitability of rules and scoring of the games, the duration of each game and the role of the researcher.

A pilot Bingo session comprising a 20-minute phonics instruction and Bingo (Letter Bingo with the Experimental Group and common Bingo with the Placebo Group) was conducted before Dictation 1 (see Diagram 6 in Section 3.4). Random words outside the textbook were used in the pilot Bingo session.

3.12.2.1 Rules and scoring of game

The rules and scoring of Letter Bingo are shown in Appendix 19; the same rules apply to the common Bingo that the Placebo Group played. In the pilot Bingo
sessions with both groups, University Graduate I was the game conductor and posed 14 questions. Table 3 below shows the results of each group in the pilot Bingo session; as the results were similar in both groups, no changes were made in terms of rules and scoring.

<table>
<thead>
<tr>
<th>Bingo</th>
<th>Placebo Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Bingo</td>
<td>at 9th question</td>
<td>at 8th question</td>
</tr>
<tr>
<td>number of students scoring Bingos</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>number of students not scoring any Bingo</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>highest Bingo scores</td>
<td>150</td>
<td>170</td>
</tr>
<tr>
<td>time to finish game (minutes)</td>
<td>18</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3. Results of groups in pilot Bingo session.

In relation to the design of Letter Bingo, the issue of luck would arise regarding the probability of scoring Bingos when the same letters would appear more than once on the Bingo sheets. Chang et al. (2009) note that chance may lessen “the frustration of those students who lose” (p.346) the game. As discussed in Section 2.7 ‘Bingo as a learning game’, studies in existing literature provide evidence supporting that students’ active participation and engagement are prerequisites in Bingo games in learning; both cognitive and phonics skills were required to solve clues in Letter Bingo in this study. Therefore, luck is neither
the preliminary element nor the prerequisite of winning Letter Bingo. This in fact was demonstrated in the pilot game; some players did not score Bingos because they missed some of the correct answers on their Bingo sheets. All in all, there was no guarantee that those possessing the best abilities would certainly win the game. As Gordon (1972) states, “a game is a simplified representation of a dynamic real-world process” (p.10). An educational game encompassing luck reflects the authenticity and the unpredictability of real life situations. Thus, the researcher found the design of Letter Bingo suitable for this study.

3.12.2.2 Duration of Bingo session

The pilot Letter Bingo and common Bingo finished within the estimated duration of 30 minutes. The phonics instruction took 25 minutes, 5 – 10 minutes longer than estimated. The phonics instruction and Bingo games were expected to finish in one hour.

3.12.2.3 Role of researcher

The researcher of this study took part at the Experimental Group session as the phonics instructor and the co-conductor of Letter Bingo and at the Placebo Group
session as the co-conductor of Bingo. The initial plan of this study was to train University Graduate I (see Section 3.9.1.2) to be the phonics instructor for both the Experimental and the Placebo Groups so as to ensure consistency and the researcher was to co-conduct the Bingo games. Despite training having been done, University Graduate I did not grasp too well the procedures for conducting the phonics instruction. The researcher therefore conducted the phonics instruction at the Experimental Group session in the presence of University Graduate I so that she knew exactly what the procedures were when she conducted the phonics instruction at the Placebo Group session. It is acknowledged that apart from the instructor, the phonics instructions for both groups were the same in terms of the words, the length of the phonics instructions and the manner it was conducted.
3.13 Ethical and practical issues

As the researcher is not a teacher in any Hong Kong primary school, the researcher took a while to gain access to a school for this study. At the preliminary stage, the principal of the school to be investigated considered the following ethical and practical issues:

(a) will the students and parents be interested in volunteering in the sessions

(b) how much time will students have to devote to the sessions

(c) will there be unfairness to other students who are not participating in the sessions

(d) what are the positive and negative academic or psychological impacts on participating students

(e) will there be monetary costs to the school and other constraints of physical environment, for example, classrooms and school campus.

In order to protect the interests and privacy of all parties involved, the assurance of anonymity and confidentiality is utterly important (Denscombe, 1998; Kvale, 1996; Powney and Watts, 1987). The researcher established informed consent by assuring that all names (including the school, teachers, parents and students)
were to remain anonymous and that interviews on record would only be employed for research purpose (Kvale, 1996).

Another ethical issue is the unfairness that would arise when students participated in different groups: the Experimental Group, the Placebo Group and the Control Group. Understanding that phonics instruction, pre-dictation (for the Placebo Group) and Letter Bingo (for the Experimental Group) were additional to students’ regular preparation for dictation and given that the positive impact (if any) of Letter Bingo was yet to be explored, the issue of unfairness was not justified. Besides, none of the students in the Placebo and Control Groups would be negatively affected. For students in the Control Group, it was their own choice not to participate in Bingo Workshop so they were not deprived of any opportunities in this study.

During the course of study, the researcher encountered difficulties including scheduling interviews with students, parents and subject teachers as well as time constraints for data collection and data analysis. One unexpected circumstance was the outbreak of the swine flu in mid-2009 (discussed in Section 3.10) that
posed a potential threat to the reliability of the findings in this study. By acknowledging the ethical and practical issues encountered, the researcher is aware of the importance of minimizing the potential threats to validity and reliability, thus maximizing the worth of the present study.

To summarize, this chapter presents the research design, sampling, participants and groups, instructional intervention, instruments and measures, data collection and analysis of this study. The validity and reliability of the study are established and ethical and practical issues are considered before undertaking the study.
Chapter 4        Findings

4.1 Overview

This section begins with the presentation of the quantitative data collected by dictation scores of students in the Experimental Group, the Placebo Group and the Control Group. Findings from dictation scores provide answers for Research Questions 1 – 2 which focus on spelling performance. The presentation of the qualitative data collected by interviewing students, parents and English subject teachers of the Experimental Group and the Placebo Group then follows. Findings from interview questions related to students’ motivation provide answers for Research Question 3. Findings presented in this Chapter are discussed in Chapter 5 with reference to spelling performance and perceived motivation in learning English.
4.2 Quantitative data

Dictation scores were the quantitative data collected in this study to measure students’ spelling performance. Apart from testing the hypotheses, dictation scores were used to test for the mean score differences between D1 and D2, initial group differences and outliers. The following subsections present the results of these tests and the results of the hypotheses. In tables presented in this section, figures in parenthesis indicate results if the data of the SEN student in the Placebo Group (the case identified after all data collection) were not included for analysis (see Section 3.3.2 ‘Students in each group’).

4.2.1 Differences between D1 and D2 scores

Table 4 below presents the descriptive statistics for D1 and D2 among groups, showing the means (Ms) and standard deviations (SDs).
Table 4. Descriptive statistics for D1 and D2 scores among groups

<table>
<thead>
<tr>
<th>Groups</th>
<th>Dictation</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>1</td>
<td>8</td>
<td>103.25</td>
<td>13.86</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8</td>
<td>95.13</td>
<td>19.19</td>
</tr>
<tr>
<td></td>
<td>average</td>
<td>8</td>
<td>99.88</td>
<td>16.09</td>
</tr>
<tr>
<td>Placebo</td>
<td>1</td>
<td>9 (8)</td>
<td>74.00 (80.50)</td>
<td>36.74 (33.29)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>9 (8)</td>
<td>75.22 (75.75)</td>
<td>30.08 (32.12)</td>
</tr>
<tr>
<td></td>
<td>average</td>
<td>9 (8)</td>
<td>74.61 (78.13)</td>
<td>32.27 (32.60)</td>
</tr>
<tr>
<td>Control</td>
<td>1</td>
<td>10</td>
<td>75.10</td>
<td>31.15</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>70.30</td>
<td>34.14</td>
</tr>
<tr>
<td></td>
<td>average</td>
<td>10</td>
<td>72.70</td>
<td>32.07</td>
</tr>
</tbody>
</table>

Note: ( ) indicates when the data of the SEN student in the Placebo Group are not included for analysis.

Table 4 shows:

(a) the three groups are non-equivalent groups differing in baseline levels; the Experimental Group showed higher mean scores and smaller SDs than the Placebo and Control Groups that showed similar mean scores and similar SDs,

(b) the differential growth among groups; the Experimental Group had the highest relative decline among groups,

(c) the average of the mean scores of D1 and D2 which was used as the pre-treatment mean scores for comparisons within group,
(d) when eliminating the data of the SEN student in the Placebo Group, all 3 groups demonstrated a negative change from D1 to D2.

(e) when including the data of the SEN student in the Placebo Group, the Placebo Group demonstrated a positive change from D1 and D2.

Diagram 7 below shows the change (in scores and in percentages) from D1 to D2 among groups. By measuring the differences between the mean scores of D1 and D2, groups’ stability in spelling performance before treatment is shown (see Section 3.8.2.1).
In terms of the change in mean scores from D1 to D2, the Experimental Group showed a negative change of 7.869%, indicating the biggest negative change among groups (regardless of the SEN student in the Placebo Group). The Control Group and the Placebo Group (without the SEN) also showed a negative change of 6.391% and 5.901% respectively. However, the Placebo Group (with the SEN) showed a slight positive change of 1.649%.

To confirm if the negative change (from D1 to D2) within groups is statistically significant, the Wilcoxon signed rank test for paired data (D1 and D2 mean scores) was run, with the null hypothesis: students’ spelling performance in D2 will be no worse than that in D1 and the results are shown in Table 5 below.

<table>
<thead>
<tr>
<th>Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group</td>
<td>0.03515*</td>
</tr>
<tr>
<td>Placebo Group with the SEN</td>
<td>0.14455</td>
</tr>
<tr>
<td>Placebo Group without the SEN</td>
<td>0.02735*</td>
</tr>
<tr>
<td>Control Group</td>
<td>0.0718</td>
</tr>
</tbody>
</table>

* p < .05
Results show, for the Experimental Group, the $p$-value is < .05 and the null hypothesis is rejected, indicating the spelling performance in D2 was significantly worse than that in D1 (mean = 99.19; 95% CI, 90.28 – 108.09).

For the Placebo Group (without the SEN), the $p$-value is <.05 and the null hypothesis is rejected, indicating the spelling performance in D2 was significantly worse than that in D1 (mean = 78.13; 95% CI, 61.23 – 95.02). For the Placebo Group (with the SEN), the $p$-value is >.05 and the null hypothesis is accepted, indicating the spelling performance in D2 was no worse than that in D1 (mean = 74.61; 95% CI, 58.4 – 90.82).

For the Control Group, the $p$-value is >.05 and the null hypothesis is accepted, indicating the spelling performance in D2 was no worse than that in D1 (mean = 72.7; 95% CI, 57.76 – 87.64).

While results indicate the Experimental Group and the Placebo Group (without the SEN) performed significantly worse in D2 than in D1, the wide confidence interval suggests uncertainty about the reliability of the findings. Given the
range of mean scores in this Wilcoxon signed rank test (the lowest mean score - 72.7 and the highest mean score – 99.19), it is reasonable to assume that a 10-point difference in mean scores will influence the level of significance of the findings and therefore caution is needed when interpreting the findings.

4.2.2 Initial group differences

As shown in Table 4, the Experimental, Placebo and Control Groups are non-equivalent groups and there are baseline differences among groups. Table 6 and Table 7 below show the results of the one-way ANOVAs, without and with the SEN student in the Placebo Group respectively. Results showed that there is no significant difference in the mean scores of D1 and D2 among the three groups, regardless of the SEN student in the Placebo Group, indicating the initial group difference is statistically insignificant.
Table 6. One-way ANOVA for the mean scores of D1 and D2 (without SEN).

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>3341.29663</td>
<td>1670.64832</td>
<td>2.08</td>
<td>0.1483</td>
</tr>
<tr>
<td>Error</td>
<td>23</td>
<td>18510.94375</td>
<td>804.82364</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>25</td>
<td>21852.24038</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R-Square  Coeff Var  Root MSE  meandict12 Mean
0.152904   34.37915   28.36941   82.51923

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Anova SS</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>group</td>
<td>2</td>
<td>3341.29663</td>
<td>1670.648317</td>
<td>2.08</td>
<td>0.1483</td>
</tr>
</tbody>
</table>

Table 7. One-way ANOVA for the mean scores of D1 and D2 (with SEN).

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>3701.61644</td>
<td>1850.80822</td>
<td>2.29</td>
<td>0.1230</td>
</tr>
<tr>
<td>Error</td>
<td>24</td>
<td>19399.95764</td>
<td>808.33157</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>26</td>
<td>23101.57407</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R-Square  Coeff Var  Root MSE  meandict12 Mean
0.168232   35.02015   28.43117   81.18519

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Anova SS</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>group</td>
<td>2</td>
<td>3701.61643</td>
<td>1850.808218</td>
<td>2.29</td>
<td>0.1230</td>
</tr>
</tbody>
</table>
4.2.3 Outliers

Tests for outliers in every group were run in all dictations in order to identify skewed data. Results showed there was 1 outlier in D5 in the Experimental Group. Table 8 below shows the descriptive statistics for all dictations among groups. Results showed the mean scores of all groups changed negatively from D1 to D5, regardless of the outlier in D5. The pattern of change in mean scores for the Experimental Group remained the same, the mean scores dropped from D1 to D5, regardless of the outlier. However, when including the outlier, the mean score of D5 for the Experimental Group was 87.25 compared with the mean score of 93.143 when eliminating the outlier, indicating the effect of the outlier in the Experimental Group on the change in terms of mean scores but not the pattern.
Table 8. Descriptive statistics for dictations among groups.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Dictation</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>1</td>
<td>8</td>
<td>103.250</td>
<td>13.86</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8</td>
<td>95.12</td>
<td>19.19</td>
</tr>
<tr>
<td></td>
<td>average</td>
<td>8</td>
<td>99.88</td>
<td>16.09</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>8</td>
<td>99.375</td>
<td>17.53</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>8</td>
<td>95.625</td>
<td>15.17</td>
</tr>
<tr>
<td>Placebo</td>
<td>1</td>
<td>9</td>
<td>(8) 74.00 (80.50)</td>
<td>36.74 (33.29)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>9</td>
<td>(8) 75.22 (75.75)</td>
<td>30.08 (32.12)</td>
</tr>
<tr>
<td></td>
<td>average</td>
<td>9(8)</td>
<td>74.61(78.13)</td>
<td>32.27(32.60)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9</td>
<td>(8) 69.89 (77.00)</td>
<td>37.30 (32.72)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>9</td>
<td>(8) 61.33 (68.38)</td>
<td>39.48 (35.66)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>9</td>
<td>(8) 58.22 (65.50)</td>
<td>36.74 (31.58)</td>
</tr>
<tr>
<td>Control</td>
<td>1</td>
<td>10</td>
<td>75.10</td>
<td>31.15</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>70.30</td>
<td>34.14</td>
</tr>
<tr>
<td></td>
<td>average</td>
<td>10</td>
<td>72.70</td>
<td>32.07</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>77.20</td>
<td>27.69</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>10</td>
<td>65.30</td>
<td>32.05</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>10</td>
<td>58.80</td>
<td>34.75</td>
</tr>
</tbody>
</table>

Note: [ ] indicates results without the outlier, ( ) indicates results without the SEN student and the averages of the mean scores of D1 and D2 are presented in italics.
4.2.4 SEN student

The SEN student in the Placebo Group was identified after all data collection (see Section 3.3.2). Diagrams 8 and 9 show the patterns of change in mean scores among groups, without and with the data of the SEN student in the Placebo Group respectively. Diagram 8 shows without the data of the SEN student, the pattern of the change was similar among groups, regardless of the outlier in D5 in the Experimental Group. Diagram 9 shows with the data of the SEN student, the direction of the change of the Placebo Group varied from that of the Experimental Group (regardless of the outlier in D5 in the Experimental Group) and that of the Control Group, indicating the effect of the SEN student on both the pattern of change and the mean score of the Placebo Group.
### Diagram 8. Mean scores of D1-D5 among groups (without SEN)

<table>
<thead>
<tr>
<th>Dictation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group (without the outlier)</td>
<td>103.25</td>
<td>95.125</td>
<td>99.375</td>
<td>95.625</td>
<td>93.143</td>
</tr>
<tr>
<td>Experimental Group (with the outlier)</td>
<td>103.25</td>
<td>95.125</td>
<td>99.375</td>
<td>95.625</td>
<td>87.25</td>
</tr>
<tr>
<td>Placebo Group (without the SEN)</td>
<td>80.5</td>
<td>75.75</td>
<td>77.0</td>
<td>68.375</td>
<td>65.2</td>
</tr>
<tr>
<td>Control Group</td>
<td>75.1</td>
<td>70.3</td>
<td>77.2</td>
<td>65.3</td>
<td>58.4</td>
</tr>
</tbody>
</table>

### Diagram 9. Mean scores of D1 - D5 among groups (with SEN)

<table>
<thead>
<tr>
<th>Dictation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group (without the outlier)</td>
<td>103.25</td>
<td>95.125</td>
<td>99.375</td>
<td>95.625</td>
<td>93.143</td>
</tr>
<tr>
<td>Experimental Group (with the outlier)</td>
<td>103.25</td>
<td>95.125</td>
<td>99.375</td>
<td>95.625</td>
<td>87.25</td>
</tr>
<tr>
<td>Placebo (with the SEN)</td>
<td>74</td>
<td>75.22</td>
<td>69.49</td>
<td>61.33</td>
<td>58.22</td>
</tr>
<tr>
<td>Control Group</td>
<td>75.1</td>
<td>70.3</td>
<td>77.2</td>
<td>65.3</td>
<td>58.4</td>
</tr>
</tbody>
</table>
4.2.5 Treatment effect within groups

The treatment effect within groups is measured by the change in spelling performance, i.e. the differences between the pre-treatment and post-treatment mean scores and results are presented in the following subsections.

4.2.5.1 Treatment effect in percentages

Diagrams 10, 11 and 12 below show the treatment effect within the Experimental Group, the Control Group and the Placebo Group respectively.

Diagram 10 shows, for the Experimental Group, there is a negative change of 6.094% (without outlier) or 12.035% (with outlier) in spelling performance.
Diagram 11 shows, for the Control Group, there is a negative change of 19.12% in spelling performance.

Diagram 12 shows, for the Placebo Group, there is a negative change of 21.968% (with the SEN) or 16.16% (without the SEN) in spelling performance.
Results show all groups experienced a decline in scores and the relative decline for the Experimental Group (regardless of the outlier) was the lowest among all groups.

4.2.5.2 Significant difference of treatment effect

Null hypotheses (the group performed no worse in post-treatment than in pre-treatment) were used to run the Wilcoxon signed rank test (for the significance of the treatment effect within groups) and results are shown in Table 9 below.

<table>
<thead>
<tr>
<th>Groups</th>
<th>p -value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group</td>
<td></td>
</tr>
<tr>
<td>with outlier</td>
<td>0.02735*</td>
</tr>
<tr>
<td>without outlier</td>
<td>0.0547</td>
</tr>
<tr>
<td>Placebo</td>
<td></td>
</tr>
<tr>
<td>with SEN</td>
<td>0.0039*</td>
</tr>
<tr>
<td>without SEN</td>
<td>0.0078*</td>
</tr>
<tr>
<td>Control</td>
<td>0.03905*</td>
</tr>
</tbody>
</table>

*P < .05

Results in Table 9 show for the Experimental Group (without outlier), the p-value is 0.0547 and the null hypothesis is accepted, indicating the Experimental Group performed no worse in post-treatment than in pre-treatment (mean = 96.77; 95%
CI, 89.23 – 104.31). However, when the p-value is close to .05, the result is not strong enough to either reject or accept the hypothesis and more samples are needed for determination.

For the Experimental Group (with outlier), the p-value is < .05 and the null hypothesis is rejected, indicating the Experimental Group (with outlier) performed significantly worse in post-treatment than in pre-treatment (mean = 93.59; 95% CI, 83.85 – 103.34).

For the Control Group, the p-value is < .05 and the null hypothesis is rejected, indicating the Control Group performed significantly worse in post-treatment than in pre-treatment (mean = 65.85; 95% CI, 50.25 – 81.45).

For the Placebo Group (regardless of the SEN student), the p-value is < .05 and the null hypothesis is rejected, indicating the Placebo Group performed significantly worse in post-treatment than in pre-treatment (with the SEN, mean = 66.61; 95% CI, 49.38 – 83.85 and without the SEN, mean = 72; 95% CI, 55.08 – 88.92).
Although results show the Experimental Group (with outlier), the Control Group and the Placebo Group (regardless of the SEN student) demonstrated a significant decline in scores after treatment, caution is needed when interpreting the findings because of the wide confidence intervals that suggest a low level of confidence. Result also shows the Experimental Group (without outlier) performed no worse in post-treatment than in pre-treatment but the result is not strong enough to draw conclusions because the p value is close to .05.

4.2.6 Treatment effect between groups

As noted in Section 3.8.2.6, the treatment effect between groups is measured by comparing the change in spelling performance between groups and results are presented in the following subsections.

4.2.6.1 Treatment effect in percentages

Diagram 13 presents the results of the treatment effect between groups in percentages.
Results show that the Experimental Group (regardless of the outlier) demonstrated a relatively lower decline than the Control Group. Initial findings suggest there is a difference in the spelling performance between the Experimental Group and the Control Group after treatment; the Experimental Group demonstrated a relatively smaller negative change in spelling performance than the Control Group.

Results also show that the Experimental Group (regardless of the outlier) demonstrated a relatively lower decline than the Placebo Group (regardless of the SEN student). Initial findings suggest there is a difference in the spelling performance between the Experimental Group and the Placebo Group; the Experimental Group demonstrated a relatively smaller negative change in spelling performance than the Placebo Group.
performance between the Experimental Group and the Placebo Group after
treatment; the Experimental Group demonstrated a relatively smaller negative
change in spelling performance than the Placebo Group.

4.2.6.2 Significant difference of treatment effect

The Mann-Whitney $U$-test was run to test for the significance of the treatment
effect between groups. The following subsections present the results of
treatment effect between groups over one school term and at each observation.

4.2.6.3 Over one school term

Table 10 shows the result of treatment effect between groups over one school term.

Because all groups experienced a decline in scores from D1 to D5, in order to
answer Q1 and Q2, the following secondary null hypotheses were therefore
formulated for further analysis:

Secondary H1: There is no significant difference in spelling performance
between the Experimental Group and the Control Group after
treatment.
Secondary H2: There is no significant difference in spelling performance between the Experimental Group and the Placebo Group after treatment.

Table 10. Mann-Whitney U-test (over one school term).

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Placebo Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>with outlier</td>
<td>with SEN student</td>
<td>0.5964</td>
</tr>
<tr>
<td>with outlier</td>
<td>without SEN student</td>
<td>0.8747</td>
</tr>
<tr>
<td>without outlier</td>
<td>with SEN student</td>
<td>0.3968</td>
</tr>
<tr>
<td>without outlier</td>
<td>without SEN student</td>
<td>0.6022</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>with outlier</td>
<td>1</td>
</tr>
<tr>
<td>without outlier</td>
<td>0.8241</td>
</tr>
</tbody>
</table>

Result shows, between the Experimental Group (with or without outlier) and the Control Group, the $p$ value is $>.05$ and the secondary null H1 is accepted (with outlier, mean = 78.19; 95% CI, 67.81 – 88.58 and without outlier, mean = 79.26; 95% CI, 68.42 – 90.11). The above findings provide answer to Research Question 1, there is no significant difference in spelling performance between the Experiment Group and the Control Group after treatment. In view of the wide
confidence interval, the interpretation of findings needs caution.

Results also show, between the Experimental Group (regardless of the outlier) and the Placebo Group (regardless of the SEN student), the $p$ value is >.05 and the secondary null H2 is accepted (with outlier and with SEN, mean = 79.32; 95% CI, 68.53 – 90.12 / with outlier and without SEN, mean = 82.81; 95% CI, 72.81 – 92.83 / without outlier and with SEN, mean = 80.33; 95% CI, 69.39 – 91.27 / without outlier and without SEN, mean = 84; 95% CI, 73.96 – 94.04). The above findings provide answer to Research Question 2, there is no significant difference in spelling performance between the Experimental Group and the Placebo Group after treatment. Considering the wide confidence interval, the interpretation of the findings needs caution.

4.2.6.4 At each observation

Null hypotheses were used to find out if there is any significant difference in spelling performance between the Experimental Group and the Control Group and that between the Experimental Group and the Placebo Group at each observation and Table 11 shows the results. Results for observations D3, D4 and D5 (after
treatment) provide answers to Research Questions 1 and 2.

At D1, between the Experimental Group and the Control Group, the \( p \) value is >.05 and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (mean = 87.61; 95% CI, 73.54 – 101.69).

At D1, between the Experimental Group and the Placebo Group (regardless of the SEN student), the \( p \) value is >.05 and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (with SEN, mean = 87.76; 95% CI, 71.62 – 103.91 and without SEN, mean = 91.88; 95% CI, 77.32 – 106.43).

Table 11. Mann-Whitney \( U \) -test (at each observation).

<table>
<thead>
<tr>
<th>group</th>
<th>Dict 1</th>
<th>Dict2</th>
<th>Dict3</th>
<th>Dict4</th>
<th>Dict5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( p )-value</td>
<td>( p )-value</td>
<td>( p )-value</td>
<td>( p )-value</td>
<td>( p )-value</td>
</tr>
<tr>
<td>Experimental Group - Control Group</td>
<td>0.0504</td>
<td>0.1094</td>
<td>0.0614</td>
<td>0.0293*</td>
<td>with outlier 0.1192</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>without outlier 0.0703</td>
</tr>
<tr>
<td>Experimental Group - Placebo Group</td>
<td>with SEN 0.1351</td>
<td>0.1354</td>
<td>0.0431*</td>
<td>0.1119</td>
<td>with outlier 0.0536</td>
</tr>
<tr>
<td></td>
<td>without SEN 0.2261</td>
<td>0.1886</td>
<td>0.0738</td>
<td>0.1886</td>
<td>with outlier 0.0917</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>without outlier 0.0481*</td>
</tr>
</tbody>
</table>

*\( p < .05 \)
At D2, between the Experimental Group and the Control Group, the \( p \) value is >.05 and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (mean = 81.33; 95% CI, 66.16 – 96.51).

At D2, between the Experimental Group and the Placebo Group (regardless of the SEN student), the \( p \) value is >.05 and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (with SEN, mean = 84.59; 95% CI, 70.8 – 98.8 and without SEN, mean = 85.44; 95% CI, 70.81 – 100.07).

At D3, between the Experimental Group and the Control Group, the \( p \) value is >.05 and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (mean = 87.06; 95% CI, 74.26 – 99.85).

At D3, between the Experimental Group and the Placebo Group (with SEN), the \( p \) value is <.05 and the null hypothesis is rejected, indicating the Experimental Group performed significantly better than the Placebo Group (with SEN) (mean = 83.76; 95% CI, 67.01 – 100.52). At D3, between the Experimental Group and
the Placebo Group (without SEN), the $p$ value is $>.05$ and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (mean = 88.19; 95% CI, 73.33 – 103.04).

At D4, between the Experimental Group and the Control Group, the $p$ value is $<.05$ and the null hypothesis is rejected, indicating the Experimental Group performed significantly better than the Control Group (mean = 78.78; 95% CI, 64.03 – 93.53).

At D4, between the Experimental Group and the Placebo Group (regardless of the SEN student), the $p$ value is $>.05$ and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (with SEN, mean = 77.47; 95% CI, 59.71 – 95.23 and without SEN, mean = 82; 95% CI, 66.02 – 97.98).

At D5, between the Experimental Group (regardless of the outlier) and the Control Group, the $p$ value is $>.05$ and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (with outlier, mean =
At D5, between the Experimental Group (with outlier) and the Placebo Group (with SEN), the \( p \) value is >.05 and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (mean = 71.88; 95% CI, 55.2 – 88.57). At D5, between the Experimental Group (with outlier) and the Placebo Group (without SEN), the \( p \) value is >.05 and the null hypothesis is accepted, indicating there is no significant difference in spelling performance (mean = 76.38; 95% CI, 61.72 – 91.03). At D5, between the Experimental Group (without outlier) and the Placebo Group (with SEN) (mean = 73.5; 95% CI, 56.02 – 90.98). At D5, between the Experimental Group (without outlier) and the Placebo Group (without SEN), the \( p \) value is <.05 and the null hypothesis is rejected, indicating the Experimental Group (without outlier) performed significantly better than the Placebo Group (without SEN) (mean = 78.4; 95% CI, 63.33 – 93.47).
Results therefore show, before treatment, there is no significant difference in the spelling performance between the Experimental Group and the Control Group and that between the Experimental Group and the Placebo Group. Given the wide confidence interval indicating concern about the reliability of findings, interpretation of the impact of treatment is to be handled with caution.

Results also show, after treatment, the Experimental Group performed significantly better than:

(a) the Control Group at D4

(b) the Placebo Group (with the SEN student) at D3

(c) the Placebo Group (regardless of the SEN student) at D5 when the outlier is excluded.

However, considering the wide confidence intervals, the reliability of the findings is in question and therefore caution is needed when interpreting the findings.

The above findings provide answer to Research Question 1: the difference in spelling performance between the Experimental Group and the Control Group
after treatment is inconclusive; although results show that the Experimental Group performed significantly better than the Control Group at D4, the finding is not robust when taking into consideration the wide confidence intervals indicating uncertainty about the reliability of the finding.

The above findings provide answer to Research Question 2: the difference in spelling performance between the Experimental Group and the Placebo Group after treatment is inconclusive; although results show the Experimental Group performs significantly better than the Placebo at D3 and D5, the finding is not robust when taking into consideration the wide confidence intervals indicating uncertainty about the reliability of the finding. Caution is advised when interpreting the findings relating to the impact of treatment on spelling performance.

4.2.7 Reliability of dictation scores

By using Cronbach’s alpha, the internal reliability of the 5 dictation scores was tested and Table 12 shows the results.
Results show the reliability coefficient for the 5 dictation scores within groups was more than 0.86, indicating the 5 dictation scores were reliable with good internal consistency (George and Mallery, 2003).

As for the consistency over time (or stability), a test-retest was conducted and Table 13 shows the results.

The test-retest (D1 & 2 – D5) shows the reliability coefficient for the dictation scores for the Control Group, the Placebo Group (regardless of the SEN student) and the Experimental Group (with the outlier) was between 0.74 and 0.96;
according to McMillan and Schumacher (2001) the range between 0.70 and 0.90 is “the acceptable range of reliability for coefficients for most instruments” (p.244). In other words, within reasonable error range, no significant change (or error) took place: any significant difference cannot be detected or the change made has very little effect and can be neglected. However, when the outlier was excluded in the Experimental Group, result in Table 13 shows the reliability coefficient for D1 & D2 and D5 was 0.49203, indicating a low reliability between D1 & D2 and D5 and within reasonable error range, a change or error was detected.

4.2.8 Level of difficulty

The level of difficulty for dictations was measured by (i) the words with reference to the KS1 and KS2 word lists (ii) the number of recurring words (see Section 3.8.2.8). Table 14 below shows the composition of words in D1 – D5. The composition includes the total number of words in each dictation, the number of words that are not identified on the KS1 word list or the non-KS1 words, the number of KS2 words and the percentage of KS2 words in D1 – D5.
Table 14. The composition of words in D1 – D5.

<table>
<thead>
<tr>
<th></th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
</tr>
</thead>
<tbody>
<tr>
<td>total no. of words</td>
<td>38</td>
<td>58</td>
<td>44</td>
<td>55</td>
<td>61</td>
</tr>
<tr>
<td>no. of non-KS1 words</td>
<td>5</td>
<td>11</td>
<td>6</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>non-KS1 words</td>
<td>jigsaw</td>
<td>hotel (KS2)</td>
<td>Hong</td>
<td>cardigan</td>
<td>cardigan</td>
</tr>
<tr>
<td></td>
<td>video (KS2)</td>
<td>Canada</td>
<td>Kong</td>
<td>Paul</td>
<td>bakery (KS2)</td>
</tr>
<tr>
<td></td>
<td>bakery (KS2)</td>
<td>dim</td>
<td>Island (KS2)</td>
<td>twinkle</td>
<td>octopus (KS2)</td>
</tr>
<tr>
<td></td>
<td>opposite (KS2)</td>
<td>sum</td>
<td>Kowloon</td>
<td>invitation (KS2)</td>
<td>Territories</td>
</tr>
<tr>
<td></td>
<td>rose (KS2)</td>
<td>bauhinia (KS2)</td>
<td>Territories</td>
<td>Cindy</td>
<td>snout</td>
</tr>
<tr>
<td></td>
<td>CD</td>
<td>Maths</td>
<td>fashion (KS2)</td>
<td>opposite (KS2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bakery (KS2)</td>
<td>opposite (KS2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Katie</td>
<td>Hong</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kong</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no. of KS2 words</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>% of KS2 words in dictation</td>
<td>10.53%</td>
<td>6.90%</td>
<td>2.27%</td>
<td>3.64%</td>
<td>6.56%</td>
</tr>
</tbody>
</table>

Table 14 shows D1 has the highest percentage of KS2 words in dictation and D3 has the lowest percentage. Assuming that a dictation would be of a high level of difficulty when there was a high percentage of KS2 words, it is justifiable to conclude D1 is of a higher level of difficulty when considering also the unidentified, non-KS1 word ‘jigsaw’. The same applies to D5 with 6.56% of KS2 words in dictation and the unidentified, non-KS1 words ‘cardigan’, ‘Territories’ and ‘snout’. However, the level of difficulty for D3 is inconclusive.
when considering also the unidentified, non-KS1 words such as ‘Territories’ in D3 although the percentage of KS2 words in dictation was the lowest. Similarly, the level of difficulty for D2 and D4 is inconclusive when, apart from measuring the percentage of KS2 words, considering also the unidentified non-KS1 words such as ‘dim sum’, ‘twinkle’, ‘Katie’, could either be of low or high level of difficulty.

Regarding the number of words that recurred in D5 (which is an exam dictation), according to the dictation revision sheet for D5 provided by the school (see Appendix 17), 8 out of 10 vocabulary items in Section A (40 marks) and 2 out of 5 complete sentences in Section B (60 marks) appeared in previous dictations (D1-D4). In other words, 29 out of 61 words or 47.54 % of words in Section A and Section B in D5 were words that recurred. Findings show, despite the familiarity of words, the level of difficulty for D5 had not been offset; all groups scored the lowest in D5.

4.2.9 Correlation between level of difficulty and dictation scores

As discussed in the last section, in terms of level of difficulty, D1 and D5 are of a relatively higher level whereas for D2, D3 and D4, the level of difficulty is
inconclusive. Thus only the correlation between the level of difficulty and dictation scores for D1 and D5 is drawn in this section.

Table 15 below shows, in terms of the percentage of KS2 words in dictation, D1 (10.53%) is relatively more difficult than D5 (6.56%). When correlating this percentage with dictation scores in rank, it is noted that the Experimental Group and the Placebo Group (without SEN) ranked first in dictation scores in D1 while the Placebo Group (with SEN) and the Control Group ranked second. In D5 (which is relatively less difficult than D1), all groups ranked fifth in dictation scores. It therefore indicates that dictation scores among groups would not have correlated with the level of difficulty for dictation.

<table>
<thead>
<tr>
<th>Dictation</th>
<th>% of KS2 words in dictation</th>
<th>Experimental Group</th>
<th>Placebo Group (without SEN)</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>10.53%</td>
<td>1</td>
<td>2(1)</td>
<td>2</td>
</tr>
<tr>
<td>D2</td>
<td>6.90%</td>
<td>4</td>
<td>1(3)</td>
<td>3</td>
</tr>
<tr>
<td>D3</td>
<td>2.27%</td>
<td>2</td>
<td>3(2)</td>
<td>1</td>
</tr>
<tr>
<td>D4</td>
<td>3.64%</td>
<td>3</td>
<td>4(4)</td>
<td>4</td>
</tr>
<tr>
<td>D5</td>
<td>6.56%</td>
<td>5</td>
<td>5(5)</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 15. Percentage of KS2 words in dictations and dictation scores in ranking order among groups.
4.2.10 Correlation between number of words in dictation and dictation scores

Table 16 below shows the number of words in each dictation and the dictation scores among groups in ranking order – rank 1 is the highest score and rank 5 is the lowest score.

<table>
<thead>
<tr>
<th>Dictation</th>
<th>Total number of words</th>
<th>Experimental Group</th>
<th>Placebo Group (without SEN)</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>38</td>
<td>1</td>
<td>2(1)</td>
<td>2</td>
</tr>
<tr>
<td>D3</td>
<td>44</td>
<td>2</td>
<td>3(2)</td>
<td>1</td>
</tr>
<tr>
<td>D4</td>
<td>55</td>
<td>3</td>
<td>4(4)</td>
<td>4</td>
</tr>
<tr>
<td>D2</td>
<td>58</td>
<td>4</td>
<td>1(3)</td>
<td>3</td>
</tr>
<tr>
<td>D5</td>
<td>61</td>
<td>5</td>
<td>5(5)</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 16 shows the Experimental Group and the Placebo Group (without SEN) scored the highest and the Control Group scored the second highest in D1 – the dictation covering the smallest number of words among all 5 dictations. All 3 groups scored the lowest in D5 – the dictation covering the largest number of words among all 5 dictations. It therefore indicates dictation scores would have correlated with the number of words in dictation.
4.2.11 Summary of quantitative findings

Findings show the three groups in this quasi-experiment are non-equivalent groups differing at baseline levels although the initial group differences are statistically insignificant. Over the period of study, all three groups experienced a decline in scores. Treatment effect within groups shows before treatment, the decline from D1 to D2 for the Experimental Group and the Placebo Group (without SEN) was statistically significant. Because of a wide confidence interval which indicates a low level of reliability of the finding, caution is needed when interpreting this finding pertaining to the treatment effect within groups. After treatment, all groups (except the Experimental Group without outlier) experienced a significant decline in spelling performance. Although the Experimental Group (without outlier) was the only group that performed no worse in post-treatment than in pre-treatment, findings are not robust enough to draw conclusion about the treatment effect because the $p$ value is close to .05 although the confidence interval is relatively narrower indicating a higher confidence level.

Over the period of study, treatment effect between groups shows, after treatment, the Experimental Group (regardless of the outlier) experienced a relatively lower
decline than the Control Group and the Placebo Group (regardless of the SEN student). Treatment effect between groups also shows, after treatment, there is no significant difference in spelling performance between the Experimental Group and the Control Group and between the Experimental Group and the Placebo Group.

At each observation, treatment effect between groups shows, before treatment, there is no significant difference in spelling performance between the Experimental Group and the Control Group and between the Experimental Group and the Placebo Group (regardless of the SEN student). After treatment, at D4, the Experimental Group performed significantly better than the Control Group; at D3 and D5, the Experimental Group performed significantly better than the Placebo Group. Again, because of the wide confidence intervals, caution is needed when interpreting the findings with regard to the impact of intervention after treatment.

Findings show the data of the SEN student in the Placebo Group affected the size and the pattern of changes both before and after treatment. Findings also show
the scores for the three groups were more correlated to the number of words in dictations than the level of difficulty of dictations.

To summarize, findings relating to spelling performance provide answer to Q1: the difference in spelling performance between the Experimental Group and the Control Group after treatment is inconclusive; although the Experimental Group performed significantly better in spelling performance than the Control Group at D4, the wide confidence intervals indicate concern about the reliability of findings.

Findings relating to spelling performance also provide answer to Q2: the difference in spelling performance between the Experimental Group and the Placebo Group after treatment is inconclusive; although the Experimental Group performed significantly better than the Placebo Group (with SEN) at D3 and (regardless of the SEN) at D5 when excluding the outlier, the impact of intervention is in question because the data of the SEN in the Placebo Group affected the size and pattern of changes in scores and the wide confidence intervals indicate a low level of reliability of the findings.
4.3 Qualitative data

Before reporting the results of the qualitative data, it is emphasized that in this quasi-experimental study, the quantitative data are the main data and the results of the qualitative data are to be interpreted in the context of the quantitative data. Therefore, while the results of the quantitative data presented in Section 4.2 do not support the positive impact of treatment on spelling performance, any positive impact of treatment on perceived motivation drawn from the qualitative data in Section 4.3 should be treated with caution. The same concern applies to any discrepancy or contradiction between the results of the quantitative and qualitative data. The impact of treatment on spelling performance and perceived motivation as well as the discrepancies between the results of the quantitative and qualitative data will be discussed in Chapter 5.

In this study, qualitative data collected by semi-structured interviews (with students, parents and teachers of the Experimental and Placebo Groups) were used to measure perceived motivation in learning English. Qualitative data were also used to supplement the quantitative data for measuring students’ spelling performance. Again, it is noted that the Control Group was not interviewed in
order to ensure the minimum contamination.

The results of the qualitative data collected by interviewing students (S), parents (P) and teachers (T) are presented in the following subsections. The change in perceived motivation in learning English is measured by comparing students’ motivation before treatment (Interview 1), during treatment (Interview 2) and after treatment (Interview 3, see Diagram 6 ‘Overview of the implementation procedures’ in Section 3.4 ‘Procedure’). These results are analysed in Chapter 5 ‘Discussion’ with specific reference to Section 2.4 ‘Motivation in language learning’ in Chapter 2 ‘Literature Review’.

4.3.1 Interviews with students

Findings of the interviews with students are presented according to the interview questions (Q1- Q10) listed in Table 17 below. Because the interviews were semi-structured, the sequence of the questions asked during the interviews was flexible. The numbering in Table 17 is for the purpose of analysing and referencing. In relation to Section 2.4.1 ‘Motivation from the cognitive perspectives’, the notion of motivation reflected in questions in Table 17 is
situated at the micro-level of the education-centred tendencies and focuses on the L2 classroom practice; the notion of motivation incorporates learners’ cognition, beliefs, values and affects (Brophy, 2004; Crookes and Schmidt, 1991; Dörnyei, 1994a, 1994b, 2001a, 2001b; McGroarty, 2001; Oxford and Shearin, 1994; Schunk et al., 2008; Ushioda, 1996b; Wigfield et al., 2007; Williams and Burden, 1997). Answers to Q1 to Q8 reflect students’ motivation and answers to Q9 – Q10 reflect the effect of Bingo and phonics on spelling. It is noted that when interpreting the results of the study, care is needed because of the small sample size; small difference between groups may be attributable to a single interviewee.

Table 17. Interview questions for students.

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Types of motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Why do you think you learn English, any change in view before/after Bingo?</td>
<td>motivation - types of motivation</td>
</tr>
<tr>
<td>2</td>
<td>Do you want to learn English before/after Bingo? And why?</td>
<td>motivation - desire</td>
</tr>
<tr>
<td>3</td>
<td>What do you do to improve your proficiency in English? Any change before/after Bingo?</td>
<td>motivation - choice of action</td>
</tr>
<tr>
<td>4</td>
<td>How do you find English spelling? And why?</td>
<td>motivation - affect</td>
</tr>
<tr>
<td>5</td>
<td>How do you find phonics? And why?</td>
<td>motivation - affect</td>
</tr>
<tr>
<td>6</td>
<td>How do you find your English dictation results? And why?</td>
<td>motivation - self-concept</td>
</tr>
<tr>
<td>7</td>
<td>How much time do you spend in preparing for English dictation?</td>
<td>motivation - effort expended on</td>
</tr>
<tr>
<td>8</td>
<td>How do you find the Bingo game? And why?</td>
<td>motivation - affect</td>
</tr>
<tr>
<td>9</td>
<td>Do you think the Bingo game helps improve your dictation result? And how?</td>
<td>the effect</td>
</tr>
<tr>
<td>10</td>
<td>Do you think phonics helps improve your dictation result? And how?</td>
<td>the effect</td>
</tr>
</tbody>
</table>
4.3.1.1 Q1 ‘Why do you think you learn English, any change in your view before/after Bingo?’

Q1 was asked at Interview 3 and students expressed if there was any change in their view, before and after Bingo, regarding the reasons for learning English.

Q1 reflects the types of motivation in learning English. With reference to Nikolov (1999), the reasons indicated by students were grouped into four broad types:

(a) classroom-related reasons, for example, ‘because learning English is fun’

(b) teacher-related reasons, for example, ‘because the teacher is nice’

(c) external reasons, for example, ‘because mother wants me to learn’

(d) utilitarian reasons, for example, ‘because I will be able to talk to foreigners’

Table 18 below shows the reasons for learning English as indicated by the Experimental Group and the Placebo Group at Interview 3. All students in both the Experimental and Placebo Groups expressed there was no change in their view, before and after Bingo, regarding the reasons for learning English. For the Experimental Group, S10 responded ‘I don’t know’ and all other students each provided at least one reason for learning English while for the Placebo Group, S1,
S2 and S5 responded ‘I don’t know’ and all other students each provided at least one reason.

Results from Q1 show the reasons for learning English for both the Experimental Group and the Placebo Group are mainly classroom-related and utilitarian reasons.

None of the reasons indicated by the two groups was teacher-related and only 1 external reason related to the student’s mother was indicated by the Experimental Group.

<table>
<thead>
<tr>
<th>Total no. of reasons provided</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom-related reasons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 (50%)</td>
<td>my English is not good (S12, S13, S14), to enhance communication with others in class (S18)</td>
<td>4 (57.1%) fail in exam (S4, S7), can improve English (S6, S9)</td>
</tr>
<tr>
<td>Teacher-related reasons</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>External reasons</td>
<td>1 (12.5%) mother wanted him to (S13)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Utilitarian reasons</td>
<td>3 (37.5%) able to talk to foreigners (S11, S15, S17)</td>
<td>3 (42.9%) able to talk to foreigners (S3, S7), English is important (S8)</td>
</tr>
</tbody>
</table>

Table 18. Reasons for learning English as indicated by groups at Interview 3.
4.3.1.2 Q2 ‘Do you want to learn English before/after Bingo? And why?’

Q2 was asked at Interview 3 and students expressed if there was any change before and after Bingo. Q2 reflects the change in students’ perceived motivation in terms of desire for learning English. Table 19 and Table 20 show respectively the desire for learning English as indicated by the Experimental Group and the Placebo Group at Interview 3.

Table 19. Desire for learning English as indicated by the Experimental Group at Interview 3.

<table>
<thead>
<tr>
<th></th>
<th>Before Bingo</th>
<th>After Bingo</th>
<th>Change in desire (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=8</td>
<td>comments</td>
<td>comments</td>
<td></td>
</tr>
<tr>
<td>S10</td>
<td>‘I don’t want to learn in the past’ (line 12)</td>
<td>‘Yes’ (line 8), ‘I don’t know [why]’ (line 10)</td>
<td>positive change</td>
</tr>
<tr>
<td>S11</td>
<td>‘there is not much difference than before’ (line 7)</td>
<td>‘I always want to learn English, even now’ (line 6)</td>
<td>no change</td>
</tr>
<tr>
<td>S12</td>
<td>‘kind of’ (line 12)</td>
<td>‘yes, I want to’ (line 14), ‘because learning English is fun’ (line 16)</td>
<td>no change</td>
</tr>
<tr>
<td>S13</td>
<td>‘my result was not good and I want it to be better’ (line 22)</td>
<td>‘want’ (line 16), ‘because my result can be better’ (line 18)</td>
<td>no change</td>
</tr>
<tr>
<td>S14</td>
<td>‘yes’ (line 8)</td>
<td>‘yes’ (line 10)</td>
<td>no change</td>
</tr>
<tr>
<td>S15</td>
<td>‘no’ (line 22), ‘because in the past … I didn’t know how to memorize English’ (line 24)</td>
<td>‘uh-huh’ (line 26), ‘I don’t know [why]’ (line 28)</td>
<td>positive change</td>
</tr>
<tr>
<td>S17</td>
<td>‘yes I want to’ (line 7)</td>
<td>‘also want to’ (line 9)</td>
<td>no change</td>
</tr>
<tr>
<td>S18</td>
<td>‘before attending this class… it’s not easy for me to discover the mistakes I made’ (line 14)</td>
<td>‘yes’ (line 8), ‘because English is interesting’ (line 10), ‘because we could see the mistakes … in the Bingo class’ (line 16)</td>
<td>positive change</td>
</tr>
</tbody>
</table>
For both groups, the desire for learning English was related to cognitive reasons which are similar: for the Experimental Group, the difficulty in memorizing and in discovering mistakes (S15 and S18); for the Placebo Group, the difficulty in

<table>
<thead>
<tr>
<th>n=9</th>
<th>Before Bingo</th>
<th>After Bingo</th>
<th>Change in desire (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>‘I didn’t want to learn’ (line 8)</td>
<td>‘I don’t want to learn’ (line 6)</td>
<td>no change</td>
</tr>
<tr>
<td>S2</td>
<td>‘yes too’ (line 6)</td>
<td>‘yes’ (line 4)</td>
<td>no change</td>
</tr>
<tr>
<td>S3</td>
<td>‘find it difficult as well’ (line 12)</td>
<td>‘so-so’ (line 8), ‘because English is difficult’ (line 10)</td>
<td>no change</td>
</tr>
<tr>
<td>S4</td>
<td>‘a little bit difficult before’ (line 12), ‘I spelled the word as a whole in the past’ (line 18)</td>
<td>‘[I] want’ (line 8), ‘if you do not study you will feel English is difficult, when you study you will not feel difficult’ (line 10), ‘I remembered the word bit by bit’ (line 16)</td>
<td>positive change</td>
</tr>
<tr>
<td>S5</td>
<td>‘I didn’t usually get high grades before’ (line 10)</td>
<td>‘yes’ (line 6), ‘because I can get higher grades in English dictation’ (line 8)</td>
<td>positive change</td>
</tr>
<tr>
<td>S6</td>
<td>‘I don’t like it before’ (line 12)</td>
<td>‘yes, because I can learn phonics and I can spell the words’ (line 10)</td>
<td>positive change</td>
</tr>
<tr>
<td>S7</td>
<td>‘in the past, I was not good at English’ (line 14)</td>
<td>‘yes’ (line 10), ‘it is because I can talk to the people when I go to different countries when traveling if I know more English’ (line 12)</td>
<td>positive change</td>
</tr>
<tr>
<td>S8</td>
<td>‘yes’ (line 10)</td>
<td>‘yes’ (line 6), ‘because … I can go to other countries … to communicate with foreigners’ (line 8)</td>
<td>no change</td>
</tr>
<tr>
<td>S9</td>
<td>‘no’ (line 6)</td>
<td>‘I don’t want to’ (line 8), ‘because the words are a bit difficult’ (line 10)</td>
<td>no change</td>
</tr>
</tbody>
</table>
remembering and spelling the words (S4 and S6). For the Experimental Group, the desire was also related to enjoyment (S12) and for the Placebo Group, to the ability to communicate with foreigners (S5, S7 and S8).

Table 21 below summarizes the change in the desire for learning English between groups. Results from Q2 therefore show, in view of students’ perceived motivation in terms of desire for learning English, the difference between groups is small: over 50% of both groups had no change, no negative change was noted and the positive change was relatively bigger for the Placebo Group (44.4%) than for the Experimental Group (37.5%). When interpreting the findings, caution is needed because the difference in the positive change between groups in raw number is 1 interviewee.

<table>
<thead>
<tr>
<th>Change in desire</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>3 (37.5%)</td>
<td>4 (44.4%)</td>
</tr>
<tr>
<td>Negative change</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No change</td>
<td>5 (62.5%)</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
4.3.1.3 Q3 ‘What do you do to improve your proficiency in English? Any change before/after Bingo?’

Q3 was asked at Interview 3 and students stated the strategies they employed to improve their English proficiency. Q3 reflects the change in students’ perceived motivation in learning English in terms of choice of action or strategies. Table 22 and Table 23 show respectively the change in strategies for the Experimental Group and the Placebo Group.

| Table 22. Strategies employed by the Experimental Group as indicated at Interview 3. |
|---|---|---|
| n=8 | Before Bingo | After Bingo |
| S10 | No answer | No answer | No change |
| S11 | 'seek help from my dad’ (line 9) | 'practise more by myself’ (line 11) | Change (more self-reliant) |
| S12 | 'would recall the word’ (line 18) | 'recall bit by bit’ (line 24) | Change (apply phonics) |
| S13 | 'used to spell the whole word before’ (line 28) | 'break the words down into bits’ (line 26) | Change (apply phonics) |
| S14 | 'elder sister helped me’ (line 16) | 'search for other English classes’ (line 20), 'sister has been busy lately’ (line 22) | No change |
| S15 | No answer | No answer | No change |
| S17 | 'revise more’ (line 13) | 'pay attention in class … be more serious when revising ’ (line 15) | Change (more engaged in learning and revision) |
| S18 | 'read more books' (line 26) | 'attend tutorial classes probably’ (line 28), 'teachers will teach us … in tutorial classes’ (line 30) | Change (more engaged in seeking help) |
For the Experimental Group, the change in strategies covers self-reliance (S11), engagement (S17, S18) and the application of phonics in spelling (S12, S13).

For the Placebo Group, the change in strategies mainly covers the level of engagement (S3, S5, S6, S7, S8) while S4 indicated the application of phonics in spelling.

Table 23. Strategies employed by the Placebo Group as indicated at Interview 3.

<table>
<thead>
<tr>
<th></th>
<th>Before Bingo</th>
<th>After Bingo</th>
<th>Change / No change / Not known (remarks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>‘I don’t know’ (line 12)</td>
<td>(silent) (line 14)</td>
<td>Not known</td>
</tr>
<tr>
<td>S2</td>
<td><strong>No answer</strong></td>
<td><strong>No answer</strong></td>
<td><strong>No change</strong></td>
</tr>
<tr>
<td>S3</td>
<td>‘not much [revision before]’ (line 20)</td>
<td>‘revision in school’ (line 18)</td>
<td>Change (in engagement in revision)</td>
</tr>
<tr>
<td>S4</td>
<td>‘I spelled the word as a whole’ (line 18)</td>
<td>‘remembered the word bit by bit’ (line 16)</td>
<td>Change (apply phonics)</td>
</tr>
<tr>
<td>S5</td>
<td>‘not much [revision before]’ (line 16)</td>
<td>‘do more revision’ (line 14)</td>
<td>Change (in engagement in revision)</td>
</tr>
<tr>
<td>S6</td>
<td>‘I played all the time’ (line 20)</td>
<td>‘do more revision’ (line 18)</td>
<td>Change (in engagement in revision)</td>
</tr>
<tr>
<td>S7</td>
<td><strong>No answer</strong></td>
<td>‘read more English books’ (line 16)</td>
<td>Change (more engaged in learning)</td>
</tr>
<tr>
<td>S8</td>
<td><em>did not do my homework very fast so I only had too little time for my study</em> (line 16)</td>
<td>‘will finish my homework faster and then use more time to study English’ (line 14)</td>
<td>Change (in engagement in revision)</td>
</tr>
<tr>
<td>S9</td>
<td>‘revise for a long time’ (line 18)</td>
<td>‘revise everyday’ (line 14)</td>
<td>No change</td>
</tr>
</tbody>
</table>
Table 24 below summarizes the change in strategies employed between groups.

Results from Q3 show, in view of students’ perceived motivation in terms of strategies, the difference between groups is small: over 60% of both groups had change while a relatively more diversified change in strategies was noted for the Experimental Group than the Placebo Group whereas 37.5% of the Experimental Group and 22.2% of the Placebo Group had no change.

<table>
<thead>
<tr>
<th>Change in strategies</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change</td>
<td>5 (62.5%)</td>
<td>6 (66.7%)</td>
</tr>
<tr>
<td>No change</td>
<td>3 (37.5%)</td>
<td>2 (22.2%)</td>
</tr>
<tr>
<td>Not known</td>
<td>0 (0%)</td>
<td>1 (11.1%)</td>
</tr>
</tbody>
</table>

4.3.1.4 Q4 ‘How do you find English spelling? And why?

Q4 was asked at Interviews 1, 2 and 3. Q4 reflects the change in students’ perceived motivation in terms of affect or views on English spelling. Table 25 and Table 26 below show respectively the views on spelling indicated by the Experimental Group and the Placebo Group at interviews.
Table 25. Views on spelling as indicated by the Experimental Group at interviews.

<table>
<thead>
<tr>
<th>n=8</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in view (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S10</td>
<td>'very happy’ (line 6), 'because I do it well' (line 10)</td>
<td>'very happy’ (line 8)</td>
<td>'very nervous’ (line 23) but did not explain</td>
<td>negative change</td>
</tr>
<tr>
<td>S11</td>
<td>'quite funny’ (line 6), 'sometimes the pronunciation is just like Chinese' (line 8)</td>
<td>'I become familiar with it' (line 18)</td>
<td>'My ability in spelling is better now' (line 25), 'I know more English spellings now' (line 27)</td>
<td>positive change</td>
</tr>
<tr>
<td>S12</td>
<td>'very difficult’ (line 7), 'difficult to remember the vocabulary’ (line 9)</td>
<td>'now, I know [phonics]' (line 44), 'if phonics is poor' (line 62), 'cannot spell [the word]' (line 64)</td>
<td>'it’s easier than before’ (line 6), '[before] I find English difficult for me' (line 10)</td>
<td>positive change</td>
</tr>
<tr>
<td>S13</td>
<td>'a little bit difficult’ (line 4), 'I cannot remember the very long and difficult sentences' (line 6)</td>
<td>'am more familiar with, for example the word invitation ' (line 34)</td>
<td>'[now] I pay attention to English spelling’ (line 30), 'spelling can …break words down into bits... I like it more’ (line 48)</td>
<td>positive change</td>
</tr>
<tr>
<td>S14</td>
<td>'sometimes it’s quite difficult’ (line 6), 'because some vocabulary... I haven’t learnt them before’ (line 8)</td>
<td>'the spelling …very interesting' (line 6), 'my spelling is much better' (line 14)</td>
<td>'much better now’ (line 29), 'I find spelling easier and vocabulary easier to spell' (line 30), 'now I can still remember some words I learnt before’ (line 40)</td>
<td>positive change</td>
</tr>
<tr>
<td>S15</td>
<td>'very delighted’ (line 14), 'because I like English’ (line 18), 'English spelling can enhance my memory’ (line 22)</td>
<td>no answer</td>
<td>'is much better now’ (line 33), 'English spelling is easier for me now’ (line 35) ‘I can get higher marks now' (line 39)</td>
<td>positive change</td>
</tr>
</tbody>
</table>
Table 25 (cont’d).

<table>
<thead>
<tr>
<th></th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in view (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S17</td>
<td>'a little bit difficult’ (line 6), ‘because I have to remember lots of vocabulary’ (line 8), ‘it’s difficult [even] if I split the words into smaller units when I’m spelling’ (line 10)</td>
<td>'more confident’ (line 18)</td>
<td>'[now] break the words down and then spell the word’ (line 21), ‘just remember it as a whole in the past’ (line 28)</td>
<td>positive change</td>
</tr>
<tr>
<td>S18</td>
<td>'quite interesting’ (line 2) ‘you can use difficult English to talk to people’ (line 4)</td>
<td>more confidence’ (line 44), 'now… I write more fluently .. With more confidence’ (line 48)</td>
<td>'It’s easier for me to spell words’ (line 51)</td>
<td>positive change</td>
</tr>
</tbody>
</table>

Table 26. Views on spelling as indicated by the Placebo Group at interviews.

<table>
<thead>
<tr>
<th></th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in view (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=9</td>
<td>comments</td>
<td>comments</td>
<td>comments</td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>'no feeling’ (line 8)</td>
<td>'I don’t know’ (line 6)</td>
<td>‘No feeling’(line 20)</td>
<td>no change</td>
</tr>
<tr>
<td>S2</td>
<td>'quite boring’ (line 6), 'a little bit of fun’ (line 8) but could not explain</td>
<td>'now I have ... a little progress’ (line 2)</td>
<td>‘a little bit unhappy’ (line 12), ‘the same as before’ (line 14)</td>
<td>not known</td>
</tr>
<tr>
<td>S3</td>
<td>'boring’ (line 6), 'annoying’ (line 8), 'since there are many letters in a word' (line 12)</td>
<td>'annoying’ (line 10)</td>
<td>‘no feeling’ (line 22)</td>
<td>not known</td>
</tr>
<tr>
<td>S4</td>
<td>'quite difficult’ (line 6), ‘because .. some words are difficult to spell. Some are not’ (line 8)</td>
<td>'I don’t know’ (line 8)</td>
<td>‘don’t know’ (line 22)</td>
<td>not known</td>
</tr>
<tr>
<td>S5</td>
<td>'words are difficult' (line 8), 'too many words’ (line 10)</td>
<td>'I find it a bit difficult’ (line 2) but could not explain</td>
<td>‘no feeling’ (line 22), ‘before? No feeling as well’ (line 24)</td>
<td>not known</td>
</tr>
</tbody>
</table>
In terms of views on spelling, before Bingo, both positive views (such as ‘funny’, ‘interesting’) and negative views (such as ‘words are difficult to remember’) shared by the Experimental and the Placebo Groups were similar. However, after Bingo, the positive views indicated by the Experimental Group were more specific – for example, S12, S14, S15, S18 stated ‘spelling is easier’. The positive views indicated by the Placebo Group were ‘it is good’ (S7) and ‘I am more familiar with the English words now’ (S8); views appear to be less specific than those expressed by the Experimental Group.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S6</td>
<td>‘takes very long time’ (line 6), ‘sometimes difficult but sometimes not’ (line 12)</td>
<td>‘I don’t like it’ (line 5)</td>
<td>‘very difficult’ (line 24), ‘(before) I played all the time’ (line 20)</td>
</tr>
<tr>
<td>S7</td>
<td>‘enjoyable’ (line 6), ‘because … spelling is interesting’ (line 8)</td>
<td>‘feel a lot better’ (line 6)</td>
<td>‘it is good now’ (line 20), ‘I thought it was boring in the past’ (line 22)</td>
</tr>
<tr>
<td>S8</td>
<td>‘ok’ (line 4), ‘because some words are too long and some words are difficult to remember’ (line 11)</td>
<td>‘I get more used to it and I spend less time on spelling’ (line 6)</td>
<td>‘I think I am more familiar with the English words now’ (line 18), ‘some English words I do not know how to pronounce before’ (line 20)</td>
</tr>
<tr>
<td>S9</td>
<td>‘feel very happy’ (line 6) but could not explain</td>
<td>‘very happy’ (line 4)</td>
<td>‘no feeling’ (line 20), ‘same [as before]’ (line 22)</td>
</tr>
</tbody>
</table>

Table 26 (cont’d).
Table 27 below summarizes the change in views on spelling between groups.

Results from Q4 show, in view of students’ perceived motivation in terms of affect or views on spelling, the positive change for the Experimental Group (87.5%) is evidently bigger than that for the Placebo Group (22.2%) while the Placebo Group had 33.3% of no change and 44.4% of change that was not known.

<table>
<thead>
<tr>
<th>Change in views on spelling</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>7 (87.5%)</td>
<td>2 (22.2%)</td>
</tr>
<tr>
<td>Negative change</td>
<td>1 (12.5%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No change</td>
<td>0 (0%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>0 (0%)</td>
<td>4 (44.4%)</td>
</tr>
</tbody>
</table>

4.3.1.5 Q5 ‘How do you find phonics? And why?’

Q5 was not asked in Interview 1 because phonics drilling only began after Interview 1 and Q5 reflects students’ perceived motivation in terms of affect or views on phonics. Table 28 and Table 29 below show the views expressed by the Experimental and Placebo Groups respectively at Interviews 2 and 3.
Table 28. Views on phonics as indicated by the Experimental Group at interviews.

<table>
<thead>
<tr>
<th>n=8</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Overall view (positive, negative, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>comments</td>
<td>comments</td>
<td></td>
</tr>
<tr>
<td>S10</td>
<td>'[phonics help me] scored 100 marks in exam' (line 18)</td>
<td>'very difficult' (line 30)</td>
<td>negative</td>
</tr>
<tr>
<td>S11</td>
<td>'it's better to use phonics for dictation' (line 48), 'much easier for me to memorize [the spelling]' (line 50), 'in the past... I would forget them all but now I'm not afraid of it' (line 54)</td>
<td>'I have some basic knowledge about it now' (line 13), 'About how to figure out ... the pronunciation of words. Sometimes I can get it right when I make wild guesses' (line 15), 'I make use of it when I see some words which I'm not familiar with' (line 19)</td>
<td>positive</td>
</tr>
<tr>
<td>S12</td>
<td>'now I know [phonics]' (line 44)</td>
<td>'much easier' (line 26), 'because I know how to pronounce the word and I know phonics now' (line 28)</td>
<td>positive</td>
</tr>
<tr>
<td>S13</td>
<td>'like it, it is fun' (line 23) 'when I do not know how to type the word on the computer ... it can help me' (line 26)</td>
<td>'I do not like phonics that much' (line 40), 'I quite like it before' (line 42), 'phonics ...can improve English dictation results a little bit' (line 62)</td>
<td>not known</td>
</tr>
<tr>
<td>S14</td>
<td>'some words that I do not know before, I learned them from phonics' (line 16)</td>
<td>'find it [phonics] easier' (line 44), phonics ...can help us to pronounce' (line 54)</td>
<td>positive</td>
</tr>
<tr>
<td>S15</td>
<td>'like it' (line 26), 'can get higher mark' (line 30)</td>
<td>no answer</td>
<td>not known</td>
</tr>
<tr>
<td>S17</td>
<td>'use phonics for spelling' (line 29)</td>
<td>'if you don’t know that word, you can use phonics to spell it' (line 43)</td>
<td>positive</td>
</tr>
<tr>
<td>S18</td>
<td>'[phonics help] remember the words for a longer period of time' (line 24)</td>
<td>'my ability in phonics is better' (line 47), 'it's easier for me to spell words' (line 51)</td>
<td>positive</td>
</tr>
</tbody>
</table>
Results show both positive views (such as enhancing spelling, helping pronounce words) and negative views (such as being difficult) on phonics were similar between the Experimental and the Placebo Groups. Table 30 below summarizes the overall views on phonics between groups. Results from Q5 show, in view of students’ perceived motivation in terms of affect or views on phonics, the
difference between groups is small: 62.5% of the Experimental Group and 55.6% of the Placebo Group had a positive overall view on phonics while 25% of the Experimental Group and 33.3% of the Placebo Group had an ambivalent view on phonics. Again, because of the small sample size, caution is needed when interpreting the result.

<table>
<thead>
<tr>
<th>Overall views on phonics</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>5 (62.5%)</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Negative</td>
<td>1 (12.5%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>Not known</td>
<td>2 (25%)</td>
<td>3 (33.3%)</td>
</tr>
</tbody>
</table>

4.3.1.6 Q6 ‘How do you find your English dictation results? And why?’

Q6 was asked at Interviews 1, 2 and 3. Q6 reflects the change in students’ perceived motivation in terms of self-concept. Table 31 and Table 32 below show respectively the comments on dictation results as expressed by the Experimental Group and the Placebo Group.
### Table 31. Views on dictation results as indicated by the Experimental Group at interviews.

<table>
<thead>
<tr>
<th>n=8</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in view (more positive, more negative, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>comments</td>
<td>comments</td>
<td>comments</td>
<td></td>
</tr>
<tr>
<td>S10</td>
<td>'very happy' (line 20)</td>
<td>'score 100 marks' (line 18), 'no [difference than before]' (line 20)</td>
<td>'very happy' (line 38) but could not explain</td>
<td>no change</td>
</tr>
<tr>
<td>S11</td>
<td>'very happy' (line 42)</td>
<td>[marks are] much higher (line 26), '5 marks [higher]' (line 28)</td>
<td>no answer</td>
<td>not known</td>
</tr>
<tr>
<td>S12</td>
<td>'it's average' (line 21), 'very happy' (line 29)</td>
<td>'very good, better than before' (line 12), 'about 90 marks before' (line 14), [now] 100 (line 16)</td>
<td>'I get higher marks' (line 46), 'happy' (line 50)</td>
<td>positive change</td>
</tr>
<tr>
<td>S13</td>
<td>'I always get … 90 marks or above… also punished by my mother, I must get 100 marks' (line 17), 'mother says it's not good' (line 20), '[I say it is] quite good (line 22), 'if I am nervous, I will forget the words' (line 26)</td>
<td>'the third dictation, I have 103 marks' (line 44), 'I have 80 marks … 70 marks before' (line 46), 'happy' (line 48), 'like it very much, mother does not scold me' (line 50)</td>
<td>'English dictation results are very good' (line 52), 'a little nervous' (line 54), 'every time I feel the same' (line 56)</td>
<td>not known</td>
</tr>
<tr>
<td>S14</td>
<td>'it's good' (line 18), 'very nervous' (line 30)</td>
<td>'scores are much higher' (line 30), I get about 100 marks before, now 110 marks (line 32)</td>
<td>'the marks are much higher than before' (line 58), 'I'm happier' (line 76), 'no [not nervous anymore]' (line 80)</td>
<td>positive change</td>
</tr>
<tr>
<td>S15</td>
<td>'a good result' (line 36)</td>
<td>'I got about 90 marks before, but now I got around 100 marks' (line 46), 'happy' (line 54)</td>
<td>'it's much better now' (line 51), 'don't know [how much better]' (line 53)</td>
<td>positive change</td>
</tr>
<tr>
<td>S17</td>
<td>'quite good' (line 12), 'very happy' (line 18)</td>
<td>'more confident' (line 18)</td>
<td>'much higher [marks]' (line 49), '10 marks higher' (line 51), '[feel] good' (line 53)</td>
<td>positive change</td>
</tr>
<tr>
<td>S18</td>
<td>'quite good' (line 84)</td>
<td>'no [difference than before]' (line 28)</td>
<td>'feel [nothing]' (line 65), '[marks] higher [than before]' (line 69)</td>
<td>not known</td>
</tr>
</tbody>
</table>
### Table 32. Views on dictation results as indicated by the Placebo Group at interviews.

<table>
<thead>
<tr>
<th>n=9</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in view (more positive, more negative, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>'very poor' (line 16), 'don't like English' (line 18)</td>
<td>'I don't know' (line 23)</td>
<td>'very poor' (line 36)</td>
<td>no change</td>
</tr>
<tr>
<td>S2</td>
<td>'quite unhappy' (line 16), 'because of the marks' (line 18)</td>
<td>'a little bit happy' (line 20)</td>
<td>'not very good' (line 24), 'unhappy now' (line 26)</td>
<td>no change</td>
</tr>
<tr>
<td>S3</td>
<td>'afraid of getting zero marks' (line 20)</td>
<td>'average' (line 32), 'because ... sometimes, I didn't study' (line 36)</td>
<td>'English is very difficult' (line 34)</td>
<td>no change</td>
</tr>
<tr>
<td>S4</td>
<td>'quite nervous' (line 20), 'because I don’t know how many marks I will get' (line 22)</td>
<td>'very happy' (line 28), 'because I always got a pass in the dictation, every time' (line 30)</td>
<td>'very good' (line 34), 'very nervous' (line 47)</td>
<td>not known</td>
</tr>
<tr>
<td>S5</td>
<td>'nervous' (line 14), 'a little bit happy' (line 16), because ... I am worried about my result... if it's not good' (line 20), '[but happy] because my result is good always' (line 22)</td>
<td>'I feel nervous' (line 14), 'because I’m afraid that I wouldn’t know some of the vocabulary' (line 16)</td>
<td>'very nervous' (line 36), 'worried that the grade is not good' (line 38)</td>
<td>no change</td>
</tr>
<tr>
<td>S6</td>
<td>'Nervous' (line 20), 'happy' (line 22), 'nervous because I don't know whether I can get full marks' (line 24)</td>
<td>'very nervous' (line 31), 'because I’m afraid that I spell them wrong' (line 33)</td>
<td>'happy' (line 42), 'because I can get better grades, big improvement' (line 44)</td>
<td>positive change</td>
</tr>
<tr>
<td>S7</td>
<td>'feel very excited' (line 14), 'because I’ve worked hard' (line 20)</td>
<td>'feeling better, because ... I know more' (line 24)</td>
<td>'much better' (line 36), 'because I had revision' (line 38)</td>
<td>positive change</td>
</tr>
<tr>
<td>S8</td>
<td>'average' (line 18), 'because some classmates do better than me' (line 22)</td>
<td>'a bit nervous' (line 22), 'because I don’t know ... if the marks will fall behind' (line 24)</td>
<td>'feel very happy’ (line 34) ‘because … I can use phonics to write the words’ (line 38)</td>
<td>positive change</td>
</tr>
<tr>
<td>S9</td>
<td>'felt very happy’ (line 16), 'excited' (line 18), 'because I got 110 marks' (line 20)</td>
<td>'I’m very happy' (line 14), 'I got more than 100 marks every time' (line 16)</td>
<td>'a bit sad' (line 40) 'because I get below 100 marks’ (line 42)</td>
<td>negative change</td>
</tr>
</tbody>
</table>
Both groups shared similar positive views and negative views on dictation results: students were happy when they got high scores and were unhappy when their scores were unsatisfactory and views are very much related to marks and scores.

Table 33 below summarizes the change in views on dictation scores between groups. Results from Q6 show, in view of students’ perceived motivation in terms of self-concept, there is a difference between groups after treatment: the positive change for the Experimental Group (50%) is relatively bigger than that for the Placebo Group (33.3%) while a relatively higher percentage of the Placebo Group (44.4%) than the Experimental Group (12.5%) remained unchanged.

<table>
<thead>
<tr>
<th>Change in views on dictation results</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>5 (62.5%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Negative change</td>
<td>0 (0%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>No change</td>
<td>1 (12.5%)</td>
<td>4 (44.4%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>2 (25%)</td>
<td>1 (11.1%)</td>
</tr>
</tbody>
</table>
4.3.1.7 Q7 ‘How much time do you spend in preparing for English dictation?’

Q7 was asked at Interview 1, 2 and 3. Q7 reflects the change in students’ perceived motivation in terms of effort expended on learning. Students generally indicated the time they spent in preparing for dictation in terms of hours.

Table 34 and Table 35 below show respectively the amount of time spent in preparing for English dictation as indicated by the Experimental and Placebo Groups. It is noted that students did not have a concrete idea of the concept of time, particularly for the Experimental Group, the amount of time indicated by S11, S12 and S13 appeared to be contradicting, thus the change is evaluated as ‘not known’. As Powney and Watts (1987) and Kvale (1996) suggest, it is important to read between the lines when interpreting the messages that children convey. In view of this, on top of the statistical figures students provided, the discussion on revision time in Chapter 5 (Section 5.4.5) takes into account of the meanings of what students said.
<table>
<thead>
<tr>
<th></th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in time (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=8</td>
<td>comments</td>
<td>comments</td>
<td>comments</td>
<td></td>
</tr>
<tr>
<td>S10</td>
<td>'an hour' (line 28)</td>
<td>'one hour' (line 24)</td>
<td>'one hour' (line 46)</td>
<td>no change</td>
</tr>
<tr>
<td>S11</td>
<td>from twenty minutes to half an hour (line 46 – 60)</td>
<td>'yes [different than before]' (line 40), 'in the past, I spent 5 minutes on revision' (line 42)</td>
<td>'half an hour. But I needed an hour in the past' (line 38)</td>
<td>not known</td>
</tr>
<tr>
<td>S12</td>
<td>'half an hour' (line 33)</td>
<td>in the past, I revised at night' (line 22), 'I don't want to revise' (line 24), 'now' when I finish dinner, I will do some revision' (line 20)</td>
<td>'about half an hour' (line 52), 'in the past… I need a longer time. More than half an hour' (line 56)</td>
<td>positive change</td>
</tr>
<tr>
<td>S13</td>
<td>'half an hour' (line 30)</td>
<td>'the same as usual' (line 78)</td>
<td>'zero' (line 64), 'one week' (line 66), 'no difference before and after [joining the course]' (line 68)</td>
<td>no change</td>
</tr>
<tr>
<td>S14</td>
<td>'about an hour' (line 34)</td>
<td>no answer</td>
<td>'around .. ten to fifteen minutes' (line 66), '[before was] twenty minutes' (line 68), 'I can memorize the vocabulary better' (line 70), 'because I have attended this class' (line 72), 'my English spelling and phonics are better' (line 74)</td>
<td>positive change</td>
</tr>
<tr>
<td>S15</td>
<td>'once a day' (line 122), 'an hour and twenty minutes [each time]' (line 129)</td>
<td>'about several minutes shorter [than before]' (line 76), '[feel] happy' (line 78)</td>
<td>I don't know' (line 41)</td>
<td>not known</td>
</tr>
<tr>
<td>S17</td>
<td>'about two or three days' (line 20)</td>
<td>'now less time' (line 22), 'several days faster' (line 24), '[in the past took] five days, six days' (line 26), 'now about four days or three days' (line 28)</td>
<td>'two to three days' (line 57), '[now] spend less time' (line 59)</td>
<td>positive change</td>
</tr>
<tr>
<td>S18</td>
<td>from half an hour to one hour (line 62 - line 66)</td>
<td>'no [different than before]' (line 36)</td>
<td>'I need half an hour now' (line 71), 'I need 15 minutes shorter than before' (line 73)</td>
<td>positive change</td>
</tr>
</tbody>
</table>
Table 36 below summarizes the change in time spent in preparing for dictation as indicated by the Experimental and Placebo Groups. Results from Q7 show, in view of students’ perceived motivation in terms of effort expended on learning, the difference between groups is evident: the Experimental Group had a positive
change of 50% and the Placebo Group had 0% and a higher percentage of the Placebo Group (88.9%) than of the Experimental Group (25%) remained unchanged. While no negative change for the Experimental Group was noted, S7 in the Placebo Group experienced a negative change; S7 indicated he spent longer hours but expressed that ‘I feel better after revision. I may get a pass tomorrow’ (Int. 3, line 50) and his dictation result was ‘much better’ (line 36) ‘because ... I had revision’ (line 38). This could mean the change of time spent was due to a stronger desire to do better. As noted previously, when interpreting results, the meaning of interviewees needs to be considered on top of the measurement of time.

<table>
<thead>
<tr>
<th>Change in time spent in preparing for dictation</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>4 (50%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Negative change</td>
<td>0 (0%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>No change</td>
<td>2 (25%)</td>
<td>7 (77.8%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>2 (25%)</td>
<td>1 (11.1%)</td>
</tr>
</tbody>
</table>
4.3.1.8 Q8 ‘How do you feel about the Bingo game? And why?’

Q8 was asked at Interview 3. Q8 reflects students’ perceived motivation in terms of affect or views on the Bingo game.

<table>
<thead>
<tr>
<th>Views on Bingo game</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of students (%)</td>
<td>Feedback provided at Interview 3</td>
</tr>
<tr>
<td>Positive</td>
<td>7 (87.5%)</td>
<td>S11 ‘game taught us pronunciations … make use of it in spelling’ (line 60); S12 ‘enjoyable’ (line 60); S13 ‘interesting’ (line 98); S14 ‘a lot of fun’ (line 84); S15 ‘can get higher marks in dictations and examinations’ (line 82); S17 ‘very enjoyable’ (line 70), [can] learn phonics’ (line 72); S18 ‘enjoyable’ (line 83)</td>
</tr>
<tr>
<td>Negative</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Not known</td>
<td>1 (12.5%)</td>
<td>S10 ‘[feel] nothing’ (line 52) but ‘learn some spelling’ (line 54)</td>
</tr>
</tbody>
</table>
Table 37 above shows 87.5% of the Experimental Group had a positive view on the Bingo game, a higher percentage compared with the 55.6% of the Placebo Group. The percentage of those whose view was ‘not known’ was higher for the Placebo Group (44.4%) than for the Experimental Group (12.5%). Both groups shared one positive view on the Bingo game – the game was ‘fun’ and ‘enjoyable’ and could help getting higher marks in dictation. One student in each group reflected the game was related to pronunciation. S10, S11 and S14 of the Experimental Group and none of the Placebo Group specified the game was related to learning spelling. S2, S7 and S9 of the Placebo Group and S17 of the Experimental Group specified the game was related to learning phonics. S6 of the Placebo Group pointed out although she was happy because she could play the game but the Bingo game had no meaning.

Results from Q8 show, in view of students’ perceived motivation in terms of affect or views on the Bingo game, there is a difference between groups: a relatively bigger positive view was noted for the Experimental Group than for the Placebo Group.
4.3.1.9 Q9 ‘Do you think the Bingo game helps improve your dictation result?

And why?

Q9 was asked at Interview 3. Q9 reflects, from the students’ perspective, the effect of the Bingo game on dictation. Table 38 below shows the views on the Bingo game in relation to dictation as indicated by the Experimental Group and the Placebo Group.

Table 38. Views on Bingo game in relation to dictation between groups.

<table>
<thead>
<tr>
<th>Views on the Bingo game in relation to dictation</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>8 (100%) Feedback provided at Interview 3</td>
<td>7 (77.8%) Feedback provided at Interview 3</td>
</tr>
<tr>
<td></td>
<td>S10 ‘because I can get 100 marks’ (line 66);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S11 ‘learned how to spell words in the game’ (line 66);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S12 ‘can remember the vocabulary’ (line 82);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S13 'bingo game is not only fun but also help English dictation’ (line 76); [by] learning more English’ (line 78);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S14 'help me spell many words’ (line 106);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S15 'because the game is about spelling’ (line 78);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S17 'can help ... separate the words so that I can remember easily' (line 87);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S18 'I can look for letters in a shorter time' (line 97)</td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>0 (0%)</td>
<td>1 (11.1%) Feedback provided at Interview 3</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>S8 ‘no’ (line 68) because the game just wants you to have fun’ (line 70)</td>
</tr>
<tr>
<td>Not known</td>
<td>0 (0%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>S3 ‘so so’ (line 70);</td>
</tr>
</tbody>
</table>
Table 38 shows 100% of the Experimental Group perceived that Bingo helped improve dictation results, compared with the 77.8% of the Placebo Group. All 8 students of the Experimental Group could explain and relate the game to some academic aspects including spelling and remembering vocabulary. S1, S2 and S5 of the Placebo Group indicated a positive view on the bingo game in relation to dictation but could not explain. S6, S7 and S9 of the Placebo Group indicated a positive view and explained the game was either related to phonics, words or spelling. S8 of the Placebo Group indicated a negative view by explaining that the game was just for fun.

Results from Q9 show, in view of the effect of the Bingo game on dictation as perceived by students, there is a small difference between groups: the Experimental Group reflected a relatively bigger positive effect than the Placebo Group. Caution is needed when interpreting the finding because the slight difference is attributable to one interviewee.

4.3.1.10 Q10 ‘Do you think phonics helps improve dictation results? And why? Q10 was asked at Interview 3. Q10 reflects, from the students’ perspective, the
effect of phonics on dictation. Table 39 shows the views on phonics in relation to dictation as indicated by the Experimental Group and the Placebo Group.

Table 39. Views on phonics in relation to dictation between groups.

<table>
<thead>
<tr>
<th>Views on phonics in relation to dictation</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of students (%)</td>
<td>Feedback provided at Interview 3</td>
</tr>
<tr>
<td>Positive</td>
<td>7 (87.5%)</td>
<td>S12 ‘yes’ (line 42), ‘I will know more [words]’ (line 44); S13 ‘yes’ (line 58), ‘a little bit’ (line 62); S14 ‘phonics … help us to pronounce’ (line 54); S15 ‘phonics [helps]’ (line 84); S17 ‘help you spell words and spell it faster’ (line 85); S18 ‘during English dictation ... if you don’t know a word, you can try to spell the word with the help of phonics’ (line 55)</td>
</tr>
<tr>
<td>Negative</td>
<td>1 (12.5%)</td>
<td>S10 ‘no’ (line 34), ‘I don’t know [why]’ (line 36); S11 ‘no [relation]’ (line 33)</td>
</tr>
<tr>
<td>Not known</td>
<td>0 (0%)</td>
<td>/</td>
</tr>
</tbody>
</table>

Table 39 shows 100% of the Place Group perceived that phonics helped improve dictation results, compared to the 87.5% of the Experimental Group. S1, S6, S7 and S9 of the Placebo Group did not or could not explain how phonics helped and
S2, S3, S4, S5 and S8 explained phonics helped in terms of spelling, memory and pronunciation. Similar views were provided by S11, S14, S17 and S18 of the Experimental Group. S13 and S15 could not explain and S10 indicated a negative view but did not explain.

Results from Q10 show, in view of the effect of phonics on dictation as perceived by students, there is a small difference between groups: the Placebo Group reflected a relatively bigger positive effect than the Experimental Group.

4.3.1.11 Summary of findings for the Experimental Group (S10 – S18)

Below is a summary of findings for the Experimental Group in view of the change in students’ motivation in learning English after Letter Bingo:

(i) in terms of desire for learning English – 37.5% had a positive change and 62.5% had no change,

(ii) in terms of strategies – 62.5% had change and 37.5% had no change,

(iii) in terms of affect/view on spelling – 87.5% had a positive change and 12.5% had a negative change,
(iv) in terms of affect/view on phonics – 62.5% had a positive view and 25% had an ambivalent,

(v) in terms of self-concept – 50% had a positive change and 37.5% had a change of that is ‘not known’,

(vi) in terms of effort expended on learning – 50% had a positive change and 25% had a change of ‘not known’.

(vii) In terms of affect/view on the Bingo game – 87.5% had a positive view and 12.5% had an ambivalent view.

Findings in (i) – (vii) show, for the Experimental Group, except in terms of desire for learning English, positive change in various aspects with regard to perceived motivation ranged from 50% – 87.5%. Findings initially support there is a positive change in perceived motivation in learning English for the Experimental Group after treatment.

Also for the Experimental Group, in view of the effect of the Bingo game on dictation, 100% had a positive view while in view of the effect of phonics on dictation, 87.5% had a positive view and 12.5% had a negative view. Findings
therefore show, as perceived by the Experimental Group, the Bingo game and phonics have a positive effect on dictation.

4.3.1.12 Summary of findings for the Placebo Group (S1 – S9)

Below is a summary of findings for the Placebo Group in view of the change in students’ motivation in learning English after Letter Bingo:

(i) in terms of desire for learning English – 44.4% had a positive change and 55.6% had no change,

(ii) in terms of strategies – 66.7% had change and 22.3% had no change,

(iii) in terms of affect/view on spelling – 22.2% had a positive change, 33.3% had no change and 44.4% had change of ‘not known’,

(iv) in terms of affect/view on phonics – 55.6% had a positive view and 33.3% had an ambivalent view,

(v) in terms of self-concept – 33.3% had a positive change, 11.1% had a change of ‘not known’ and 44.4% remained unchanged,

(vi) in terms of effort expended on learning – 0% had a positive change, 11.1% had a change of ‘not known’ and 77.8% remained unchanged,
(vii) In terms of affect/view on the Bingo game – 55.6% had a positive view and 44.4% had an ambivalent view.

Findings in (i) – (vii) show, for the Placebo Group, except in terms of strategies, positive change in various aspects with regard to perceived motivation ranged from close to 50% or below. Findings also show in 3 out of 7 aspects, the percentage of ‘no change’ was 44.4% or above. Findings initially show there is no positive change in perceived motivation in learning English for the Placebo Group after treatment.

Also for the Placebo Group, in view of the effect of the Bingo game on dictation, 77.8% had a positive view while in view of the effect of phonics on dictation, 100% had a positive view. Findings therefore show, as perceived by the Placebo Group, the Bingo game and phonics have a positive effect on dictation.

Findings also show, when comparing the difference between groups, in terms of students’ view on spelling and time spent in preparing for dictation, the Experimental Group showed an evidently more positive change than the Placebo
Group and in terms of view on dictation and on Letter Bingo game, the Experimental Group showed a relatively more positive change.

To answer Research Question 3: initial findings show there is a difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment; from the perspective of students, the Experimental Group demonstrated a more positive change in perceived motivation than the Placebo Group.

4.3.2 Interviews with parents

Qualitative data collected by interviewing parents and teachers were to cross-reference the data drawn on interviewing students with regard to students’ motivation in learning English and to supplement the quantitative data collected by dictation scores which were used to assess students’ academic performance in spelling. Table 40 below presents the questions for parents in relation to students’ motivation and academic performance. However, due to the small sample size, caution is needed when interpreting the findings of this study.
Table 40. Interview questions for parents.

<table>
<thead>
<tr>
<th>Q</th>
<th>Question</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Does your child speak/use any English at home?</td>
<td>background</td>
</tr>
<tr>
<td>12</td>
<td>Has your child received any additional tutoring for English between Dictation 1 and Dictation 5?</td>
<td>background</td>
</tr>
<tr>
<td>13</td>
<td>How do you find your child’s performance in spelling?</td>
<td>overall performance</td>
</tr>
<tr>
<td>14</td>
<td>How do you find your child’s performance in phonics?</td>
<td>overall performance</td>
</tr>
<tr>
<td>15</td>
<td>How do you find your child’s performance in English dictation?</td>
<td>academic performance</td>
</tr>
<tr>
<td>16</td>
<td>How does your child prepare for English dictation?</td>
<td>motivation – choices of action / strategies</td>
</tr>
<tr>
<td>17</td>
<td>How long does your child take to prepare for English dictation?</td>
<td>motivation – effort expended on learning</td>
</tr>
<tr>
<td>18</td>
<td>What did your child say about the Bingo class?</td>
<td>motivation - affect</td>
</tr>
<tr>
<td>19</td>
<td>Do you think the bingo game helps your child in English dictation? And how?</td>
<td>the effect</td>
</tr>
<tr>
<td>20</td>
<td>Do you think phonics helps your child in English dictation? And how?</td>
<td>the effect</td>
</tr>
</tbody>
</table>

4.3.2.1 Q11 ‘Does your child speak/use English at home?’

Q11 was asked at Interview 1 and Q11 was to confirm that students learnt English as L2. Results show all parents for the Experimental and Placebo Groups reflected their child did not speak or use English at home.

4.3.2.2 Q12 ‘Has your child received any additional tutoring for English between Dictation 1 and Dictation 5?’

Q12 was asked at Interview 3 and Q12 was to confirm if student received additional tutoring for English between Dictation 1 and Dictation 5. All parents for the Experimental Group confirmed their child had not received additional
tutoring for English during the period. For the Placebo Group, P4, P5, P6 and P9 confirmed their child had received additional tutoring and the rest had not received any.

4.3.2.3 Q13 ‘How do you find your child’s performance in spelling?’

Q13 was asked at Interviews 1, 2 and 3 and Q13 reflects the change in students’ spelling performance as perceived by parents. Table 41 and Table 42 show respectively parents’ comments on their child’s spelling performance for the Experimental Group and the Placebo Group.

| Table 41. Parents' view on child’s spelling performance for the Experimental Group. |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                                  | Before Bingo (Interview 1)       | During Bingo (Interview 2)       | After Bingo (Interview 3)        |
|                                  | comments                         | comments                         | comments                         |
| n=8                              |                                  |                                  |                                  |
| P10                              | ‘it’s difficult to memorize’ (line 66), ‘sometimes she looks puzzled’ (line 68) | ’a bit better’ (line 48), ‘she knows...how to spell sometimes’ (line 50) | ‘better than before’ (line 4), ‘she knows how to spell’ (line 6), ‘remember short words’ (line 8) |
|                                  | positive change                  |                                  |                                  |
| P11                              | ‘she could only spell right after revision’ (line 38), ‘because she couldn’t retain them [the words] for long’ (line 58) | ’no difference’ (line 6), ’last time, she had to spell 'New Territories’ ...she still recalled it as a whole instead of breaking it down’ (line 48) | ‘no big difference. She still doesn’t know how to break the words down’ (line 5) |
|                                  | no change                        |                                  |                                  |

309
Table 41 (cont’d).

<table>
<thead>
<tr>
<th>P12</th>
<th>‘his performance is okay’ (line 4), ‘he is very clever and has a good memory’ (line 16), ‘he remembers the vocabulary but may not remember the sentence’ (line 30)</th>
<th>his English is not bad (line 14)</th>
<th>‘he should be cleverer’ (line 22)</th>
<th>not known</th>
</tr>
</thead>
<tbody>
<tr>
<td>P13</td>
<td>‘of course not good’ (line 168)</td>
<td>‘I really [don’t know]’ (line 56)</td>
<td>‘I don’t’ know because I didn’t revise with him. I just heard him saying … it’s easy to remember’ (line 13)</td>
<td>not known</td>
</tr>
<tr>
<td>P14</td>
<td>‘it is okay because S14 responses quickly’ (line 20)</td>
<td>‘her performance in spelling has improved a lot’ (line 18), ‘maybe spelling …. is easier for her now’ (line 34)</td>
<td>‘actually, the difference is quite big’ (line 12), ‘yes [spell faster]’ (line 28)</td>
<td>positive change</td>
</tr>
<tr>
<td>P15</td>
<td>‘his memory is not very good’ (line 20), but ‘he doesn’t have any difficulty’ (line 22)</td>
<td>‘I find that he knows [better]’ (line 24), ‘he can now teach me after the lesson’ (line 32)</td>
<td>‘he didn’t know how to pronounce the words before. He knows more words now and knows how to pronounce them’ (line 7)</td>
<td>positive change</td>
</tr>
<tr>
<td>P17</td>
<td>‘she’s quite fond of spelling … but when she comes across some vocabulary which are more complicated and longer, she will be afraid… she’ll take a longer time to memorize the words’ (line 108)</td>
<td>‘very good’ (line 6), ‘she does ask me [for help] less frequently’ (line 78)</td>
<td>‘a little bit better’ (line 5), ‘do not need me to prepare dictation with her’ (line 6)</td>
<td>positive change</td>
</tr>
<tr>
<td>P18</td>
<td>‘it should be okay’ (line 66), ‘he doesn’t say the words are difficult’ (line 70), ‘he doesn’t’ have great interest [in spelling]’ (line 142)</td>
<td>‘probably improved’ (line 16), ‘sometimes he spells English words. I think he spells them faster now’ (line 20)</td>
<td>‘I think now it is easier for him to remember the words after spelling a few times’ (line 12), ‘he won’t learn by rote, will spell’ (line 14), ‘I think he is now becoming more motivated’ (line 20)</td>
<td>positive change</td>
</tr>
</tbody>
</table>
Table 42. Parents’ view on child’s spelling performance for the Placebo Group.

<table>
<thead>
<tr>
<th>n=9</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in spelling performance (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>‘does not pay attention … does not remember, … easily distracted by others’ (line 16), ‘have a little bit of difficulty’ (line 35)</td>
<td>‘a little bit better’ (line 10), ‘he is not focused enough … often distracted by other things’ (line 40)</td>
<td>‘a little improvement’ (line 10), ‘I think that his memory becomes better’ (line 16)</td>
<td>positive change</td>
</tr>
<tr>
<td>P2</td>
<td>‘absolutely unacceptable … he doesn’t spell most of them’ (line 12), ‘he’s good at memorizing meanings, but poor at memorizing English spelling… very poor’ (line 18), ‘he actually forgets the spelling of words like ‘one’, ‘two’, ‘three’ ’ (line 42)</td>
<td>‘same as before’ (line 6)</td>
<td>‘about the same [as before]’ (line 6)</td>
<td>no change</td>
</tr>
<tr>
<td>P3</td>
<td>‘very difficult for her … she, perhaps spells a word ten times… she forgets everything’ (line 12), ‘lazy but at the same time, likes to play’ (line 20)</td>
<td>has shown a little bit improvement’ (line 12)</td>
<td>‘a little progress, but she always forgets what she learnt after class’ (line 4)</td>
<td>positive change</td>
</tr>
<tr>
<td>P4</td>
<td>‘average’ (line 16), ‘sometimes she knows how to spell … when she knows how to pronounce the word’ (line 14)</td>
<td>‘I can’t see any difference’ (line 12)</td>
<td>‘no difference’ (line 4), ‘no progress’ (line 6)</td>
<td>no change</td>
</tr>
<tr>
<td>P5</td>
<td>‘I seldom pay attention to her English [performance]’ (line 12), ‘she’s ok in English spelling’ (line 16)</td>
<td>pretty much the same as before’ (line 10)</td>
<td>‘I don’t pay much attention to [her spelling] at all’ (line 6), ‘she does have some improvement, but just a little bit’ (line 8)</td>
<td>not known</td>
</tr>
</tbody>
</table>
Both groups shared similar positive changes in spelling performance as reflected by parents; changes mainly covered cognitive aspects such as the ability to remember (P1, P10, P18), the ability to spell and pronounce (P6, P10, P14, P15, P18) and motivational aspects (P7, P17, P18). Table 43 below shows the change in students’ spelling performance as reflected by parents between groups. The Experimental Group had a positive change of 62.5% while the Placebo Group had
44.4%. The Placebo Group had a ‘no change’ of 44.4% while the Experimental Group had 12.5%.

Results from Q13 therefore show, from the parents’ perspectives, there is a small difference in motivation between groups after treatment: the Experimental Group had a relatively more positive change in spelling performance than the Placebo Group. However, it is noted the difference is attributable to one interviewee thus caution is needed when interpreting the results.

4.3.2.4 Q14 ‘How do you find your child’s performance in phonics?’

Q14 was asked at Interviews 2 and 3 because phonics drilling only began after Interview 1. Q14 reflects students’ performance in phonics from parents’ perspectives. Tables 44 and 45 show the parents’ comments on their child’s performance in phonics for the Experimental Group and the Placebo Group.
<table>
<thead>
<tr>
<th></th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in phonics performance (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P10</td>
<td>'she still couldn’t grasp it’ (line 22), 'yes [she learns by rote]' (line 26)</td>
<td>'no big difference' (line 12)</td>
<td>positive change</td>
</tr>
<tr>
<td>P11</td>
<td>'she still couldn’t grasp it’ (line 22), 'yes [she learns by rote]' (line 26)</td>
<td>'no big difference' (line 12)</td>
<td>no change</td>
</tr>
<tr>
<td>P12</td>
<td>'we seldom talk about this’ (line 46)</td>
<td>no answer</td>
<td>not known</td>
</tr>
<tr>
<td>P13</td>
<td>'probably [helps in dictation]' (line 48) 'because … have checked her performance in dictation’ (line 50)</td>
<td>'I didn't keep an eye on her phonics’ (line 32)</td>
<td>not known</td>
</tr>
<tr>
<td>P14</td>
<td>'he knows how to divide [words] into different parts with lines’ (line 40)</td>
<td>'he used to learn the words by rote before and now he knows how to break them down and spell them' (line 11)</td>
<td>positive change</td>
</tr>
<tr>
<td>P15</td>
<td>'she would draw line’ (line 62) 'not very often [before] …now she becomes more skilful …no need to ask me’ (line 68)</td>
<td>'I don’t know’ (line 9)</td>
<td>not known</td>
</tr>
<tr>
<td>P17</td>
<td>'I think he is now more confident in reading English’ (line 30)</td>
<td>'yes [he tried to underline the word and break them down into small bits]’ (line 28), 'he seldom did this before' (line 30)</td>
<td>positive change</td>
</tr>
</tbody>
</table>
For the Experimental Group, positive changes were related to the breaking down of words (P15, P18) while for the Placebo Group, positive changes were related to

<table>
<thead>
<tr>
<th>n=9</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in phonics performance (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>'still poor' (line 18)</td>
<td>'it seems that his phonics skills got no improvement at all' (line 22)</td>
<td>no change</td>
</tr>
<tr>
<td>P2</td>
<td>'same as before' (line 12)</td>
<td>'no improvement in phonics' (line 10)</td>
<td>no change</td>
</tr>
<tr>
<td>P3</td>
<td>'I can't tell if there's any difference' (line 14)</td>
<td>'slightly better. If you read her a word, she can tell whether it starts with the letter ‘a’ or ‘b’ (line 14)</td>
<td>positive change</td>
</tr>
<tr>
<td>P4</td>
<td>'she knows how to spell but doesn't know how to pronounce. Pronouncing the words seems more difficult for her' (line 16)</td>
<td>'no difference' (line 8)</td>
<td>no change</td>
</tr>
<tr>
<td>P5</td>
<td>'it didn't change a lot' (line 14)</td>
<td>'it seems that her English has improved a little' (line 10)</td>
<td>positive change</td>
</tr>
<tr>
<td>P6</td>
<td>'pretty much the same as before' (line 14)</td>
<td>'could pronounce many words now' (line 13)</td>
<td>positive change</td>
</tr>
<tr>
<td>P7</td>
<td>'can remember the spellings of words quickly when I revise dictation with him' (line 16)</td>
<td>'slightly better than before' (line 12)</td>
<td>positive change</td>
</tr>
<tr>
<td>P8</td>
<td>'that's average' (line 16)</td>
<td>'not much improvement' (line 10)</td>
<td>no change</td>
</tr>
<tr>
<td>P9</td>
<td>'I can only tell that he can now spell words with less difficulty… like this morning… the word 'drinking' … he could spell the whole word' (line 14)</td>
<td>'no big difference' (line 12)</td>
<td>no change</td>
</tr>
</tbody>
</table>
pronunciation (P3, P6). Table 46 below shows the change in phonics performance as perceived by parents between groups. The Placebo Group had a positive change of 44.4% and ‘no change’ of 55.6% while the Experimental Group had a positive change of 37.5% and 12.5% had ‘no change’. Change ‘not known’ for the Experimental Group was 50% while there was none for the Placebo Group.

<table>
<thead>
<tr>
<th>Change in phonics skills</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>3 (37.5%)</td>
<td>4 (44.4%)</td>
</tr>
<tr>
<td>Negative change</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No change</td>
<td>1 (12.5%)</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>4 (50%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Results from Q14 therefore show, from parents’ perspectives, there is a small difference between groups after treatment: the Placebo Group had a slightly bigger positive change in phonics performance and had a relatively higher percentage of ‘no change’ than the Experimental Group.
4.3.2.5 Q15 ‘How do you find your child’s performance in English dictation?’

Q14 was asked at Interviews 1, 2 and 3. Q14 reflects the students’ academic performance in English dictation from parents’ perspectives. Table 47 and Table 48 show respectively parents’ comments on their child’s performance in English dictation for the Experimental Group and the Placebo Group.

### Table 47. Parents’ view on child’s dictation results for the Experimental Group.

<table>
<thead>
<tr>
<th></th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in dictation results (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P10</td>
<td>‘about average’ (line 32), ‘I think she doesn’t know all [the words]’ (line 36), ‘about forty, thirty marks’ (line 54)</td>
<td>‘I really don’t know it’ (line 40), ‘not very good’ (line 42)</td>
<td>‘I don’t know’ (line 22), ‘she does not let me look at it’ (line 16)</td>
<td>not known</td>
</tr>
<tr>
<td>P11</td>
<td>‘she’s fine in managing her dictation or exam’ (line 64)</td>
<td>‘actually her marks have always been quite good’ (line 30)</td>
<td>‘her result has shown a little improvement but not very obvious’ (line 14)</td>
<td>no change</td>
</tr>
<tr>
<td>P12</td>
<td>‘The English dictation result is about the same every time… always gets full marks’ (line 4)</td>
<td>‘I don’t know. His father signs (the dictation book)’ (line 26)</td>
<td>‘I don’t know his result yet’ (line 4), ‘because his father signs it, he may get 100 marks’ (line 14)</td>
<td>not known</td>
</tr>
</tbody>
</table>
Table 47 (cont’d).

<table>
<thead>
<tr>
<th></th>
<th>'his English is good enough' (line 54), ‘for dictation, at least …’ (line 58), ‘more than ninety-something’ (line 60), ‘it’s good enough, as no one helps him’ (line 72)</th>
<th>‘sure there is [difference]’ (line 32), ‘around eighty to ninety marks [before]’ (line 34), ‘[last time] he got 103 marks’ (line 36)</th>
<th>‘he hasn’t had any dictation recently’ (line 17)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P13</td>
<td></td>
<td></td>
<td></td>
<td>not known</td>
</tr>
<tr>
<td>P14</td>
<td>‘she is confident and she always says that she is smart’ (line 40)</td>
<td>‘no [difference]’ (line 26)</td>
<td>‘yes [maintained good scores], the scores are quite good’ (line 50)</td>
<td>no change</td>
</tr>
<tr>
<td>P15</td>
<td>‘he is pretty confident … he takes every dictation very seriously. He said he wants to get full marks’ (line 42)</td>
<td>‘there isn’t any obvious difference because he always gets full marks’ (line 66)</td>
<td>‘he always gets high marks’ (line 17), ‘takes shorter time’ (line 19)</td>
<td>no change</td>
</tr>
<tr>
<td>P17</td>
<td>‘in general … more than ninety marks on average’ (line 70), ‘it’s quite satisfactory’ (line 76)</td>
<td>‘almost same as before’ (line 40)</td>
<td>‘this time I don’t know the result yet’ (line 22), ‘probably better’ (line 24)</td>
<td>not known</td>
</tr>
<tr>
<td>P18</td>
<td>‘seems quite good … can score ninety-something or above’ (line 82)</td>
<td>‘there isn’t any big difference’ (line 24)</td>
<td>‘the performance is quite satisfactory’ (line 34), ‘but the results had no significant improvement, just a few marks’ difference’ (line 43)</td>
<td>no change</td>
</tr>
</tbody>
</table>
Table 48. Parents' view on child's dictation results for the Placebo Group.

<table>
<thead>
<tr>
<th>n=9</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in dictation results (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>'very bad' (line 42), 'because he doesn’t have enough time. He does not pay attention when revising. He said very tired …' (line 46)</td>
<td>'better, a little bit better' (line 24), 'before was worse … but now he can memorize, memorize some' (line 26)</td>
<td>'also very bad, bad' (line 24), 'a little improvement! A little bit better!' (line 26)</td>
<td>positive change</td>
</tr>
<tr>
<td>P2</td>
<td>very poor' (line 36), 'always fail' (line 38)</td>
<td>always fail' (line 16), 'no [difference]' (line 19)</td>
<td>'no big improvement' (line 14), 'slightly better maybe' (line 16)</td>
<td>not known</td>
</tr>
<tr>
<td>P3</td>
<td>'most of them failed … because she didn’t remember the vocabulary’ (line 34)</td>
<td>'not a big difference' (line 20)</td>
<td>'slightly better' (line 20), 'still failed’ (line 30), 'but now, marks were not the same … slightly better now’ (line 32)</td>
<td>positive change</td>
</tr>
<tr>
<td>P4</td>
<td>'she's ok’(line 28)</td>
<td>'there's no difference. She has always been performing quite alright in dictation… but she doesn't know how to pronounce the words' (line 22)</td>
<td>'her English dictation is okay always, no difference after joining the bingo class’ (line 12)</td>
<td>no change</td>
</tr>
<tr>
<td>P5</td>
<td>'average only’ (line 30)</td>
<td>'same as usual' (line 16)</td>
<td>'about the same' (line 16)</td>
<td>no change</td>
</tr>
<tr>
<td>P6</td>
<td>'at least 90 marks. Sometimes 100 and something. Sometimes 110’(line 27)</td>
<td>'her marks were pretty much the same as before' (line 18)</td>
<td>'it is almost the same' (line 17)</td>
<td>no change</td>
</tr>
<tr>
<td>P7</td>
<td>'he would forget [the spelling] very quickly’ (line 20)</td>
<td>'he still fails but his marks are higher than before' (line 18)</td>
<td>'English dictation! Average.' (line 16)</td>
<td>not known</td>
</tr>
<tr>
<td>P8</td>
<td>'she always gets an ‘A ’ for English dictation’ (line 58)</td>
<td>'is pretty much the same' (line 20)</td>
<td>'just like before’(line 18)</td>
<td>no change</td>
</tr>
<tr>
<td>P9</td>
<td>'he is quite self-motivated [in terms of dictation]'(line 18)</td>
<td>'I didn't notice a big change because his performance has been quite satisfactory before’ (line 16)</td>
<td>'I think it is ok’ (line 14), 'no big difference' (line 16),'his marks have dropped’ (line 41)</td>
<td>negative change</td>
</tr>
</tbody>
</table>
No positive change in dictation results was noted for the Experimental Group. For the Placebo Group, P1 and P3 indicated a slight improvement in dictation results.

Table 49 below shows the change in dictation results as indicated by parents between groups.

<table>
<thead>
<tr>
<th>Change in dictation results</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>0 (0%)</td>
<td>2 (22.2%)</td>
</tr>
<tr>
<td>Negative change</td>
<td>0 (0%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>No change</td>
<td>4 (50%)</td>
<td>4 (44.4%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>4 (50%)</td>
<td>2 (22.2%)</td>
</tr>
</tbody>
</table>

Results from Q15 show, from parents’ perception, there is difference between groups after treatment: the Placebo Group had a relatively bigger positive change than the Experimental Group after treatment. P9 of the Placebo Group indicated a negative change in dictation results.

4.3.2.6 Q16 ‘How does your child prepare for English dictation?’

Q16 was asked at Interviews 1, 2 and 3. Q16 reflects, from the parents’ perspectives, students’ motivation in terms of strategies including whether the
students were self-reliant or sought others’ help when revising and whether the students learnt by rote or by other ways such as breaking words into parts. Table 50 and Table 51 show respectively the parents’ comments on how their child prepared for English dictation for the Experimental Group and the Placebo Group.

| Table 50. Strategies employed by the Experimental Group as indicated by parents. |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                                  | Before Bingo (Interview 1)      | During Bingo (Interview 2)       | After Bingo (Interview 3)        | Change in strategies |
|                                  | comments                        | comments                        | comments                        | (Yes / No / Not known) |
| P10                              | 'she studies on her own' (line 29) | 'by rote-learning' (line 54)     | 'study on her own' (line 24)     | no change            |
|                                  | 'I [father] read out for her … she spells' (line 87), 'spells it again' (line 89) | 'I myself, would break down the words and read to her, to help her spell' (line 28) | 'no [difference than before] … every time I revise with her the day before the dictation’ (line 19) | no change            |
| P11                              | 'I do not spend too much time to revise with him' (line 6), 'he would say, 'mum, you say the picture! And he can spell all the words’ (line 18), 'he will do it bit by bit. Study ten words today and … The next day’ (line 24), 'divide it into several days' (line 26) | no answer                        | 'he studies it once and dictates it by himself’ does not need me to study with him. He is quite self-motivated' (line 36) | no change            |
| P12                              | 'revise by himself’ (line 48), 'I often see him using the i-pen’ (line 300), 'it looks like a pen, when you press it, it pronounces the words’ (line 306) | he does it by himself' (line 26) | 'by himself… I do not study with him' (line 11) | no change            |

321
Table 50 (cont’d)/

<p>| P14 | 'her elder sister reads to her in English and I write in Chinese. I say the word in Cantonese and she writes in English’ (line 18), ‘if she writes a word wrong, she needs to write that word ten times’ (line 35) | 'I don’t have to help her revise for a few times. I just help her one or two times and then she’ll pick it up by herself’ (line 60) | 'In the past, I need to revise with her three to four times … now … she just needs to revise one or two times’ (line 16), ‘yes [seek less help from sister]’ (line 86) | positive change |
| P15 | ‘he would read them aloud.. he would memorize them this way… he relies on this… because he knows he’s not doing very well in his dictation. He also needs to memorize them bit by bit until he could fully memorize them.’ (line 28), with mother’s help (line 32) | ‘when revising… dictation.. He copies the words every time.. He does the same thing.. Copy the words’ (line 58) | ‘he used to learn the words by rote before and now he knows how to break them down and spell them’ (line 11), ‘takes shorter time… He remembers the passage now when I revise it with him’ (line 19) | positive change |
| P17 | ‘It’s me most of the time’ (line 34), ‘after I have got the dictation content, I will start helping her in revision’ (line 38), ‘if she is not familiar with the spellings, she will write them down’ (line 54), ‘I’ll split the words into small units… it can help her memorize better’ (line 112), ‘she splits the words up [herself] most of the times’ (line 124) | ‘same as before’ (line 48) | ‘she doesn’t need me to prepare dictation with her at all’ (line 26) | positive change |
| P18 | ‘for dictation, spelling … he reads out loud, spells and dictates’ (line 76), ‘he revises by himself first. He will ask his brother to see if they are free to read the words for him to spell’ (line 88) | [ask brother for help] not at the moment. Only when he doesn’t pronounce a word’ (line 38) | ‘in the past, when there was a dictation, he felt that dictation and copying were difficult for him’ (line 39), ‘and now I think he could handle it more easily’ (line 41), ‘his brother is very busy now’ (line 65), ‘he is feeling confident himself’ (line 67), ‘he is now more motivated’ (line 69) | positive change |</p>
<table>
<thead>
<tr>
<th>n=9</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in strategies (Yes / No / Not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>with mother’s help (line 40)</td>
<td>‘he studies by himself, I test him to see whether he learns it well. He studies on his own’ (line 32)</td>
<td>‘he did it by himself’ (line 34), no change</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>‘I request him… to write it down’ (line 26), ‘I help him’ (line 32)</td>
<td>‘spell and write’ (line 21)</td>
<td>‘copy the words’ (line 18), with mother’s help (line 28), no change</td>
<td></td>
</tr>
<tr>
<td>P3</td>
<td>‘she said her teacher helped her’ (line 32)</td>
<td>‘me [who helps him]’ (line 24)</td>
<td>‘she said she copied them’ (line 26), ‘not much difference [than before]’ (line 28), no change</td>
<td></td>
</tr>
<tr>
<td>P4</td>
<td>‘if she doesn’t know that word, ask her to check the dictionary’ (line 22), revision with mother’s help (line 26)</td>
<td>‘she usually revises by herself. Sometimes she uses the computer and reads along’ (line 24)</td>
<td>‘she studies by herself and pays attention … if she finds something that she doesn’t understand, she will ask mother or brother’ (line 16), no change</td>
<td></td>
</tr>
<tr>
<td>P5</td>
<td>‘by herself’ (line 24), ‘the sisters themselves study together and help each other’ (line 26)</td>
<td>‘she revises by herself’ (line 20)</td>
<td>‘by herself’ (line 18), no change</td>
<td></td>
</tr>
<tr>
<td>P6</td>
<td>‘sisters help each other’ (line 20)</td>
<td>‘she revises by herself’ (line 20)</td>
<td>‘[by] herself’ (line 21), no change</td>
<td></td>
</tr>
<tr>
<td>P7</td>
<td>‘I will ask him the pictures and he dictates’ (line 28), sometimes ‘his brother or himself’ (line 35)</td>
<td>‘asks me to read out for him’ (line 20)</td>
<td>‘he said teacher revised with him at school’ (line 20), not known</td>
<td></td>
</tr>
<tr>
<td>P8</td>
<td>‘sometimes she uses the computer. Because her school has a self-learning website, she can go there and check the pronunciation and dictate by herself’ (line 36), ‘I say the word in Chinese and she writes the English one’ (line 50)</td>
<td>‘most of the times is me, I read (it out) and she writes’ (line 28)</td>
<td>‘I ask her in Chinese and she writes in English’ (line 20), no change</td>
<td></td>
</tr>
<tr>
<td>P9</td>
<td>‘I don’t know clearly what method he uses during his revision’ (line 12), ‘he usually takes the initiative to do the revision’ (line 14), ‘I help him during revision after school’ (line 16)</td>
<td>‘he just glances through it and then spells…I haven’t noticed how he does his revision’ (line 22)</td>
<td>‘he only spells the words. I don’t know how he prepared for dictation. I didn’t know much about it’ (line 17), ‘I did not revise with him’ (line 23), ‘he did it at school…tutorial class’ (line 25), not known</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Strategies employed by the Placebo Group as indicated by parents.
For the Experimental Group, changes include students being more independent when preparing for dictation; some students changed from relying on parents’ or siblings’ assistance to revising by themselves while others changed to seeking less assistance. For the Placebo Group, there was either no change in strategy or change was not known. Table 52 below shows the change in strategy as indicated by parents between groups.

<table>
<thead>
<tr>
<th>Change in strategies</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change</td>
<td>4 (50%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No change</td>
<td>4 (50%)</td>
<td>7 (77.8%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>0 (0%)</td>
<td>2 (22.2%)</td>
</tr>
</tbody>
</table>

Results from Q16 show, in terms of choice of action or strategy, results from parents’ perspective, there is a difference between groups after treatment: the Experimental Group demonstrated more change than the Placebo Group while a relatively higher percentage of the Placebo Group demonstrated no change than the Experimental Group.
4.3.2.7 Q17 ‘How long does your child take to prepare for English dictation?’

Q17 was asked at Interviews 1, 2 and 3. Q17 reflects, from the parents’ perspectives, students’ motivation in terms of the effort expended on learning.

Table 53 and Table 54 show respectively the parents’ feedback on the time their child spent in preparing for English dictation for the Experimental Group and the Placebo Group.

| Table 53. Time spent in preparing for dictation as indicated by parents for the Experimental Group. |
|--------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| n=8                                              | Before Bingo (interview 1)                      | During Bingo (Interview 2)                       | After Bingo (Interview 3)                        | Change in time spent (positive change / negative change / no change / not known) |
| Comments                                         | Comments                                        | Comments                                        | Comments                                        |                                                                                  |
| P10                                              | 'about two hours’ (line 44)                    | no answer                                       | 'revise for a while’ (line 26), 'she didn’t revise before’ (line 28), 'she can remember it for a long time’ (line 30) | positive change                                                                  |
| P11                                              | 'about one hour’ (line 85)                     | 'no difference’ (line 12)                       | about half an hour’ (line 17), 'no [difference]' (line 19) | not known                                                                       |
| P12                                              | 'he will do it bit by bit [every day]’ (line 25), 'divide it into several days’ (line 26) | no answer                                       | 'yes [faster]’ (line 34 )                        | positive change                                                                  |
| P13                                              | 'he does all these by himself. I said ‘mum can’t help you, you have to do it by yourself’ (line 132) | no answer                                       |  'I don’t know because I didn’t revise with him’ (line 13) | not known                                                                       |
| P14                                              | 'Very fast. About 15 minutes. She’s fast ... She doesn’t take too much time’ (line 36) | 'a little bit faster probably’ (line 62), 'not so slow before’ (line 66) | 'I just think that she revises faster, and now she only needs to revise once or twice’ (line 32) | positive change                                                                  |
| P15                                              | 'about a while ... won’t take too long’ (line 36), 'every time before dictation, 2 to 3 days... I would … every night, help him to revise once’ (line 48) | 'when revising… he does the same thing …’ (line 58) | 'he needed to revise many times before but now one or two times is okay’ (line 13), 'revision time is shorter’ (line 25) | positive change                                                                  |
Table 53 (cont’d).

<table>
<thead>
<tr>
<th>Parent</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>P17</td>
<td>I’ll start helping her if I’m free… it will be harsh for her if we don’t start early’ (line 44), [revise] two or three … two times [before dictation’ (line 48)</td>
</tr>
<tr>
<td></td>
<td>‘in terms of time … I only know that she does not need me to study with her’ (line 34)</td>
</tr>
<tr>
<td>P18</td>
<td>‘[read] usually once or twice’ (line 90)</td>
</tr>
<tr>
<td></td>
<td>‘probably … shorter and he seems more confident now’ (line 28)</td>
</tr>
<tr>
<td></td>
<td>‘I think he is faster’ (line 57)</td>
</tr>
</tbody>
</table>

Table 54. Time spent in preparing for dictation as indicated by parents for the Placebo Group.

<table>
<thead>
<tr>
<th>Parent</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in time spent (positive change / negative change / no change / not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>‘half an hour’ (line 38)</td>
<td>‘within an hour’ (line 30)</td>
<td>‘he just prepared for about fifteen minutes’ (line 30)</td>
<td>positive change</td>
</tr>
<tr>
<td>P2</td>
<td>‘I request him to revise for one or two hours’ (line 26)</td>
<td>‘one hour’ (line 23)</td>
<td>‘just like before, no big difference’ (line 26)</td>
<td>no change</td>
</tr>
<tr>
<td>P3</td>
<td>‘seldom revise … time for revision is relatively little’ (line 28)</td>
<td>‘I don’t know how longs he revises at school’ (line 22)</td>
<td>no answer</td>
<td>not known</td>
</tr>
<tr>
<td>P4</td>
<td>‘she would have plenty of time on Saturday and Sunday’ (line 24)</td>
<td>‘it takes quite long, half an hour to an hour’ (line 26)</td>
<td>‘one hour’ (line 18)</td>
<td>no change</td>
</tr>
<tr>
<td>P5</td>
<td>‘if she takes it seriously… about half an hour. If she doesn’t, a bit longer’ (line 22)</td>
<td>‘sometimes she revises for a few hours but sometimes she revises for about half an hour’ (line 18)</td>
<td>‘it depends on how long the chapter is, but she usually finishes it very quickly’ (line 20), ‘it seems a little quicker than before’ (line 22)</td>
<td>positive change</td>
</tr>
<tr>
<td>P6</td>
<td>‘half an hour to one hour … most often, she could handle it within half an hour’ (line 17)</td>
<td>‘she can finish it in about half an hour’ (line 20)</td>
<td>‘it depends’ (line 23), ‘no difference’, but her spelling is better’ (line 25)</td>
<td>no change</td>
</tr>
<tr>
<td>P7</td>
<td>‘it was quite fast. He remembers them very fast… but .. when you ask him to dictate again, he wouldn’t remember anything.’ (line 30)</td>
<td>‘about an hour’ (line 22)</td>
<td>‘he said he revised at school so there is no need to study again at home’ (line 22)</td>
<td>not known</td>
</tr>
</tbody>
</table>
Table 55 below summarizes the change in time spent in preparing for dictation as indicated by parents between groups. The positive change for the Experimental Group (62.5%) is relatively bigger than that for the Placebo Group (33.3%). No group had a negative change in time spent. The Placebo Group demonstrated a higher percentage of no change than the Experimental Group. The change being ‘not known’ for both groups is similar.

Table 55. Change in time spent in preparing for dictation as indicated by parents between groups.

<table>
<thead>
<tr>
<th>Change in time spent</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>5 (62.5%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Negative Change</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No change</td>
<td>0 (0%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>3 (37.5%)</td>
<td>3 (33.3%)</td>
</tr>
</tbody>
</table>
Results from Q17 show, from the parents’ perspectives, in view of students’ motivation in terms of the effort expended on learning, there is a difference between groups after treatment: the Experimental Group had a relatively bigger positive change than the Placebo Group.

4.3.2.8 Q18 ‘What did your child say about the Bingo class?’

Q18 was asked at Interview 3. Q18 reflects, from the parents’ perspective, students’ motivation in terms of affect. Table 56 shows the parents’ feedback on their child feelings towards the Bingo class between groups.
Table 56 shows 75% of the Experimental Group and 11.1% of the Placebo Group shared a positive view on the Bingo class. 25% of the Experimental Group and
88.9% of the Placebo Group shared view that was not known. No negative view was noted for either group. . 

Results from Q18 show, from parents’ perspective, in view of students’ motivation in terms of affect towards the Bingo class, the Experimental Group had a more positive view than the Placebo Group and most of the Placebo Group were indifferent towards the Bingo class.

4.3.2.9 Q19 ‘Do you think the Bingo game helps your child in English dictation? And how?’

Q19 was asked at Interview 3. Q19 reflects parents’ perspective on the effect of bingo on students’ English dictation. Table 57 below shows parents’ comments on the effect of the Bingo class between groups.
Table 57. Parents' view on Bingo class between groups.

| Parents’ view on bingo class | Experimental Group  
| (n=8) | Placebo Group  
| (n=9) |
|---|---|
| No. of students | Responses provided at Interview 3 | No. of students | Responses provided at Interview 3 |
| Positive | 6 (75%) | P11 ‘Better than none. I think it helps a lot’ (line 23), ‘it helps keep her interest in English’ (line 25); P12 ‘yes [different than before]’ (line 20), ‘he should be cleverer’ (line 22); P14 ‘I think bingo helps more’ (line 70); P15 ‘teach him how to spell... how to break the words down... how to pronounce the words’ (line 31); P17 ‘I think it helps’ (line 38), ‘it helps me’ (line 40); P18 ‘I think bingo class is quite good’ (line 75) | 6 (66.7%) | P1 ‘I think it is a bit helpful’ (line 36), ‘it helped him memorize the words, spell the words’ (line 38); P2 ‘the game [helps]’ (line 32), ‘he can remember it through games’ (line 34); P5 ‘I think games with fun would help’ (line 27); P6 ‘it helps her English’ (line 29); P7 ‘at least he is willing to read ‘ (line 10), ‘he is more interested in games’ (line 32); P9 ‘it may help’ (line 28) |
| Negative | 1 (12.5%) | P10 ‘I don’t think there is any help. Because there are only a few lessons and she may forget after a few months’ (line 32), ‘the period between each is long. One week one lesson is not enough.’ (line 34) | 1 (11.1%) | P4 ‘no, doesn’t help’ (line 24), ‘she revised in pretty much the same way at home’ (line 26) |
| Not known | 1 (12.5%) | P13 ‘I really don’t know’ (line 27) | 2 (22.2%) | P3 ‘sometimes after a week or two she didn’t remember what she has learnt’ (line 38); P8 ‘not much progress. Don’t know what she learnt in the class’ (line 30) |
Table 57 shows 75% of the Experimental Group and 66.7% of the Placebo Group shared a positive view on the effect of the bingo class on students’ English dictation and the positive views were similar – bingo class helps in motivating students (P7, P11) and in spelling (P1, P15). 12.5% of the Experimental Group and 22.2% of the Placebo Group shared view that was not known. About the same percentage for both groups shared a negative view.

Results from Q19 therefore show, from parents’ perspectives, the Experimental Group had a relatively more positive view than the Placebo Group on the effect of bingo class on English dictation.

4.3.2.10 Q20 ‘Do you think phonics helps your child in English dictation? And how?’

Q20 was asked at Interview 3. Q20 reflects parents’ perspectives on the effect of phonics on students’ English dictation and parents’ comments are shown in Table 58.
Table 58 shows 25% of the Experimental Group and 11.1% of the Placebo Group shared a positive view on the effect of phonics on students’ English dictation.

However, parents did not explain how they thought phonics helped dictation.

The percentage of those sharing view that was ‘not known’ was similar between groups. None shared a negative view between groups.

Results from Q20 show, form parents’ perspectives, the Experimental Group had a relatively more positive view than the Placebo Group on the effect of phonics on students’ English dictation.
4.3.2.11 Summary of findings for the Experimental Group (P10 – P18)

Below is a summary of findings for the Experimental Group, from parents’ perspectives, in view of the change in students’ motivation in learning English after Letter Bingo:

(i) in terms of strategies – 50% had a positive change and 50% had no change,

(ii) in terms of effort expended on learning – 62.5% had a positive change and 37.5% had a change of ‘not known,

(iii) in terms of affect/view on the Bingo class – 75% had a positive view and 12.5% had an ambivalent view.

As previously noted, data drawn on interviewing parents were to cross-reference the data drawn on interviewing students with regard to students’ motivation in learning English and to supplement the quantitative data collected by dictation scores which were used to assess students’ academic performance in spelling.

Findings (i) – (iii) show, in view of the change in students’ motivation in learning English from parents’ perspectives, there is a positive view change for the Experimental Group after Letter Bingo. When cross-referenced with data drawn
from interviewing students, similar positive view change in students’ motivation was noted.

Below is a summary of findings for the Experimental Group, from parents’ perspectives, in view of the effect of Bingo on academic performance:

(i) in terms of spelling performance – 62.5% had a positive change, 12.5% had no change and 25% had change of ‘not-known’

(ii) in terms of phonics performance – 37.5% had a positive change, 12.5% had no change and 50% had change of ‘not known’,

(iii) in terms of dictation results – 50% had no change and 50% had change of ‘not known’

Findings (i) – (iii) show, from parents perspectives, there is some evidence to support the positive effect of Bingo on performance in spelling but not in phonics or dictation.
4.3.2.12 Summary of findings for the Placebo Group (P1 – P9)

Below is a summary of findings for the Placebo Group, from parents’ perspectives, in view of the change in students’ motivation in learning English after Letter Bingo:

(i) in terms of strategies –77.8% had no change and 22.2% had a change of ‘not known’,

(ii) in terms of effort expended on learning – 33.3% had a positive change, 33.3% had no change and 33.3% had a change of ‘not known’,

(iii) in terms of affect/view on the Bingo class – 66.7% had a positive view and 22.2% had an ambivalent view.

Findings (i) – (iii) show, in view of the change in students’ motivation in learning English from parents’ perspectives, only Bingo class has over 50% positive view so there is no strong evidence to support a positive view change for the Placebo Group after Letter Bingo. When cross-referenced with data drawn from interviewing students, a similar result (that is, no positive view change in students’ motivation) was noted.
Below is a summary of findings for the Placebo Group, from parents’ perspectives, in view of the effect of Bingo:

(i) in terms of spelling performance – 44.4% had a positive change, 44.4% had no change and 11.1% had change of ‘not-known’

(ii) in terms of phonics performance – 44.4% had a positive change and 55.6% had no change,

(iii) in terms of dictation results – 22.2% had a positive change, 11.1% had a negative change and 44.4% had no change.

Findings (i) – (iii) show, from parents perspectives, there is no evidence to support the positive effect of Bingo on performance in spelling, phonics or dictation.

When comparing the change in motivation between groups after treatment, from the parents’ perspective, the Experimental Group demonstrated a more positive change in motivation in terms of spelling and time spent in preparing for dictation.

To answer Research Question 3: initial findings show there is a difference in perceived motivation in learning English between the Experimental Group and the Placebo Group. Again, because of the small sample size, caution is needed when interpreting the findings.
4.3.3 Interviews with teachers

Similar to the data collected by interviewing parents, the qualitative data collected by interviewing teachers were to cross-reference the data drawn on interviewing students with regard to students’ motivation in learning English and to supplement the quantitative data collected by dictation scores which were used to assess students’ academic performance in spelling. Questions for teachers in relation to students’ motivation and academic performance are listed in Table 59.

<table>
<thead>
<tr>
<th></th>
<th>Table 59. Interview questions for teachers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>How do you find (student)’s performance in English class, in terms of motivation? Any example?</td>
</tr>
<tr>
<td>22</td>
<td>How do you find (student)’s performance in spelling /dictation?</td>
</tr>
</tbody>
</table>

4.3.3.1 Q21 ‘How do you find (student)’s performance in English class, in terms of motivation? Any example?

Q21 was asked in Interviews 1, 2 and 3. Q21 reflects students’ motivation (covering participation, self-confidence, willingness to answer and ask questions) in English class from teacher’s perspectives. Table 60 and Table 61 below show respectively teachers’ comments on students’ motivation for the Experimental Group and the Placebo Group at interviews.
Table 60. Teachers’ view on students’ motivation for the Experimental Group.

<table>
<thead>
<tr>
<th>n = 8</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in motivation (more positive, more negative, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>comments</td>
<td>comments</td>
<td>comments</td>
<td></td>
</tr>
<tr>
<td>S10</td>
<td>'very active in answering questions’ (T1, line 13), '[raise hands] quite frequently' (line 17), 'I think she has confidence’ (line 21), 'enthusiastic [in class]' (line 43)</td>
<td>'active, willing to raise hands' (T1, line 5), [participation in class] similar to before’ (line 8)</td>
<td>'same as before’ (T1, line 26), 'very enthusiastic’ (line 28), ‘I think she likes [English], she isn’t afraid of it’ (line 32)</td>
<td>no change</td>
</tr>
<tr>
<td></td>
<td>'She will put up her hands to answer questions, very enthusiastic’ (T1, line 83), '[speaks] relatively soft. I’m not sure if it is related to her confidence’ (line 87), 'but ... she knows the answer’ (line 89)</td>
<td>'pretty much the same as before' (T1, line 109), 'yes [voice still soft]' (line 115)</td>
<td>'no big difference... still very active to answer questions’ (T1, line 76), 'but she’s quite obedient and hardworking’ (line 96)</td>
<td>no change</td>
</tr>
<tr>
<td>S12</td>
<td>'he’s relatively easy to be distracted … because there are some boys sitting next to him’ (T1, line 47) 'he would put up his hands [if he knows the answer]’ (line 61), 'he's not the type of person that is very shy to answer questions' (line 67), '[when answering] loud enough, quite good’ (line 73)</td>
<td>'more or less the same as before’ (T1, line 47), 'also being distracted’ (line 49), 'he's not focused’ (line 55), 'pretty smart' (line 77), 'he might think he knows the answer, so is relatively easy to be distracted’ (line 83)</td>
<td>'but then attentiveness in class is relatively poor’ (T1, line 46), 'perhaps because those sitting next to him played’ (line 50)</td>
<td>no change</td>
</tr>
</tbody>
</table>
Table 60 (cont’d).

<table>
<thead>
<tr>
<th>Student</th>
<th>Observations</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>S13</td>
<td>'very active [participation in English class]' (T2, line 30), 'a smart student' (line 32), 'very self-initiated' (line 38), 'sometimes … he has the confidence, but sometimes … he would then hesitate' (line 40), 'he is willing to learn' (line 46)</td>
<td>positive change</td>
</tr>
<tr>
<td>S14</td>
<td>'very active, very enthusiastic, very focused' (T3, line 26), 'even if she doesn’t know [the answer]' (line 40), 'she would try' (line 42), 'even when her answers are wrong], she would not stop [her from] raising her hand' (line 44), 'very strong [confidence]' (line 50)</td>
<td>no change</td>
</tr>
<tr>
<td>S15</td>
<td>'he’s not very active’ (T3, line 78), 'he raises his hands but just sometimes' (line 80), 'he is loud enough [when speaking]' (line 90)</td>
<td>positive change</td>
</tr>
</tbody>
</table>

- 'he starts to participate more actively in class’ (T2, line 8), 'he tries his best to perform' (line 12); 'how many syllables, in the past, he didn’t dare to count. But now he would know how to count, three, two four, like that..' (line 14), [student with noticeable improvement] I think S13’ (line 134)

- 'more or less the same … because she is too good before … is hard to have a breakthrough’ (T3, line 30)

- 'yes [her confidence, participation are very impressive]’ (T3, 3b, line 14), 'still very well' (line 20)

- 'attempt to raise hands' (T3, line 58), 'improved a little bit' (line 60), 'it’s not a distinct improvement though he raises hand when he knows the answers’ (line 62), 'maybe because of the recent topics … and changed his seat' (line 64)

- 'I think he becomes more active in raising his hands' (T3, 3b, line 34), 'I think he becomes more focused’ (line 52)
Table 60 (cont’d).

<table>
<thead>
<tr>
<th>S17</th>
<th>Comments</th>
<th>Change in motivation (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘very very active’ (T3, line 110), ‘very good [in confidence]’ (line 114), ‘loud enough [when answering questions]’ (line 118)</td>
<td>still keeping [up with her participation] (T3, line 148)</td>
<td>no change</td>
</tr>
<tr>
<td>‘seems less focused in class [after change of seat]’ (T3, 3a, line 25), ‘he may think like he knows it already’ (line 35), [because] perhaps not challenging at all’ (line 37)</td>
<td>‘very confident’ (T3, 3a, line 15), ‘very self-initiated’(line 21)</td>
<td>negative change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S18</th>
<th>Comments</th>
<th>Change in motivation (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘he is extremely interested in learning difficult words.. he uses phonics to spell’ (T3, line 146)</td>
<td>‘nothing special’ (T3, line 205), 'like to be challenged’ (line 219)</td>
<td>negative change</td>
</tr>
</tbody>
</table>

Table 61. Teachers’ view on students’ motivation for the Placebo Group.

<table>
<thead>
<tr>
<th>n=9</th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in motivation (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>comments</td>
<td>comments</td>
<td>comments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>‘absent-minded’ (T1, line 115), ‘every lesson…spent on daydreaming’ (line 119), ‘would chat with other students … easy to be distracted’ (line 127), ‘really rare [that he would raise his hands]’ (line 141), ‘he was that kind of person when he raised his hands, he knew the answer’ (line 145)</td>
<td>‘yes [still day-dreaming]’ (T1, line 119), [frequency] same as before’ (line 123), ‘he doesn't play during the class now … maybe because they've changed seats’ (line 127)</td>
<td>‘he's a bit too shy’ (T1, line 116), 'when he tried to answer questions, he would not…answer them very loudly .. very soft voice' (line 120), ‘[the problem of daydreaming gets] better’ (line 152), ‘perhaps …because those next to him are relatively obedient and perhaps could help him’ (line 156)</td>
<td>not known</td>
</tr>
<tr>
<td>Student</td>
<td>Initial Observation</td>
<td>Change in Behavior</td>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------------------</td>
<td>--------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>He sometimes would disturb the class... would stand up.. or walk away from his seat... However, he's not SEN' (T1, line 173), 'I notice that his homework is quite nicely done' (line 198), 'but his performance in class is not acceptable' (line 199), 'I don't think he would be afraid of being scolded... he said he is used to it' (line 203)</td>
<td>'performance [in class] is better' (T1, line 203), 'since the class teacher changed his seat' (line 201), 'he will raise hands to answer questions now' (line 215), 'of course he raises only when he knows the answer' (line 219)</td>
<td>[suddenly standing up or rushing out during the lesson] less frequent. After changing seat, the situation was better (T1, line 216)</td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>'relatively quiet girl' (T1, line 207), 'she would raise hands to answer questions but not so frequently' (line 209), 'a little bit shy' (line 217), 'quite soft [when answering]' (line 219), 'I think she is not confident enough' (line 227)</td>
<td>'she raise hands to answer questions more frequently these days' (T1, line 245), 'maybe she knew the answer! Because she won't raise hands when she doesn't know the answers?' (line 253)</td>
<td>'performance in classroom maintained' (T1, line 232), [confidence] similar to before' (line 236)</td>
<td></td>
</tr>
<tr>
<td>S4</td>
<td>'she responses to questions actively in the class' (T1, 1b, line 6), loud enough [when speaking]!' (line 12), 'she's not shy' (line 16), 'self-confidence pretty good' (line 32), 'she is willing participate ... and not afraid of failure' (line 36)</td>
<td>'same [in performance in class]'! I think her confidence is not bad, it's good' (T1, line 291), 'she's loud enough' (line 295)</td>
<td>'actively answer questions in the class' (T1, line 246), 'very enthusiastic [in raising hands]' (line 250), [students with noticeable change] S4! She's got improvement.' (line 308)</td>
<td></td>
</tr>
</tbody>
</table>

Table 61 (cont’d).
Table 61 (cont’d).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>positive change</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5</td>
<td>'no matter how hard you try, she wouldn’t talk' (T2, line 98), never at all [raises her hand]' (line 100), 'not enough [confidence]' (line 118)</td>
<td>'yes [still not willing to raise her hands]' (T2, line 30)</td>
<td>'I always push her to … speak. She now speaks more' (T2, line 57), ‘she would be more active to put up her hands during English lesson’ (T2, line 61), She is better now [in answering questions] ‘ (line 66)</td>
</tr>
<tr>
<td>S6</td>
<td>'soft voice, no confidence, but if you insists … 'you must answer me', then she would, ’ok fine, I answer … 'but she would sometimes just make a wild guess' (T2, line 132), ‘[if given wrong answers] she would still actively put up her hand, but less frequently’ (line 143), ‘[she speaks] not loud enough’ (line 161) I have to ask her several times, and she would then start to speak louder’ (line 171)</td>
<td>'starts to have more confidence' (T2, line 68), 'yes ! A bit. Better than none' (line 70), 'because perhaps other students also encourage her' (line 72)</td>
<td>'S6's [confidence] better' (T2, line 96), 'increased a bit' (line 102)</td>
</tr>
</tbody>
</table>

positive change
Table 61 (cont’d).

<table>
<thead>
<tr>
<th>S7</th>
<th>positive change</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘average [performance in class]’ (T2, line 175), ‘yes [enough initiative]. But he is easily affected’ (line 179), ‘this kid always cries’ (line 183), ‘[when] he gives an incorrect answer … classmates may say “aiya, it’s wrong!” … and then .. cries’ (line 193)</td>
<td>‘also very soft voice’ (T2, line 98), ‘[cries] less often’ (line 110), ‘I always say to him ‘you look dull when you cry, I honestly couldn’t accept it’ (line 112), ‘you could say he did gain a little confidence’ (line 116), ‘he always tries to participate, always looks as if he was saying ‘let me try’’ (line 120)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S8</th>
<th>no change</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘very hard-working.. willing to answer questions’ (T3, line 158)</td>
<td>‘she speaks in a slower pace’ (T3, line 242) ‘but she shows no difficulties in academic or any other aspects’ (line 246), ‘very active in class’ (line 230), ‘hard-working and obedient’ (line 298)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S9</th>
<th>no change</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘not very active’ (T3, line 182), ‘[his] initiative is fair … we are not saying he never puts up his hand, but rare’ (line 184), ‘fairly [loud enough when speaks]’ (line 186)</td>
<td>fair [in participation]’ (T3, line 318), ‘kind of passive’ (line 328), ‘he behaves well in class… the only problem is not raising hand as frequently as others’ (line 352)</td>
</tr>
</tbody>
</table>

In view of students’ change in motivation, for both groups, positive changes as reflected by teachers were related to participation in class (S5, S13, S15) and confidence (S6, S7, S13). 1 negative change was noted in the Experimental Group. Table 62 below shows teachers’ view on change in students’ motivation between groups.
Results from Q21 show, from teachers’ perspectives, in view of the change in students’ motivation in learning English, the Experimental Group had a positive change of 25% and 62.5% had no change while the Placebo Group had 33.3% of positive change / no change / change ‘not known’. Therefore there is no evidence to support the positive change in motivation for either group from the perspective of teachers.

<table>
<thead>
<tr>
<th>Change in motivation</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>2 (25%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Negative Change</td>
<td>1 (12.5%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No change</td>
<td>5 (62.5%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>0 (0%)</td>
<td>3 (33.3%)</td>
</tr>
</tbody>
</table>

4.3.3.2 Q22 ‘How do you find (student)’s performance in spelling / dictation?

Q22 was asked in Interviews 1, 2 and 3. Q22 reflects the change in students’ academic performance in terms of spelling and dictation from the teachers’ perspectives. Table 63 and Table 64 below show respectively teachers’ comments for the Experimental Group and the Placebo Group at interviews.
Table 63. Teachers’ view on students’ performance in dictation for the Experimental Group.

<table>
<thead>
<tr>
<th>n=8</th>
<th>Before Bingo (Interview 1)</th>
<th>During Interview (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in performance in dictation (positive change, negative change, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S10</td>
<td>‘[her spelling] not weak … because she seems to have a good foundation in English’ (T1, line 31), ‘[her English] quite good [but not outstanding]’ (line 39)</td>
<td>‘failed in the third [dictation]’ (T1, line 14), ‘[marks are] falling’ (line 22)</td>
<td>‘her performance maintains’ (T1, line 12), ‘I think she’s probably using phonics’ (line 18)</td>
<td>no change</td>
</tr>
<tr>
<td>S11</td>
<td>‘[her spelling] not bad’ (T1, line 105), ‘willing to try [to guess the spelling]’ (line 109)</td>
<td>‘her English … is okay’ (T1, line 93), ‘yes [a bit unstable]’ (line 101)</td>
<td>‘but the dictation results are still poor and fluctuate’ (T1, line 76), ‘I guess she [spells] by memorizing’ (line 86)</td>
<td>negative change</td>
</tr>
<tr>
<td>S12</td>
<td>‘his English is quite good’ (T1, line 47), ‘he wouldn’t have difficulty in spelling]. I think he’s quite smart’ (line 77)</td>
<td>[dictation scores] pretty good’ (T1, line 65), [progressive improvement] ‘yes! It’s good for him’ (line 71)</td>
<td>‘he did well in all the dictations’ (T1, line 42), ‘he’s within the top 3 among the class’ (line 44)</td>
<td>no change</td>
</tr>
<tr>
<td>S13</td>
<td>‘top 5 [in class]’ (T2, line 34), ‘spelling … not much [difficulty]. But sometimes he is very careless’ (T2, line 68), ‘he knows [how to break words down]’ (line 72)</td>
<td>‘[performance in dictation] better and better’ (T2, line 4), ‘at least, for phonics, he seems to be more confident’ (line 24)</td>
<td>‘he could [maintain his performance]… and he also starts to know how to break down words’ (T2, line 19), ‘his performance is very stable and getting better] yes exactly’ (line 23), ‘yes [confident in spelling]’ (line 25)</td>
<td>positive change</td>
</tr>
<tr>
<td>S14</td>
<td>‘[performance in spelling] very good’ (T3, line 56), ‘[she] breaks words down’ (line 58)</td>
<td>‘she keeps doing well [in dictations]’ (T3, line 18)</td>
<td>‘she’s been doing a great job’ (T3, 3b, line 8), [performance] doing well’ (line 12), ‘stable’ (line 10), ‘yes [spelling by using phonics]’ (line 16)</td>
<td>no change</td>
</tr>
<tr>
<td>S15</td>
<td>‘[performance in] spelling … a bit frustrating but acceptable’ (T3, line 80), ‘I think [he breaks the words down when spelling]’ (line 82)</td>
<td>‘rougly the same’ (T3, line 48), ‘his dictation result is stable’ (line 52), ‘very stable’ (line 54), ‘pretty much the same’ (line 88)</td>
<td>‘doing very well’ (T3, 3b, line 30), ‘marks did not go down’ (line 32), ‘[performance in spelling] more or less the same’ (line 34)</td>
<td>no change</td>
</tr>
</tbody>
</table>
Table 63 (cont’d).

<table>
<thead>
<tr>
<th></th>
<th>S17</th>
<th>S18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>‘she seldom has problems’ (T3, line 126)</td>
<td>‘[his] English very good’ (T3, line 139), ‘he knows a lot of vocabulary … even difficult ones. He is also one of the students who use phonics. I’m 100% sure he is’ (line 140), ‘for example, “apostrophe” … he uses phonics to spell it’ (line 146), ‘[his spelling] very good’ (line 156)</td>
</tr>
<tr>
<td></td>
<td>‘it’s good!’ (T3, line 154), ‘Steady, very stable’ (line 159)</td>
<td>‘I don’t expect a primary three student to spell ‘apostrophe’ correctly’ (T3, line 213), ‘but [he is] able to spell it’ (line 219), ‘by breaking [the words down]’ (line 225)</td>
</tr>
<tr>
<td></td>
<td>‘[performance] very stable’ (T3, 3a, line 11), ‘yes [keep doing well in dictation]’ (line 23)</td>
<td>‘[when] vocabulary are very demanding, then he would find it challenging’ (T3, 3a, line 43), ‘[performance is] stable’ (line 53)</td>
</tr>
<tr>
<td></td>
<td>no change</td>
<td>no change</td>
</tr>
</tbody>
</table>

Table 64. Teachers’ view on students’ performance in dictation for the Placebo Group.

<table>
<thead>
<tr>
<th></th>
<th>Before Bingo (Interview 1)</th>
<th>During Bingo (Interview 2)</th>
<th>After Bingo (Interview 3)</th>
<th>Change in motivation (more positive, more negative, no change, not known)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>‘yes [spelling is relatively weak]’ (T1, line 133), [performance with easier words] still bad ’ (line 137), ‘he’s weak [in spelling]’ (line153)</td>
<td>‘He failed in all three dictations’ (T1, line 133), ‘I guess he didn’t study for the dictations’ (line 143), ‘[but] he got rather good results in tests’ (line 145), ‘I think if he studies, the result would be quite good’ (line 169), ‘… actually what I heard from class teacher is that he is quite good’ (line 195)</td>
<td>‘still didn’t pass the dictation’ (T1, line 104), [but performance in other English tests] was quite good’ (line 110)</td>
<td>no change</td>
</tr>
<tr>
<td>S2</td>
<td>‘I don’t know whether it’s because he is weak in English, or just already lost the passion to learn’ (T1, line 173), ‘very very seldom [he knows some of the answers]’ (line 193)</td>
<td>‘his fluctuation is large’ (T1, line 227), ‘I thought his family helps him revise, but when I asked him, he said no one helped him, he studies on his own’ (line 229)</td>
<td>‘[his] mark was very low’ (T1, line 178), ‘yes! Extremely low’ (line 180), ‘[spell] by rote-learning’ (line 222)</td>
<td>no change</td>
</tr>
<tr>
<td>S3</td>
<td>‘not like those strong ones [in spelling]’ (T1, line 213)</td>
<td>‘she improved in the three dictations, although only by several marks’ (T1, line 265)</td>
<td>‘still got about 40 something in the dictation’ (T1, line 224), ‘learnt by rote’ (line 228)</td>
<td>no change</td>
</tr>
</tbody>
</table>
As reflected by teachers, all positive changes for both groups were related to the applying of phonics (S4, S7, S9, S13). Table 65 below shows teachers' view on change in students' academic performance between groups. The Experimental

<table>
<thead>
<tr>
<th>S4</th>
<th>'her English is pretty good' (T1, 1b, line 4), 'I guess is phonics [she is using for spelling]' (line 20)</th>
<th>'[her scores] all fall within [her] range' (T1, line 289)</th>
<th>she was quite good at English' (T1, line 242), 'I guess she used phonics [to spell]' (line 256), '[S4 has] got improvement' (line 308)</th>
<th>positive change</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5</td>
<td>'spelling … pronunciation … is okay’ (T2, line 122), 'but slow, relatively slow' (line 124), 'learning by rote' (line 126), 'her spelling skills] relatively low' (line 128)</td>
<td>'split the words? Probably not' (T2, line 32), 'dictation … is ok! But I think she learns by rote' (line 34)</td>
<td>'marks got in dictation… lower’ (T2, line 53), '[she] learns by rote' (line 74), 'because she never tried to break words down’ (line 78)</td>
<td>negative change</td>
</tr>
<tr>
<td>S6</td>
<td>'I think she is [spelling by rote'] (T2, line 151), 'pronunciation … is not so good' (line 157)</td>
<td>'the result is similar' (T2, line 60), 'yes [still learns by rote]' (line 66)</td>
<td>'yes [learn by rote]' (T2, line 90), '[even when asked to break words down] still no... I would ask them ... underline it ... They still would not' (line 94)</td>
<td>no change</td>
</tr>
<tr>
<td>S7</td>
<td>'he would find it hard’ (T2, line 233), 'he always thinks … breaking down the words is different from the real pronunciation' (line 235)</td>
<td>'still find [spelling] frustrating' (T2, line 104)</td>
<td>'still on his average' (T2, line 106), 'he gave me a feeling that .. he also started to try to break words down’ (line 130)</td>
<td>positive change</td>
</tr>
<tr>
<td>S8</td>
<td>'I'm not sure if she spells.. using phonics.’ (T3, line 158), 'sometimes … she has difficulties… rely a bit on rote-learning’ (line 160)</td>
<td>'she is not spelling as quickly as other classmates' (T3, line 256), 'she's got very good result' (line 284)</td>
<td>'[performance] still very good’ (T3, 3a, line 59), 'also stable’ (line 93)</td>
<td>no change</td>
</tr>
<tr>
<td>S9</td>
<td>'the result is okay’ (T3, line 182), 'I'm not sure if he knows phonics’ (line 184)</td>
<td>'not sure [if he breaks the words'] (T3, line 324), 'yet he got good results' (line 330)</td>
<td>'performance is also very good’ (T3, 3a, line 97), '[dictation result] doesn’t’ fluctuate’ (line 105),'I guess he breaks words down’ (line 113)</td>
<td>positive change</td>
</tr>
</tbody>
</table>

Table 64 (cont’d).
Group and the Placebo Group had a 12.5% and 33.3% positive change respectively. The Experimental Group and the Placebo Group had a 75% and 55.6% of ‘no change’ in academic performance.

Results from Q22 show, from teachers’ perspectives, in view of academic performance, the Experimental Group had a positive change of 12.5%, a negative change of 12.5% and 75% of ‘no change’ while the Placebo Group had a positive change of 33.3%, a negative change of 11.1% and 55.6% of ‘no change’.

Therefore there is no evidence to support the positive change in academic performance for either group.

<table>
<thead>
<tr>
<th>Change in academic performance</th>
<th>Experimental Group (n=8)</th>
<th>Placebo Group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change</td>
<td>1 (12.5%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Negative Change</td>
<td>1 (12.5%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>No change</td>
<td>6 (75%)</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Change not known</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Table 65. Teachers’ view on change in students’ academic performance between groups.
4.3.4  Summary of qualitative findings

With regard to motivation in learning English, for the Experimental Group, findings only show there is a positive change from the perspectives of students and parents. Students were asked 7 questions at interviews in relation to motivation. Comments by students show there is less than 50% positive change in terms of desire for learning English but more than 50% positive change in terms of effort expended on learning, self-concept, feelings towards spelling, phonics and Letter Bingo as well as more than 50% change in terms of strategies. From students’ perspectives, there is generally a positive change in motivation in learning English.

Parents were asked 3 questions at interviews in relation to motivation. Answers to these 3 questions were to triangulate students’ answers to the corresponding questions. Comments by parents show there is more than 50% positive change in terms of effort expended on learning and view towards Letter Bingo as well as a change of 50% in terms of strategies. In view of this, students and parents share a similar view on the positive change in motivation in learning English.
Teachers were asked 1 question in relation to motivation. Answers to this question were to triangulate students’ answers to the questions in relation to motivation. Comments by teachers show there is less than 50% positive change in students’ motivation in learning English. In this respect, students and teachers do not share a similar view on the change in motivation in learning English.

The above findings therefore show, from the perspectives of students and parents, the employing of Letter Bingo (game encompassing phonics instruction) had a positive effect on motivation in learning English. However, because of the small sample size, caution is needed when interpreting the findings.

For the Placebo Group, findings show there is no positive change in students’ motivation in learning English. Comments by students show there is a no positive change in terms of effort expended on learning, less than 50% positive change in terms of desire for learning English, self-concept, feelings towards spelling and phonics but more than 50% positive change of in terms of feelings towards Bingo as well as more than 50% change of in terms of strategies.
Comments by parents show there is less than 50% positive change in terms of effort expended on learning and feelings towards Bingo as well as more than 50% ‘no change’ in terms of strategies. Findings show students and parents do not share a similar view on the change in motivation in learning English.

Comments by teachers show there is less than 50% positive change in students’ motivation in learning English. Findings show students and teachers do not share a similar view on the change in motivation in learning English.

The above findings therefore show, the employing of phonics instruction (without playing Letter Bingo) had no positive effect on motivation in learning English from the perspectives of students, parents and teachers.

To answer Research Question 3, initial findings show there is a difference in the perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment; there is a more positive change in motivation for the Experimental Group from the perspectives of students and parents, there is no change for the Placebo Group. Again, as alerted in the beginning of Section 4.3,
the findings of the qualitative data in this quasi-experiment offer an alternative, supportive perspective to the quantitative data and the interpretation of such findings needs to be treated with caution.
Chapter 5       Discussion

5.1 Overview

This chapter comprises four sections. The first section discusses the findings in relation to the treatment effects within groups. The second section presents findings in relation to the treatment effects between groups thus answering Research Questions 1-3. The third section covers findings additional to the treatment effects within groups and between groups. The fourth section addresses the strengths and limitations of the present study.
5.2 Discussion on treatment effects within groups

In this section, the treatment effects within groups are discussed in terms of the effects on spelling performance (drawn from the results of the quantitative data presented in Section 4.2) and the effects on perceived motivation (drawn from the results of the qualitative data presented in Section 4.3). It is emphasized that based on the research design of this quasi-experiment, the quantitative data provide the foreground of interpreting the treatment effects whereas the qualitative data are interpreted in the context of the quantitative data.

5.2.1 Treatment effects within Experimental Group

The treatment effects within the Experimental Group cover both the effects of treatment on spelling performance and on perceived motivation.

5.2.1.1 Treatment effects on spelling performance within Experimental Group

To recap, the quantitative data presented in Section 4.2 show that all three groups experienced a decline in scores from D1 to D5. Section 4.2.1 shows, before treatment, despite being the more able group, the Experimental Group experienced a significant decline in scores in the double pre-tests, D1 and D2.
(\(p < .05; \text{mean} = 99.19; 95\% \text{ CI}, 90.28 - 108.09\)). The negative pre-treatment growth in spelling demonstrates the instability in performance of the Experimental Group. Even though the confidence interval for the mean of the Experimental Group is relatively narrower than that of the Control Group and of the Placebo Group before treatment, the confidence interval is still wide when taking into consideration the range of mean scores (highest mean = 99.9, lowest mean = 72.7). Therefore, uncertainty is indicated about the significance of the decline for the Experimental Group before treatment.

Section 4.2.5.2 shows, after treatment, the Experimental Group (with outlier) performed significantly worse than before treatment while the Experimental Group (without outlier) did not perform significantly worse than before treatment (\(p\)-value is 0.0547, mean = 96.77; 95\% CI, 89.23-104.31). Although in Section 4.3.2.2 parents for the Experimental Group confirmed at Interview 3 that no students received additional tutoring over the period of study thus no multi-treatment interference was noted, the findings are not robust to indicate Letter Bingo has added-value to spelling performance because the \(p\)-value for the Experimental Group (without outlier) is close to .05. Findings in this study do
not appear to be in accordance with the effect of spelling games in Cassar and Jang (2010) and Rosas et al. (2003) where treatment groups demonstrated improvement in spelling performance in post-tests. One possible explanation for the inconsistent result in this study is the methodological limitation of employing dictation as a measuring instrument that did not reflect a progressive level of difficulty (see Section 4.2.8) and this is further discussed in Section 5.4.2.

Findings in this study are also inconsistent with the academic improvement shown in the treatment groups in various studies (reviewed in Section 2.7) examining the effect of Bingo on acquisition and retention of words or terminology including Kirby et al. (1981), Tietze (2007), Vanags et al. (2012) and Weisskirch (2009). With reference to learning contents as reviewed in literature, no robust findings in this study appear to support the game function of Letter Bingo as a learning game for drilling specific, well-defined information such as spelling as suggested by McFarlane et al. (2002), Mitchell and Savill-Smith (2004), Randel et al. (1992) and Squire and Jenkins (2003). One plausible explanation for such inconsistency is the difference in methodological design between the present study and the empirical studies reviewed. For example, immediate recall of physiological
terms in psychology was tested in Experiment 1 in Vanags et al. (2012) but recall of vocabulary in the present study was held in dictations that took place days after the bingo sessions: D3 took place seven days after Bingo 2, D4 three days after Bingo 3, D5 eighteen days after Bingo 5 (see Diagram 6 ‘Overview of the implementation procedures’ in Section 3.4). However, noting that the mean scores of D4 are lower than the mean scores of D3 among all three groups (see Diagram 8 and Diagram 9—mean scores of D1-D5 among groups without SEN and with SEN respectively), the possible effect of immediate recall or delayed recall on dictation scores is dismissed.

Noting that the Experimental Group of this study experienced a decline in scores after treatment, the attribution of Letter Bingo to the decline is inconclusive because the scores of all three groups declined in a similar pattern. Possible explanations of the decline are discussed in Section 5.4.2.

With regard to the treatment effects on spelling performance within the Experimental Group, discrepancies between the quantitative and qualitative date are noted. First, while the quantitative data do not demonstrate any positive
effect of Letter Bingo on spelling performance in terms of dictation scores, the qualitative data presented in Section 4.3.1.11 show, as perceived by students, the Bingo game has a positive effect on dictation. Second, when students’ perception is triangulated with parents’ perception, another discrepancy is noted; Table 49 ‘Change in child’s dictation results as indicated by parents between groups’ shows 0% positive change in dictation results indicating no evidence of positive effect on dictation as perceived by parents. In this respect, parents’ perception of the treatment effect on dictation is in line with the findings drawn from the quantitative data demonstrating no evidence of positive treatment effect on dictation scores. An explanation for the discrepancy between students’ and parents’ perceptions is perhaps because students of the Experimental Group in this study are not marks-oriented; Table 38 ‘Views on Bingo game in relation to dictation between groups’ shows, of the 100% positive feedbacks provided by the 8 students, only one provided explanation that was marks-related. Also owing to the limited breadth of interview questions, students’ responses are therefore discounted in the interpretation of findings.

Findings in this study are inconsistent with those in Weisskirch (2009) employing
a modified Bingo exercise for reviewing psychology theories and concepts; in Weisskirch (2009), both students’ self-reported improvement in knowledge and improved scores on exams changed significantly. One explanation for the inconsistency is, as discussed in Section 2.7.6, Weisskirch (2009) measured academic performance by employing exam scores but with two additional chapters’ information covered in the exam thus posing threats to internal validity of the study whereas the present study measured academic performance by employing scores of D1-D5 and Sections A and B in dictations mainly covered words on the dictation revision sheets prepared by the school. As mentioned in Section 3.6.1, it is acknowledged that a 1-point bonus would be given to students for every extra word they put down in Section C ‘Creative Dictation’ (see Appendix 17), scores attained in Sections A and B constitute the majority of scores. In view of this, potential threats to the internal validity of the present study are minimized. The quantitative data are more controlled than the qualitative data in this quasi-experiment; this makes the quantitative data more credible. It is therefore reasonable to conclude that no robust evidence indicates a positive treatment effect on spelling performance within the Experimental Group despite some limited positive findings drawn from the qualitative data.
5.2.1.2 Treatment effects on perceived motivation within Experimental Group

For the Experimental Group, the qualitative data presented in Sections 4.3.1.11 and 4.3.2.11 show respectively, from the perspectives of students and of parents, that findings initially support the positive change in students’ motivation in learning English after treatment. Initial findings in this study appear to be similar with those in Cassar and Jang (2010) investigating the effect of spelling games on 6 students with reading disabilities and attention deficit disorders; the level of engagement of treatment group increased after treatment. Also similar to Cassar and Jang (2010), generalizability of the findings of this study is limited because of the small sample size thus making the positive treatment effect on perceived motivation questionable. Considering the breadth of interview questions as one of the methodological limitations of the present study, the positive treatment effect on perceived motivation within the Experimental Group is therefore inconclusive.

5.2.2 Treatment effects within Control Group

The treatment effects within the Control Group cover only the effects on spelling performance drawn from the results of the quantitative data presented in Section
4.2. There is no discussion on the effects on perceived motivation because the Control Group being the intact group was not being interviewed so as to prevent the group from being contaminated. However, the lack of data to measure the perceived motivation for the Control Group is also one of the limitations of this quasi-experimental design as discussed in Section 3.11.

Unlike the Experimental Group, the quantitative data presented in Section 4.2.1 show the Control Group did not perform significantly worse in the double pre-tests before treatment. Drawn from the data presented in Section 4.2.5.2, the treatment effect within group shows the Control Group performed significantly worse in post-treatment than in pre-treatment. Also, taking into consideration the wide confidence intervals (mean = 65.85; 95% CI, 50.25 – 81.45), the judgment of the reliability of the significance of this finding needs caution.

Findings in this study showing a decline in performance for the Control Group are inconsistent with findings in Vanags et al. (2012) with the control group in Experiment 1 (that participated in standard tutorial activities) showing no change in the recall of terms in Psychology between pre-test and post-test. The possible reasons for the decline in performance are discussed in Section 5.4.2.
In this study, the Control Group, receiving no treatment over the period of study, participated in standard classroom activities. In relation to the standard tutorial activities and spelling difficulties in L2, comment by Teacher T2 at Interview 1 confirmed that ‘the curriculum does not cover’ (line 243) phonics instruction and most students in her school had no knowledge of phonics skills. The comment is similar to the remarks of McBride-Chang and Treiman (2003) and Yeung (2006) that formal and regular English phonics training in primary schools is not seen in Hong Kong. Findings in previous studies (Dietrich and Brady, 2001; Kamhi and Hinton, 2000) support the lack of phonological knowledge is one of the reasons for spelling difficulties. In this study, although no information about multi-treatment interference like private tutoring was collected from the Control Group, considering the significant decline in scores and the standard classroom activities that the untouched group participated in, findings show spelling difficulties persist. The lack of systematic phonics instruction may constitute part of the spelling difficulties among students. In view of this, the revisiting of a formal and systematic phonics instruction in the Hong Kong curriculum is worth considering.
Also noting that the Control Group experienced a significant decline in scores after treatment, the attribution of receiving no treatment to the decline is inconclusive because the scores of all groups declined in a similar pattern.

5.2.3 Treatment effects within Placebo Group

The treatment effects within the Placebo Group cover both the effects of intervention on spelling performance and on perceived motivation.

5.2.3.1 Treatment effects on spelling performance within Placebo Group

Section 4.2.1 shows, before treatment, the Placebo Group (without SEN) experienced a significant decline in scores in the double pre-tests while the Placebo Group (with SEN) performed better in D2 than in D1. Section 4.2.5.2 shows, after treatment, the Placebo Group (regardless of the SEN student) experienced a significant decline. Given the wide confidence interval (with SEN, mean = 66.61; 95% CI, 49.38 – 83.85 and without SEN, mean = 72; 95% CI, 55.08 – 88.92), caution is needed when interpreting the reliability of the significance of the decline. Parents confirmed at Interview 3 that four students
received additional tutoring for English over the period of study. Nonetheless, the additional tutoring being a multi-treatment intervention does not appear to be influencing the result of this study in a positive way; the Placebo Group also experienced a significant decline in scores after treatment.

The decline in scores in the Placebo Group is inconsistent with the findings in L2 studies (Holm and Dodd, 1996; Johnston and Watson, 2003; Leong, 1998; Man, 2003; Stuart, 1999) supporting the relation between the phonological awareness and spelling. One plausible reason for the results in this study is the inclusion of the data of the SEN student; findings (including the difference between D1 and D2 scores, pattern of decline and the treatment effect between groups when comparing results with and without SEN) indicate that the data of the SEN student may be a variable causing differences in spelling performance. Therefore, caution is needed when interpreting the findings.

Again noting that the Placebo Group (regardless of the SEN student) experienced a significant decline in scores after treatment, the attribution of phonics instruction (without playing Letter Bingo) to the decline is inconclusive because the scores of
all three groups declined in a similar pattern. The possible reasons for such decline are discussed in Section 5.4.2.

Similar to the Experimental Group, with regard to the treatment effect on spelling performance within the Placebo Group, discrepancies between the quantitative and qualitative data are noted. First, while the quantitative data do not demonstrate any positive treatment effect, the qualitative data presented in Section 4.3.1.12 show, as perceived by students, the Bingo game has a positive effect on dictation. However, the treatment effect is inconclusive because Table 38 ‘Views on Bingo game in relation to dictation between groups’ shows many students could not explain why they had a positive view on the treatment effect. Second, findings drawn from parents’ interviews are not in line with findings drawn from the quantitative data; Table 49 ‘Change in child’s dictation results as indicated by parents between groups’ shows 22% or 2 parents expressed a positive change in dictation results while findings drawn from the quantitative data show a decline in dictation scores..

As noted earlier, because of the methodological design of this quasi-experiment,
the quantitative data are more controlled and the qualitative data are insufficiently linked to the outcome. Also because of the small sample size, the response of students and parents for the Placebo Group are discounted. It is therefore concluded that findings are not robust to indicate the positive treatment effect on spelling performance within the Placebo Group.

5.2.3.2 Treatment effects on perceived motivation within Placebo Group

Qualitative data presented in Sections 4.3.1.12 and 4.3.2.12 show respectively, from the perspectives of students and parents, that there is no positive treatment effect on students’ motivation in learning English for the Placebo Group after treatment. Again, it is acknowledged that because of the methodological design of this quasi-experiment, the qualitative data are supplementary to the quantitative data. Besides, the small sample size and the insufficient breadth of interview questions pose limitations to the findings of the qualitative data in this study.
5.3 Discussion on treatment effects between groups

Findings relating to the treatment effects between groups provide answers to the three Research Questions:

Q1: Is there any difference in spelling performance between the Experimental Group and the Control Group after treatment?

Q2: Is there any difference in spelling performance between the Experimental Group and the Placebo Group after treatment?

Q3: Is there any difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment?

5.3.1 Q1: Is there any difference in spelling performance between the Experimental Group and the Control Group after treatment?

Comparing the relative decline in scores between the Experimental Group and the Control Group over the period of study, findings in Section 4.2.6.1 show the Experimental Group (regardless of the outlier) experienced a lower relative decline than the Control Group. However, findings in Section 4.2.6.4 show the difference is insignificant.
Comparing the scores between the Experimental Group and the Control Group at each observation, findings in Section 4.2.6.3 show there is no significant difference before treatment. This indicates the possible impact on treatment results caused by the initial group differences of the more able group - the Experimental Group is discounted. Findings show, after treatment at D4, the Experimental Group performed significantly better than the Control Group. As previously noted, the wide confidence interval (mean = 78.78; 95% CI, 64.03 – 93.53) indicates a low level of reliability of the findings therefore interpretation of findings needs caution.

Considering both discussions on the treatment effects on spelling performance within groups (Experimental Group in Section 5.2.1.1 and Control Group in Section 5.2.2) and between groups (Experimental Group and Control Group in this section), to answer Q1, the difference in spelling performance between the Experimental Group and the Control Group after treatment is inconclusive although the Experimental Group performed significantly better than the Control Group at D4.
Findings in this study do not support those in Keen (1983) that investigated the effect of Boggle on L1 spelling. In Keen (1983), 3rd grade students employing traditional spelling programs performed significantly better than those employing game. Both the students in Keen (1983) and in the present study were about 8 years old. Unlike Keen (1983), the Control Group in this study did not perform significantly better than the Experimental Group, indicating the Control Group did not achieve better spelling performance as a result of the standard, non-gaming instructional approach in Hong Kong classrooms.

One explanation for the difference in findings between this study and Keen (1983) is that students in the former learn English as L2 and students in the latter learn English as L1. While L1 acquisition is part of the learner’s life and operates within the learner’s natural mind, L2 acquisition operates within the learner’s conscious mind. With reference to the constructivist learning perspectives, learners play an active role in exploring, connecting and constructing knowledge and constant effort is required in L2. In view of this, spellers or learners in this study may require more active participation when learning English is concerned.
Similar to findings in Klepper (2003) which investigated the effect of Bingo on social sciences vocabulary, findings in the present study show there is no significant difference in the academic performance between the treatment and non-treatment groups. Different from Klepper (2003), the Experimental Group and the Control Groups in this study both experienced a decline in scores although the relative decline was lower for the Experimental Group. Possible reasons for the decline are discussed in Section 5.4.2.

Findings in this study are also different from those in Ehri et al.’s (2001). In this study, findings are not strong enough to demonstrate that phonics instruction benefits spelling more than no phonics instruction; although the Experimental Group experienced a lower relative decline in scores than the Control Group over the period of the study, the difference in performance between the groups was insignificant. Ehri et al.’s (2001) meta-analysis on phonics instruction concludes that systematic phonics instruction benefited “decoding, word reading, text comprehension, and spelling in many readers” (p.393) more than unsystematic or no phonics instruction. Although Letter Bingo in this study encompasses phonics instruction, further studies on the impact of Letter Bingo are needed to
demonstrate the impact concluded by Ehri et al.’s (2001) through gaming approach.

5.3.2 Q2: Is there any difference in spelling performance between the Experimental Group and the Placebo Group after treatment?

Comparing the relative decline in scores between the Experimental Group and the Placebo Group over the period of study, findings in Section 4.2.6.1 show the Experimental Group (regardless of the outlier) experienced a lower relative decline than the Placebo Group (regardless of the SEN student). However, findings in Section 4.2.6.3 show the difference is insignificant.

Comparing the scores between the Experimental Group and the Placebo Group at each observation, findings in Section 4.2.6.4 show there is no significant difference before treatment. After treatment, findings show the Experimental Group performed significantly better than the Placebo Group (with SEN) at D3 and the Placebo Group at D5 (regardless of SEN) when excluding the outlier at D5.
Considering both discussions on the treatment effects on spelling performance within groups (Experimental Group in Section 5.2.1.1 and Placebo Group in Section 5.2.3.1) and between groups (Experimental Group and Placebo Group in this section), to answer Q2, the difference in spelling performance between the Experimental Group and the Placebo Group after treatment is inconclusive.

Although at various observations the Experimental Group performed significantly better than the Placebo Group (with SEN), the result is to be interpreted with caution because of the confounding variable – the SEN student as well as the wide confidence interval indicating a low level of reliability.

Different from findings in Rosas et al. (2003) which show both the experimental groups and the internal control groups had improvement in spelling performance in post-tests, both the Experimental and the Placebo Groups experienced a decline in this study. Rosas et al. (2003) conclude the result “undoubtedly shows the presence of Hawthorne’s effect (Clark and Sugrue, 1991)” (p.89). In this study, the presence of the Hawthorne’s effect is not noted.

The decline in scores for the Placebo Group may be partially explained by the
difference in instructional approach between the Placebo Group and the Experimental Group. Although both groups experienced a decline, the relative decline for the Experimental Group was lower. Considering the spelling drilling that took place in each bingo session (see Section 3.5.1), both the Experimental Group and the Placebo Group in this study received phonics instruction (to facilitate spelling) with the same coverage of words and in the same manner, the only difference was drilling strategy – the Experimental Group played Letter Bingo while the Placebo Group received a pre-dictation (the words covered in Letter Bingo and pre-dictation were exactly the same). Referred to the literature review, learning outcomes are affected by the instructional strategies employed (Garris et al., 2002; O’Neil et al., 2005). Although at D3 and D5, findings show the Experimental Group performed significantly better than the Placebo Group, the findings are not strong enough to support the positive impact of Letter Bingo as an instructional strategy for drilling spelling. Further studies are needed before any firm conclusion can be drawn.
5.3.3 Q3: Is there any difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment?

Comparing the change in perceived motivation between the Experimental Group and the Placebo Group after treatment, initial findings in Sections 4.3.1.11 and 4.3.2.11 show, from the perspectives of students and parents of the Experimental Group, that there is a positive change in students’ motivation in learning English. When triangulated with the perspectives of teachers, Table 62 shows only 25% of students had a positive change in motivation. Also, due to the small sample size, the limited breadth of interview questions, findings are not robust to support for the positive change in students’ motivation from the perspectives of students, parents and teachers. As for the Placebo Group, findings in Sections 4.3.1.12, 4.3.2.12 and 4.3.3 show there is no change in students’ motivation in learning English from the perspectives of students, parents and teachers.

Considering the design and the methodological limitations of this study, such as the small sample size and the lack of randomization, to answer Q3, there is no robust evidence demonstrating the difference in perceived motivation in learning English between the Experimental Group and the Placebo Group after treatment.
In relation to motivation, this study is more concerned about the motivation that comes from ‘within’ learners (see Section 2.4.2). Discussion on self-motivation and learners’ engagement are therefore covered in this section whereas the discussion on the types of motivation is presented in Section 5.4 ‘Additional findings’.

In this study, comments by students and parents in the Experimental Group initially support that self-motivation affects learners’ engagement in terms of the choice, the use, the range and the management of learning strategies (Clement, 1994; Syed, 2001). However, no firm conclusion can be drawn because the qualitative data are interpreted in the context of the quantitative data in this quasi-experiment. With regard to learning strategies, comments by the Experimental Group indicated a possible change from being dependent on parents or siblings to being more self-reliant after Bingo. Also sharing the view of Sawyer and Joyce (2006) that “correct spelling is expected to evolve through purposeful attention to words the person specifically wanted to learn” (p.87), initial findings drawn from the qualitative data in this study are in accordance
with Cassar and Jang’s (2010) findings which demonstrate the variety of spelling game activities has a positive effect on students’ level of engagement in learning. Nonetheless, it must be emphasized that further research with more control for the qualitative data is required in order to support that motivation can be enhanced by employing Letter Bingo as a meaningful classroom activity to facilitate spelling.

Also related to motivation is students’ view on Bingo. Findings in this study show Letter Bingo was mostly positively received by the Experimental Group and was considered as ‘fun’, ‘enjoyable’; no negative comments are noted and this is different from Tietze (2007) which showed negative comments like the game was “too time-consuming” (p.5). In view of this, the fun element of Letter Bingo as a learning game is established but its pedagogical values are yet to be demonstrated in further studies.

Findings in this study show there is no positive change in students’ motivation in learning English for the Placebo Group. Findings are not in accordance with Share’s (1995) view that motivation can be enhanced when learners are able to decode words independently. Findings in this study are inconsistent with the
findings in Keen (1983) and Leung (2003) showing that although there was no significant improvement in spelling achievement with the employing of phonics programs, students’ motivation was enhanced. Again, acknowledging the lack of randomization, the small sample size and the lack of breadth of interview questions, responses of interviewees (particularly those of students) are superficial thus weakening the reliability of the qualitative data drawn in this study.

The initial difference in perceived motivation between the Experimental Group and the Placebo Group may draw implications on the tie between games and learning outcomes. As McClarty et al. (2012) remark in the review of gaming in education, “if the goals of the game and the learning outcomes are closely tied together, students tend to be more intrinsically motivated and the rewards are in solving the game challenges and learning” (p.15). In the present study, the Placebo employed pre-dictation for drilling spelling and played the non-phonics/non-spelling related Bingo game. Considering the feedback received from the Placebo Group such as the game had ‘no meanings’ (S6, Int. 3, line 85] and 'the game just wants you to have fun' (S8, Int.3, line 70), the tie between educational games and learning outcomes appears to have an impact on
motivation. However, it is emphasized that due to the limited breadth of interview questions in this quasi-experiment, the tie between games and learning outcomes is to be demonstrated in further studies.
5.4 Discussion on additional findings

In addition to the above findings relating to the treatment effect within groups and between groups, this study yielded findings that are complementary to the discussion on spelling and motivation and are therefore worth discussing.

Additional findings include findings relating to a few unanticipated aspects – the identification of the SEN student in the Placebo Group after all data collection as well as the reasons for the decline in spelling performance among all groups.

Additional findings also cover types of motivation and the perspectives of students and parents.

5.4.1 SEN student

Findings show the inclusion of the data of the SEN student in the Placebo Group in analysis yielded different results in two aspects:

(i) the difference between D1 and D2 scores (see Section 4.2.1) reflecting the stability in spelling performance of groups before treatment - when the data of the SEN student was excluded, all three groups experienced a decline in scores but when the data of the SEN student was included, the Placebo Group demonstrated a positive change from D1 to D2,
the pattern of change in dictation scores for D1 – D5 (see Section 4.2.4) reflecting the possible correlation between the contents (the level of difficulty / the total number of words) of dictation and spelling performance - when the data of SEN student was excluded, the direction of change is similar among groups but when the data of the SEN student was included, the Placebo Group demonstrated a different pattern of change.

The above findings support the identification of SEN students at the beginning of this study so as to control for the extraneous factor of ability. In view of this, the interpretation of the findings relating to the Placebo Group needs caution. Nonetheless, the case in the present study indicates the authenticity of the classroom situations when students as such are yet to be identified.

5.4.2 Reasons for the decline in spelling performance

The decline in spelling performance experienced by all three groups was unanticipated. Although in a few previous studies the negative change in post-treatment is noted (in Garcia et al. 2008, 1 of the 24 participants scored
worse in post-test and in Rama et al. 2007, 10.26% of the experimental group and 34.29% of the control group scored worse in the post-test), the decline for all three groups in this study is worth discussing.

In view of the similar pattern of decline among groups (Diagram 8), it is reasonable to assume that neither the treatment (Letter Bingo) nor the absence of the treatment (Letter Bingo) is the cause for the decline. One possible reason for the decline is the potential problem residing in the measuring instrument – dictation. Although tests for internal reliability (see Section 4.2.7) indicated the 5 sets of dictation scores were reliable with good internal consistency, findings in this study indicate the 5 sets of dictation were of different, but not progressive, levels of difficulty (see Section 4.2.9 and Section 4.2.10). This indicates that measuring the treatment effect between groups at each observation better reflects the impact of treatment than measuring over the period of study. At various observations, findings show the Experimental Group performed significantly better than the Control Group and the Placebo Group. Although the wide confidence intervals indicated a level of uncertainty about the reliability of the findings and caution is needed when interpreting the findings, the significant
difference in the post-treatment performance of the Experimental Group is not to be dismissed. It is acknowledged that stronger findings are needed in future studies with bigger sample size and randomization before firm conclusion on the impact of Letter Bingo can be drawn.

Another possible reason for the decline in scores is the instructional strategies that students employ. Findings in Section 4.2.10 and Section 4.2.11 show that dictation scores in this study correlated more with the number of words in dictation than with the level of difficulty. While the employing of rote learning is a common and dominant practice employed in various parts of the world (Nguyen and Khuat, 2003; Sawyer and Joyce, 2006; Watkins and Biggs, 1996; Wang, 2010; Yeung, 2006), similar practice is noted in Hong Kong. According to Biggs and Tang (2007), while lower / surface level learning covers memorizing and identifying the material, deeper level learning is a more structural learning that allows students to use and apply the knowledge thus allowing better retention of information. Wang and Geva (2003) remark that Hong Kong students learn Chinese characters by copying and memorization and this would have an impact on their learning of English spelling. Findings in Yeung (2006) and Wong (1995)
show the learning of spelling relies on rote memorization or mechanic drilling and practices in Hong Kong.

Similar findings in this study are noted. Interviews with students show, in terms of choice of action to improve English proficiency and views on spelling, students find words and spelling difficult to remember and students memorize the spelling of words as a whole. Interviews with parents triangulated the data and supplemented that students spelt by memorizing the whole words and by repetitive drilling such as copying. Although by comparison, relatively more students of the Experimental Group than the Placebo Group employed phonics skills to facilitate spelling after Bingo (2 students or 25% of the Experimental Group and 1 student or 11.1% of the Placebo Group changed from spelling words as a whole to employing phonics skills), the overall percentage of students employing phonics skills is small, indicating rote learning or spelling words as a whole was still a strategy generally employed by students in this study. Also, different from findings in Kwong and Varnhagen (2005) which show students employed strategies such as sounding out, writing alternative spellings and looking up in the dictionary, findings in this study show very few students
employed strategies such as writing alternative spellings and looking up in the
dictionary except P4 indicated S4 sometimes used the computer to read along and
P13 indicated S13 used ‘i-pen’ for the pronunciation of words.

In this study, findings relating to choice of action and rote learning do not seem to
be compatible with the Piagetian theory of cognitive development and the
developmental stages of spellers (Bear and Templeton, 1998; Ehri, 1987, 1992,
relation to L2 learning, students’ cognitive development at the concrete
operational stage (beginning around 7 years old) allows students to gain a better
understanding of mental operations and to think logically. As with the
developmental stages of spellers, as learners develop some understanding of the
sound-letter relationship, spelling is applied to partial sound information in words.
Also findings in Collier (1989) support that age 8-12 is appropriate to begin L2
development but findings in this study do not seem to be in accordance with this.

Thus relating to the choice of action such as rote learning, findings in this study
show that although students have reached Piaget’s (1983) concrete operational
stage, rote learning was still widely employed even after phonics instruction was introduced. One possible explanation for this is, even when students’ cognitive development allows them to operate and think logically, and even when phonics instruction is introduced, motivation is “a necessary prerequisite and co-requisite” (Palmer, 2005, p.1855) for students to actively engage themselves in L2 learning. When motivation is enhanced, students become more involved at the operational stage of the L2 learning process. However, acknowledging the small sample size in this study, the impact of Letter Bingo on motivation is to be leveraged in further studies pertaining to learning games.

Also related to the developmental process is the conceptual process (see Section 2.3.2.2). Morris et al. (1995) remark that the conceptual process allows spellers to develop recognition of differences and similarities of word types through reading and writing. Findings drawn from the quantitative data in Section 4.2.8 ‘Level of difficulty’ show that, although 47.54% of words (in D1-D4) recurred in D5, all three groups scored the lowest in D5, indicating students were not able to relate their existing prior knowledge, to make connections, to internalize and to apply. Again, from the constructivist learning perspectives, more active
participation is required in the process of spelling.

5.4.3 Types of motivation

In relation to types of motivation, findings from interviews with students show the reasons for learning English for both the Experimental Group and the Placebo Group were mainly classroom-related (such as ‘my English is not good’, ‘can improve English’) and utilitarian reasons (such as ‘be able to talk to foreigners’, ‘English is important’). Only one reason was an external reason – S13’s reason was related to the mother who wanted the student to learn English – and no reason was teacher-related (for example ‘the teacher is nice’).

Findings related to the reasons for learning English are partially consistent with findings in Nikolov (1999) in that over half or more of the reasons were classroom-related. Findings are inconsistent in that all the answers given by ‘learners (aged 6-8)’ in Nikolov (1999) were positive statements and there were at least some reasons that were teacher-related. However, in this study, there were negative statements such as ‘my English is not good’ (S12, S13, S14), ‘fail in exam’ (S4, S7) in comments by students. This may indicate that the students do
have the motivation to learn English; because they were not good at it, they wanted to do better. This supports the findings in Man (2003) that showed the motivation in learning English of Hong Kong junior primary school students was generally high. Thus, sharing Man’s (2003) view, maintaining or enhancing students’ motivation in learning English should be done in early junior primary school years.

In addition, 50% or more reasons in this study were classroom-related and none of the reasons was teacher-related. It indicates that changes made in classroom level (Crookes and Schmidt, 1991; Dörnyei, 1994a, 2001a; Ushioda, 1996a) such as learning strategies, classroom atmosphere, teaching skills appear to be important means to motivate students to learning English as L2 in Hong Kong. Again, it is acknowledged that due to the methodological limitations of the present study, caution is needed when interpreting the qualitative data particularly in relation to students’ responses.

As discussed in Section 2.4.2 ‘Types of motivation’, learners can be motiuated by different types of motivation including intrinsic / extrinsic motivation,
self-motivation, instrumental / integrative motivation (Clement, 1980, 1994; Deci and Ryan, 1985; Gardner, 1985, 1988; Syed, 2001). Comments by both the Experimental and the Placebo Groups support that students in this study were driven to learn English by marks and grades. Findings in this study are in line with the findings in Lin et al. (1991) in that Hong Kong students are extrinsically motivated to learn English. Comments by both groups also indicate that a few students were simultaneously driven to learn English by more than one type of motivation, for example, S7 learnt English because he failed in exams and he wanted to be able to talk to foreigners while S13 learnt English because his English was not good and his mother wanted him to improve. Findings therefore support that students can simultaneously be motivated by a multiple of motives as suggested by Oxford and Shearin (1994).

Considering the classroom-related reasons (such as S6, S9 – can improve English – and S18 – can communicate with classmates) and the utilitarian reasons (such as S3, S7, S11, S17 – can talk to foreigners – and S8 – English is important) expressed by both the Experimental and the Placebo Groups, findings in this study support that students were motivated by both instrumental and integrative
motivation (Gardner and Lambert, 1972; Gardner, 1988). Both instrumental motivation and integrative motivation are shown in previous studies with more instrumental factors in Lau (2006) and Wong (1995) and more integrative factors in Man (2003). Findings therefore support that Hong Kong students are motivated by both instrumental and integrative factors.

Again, it is noted that this study is more concerned about whether students can be motivated by the instructional game Letter Bingo than what the types of motivation are. Discussion on the types of motivation is to examine if there is any emergence of findings giving rise to new knowledge.

5.4.4 Students’ perspectives

Initial findings presented in Section 4.3 may suggest the dominant role that students’ perspectives play in constructing knowledge according to the constructivist learning theories. Findings from interviews show that, for the Experimental Group, all students had a positive view on the effect of Letter Bingo on dictation results and thus support the findings in Alemi (2010) and Nikolov (1999) that children choose to engage in and to pay attention to what they feel
worth it. Findings in this study also show, students such as S6 and S8 in the Placebo Group expressed their Bingo game was just for fun and the ‘a’, ‘b’, ‘c’ in the Bingo game had no meanings. This indicates that students do think for themselves and such thinking is important in self-motivation (Ames and Ames, 1985). Further, it indicates other than enjoying and having fun, students do expect some contents and intended learning outcomes in learning games. While researchers (Adam, 1973; Prensky, 2001) suggest that through games students learn without being aware of learning, findings in this study show that students are aware of the fact that they are not learning when games do not contain learning contents.

In view of the above, the students’ perspectives may explain the absence of change in motivation in learning English for the Placebo Group. Initial findings show the Placebo Group was not satisfied with the Bingo game they played (the common Bingo with letters, without encompassing phonics instruction and without incorporating any learning aspect) and support that the essence of games lies in the context and activities associated with games, not the games per se (Allery, 2004; Conati, 2002, deHaan, 2010; Garris et al., 2002; Habgood et al., 2004).
Thus findings in this study may show that Hong Kong students at the age of 8 are capable of distinguishing games for entertainment and games for learning (Connolly et al., 2012).

Also related to students’ view is individual preference. Games may not appeal to every student and different students prefer different games (Garris et al., 2002; Squire and Jenkins, 2003). This view is supported by findings in Tietze (2007) in which a negative comment suggesting that Bingo was “too time-consuming” (p.5) was noted. Findings in this study do not echo the view on individual preferences; comments by the Experimental Group reflected 87.5% positive views on Letter Bingo and no negative view, the view of one student (or 12.5% of the Group) is ‘not known’ but she did not suggest that she preferred something else. Letter Bingo is therefore well-received in this study.

5.4.5 Parents’ perspectives

Much written about the benefits of games is based on implicit beliefs that games potentially keep students motivated and students learn better in a fun and
anxiety-free environment of games (Uberman, 1998). Findings in this study show some evidence supporting that some parents share the implicit assumptions of the pedagogical potentials of games. Comments by parents (both the Experimental Group and the Placebo Group) in this study showed that half the parents who gave positive statements regarding the effect of the game on improving their child’s English could not explain why they thought the game could help while the dictation scores for all three groups were declining during the period when the 3 interviews with parents were conducted. Even though findings show the perceptions of parents for the Experimental Group are more consistent with the findings drawn from the quantitative data with regard to the treatment effect on dictation scores, interview questions in further studies should probe more deeply into what parents mean when they are commenting on their child’s performance.

Nonetheless, interviewing parents is important. As shown in findings in this study, parents’ comments can triangulate data thus strengthening the validity and reliability of the study. One example in this study was the time students spent in preparing for dictation. It is evident that Hong Kong students at the age of 8 did
not have a concrete idea of time; thus contradictory data in terms of time were noted in the comments by students. Apart from reading between the lines when interpreting the messages that children convey (Powney and Watts, 1987; Kvale, 1996), triangulating data with parents’ comments becomes useful and necessary.

However, it is noted in the literature review in this study that very few studies cover parents’ perspectives on the effect of games on learning. Considering the initial findings in this study, change in learning is not only depicted in school but also at home (such as the change in students’ behaviour and strategies for preparing for dictation at home), interviewing parents is therefore worth considering in future studies.
5.5 Strengths and limitations of the study

One of the strengths of this study is its focus on the objective learning outcomes rather than on the implicit beliefs and mere assumptions of the pedagogical potentials of learning games. By investigating the cognitive outcomes of spelling acquisition and retention, the understanding of learning games is established on objective measures. To demonstrate the impact of a specific game in a naturalistic environment is one of the other strengths of this study; this study addresses the issue of learning games at the classroom level in an authentic setting. Acknowledging that the sample size is small, this study does not aim at generalizing to the wider population. By obtaining an overview on the impact of a specific game on a particular group, this study not only provides cautious support for extending the constructivist learning theories in relation to the pedagogical values of games in the classrooms but also paves the way for further investigations which may contribute to such extension.

The provision of both quantitative and qualitative outcomes is also the strengths of this study. This allows readers to understand the learning impact of games from various aspects. When exploring the qualitative outcomes, this study
employs interviews and this research method is one of the other strengths.

Considering the age of the students in this study, their patience and literacy in understanding and answering the question have to be considered. Face-to-face interviews in this study therefore not only allow for the elicitation of first-hand information on students’ thoughts, beliefs and feelings but also allow for flexibility and the minimizing of misunderstanding and misinterpretation of questions.

In this study, there are five limitations for consideration. The lack of randomization is the major limitation of this study. While true randomizing process is possible in naturalistic settings, it does not happen in this study; the researcher of this study has little control of the allocation of treatment. The selection and assignment of groups are based on interests and availability of students and parents and the representativeness of the sample is further restricted by limited sign-ups. The initial differences of groups in terms of gender and ability as well as the unexpected circumstances including the SEN student confirmed after all data collection and the extraneous event – the outbreak of the swine flu in the end of 2009 are all confounding variables that may affect the
results of this study. Further research may address this limitation through random assignments and a larger sample size so that the error associated with the characteristics of subjects (such as abilities and maturation rates) “would have been probabilistically equal in both group” (Shadish et al., 2002, p.14).

The small sample size is the second limitation of this study. Generalization to the wider population is limited. When considering the qualitative data collected for measuring motivation, caution is needed when drawing inferences because the difference between groups is perhaps attributable to a single interviewee. Thus a larger sample size may address this limitation in further research.

The third limitation is that the generalizability of this study is also restricted by two other facts: only one game and only spelling were investigated. Considering the four language skills (reading, writing, speaking, listening), spelling is a narrow aspect of language learning although it is significant for reading and writing. Therefore, in further research, the investigation into the impact of Letter Bingo in conjunction with other aspects of language learning is suggested.
The fourth limitation relates to the employing of interviews. When human beings are involved, the issue of subjectivity arises in both interviewer and interviewee (Denscombe, 1998; Kvale, 1996). In this study, there were ten interview questions for students, ten for parents and two for teachers. Given the short attention span that young students generally have, fewer questions and more focused ones are suggested in further investigation.

The measuring instrument – dictation is the fifth limitation of the study. Measures of achievement such as exams being standardized measures can provide high reliable scores (McMillan and Schumacher, 2001). However, they are not without limitations. In this study, although findings show the 5 sets of dictation scores collected in one school term were reliable with good internal consistency, findings also show the dictations were not in a progressive level of difficulty thereby affecting the results. This limitation may be addressed by extending the period of study so as to increase the measurement reliability.
Chapter 6 Conclusion

6.1 Overview

This chapter first summarizes how the two objectives of this study outlined in Section 1.3 are answered (i) to examine the impact of Letter Bingo on spelling performance (ii) to examine the impact of Letter Bingo on perceived motivation in learning English as L2 in Hong Kong. The emergence of new knowledge is then highlighted and is followed by some implications of the study and some recommendations for further research.
6.2 Summary

From the constructivist learning perspectives, this study investigates the impact of Letter Bingo as an instructional gaming strategy to support L2 learning in the level of classroom settings, the level that teachers’ needs are situated at precisely (Wastiau et al., 2009).

6.2.1 Interventional impact

By employing the quasi-experiment, this study obtains a general overview and provides groundwork for further investigations on the impact of language games. In this quasi-experiment, the quantitative data are more controlled for and provide the foreground for interpreting results whereas the qualitative data are supplementary to the quantitative data. In relation to the two objectives of this study outlined in Section 1.3 (i) to examine the impact of Letter Bingo on spelling performance (ii) to examine the impact of Letter Bingo on perceived motivation in learning English as L2 in Hong Kong, the quantitative data in this study show there is no positive impact of Letter Bingo on spelling performance in terms of dictation scores and the qualitative data show there is no robust evidence to support the positive impact of Letter Bingo on students’ perceived motivation in
learning English. It is therefore concluded that the efficacy of Letter Bingo has not been conclusively demonstrated in this quasi-experiment.

The inconclusive result is different from the results of some of the empirical studies reviewed in this study, for example, the positive effect of Bingo on acquisition and retention of words or terms in Kirby et al. (1981), Tietze (2007), Vanags et al. (2012) and Weisskirch (2009); the positive effect of language games in Alemi (2010), Cassar and Jang (2010) and Rosas et al. (2003); the positive effect of learning games on motivational aspects in Cassar and Jang (2010), Keen (1983), Tietze (2007), Vanags et al. (2012) and Weisskirch (2009). As discussed in Chapter 5, the methodological differences between the present study and the empirical studies reviewed mainly account for the different results in this study.

To sum up, the methodological differences include the lack of randomization, the small sample size and the lack of breadth of interview questions in the present study. Unlike the random selection and assignment of male/female students into the experimental and control groups in Alemi (2010) and the random assignment of third, fourth and fifth grade students into the ‘Boggle’ and textbook groups in
Keen (1983), randomization was not possible in the present study. It is acknowledged that the Experimental, Placebo and Control Groups in this study are non-equivalent groups that differ in baseline levels and such selection bias becomes a confounding variable of treatment effects. Unlike the sample size of 1274 students in Rosas et al. (2003) and the sample size of 130 students for Fall Semester and 116 students for Spring Semester in Tietze (2007), the sample size of 27 students in the present study limits the generalization of results to the wider population. Different from the four well-defined dimensions (interest, engagement, focus and confidence) exploring students’ affect in the questionnaires in Chang et al. (2009) and the self-assessment covering specific items of developmental theories and concepts in Weisskirch (2009), the interview questions in the present study do not probe deep enough as to elicit why interviewees feel and think in the way they have responded.

Apart from the above methodological concerns, the unanticipated problems and circumstances (including the outbreak of swine flu, the unidentified case of SEN student in the Placebo Group and the problems with the measuring instrument – dictations) account for the differences in the results between the present study and
the empirical studies reviewed.

Nonetheless, some methodological considerations of the present study are noted and they demonstrate other differences in the empirical studies reviewed in existing literature. The first consideration is the inclusion of the Placebo Group to counterbalance the Hawthorne effect. Different from the result in Rosas et al. (2003), the Hawthorn effect is absent in the present study.

The pre-dictation did by the Placebo Group after phonics instruction is the second methodological consideration. Unlike the methodological design of Alemi (2010) (that gives rise to the possibility that results could have been attributed to more reinforcement of vocabulary in games of the experimental group while control group received no reinforcement), the Placebo Group in this study reviewed vocabulary in the pre-dictation after phonics instruction when the Experimental Group reviewed the same vocabulary in the Letter Bingo game.

Also related to the Placebo Group is the third methodological consideration of the present study: by comparing the Experimental Group and the Placebo Group, any
treatment effect is attributed to the gaming elements of Letter Bingo since both groups received phonics instructions.

The fourth methodological consideration of the present study is interviewing parents so as to triangulate data thus strengthening the validity of the study. Parents’ perceptions are not elicited in any of the empirical studies reviewed in this study. Parents’ responses in this study provide some evidence demonstrating the lack of positive impact of Letter Bingo on academic performance.

6.2.2 Implications of this study

Aiming at providing groundwork for further exploration, it is reasonable to conclude that Letter Bingo in this study has the following educational implications. At this stage, the positive impact of Letter Bingo has not been robustly demonstrated in this study. At the same time, this study has not shown that Letter Bingo has any negative treatment impact. Taking into account the methodological issues discussed in the last subsection and some positive responses of both students’ and parents’ despite the decline in dictation scores, further studies with robust research designs are worth considering. Robust
research designs include the randomization of participants, a large sample size, a longer duration of study, interview questions that probe deeply into interviewees’ thoughts and beliefs as well as reliable measuring instruments. These are further discussed in Section 6.5 ‘Recommendations for further research’.

6.2.3 Classroom practices and other applications

It is stressed that due to the paucity of empirical evidence on investigations into the effectiveness of learning games on academic attainment, this study aims at providing basis for further investigations on the topic. The lack of robust evidence supporting the positive impact of Letter Bingo in this study makes it premature for classroom practices and other applications. Nevertheless, the practical and organizational aspects discussed in earlier chapters provide considerations and directions for the evaluation of games in studies in the future. Classroom practices should only take place when firm conclusions can be drawn on the impact of language games in classroom contexts.
6.3 Emergence of new knowledge

Acknowledging the limited knowledge pertaining to the effect of learning games on L2 academic attainment, this study is an initial study investigating the impact of the modified L2 linguistic game Letter Bingo on spelling performance with reference to perceived motivation in learning English in Hong Kong classrooms. The new knowledge emerged in this study includes (i) the drawing of methodological insights into research works relating to the impact of games in educational context and such insights can be carried forward to further studies of investigating learning games with particular reference to literacy (ii) Letter Bingo, a game modified from the west, is well-received by Hong Kong students in this study who enjoyed the game and who believed that the game has a positive impact on academic attainment. However, it is emphasized that these perceptions have to be considered in relation to the statistical findings that covered the wide confidence intervals, indicating uncertainty in the judgment of the findings in this study.
6.4 Future implications

One of the future implications of this study is the call for the revisiting of the formal and systematic phonics instruction in the primary school curriculum in Hong Kong. Although no empirical evidence drawn in this study supports the attribution of phonics instruction to any positive change in spelling performance or to motivation in learning English, comments from students and parents at interviews demonstrate a positive view on phonics instruction. This study by no means suggests that phonics instruction solves all spelling difficulties that Hong Kong students encounter or all problems regarding the proficiency decline in English. Nonetheless, phonics skills are crucial for decoding, reading, spelling and writing words and such skills provide the foundation for English learning. A systematic introduction of phonics skills in the curriculum is thus worth considering.

Considering the interconnectedness of academic achievement and motivation, another future implication is that the motivation of Hong Kong junior primary school students can be “‘worked on’ and increased” (Dörnyei, 2001b, p. 118) by introducing interesting and purposeful learning activities at classroom level.
Whether the kind of motivation is integrative or instrumental, intrinsic or extrinsic, it is not utterly important because they are not mutually exclusive. Most importantly, from the constructivist learning perspectives, motivation is integral in L2 learning and thereby more attention should be paid to how students’ motivation can be developed and sustained at an early stage in order to achieve the education aim of attaining life-long learning and whole person development.

When it is seen in this study that young learners in Hong Kong are generally reactive to marks and grades, their motivation in the developmental stage are susceptible to their learning experiences. When it is also noted that some young learners with very good marks and grades expressed unhappiness and anxiety in learning English, it is worth the while of educators and policy-makers in Hong Kong to reflect on how and why learners think and feel in such a manner.
6.5 Recommendations for further research

This study provides the starting point for future investigations into the potential educational values of Letter Bingo as a purposeful learning game.

Recommendations for further research therefore focus on research design although some game elements are also suggested.

The present study employed the quasi-experiment because random assignment was not feasible. In further investigations, random assignment could be employed so as to maximize the homogeneity of groups for comparison.

Acknowledging individual differences in personality and preferences, different age and gender groups could be investigated in further studies. Over the duration of one school term, the positive impact of the game has not been robustly demonstrated in this study; longer durations could be considered in order to investigate the differences of impact of the game, if any.

In this study, findings drawn from the quantitative data and most findings drawn from the interviews with parents and teachers have not demonstrated any positive impact of Letter Bingo on students’ spelling performance and motivation.
However, an interesting issue arises when initial findings drawn from the interviews with students for the Experimental Group demonstrate that there is positive impact. In further studies, it is suggested that interview questions should probe deeply into the interviewees’ thoughts and beliefs so as to elicit more in-depth understanding of the related issues.

In terms of game elements, the potentials of the game can be leveraged by considering the level of difficulty so as to suit individual abilities as well as to enhance curiosity and engagement.

Finally, another recommendation is to investigate Letter Bingo’s reference to reality which is significant in fostering whole-person development. Although games are not intended to represent any real-world system, Bingo in studies such as Coco et al. (2000) demonstrates the game to be “an holistic, experiential strategy that provokes personal reflection” (p.154). Although this study does not generate evidence to support the relevance of Letter Bingo to real life situations, the potential reference of Letter Bingo to reality should not be dismissed.
To conclude, Macedonia (2005) asserts “there seems to be no argument against the use of games. If they additionally facilitate achieving the goal of memorization and oral recall, then games acquire a didactic purpose as well” (p.139). Since the positive impact of Letter Bingo on learning has not been robustly demonstrated in this study, it is evident that more empirical studies relating to the topic are needed before a conclusive result can be drawn about the value of Letter Bingo.

Reflecting on the process of developing and conducting this study, being the researcher, I find this experience exciting and enriching. Acknowledging that this study was disrupted by the outbreak of swine flu, I learn from this unique experience about constraints that can be arisen from unanticipated circumstances. Although it is perhaps disappointing that the positive impact of Letter Bingo on learning has not been robustly demonstrated in this study, I learn about the importance of randomization as well as the constraints of small sample size. This experience provides me with the knowledge that a researcher should be equipped with when developing robust designs for research works.
# Appendix 1

## Summary of strategies from Dörnyei (1994a)

<table>
<thead>
<tr>
<th>Levels</th>
<th>Strategies</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. include a sociocultural component in the L2 syllabus</td>
<td>showing films, playing relevant music</td>
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</tr>
<tr>
<td>2. promote students’ cross-cultural awareness</td>
<td>focusing on cross-cultural similarities</td>
<td></td>
</tr>
<tr>
<td>3. promote student contact with L2 speakers</td>
<td>organising school trips</td>
<td></td>
</tr>
<tr>
<td>4. develop students’ instrumental motivation</td>
<td>discussing with students the potential usefulness of L2</td>
<td></td>
</tr>
<tr>
<td><strong>Learner level</strong></td>
<td></td>
<td></td>
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<tr>
<td>5. develop students’ self-confidence</td>
<td>providing praise, encouragement, involving students in more favourable, ‘easier’ activities</td>
<td></td>
</tr>
<tr>
<td>6. promote students’ self-efficacy</td>
<td>teaching students strategies for problem-solving, learning and communication strategies</td>
<td></td>
</tr>
<tr>
<td>7. promote favourable self-perceptions of competence in L2</td>
<td>highlighting what students can do</td>
<td></td>
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<tr>
<td>8. decrease student anxiety</td>
<td>creating a supportive learning</td>
<td></td>
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<tr>
<td>9. promote motivation-enhancing attributions</td>
<td>helping students recognise links between effort and outcome</td>
<td></td>
</tr>
<tr>
<td>10. encourage students to set attainable subgoals</td>
<td>learning a certain number of new words every week</td>
<td></td>
</tr>
<tr>
<td><strong>Learning situation level</strong></td>
<td></td>
<td></td>
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<tr>
<td>11. make the syllabus of the course relevant</td>
<td>basing it on needs analysis</td>
<td></td>
</tr>
<tr>
<td>12. increase the attractiveness of the course content</td>
<td>using authentic materials, using supplementary materials, visual aids</td>
<td></td>
</tr>
<tr>
<td>13. discuss with students the choice of teaching materials</td>
<td>pointing out strong and weak points</td>
<td></td>
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<tr>
<td>14. arouse and sustain curiosity and attention in the task</td>
<td>not allowing lessons to settle into too regular a routine</td>
<td></td>
</tr>
<tr>
<td>15. increase students’ interest and involvement in the task</td>
<td>by designing or selecting varied and challenging activities, include game-like features</td>
<td></td>
</tr>
<tr>
<td>16. match difficulty of tasks with students’ abilities</td>
<td>so that students can expect to succeed</td>
<td></td>
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<tr>
<td>17. increase student expectancy of task fulfilment</td>
<td>offering student ongoing assistance</td>
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<tr>
<td>18. facilitate student satisfaction</td>
<td>celebrating success</td>
<td></td>
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<tr>
<td>19. try to be empathetic, congruent and accepting</td>
<td>being sensitive to students’ needs, non judgmental</td>
<td></td>
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<tr>
<td>20. adopt the role of a facilitator</td>
<td>developing a warm rapport with</td>
<td></td>
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<tr>
<td>21. promote student autonomy</td>
<td>minimising threats and punishment</td>
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<tr>
<td>22. model student interest in L2 learning</td>
<td>taking students’ learning process very seriously</td>
<td></td>
</tr>
<tr>
<td>23. introduce tasks so as to stimulate intrinsic motivation and help internalise extrinsic motivation</td>
<td>presenting tasks as learning opportunities to be valued</td>
<td></td>
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<tr>
<td>24. use motivating feedback</td>
<td>giving positive competence feedback</td>
<td></td>
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<tr>
<td>25. increase the group’s goal-orientedness</td>
<td>initiating discussions</td>
<td></td>
</tr>
<tr>
<td>26. promote internalisation of classroom</td>
<td>asking for students’ agreement</td>
<td></td>
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<tr>
<td>27. help maintain internalised classroom</td>
<td>observing consistently</td>
<td></td>
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<tr>
<td>28. minimise detrimental effect of evaluation</td>
<td>focusing on individual progress</td>
<td></td>
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<tr>
<td>29. promote development of group cohesion, enhance intermember relationships</td>
<td>organising outings, game-like inter-group competitions</td>
<td></td>
</tr>
<tr>
<td>30. use cooperative learning techniques</td>
<td>including groupwork in classes</td>
<td></td>
</tr>
<tr>
<td>Researchers</td>
<td>Basis</td>
<td>Classification</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>McFarlane <em>et al.</em> (2002)</td>
<td>Genres of title</td>
<td>A. Adventure/quest games</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B. Simulations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C. Race games</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D. Maze games</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E. Edutainment activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F. Creative/model building</td>
</tr>
<tr>
<td>Kaptelin and Cole (2001),</td>
<td>Kinds of experiences that games</td>
<td>G. Shooting/arcade games</td>
</tr>
<tr>
<td>Becta (2002)</td>
<td>provide</td>
<td>H. Traditional games</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A. Physical skills</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B. Games of strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C. Games of chance</td>
</tr>
</tbody>
</table>
Appendix 3

Game functions from Dempsey et al. (1993)

<table>
<thead>
<tr>
<th>Function of games</th>
<th>Percentage of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn new skills</td>
<td>23%</td>
</tr>
<tr>
<td>Practise existing skills</td>
<td>21%</td>
</tr>
<tr>
<td>Not able to determine</td>
<td>14%</td>
</tr>
<tr>
<td>Change attitude</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td>11%</td>
</tr>
<tr>
<td>Drill existing skills</td>
<td>9%</td>
</tr>
<tr>
<td>Tutor</td>
<td>6%</td>
</tr>
<tr>
<td>Promote self-esteem</td>
<td>3%</td>
</tr>
<tr>
<td>Amusement</td>
<td>2%</td>
</tr>
</tbody>
</table>
## Appendix 4

**Game functions from the constructivist learning perspectives**

<table>
<thead>
<tr>
<th></th>
<th>Game functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strategy for drilling and practising</td>
</tr>
<tr>
<td>2</td>
<td>Strategy for introducing new contents</td>
</tr>
<tr>
<td>3</td>
<td>Strategy for reflection</td>
</tr>
<tr>
<td>4</td>
<td>Motivation stimuli for learning</td>
</tr>
<tr>
<td>5</td>
<td>Strategy for developing tasks</td>
</tr>
<tr>
<td>6</td>
<td>Strategy for developing collaboration and social skills</td>
</tr>
</tbody>
</table>
Appendix 5

Linguistic games focusing on accuracy

<table>
<thead>
<tr>
<th>Learning targets</th>
<th>No. of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>3</td>
</tr>
<tr>
<td>Spelling</td>
<td>5</td>
</tr>
<tr>
<td>Grammar</td>
<td>0</td>
</tr>
</tbody>
</table>
## Summary of empirical studies on vocabulary games focusing on accuracy

<table>
<thead>
<tr>
<th>References</th>
<th>L1/L2</th>
<th>Game(s)</th>
<th>Learning theories underpinning the game(s)</th>
<th>Game types (individual/group games)</th>
<th>Game functions</th>
<th>Learning outcomes</th>
<th>Design as reported by the author(s)</th>
<th>General findings as reported by the author(s)</th>
<th>Any methodological concerns noted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alemi (2010)</td>
<td>English as L2 in Iran</td>
<td>5 games: Twenty Questions, Charades, Definition Game's, Passwords, Crossword Puzzles</td>
<td>not specified</td>
<td>not specified</td>
<td>drill and practise vocabulary</td>
<td>cognitive - vocabulary retention</td>
<td>experiment</td>
<td>experimental group performed significantly better than control group in post-test</td>
<td>results could have been attributed to more reinforcement of vocabulary in games for experimental group while control group received no reinforcement</td>
</tr>
<tr>
<td>Kirby et al. (1981)</td>
<td>English as L1 in Canada</td>
<td>bingo</td>
<td>behavioural principles</td>
<td>individual</td>
<td>drill and practise sight words</td>
<td>cognitive-acquisition and retention of sight word vocabulary</td>
<td>experiment</td>
<td>noticeable improvement occurred for word sets receiving game treatment</td>
<td>no control group; a small sample size of 6 students</td>
</tr>
<tr>
<td>Laleh and Nasrin (2011)</td>
<td>English as L2 in Iran</td>
<td>digital computer game SHAIEs</td>
<td>cognitive learning theories</td>
<td>individual</td>
<td>introduce new vocabulary</td>
<td>cognitive - vocabulary acquisition</td>
<td>experiment</td>
<td>experimental group performed significantly better than control group in final test</td>
<td>only girl participants and no explanation provided; randomization unknown; no measurement of motivation but claimed experimental group was more motivated than control group</td>
</tr>
<tr>
<td>References</td>
<td>L1/L2</td>
<td>Game(s)</td>
<td>Learning theories underpinning the game(s) involved</td>
<td>Game types (individual / group games)</td>
<td>Game functions</td>
<td>Learning outcomes</td>
<td>Design as reported by the author(s)</td>
<td>General findings as reported by the author(s)</td>
<td>Any methodological concerns noted</td>
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<tr>
<td>Cassar and Jang</td>
<td>English as L1 in Canada</td>
<td>a variety of games - including game-based activities including crossword puzzles and board games</td>
<td>phonological processing model and Vygotsky’s cognitive developmental theories</td>
<td>individual / group</td>
<td>introduce, drill and practise spelling</td>
<td>cognitive - word recognition, spelling acquisition and retention; affective - level of engagement in learning</td>
<td>quasi-experiment</td>
<td>both treatment group and comparison group performed better on post-spelling tests; treatment group showed higher gain scores on average than comparison group; level of engagement of treatment group was better than comparison group</td>
<td>small sample of 6 students (all with reading disabilities and attention deficit disorders) limited generalizability</td>
</tr>
<tr>
<td>Garcia et al. (2008)</td>
<td>Spanish speaking students learning English as L2</td>
<td>a Pac-man like game</td>
<td>theories about orthography</td>
<td>individual / group</td>
<td>introduce, drill and practise spelling</td>
<td>cognitive - orthography, spelling acquisition and retention</td>
<td>experiment</td>
<td>claimed students made significant progress after game;</td>
<td>significant improvement was claimed without providing statistical significant difference; some students played in groups because of lack of equipment</td>
</tr>
<tr>
<td>Jolicoeur and Berger (1988)</td>
<td>English as L1 in U.S.</td>
<td>8 educational commercially sold software programmes (4 being spelling software - including 2 spelling tutorial and 2 spelling games)</td>
<td>cognitive learning theories</td>
<td>individual</td>
<td>(2 spelling games) introduce new contents</td>
<td>cognitive - fraction concepts, spelling acquisition</td>
<td>experiment</td>
<td>in immediate test, no significant difference between spelling tutorials and spelling games; in the two-week delayed test, spelling knowledge decreased significantly for students who employed spelling software (spelling tutorials and spelling games as a whole)</td>
<td>in the delayed test, no comparison in performance between spelling tutorials and spelling games, effect cannot be compared</td>
</tr>
<tr>
<td>References</td>
<td>Type</td>
<td>Game(s)</td>
<td>Learning theories underpinning the game(s)</td>
<td>Game types (individual/group games)</td>
<td>Game functions</td>
<td>Learning outcomes</td>
<td>Design as reported by the author(s)</td>
<td>General findings as reported by the author(s)</td>
<td>Any methodological concerns noted</td>
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<tr>
<td>Keen (1983)</td>
<td>English as L1 in U.S.</td>
<td>commercially produced game Boggle</td>
<td>psycho-linguistic aspects of writing system and motivational aspects of students</td>
<td>individual/group</td>
<td>introduce, drill and practise spelling</td>
<td>cognitive-spelling acquisition and retention</td>
<td>experiment</td>
<td>in terms of gain scores in spelling, at 3rd grade level, textbook class performed significantly better than Boggle class; at 4th, 5th grade level no significant difference between groups</td>
<td>different treatment occurred for the 5th grade level: textbook group met only twice during the week (because of scheduling conflicts)(p.58) while the Boggle group met from Monday to Thursday; students played Boggle in randomly assigned groups but no such group was noted for the textbook groups at the three grade levels</td>
</tr>
<tr>
<td>Rosas et al. (2003)</td>
<td>English as L2 in Chile</td>
<td>a software designed with 5 video games</td>
<td>cognitive learning theories</td>
<td>individual</td>
<td>introduce new contents</td>
<td>cognitive reading comprehension, spelling and math skills; motivation to use video games</td>
<td>experiment</td>
<td>significant differences in spelling between experimental schools (consisting experimental groups (EG) and internal control (IC) groups) and outside schools (which were the external control (EC) groups) but no significant differences between the EG groups and the IC groups; with the use of video games; improvement in motivation to learn was noted</td>
<td>participants were matched in the EG, IC and EC groups but no mentioning regarding the teaching instructions of the IC groups and the EC groups</td>
</tr>
</tbody>
</table>
### Appendix 8. Summary of empirical studies on language games focusing on communication.

<table>
<thead>
<tr>
<th>References</th>
<th>L1/L2</th>
<th>Game(s)</th>
<th>Learning theories underping the game(s)</th>
<th>Game types (individual / group games)</th>
<th>Game functions</th>
<th>Learning outcomes</th>
<th>Design as reported by the author(s)</th>
<th>General findings as reported by the author(s)</th>
<th>Any methodological concerns noted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gardner (1987)</td>
<td>English as L2 in UK</td>
<td>Describe and Arrange</td>
<td>not specified</td>
<td>group</td>
<td>drill and practise vocabulary, pronunciation and grammar</td>
<td>cognitive - vocabulary, pronunciation, grammar</td>
<td>action research</td>
<td>more positive impact on practising language related to description than location but little evidence to support self-correction and peer-correction</td>
<td>methodology (sampling, randomization, pairing of groups) was not known except the mentioning of a questionnaire</td>
</tr>
<tr>
<td>Liu and Chu (2010)</td>
<td>English as L2 in Taiwan</td>
<td>ubiquitous games HELLO</td>
<td>constructivism and motivation theories</td>
<td>group</td>
<td>drill and practise listening and speaking</td>
<td>cognitive-listening and speaking skills; motivation; collaboration</td>
<td>quasi-experiment</td>
<td>in both test scores and motivation, experimental group using ubiquitous games performed better than control group using non-gaming learning</td>
<td>students were assigned to experimental and control groups (then to teams in each group) but no control for differences among teams was noted</td>
</tr>
<tr>
<td>Nguyen and Khuat (2003)</td>
<td>English as L2 in Vietnam</td>
<td>a few vocabulary games (including Simon Says, Hangman)</td>
<td>communicative language teaching approach</td>
<td>group</td>
<td>drill and practise vocabulary</td>
<td>communicative learning, cognitive-vocabulary building; perception and attitudes</td>
<td>action research</td>
<td>claimed games contributed to vocabulary learning and students welcomed new way of vocabulary teaching</td>
<td>objective measure of progress in vocabulary is limited</td>
</tr>
<tr>
<td>References</td>
<td>L1/L2</td>
<td>Game(s)</td>
<td>Learning theories underpinning the game(s)</td>
<td>Game types (individual/group games)</td>
<td>Game functions</td>
<td>Learning outcomes</td>
<td>Design as reported by the author(s)</td>
<td>General findings as reported by the author(s)</td>
<td>Any methodological concerns noted</td>
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<tr>
<td>Rama et al (2007)</td>
<td>L1 in Singapore</td>
<td>5 communicative games</td>
<td>collaborative learning</td>
<td>group</td>
<td>introduce, drill and practise vocabulary</td>
<td>oral communication skills</td>
<td>experiment</td>
<td>experimental group showed greater improvement in post-tests of oral component</td>
<td>collaborative learning was noted in experimental group but not in control group; result may have been attributed to collaborative learning not gaming</td>
</tr>
<tr>
<td>Uberman (1998)</td>
<td>Polish speaking students learning English as L2</td>
<td>Vocabulary Picture-Puzzle and crossword puzzle</td>
<td>various vocabulary presentation techniques</td>
<td>group</td>
<td>introduce, drill and practise vocabulary</td>
<td>cognitive - vocabulary acquisition and retention</td>
<td>experiment</td>
<td>claimed that gaming group performed significantly better; sampling size, randomization are unknown; some games were played in pairs and how pairing was formed was not stated; observation procedures were not stated</td>
<td>claimed that gaming group performed significantly better; claimed that from observation, students playing games were more motivated</td>
</tr>
<tr>
<td>References</td>
<td>L1/L2</td>
<td>Game(s)</td>
<td>Game types (individual/group games)</td>
<td>Game functions</td>
<td>Learning outcomes</td>
<td>Design as reported by the author(s)</td>
<td>General findings as reported by the author(s)</td>
<td>Any methodological concerns noted</td>
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</tr>
<tr>
<td>Yu (2005)</td>
<td>German as L2 in Taiwan</td>
<td>13 games</td>
<td>communicative practices and motivation theories</td>
<td>groups</td>
<td>introduce and drill and practise</td>
<td>cognitive - grammar accuracy; motivation and perception on classroom atmosphere</td>
<td>no significant improvement in grammatical accuracy but significant improvement in motivation and classroom atmosphere for the experimental group</td>
<td>the number of students with different levels of motivation in learning German in each high/middle/low language level group is not known</td>
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</table>
## Appendix 10

### Summary of empirical studies on language games

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Linguistic games</th>
<th>Communicative games (5)</th>
<th>Language games focusing on accuracy and fluency</th>
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<tr>
<td><strong>Language</strong></td>
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<tr>
<td>L1</td>
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<td>L2</td>
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<td><strong>Type</strong></td>
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<td>computer-related games</td>
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<td>non computer-related games</td>
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<td><strong>Game source</strong></td>
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<td>employ or adapt from readily available games</td>
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<td>specifically designed games</td>
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<td><strong>Player</strong></td>
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<td>individual games</td>
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<td>constructivist / cognitive learning theories</td>
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<td>drill and practice</td>
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<td>develop tasks</td>
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<td>/</td>
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<td>collaboration and social skills</td>
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<td>reflection</td>
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<td><strong>Outcomes</strong></td>
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<td>cognitive and affective outcomes</td>
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<td><strong>Research design as reported by the author(s)</strong></td>
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<td>experimental design</td>
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<td>quasi-experimental design</td>
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<td>1</td>
<td>1</td>
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<td>action research</td>
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<td><strong>General findings as reported by the author(s)</strong></td>
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<td>positive impact of games (academic and/or affective aspects)</td>
<td>3</td>
<td>3</td>
<td>5</td>
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Appendix 11

7 questions for considerations for language games
from Hong (2002)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Which language does the game target?</td>
</tr>
<tr>
<td>2</td>
<td>Which skills does it practise? The language skill focus could be any one of the major skills of listening, speaking, reading or writing.</td>
</tr>
<tr>
<td>3</td>
<td>What type of game is it?</td>
</tr>
<tr>
<td>4</td>
<td>What’s the purpose for using it?</td>
</tr>
<tr>
<td>5</td>
<td>Does it fit the students? How could I simplify or make it more complex if necessary? Many games require modification in use when the students’ needs are taken into consideration.</td>
</tr>
<tr>
<td>6</td>
<td>How much interaction and participation is there? Maximum involvement is something we are pursuing.</td>
</tr>
<tr>
<td>7</td>
<td>Do I like the game myself?</td>
</tr>
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</table>
# Appendix 12

## Practical and organizational aspects of choosing language games

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Specifics</th>
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<tbody>
<tr>
<td>Goal / objective</td>
<td>Which language, which skills (reading, writing, speaking, listening) do the game target?</td>
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<tr>
<td>Focus</td>
<td>accuracy or communicative purpose</td>
</tr>
<tr>
<td>Functions</td>
<td>e.g. drill and practise familiar materials, introduce new concepts, strategy for deep learning</td>
</tr>
<tr>
<td>Type</td>
<td>to be played individually or in pairs/groups; to be played in classroom or at home; digital game or pen-and-paper game</td>
</tr>
<tr>
<td>Appropriacy</td>
<td>corresponding to the number of students, students’ age, proficiency, any simplication or modification required</td>
</tr>
<tr>
<td>Organizational process</td>
<td>time involved (e.g. before/during/after class, duration of each game); classroom setting and space</td>
</tr>
<tr>
<td>Materials/cost involved</td>
<td>pens and paper, cards and boards, any IT infrastructure e.g. computers, laptops, broadband accessibility, technical staff etc.</td>
</tr>
<tr>
<td>Culture</td>
<td>students’ attitude towards participation, learning and fun</td>
</tr>
<tr>
<td>References</td>
<td>Subject discipline</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Chang et al. (2009)</td>
<td>Math</td>
</tr>
<tr>
<td>Kirby et al. (1981)</td>
<td>English language as L1</td>
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<td>Klepper (2003)</td>
<td>Social sciences</td>
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</table>
## References

<table>
<thead>
<tr>
<th>Subject discipline</th>
<th>Learning theories underpinning the game(s) involved</th>
<th>Game types (individual / group games)</th>
<th>Game functions</th>
<th>Learning outcomes</th>
<th>Design as reported by the author(s)</th>
<th>General findings as reported by the author(s)</th>
<th>Any methodological concerns noted</th>
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</thead>
<tbody>
<tr>
<td>Tietze (2007)</td>
<td>Pharmacy</td>
<td>individual</td>
<td>drill and practice and demonstrate learning, develop tasks, stimulus for learning</td>
<td>cognitive-acquisition and retention of contents; affective - attention, attitude</td>
<td>action research</td>
<td>students who achieved bingo had at least an average course grade points higher than previous semesters compared to students who did not achieve bingo and had an average course grade points lower</td>
<td>43% of students completed anonymous survey - low responding rate may affect the drawing of conclusion</td>
</tr>
<tr>
<td>Vanags et al. (2012)</td>
<td>Psychology</td>
<td>deep learning groups</td>
<td>drill and practice specific terms</td>
<td>cognitive - recall and retention of terms</td>
<td>quasi-experiment</td>
<td>the experimental group showed significantly better recall for key terms than the control group in both post-test and follow-up test</td>
<td>no random assignment; in Experiment 1, control group lacked opportunity to familiarize themselves with terminology</td>
</tr>
<tr>
<td>Weisskirch (2009)</td>
<td>Developmental Psychology</td>
<td>cognitive learning</td>
<td>drill and practice / review concepts</td>
<td>cognitive-recall and retention of concepts; affect</td>
<td>experiment</td>
<td>students reported improvement of their knowledge and understanding of theories and concepts; positive view on game activity; students reported better perceived understanding of course material achieved higher scores on exam</td>
<td>test score for exam was used for measuring academic performance but additional chapters' information was included in exam thus threatening the validity of study</td>
</tr>
</tbody>
</table>
Appendix 14

Sign-up form I

活動名稱：Bingo workshop (共六堂)
活動性質：透過 Bingo 學英文，令學生掌握中字及發音的技巧，在學習歷程中培養孩子靈活性、專注力和自信心。
完成課程將獲頒發證書。
活動日期：2009 年 9 月至 12 月（六）
(26/9、17/10、31/10、21/11、5/12、19/12）
組別：A 組 12 人 (11:20am-12:20pm)
B 組 12 人 (12:30pm-01:30pm)
活動對象：三年級
名額：24 名 (如額滿報名人數，將以抽籤形式取錄)
費用：全免(報讀後才數按金，先付按金$50 包席位及活動簡冊全數書籍)
導師：認真訓練中心洪靜儀老師
活動地點：耀道小學
服裝：校服
裝備：文具
如有任何查詢，請致電 小組

香港曜協會主席
Chairman of the Hong Kong Sunshine Association

如有興趣參加，請填妥以下回條，於 9 月 15 日前交回班主任彙報，否則作放棄論。
2009 年 9 月 15 日

Bingo Workshop 回條

☐ 本人有興趣讓子女參與 Bingo Workshop 活動，並希望額位
☐ A 組(11:20am-12:20pm)
☐ B 組(12:30pm-01:30pm)

☐ 本人未有興趣讓子女參與 Bingo Workshop 活動。

* 請在適當的 ☐ 內打 √

______ 班學生 ______________ ( )
聯絡電話：____________________ 家長簽署：____________

2009 年 9 月 ___ 日
Appendix 15

Completion form

Bingo Workshop

活動名稱: Bingo Workshop
活動日期: 2009年9月至12月
(26/9・17/10・31/10・21/11・5/12・19/12)
組別:
A組 (11:20 am - 12:20 pm)
B組 (12:30 pm - 1:30 pm)
導師: 葉耀輝老師

所有資料只供「Bingo遊戲對香港小學生學習英文字母之效用」
作研究報告之用，將會保密。

本人與子女已完成 Bingo Workshop □ A組 (11:20 am - 12:20 pm) 活動。
□ B組 (12:30 pm - 1:30 pm)

3 班

家長簽署: __________________________

學生姓名: __________________________

日期: __________________________
Appendix 16
Sign-up form II

Bingo Workshop

現邀請三年級同學提供上學期英文科默書成績作 Bingo Workshop

研究報告之用。

如有興趣參加，請填妥以下回條，於　__　月　__　日前交回班主任存档。

Bingo Workshop 回條

所有資料只供研究目的，將會保密。

本人　□　願意　透過學校提供子女默書成績以作研究之用。
□　不願意

□　班學生　　　（　）　家長簽署：__________

聯絡電話：__________　　日期：__________
Appendix 17

Copy of dictation revision sheet

2009-2010 1st Term
P3 English Dictation Revision Sheet 3 (Unit 3 & 4)
Class: 3 ( )
Name: ( ) Date of dictation: 6th November, 2009

A. Vocabulary 40 marks

1. Hong Kong Island
2. Kowloon
3. the New Territories
4. Chinese
5. Maths
6. friendly
7. clever
8. kind
9. hard-working
10. helpful

B. Sentences 60 marks

1. Does he come here every day?
2. No, he doesn’t.
3. Does he play the piano?
4. Yes, he does.
5. What do you do to help the people here?
6. I clean the bedrooms.

C. Creative Dictation (Bonus)
Topic: Words that end with “nd” or “nt”.
Appendix 18


Purpose
- To strengthen the association between letters and topic items.
- To reinforce vocabulary and spelling skills.

Game Objective
To win by covering 6 game board squares in a horizontal, vertical, or diagonal (corners-to-center) line.

Players
4 or more. Can be adapted for one-on-one scoring.

Time
15-45 minutes.

Grades
K-6.

Supplies
- A set of questions and clues about the topic.
- 1 game sheet per team.
- 1 marker (pens or similar small tokens) per team.
- Paper and pencils for each team.

GAME STEPS

Preparation
- Divide class into teams of four or three players each.
- Distribute one game sheet and one marker to each team.

Round 1
- Present a word or picture clue.
- Have teams place their markers on the game sheet letter representing the correct response.
- Announce the correct response.

Scoring
- For a correct response, the team removes its marker and marks an “X” through the correct square.
- For an incorrect response, the team removes its marker.
- This completes the first round of play.

Round 2 to End of Game
- Play is the same for each round.

End of Game
- The first team to cover four squares in a row is declared the winner.

SCORING EXAMPLE

Preparation
- The class is divided into teams of two to three players.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>D</th>
<th>K</th>
<th>R</th>
</tr>
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<tr>
<td>E</td>
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<td>J</td>
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<tr>
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<td>I</td>
<td>S</td>
<td>C</td>
<td></td>
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<tr>
<td>G</td>
<td>N</td>
<td>L</td>
<td>A</td>
<td></td>
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</table>

- Each team receives a marker and a game sheet.
- Students are instructed to find the first letter of the words represented by the clues given by the teacher.
Appendix 19

Rules and scoring of Letter Bingo

i. At the start of each game, each participant will be distributed a Bingo sheet.

ii. All Bingo sheets are in the form of a 6 x 6 grid, with a letter in each square (see Appendix 20). All letters in the squares are randomly chosen. All Bingo sheets vary. The number of letters on each sheet is different (i.e. a letter may occur once, twice or even three times on a single sheet).

iii. During the game, the conductor will ask 14 questions:

- The Placebo Group - the conductor will call out a letter, e.g. the letter ‘t’.
- The Experimental Group - the conductor will call out a word in the forthcoming dictation and pose a question, e.g. ‘What is the fourth letter of the word bakery?’.

All participants are to look for their own answer(s) / letter(s) on their Bingo sheet and circle them with a pencil. The conductor will confirm the correct answer(s) / letter(s) by circling with a marker.

iv. Bingo points will be awarded to any participant when 4 – 6 letters in a row (either vertically, horizontally or diagonally) are circled. 40, 50, 60 points will be awarded to 4, 5, 6 circled answers in a row respectively. Wrong answers to questions or missing letters will not score Bingo points.

v. Participants are required to call ‘Bingo’ every time right after a Bingo occurs. Points will not be awarded to any previous or missed Bingo.

vi. The game ends when all 14 questions are asked. Time for each game is estimated to be within 30 minutes. The winner is the one with the highest Bingo scores in that game.
Appendix 20

Copy of Letter Bingo sheet

![Letter Bingo sheet image]
Appendix 21

Extracts of interviews with students

SS(1)
1. I: Ok! Miss X starts now... OK! Are you XXX?
2. R: Yes
3. I: Um! I would ask you something about English spelling now. You have to answer me loudly, ok?
4. R: Ok
5. I: um! What do you think about English spelling? What are your feelings about spelling?
6. R: er... I think it is difficult
7. I: um! You think it is difficult. um! Why? Why do you think it is difficult?
8. R: Because... words are difficult
9. I: um! You think words are difficult. Why do you think English spelling is difficult apart from that the words are difficult?
10. R: too many words
11. I: OK! Many words to remember! um! Understand! Er... anything else? Any? Do you think that there is any relationship between English spelling and English dictation?
12. R: er... no relationship
13. I: You think that no relationship! um! er... How do you feel when you receive the dictation scores?
14. R: nervous
15. I: OK! Nervous! and?
16. R: er... a little bit happy
17. I: A little bit happy, and?
18. R: er... Nothing else
19. I: Nothing else! Why do you feel nervous but happy when you received dictation scores?
20. R: Because... I am worried about my result... if it’s not good
21. I: um! You’re worried about your result? But happy?
22. R: er... because my result is good always
23. I: um! Understand! How much time does it take you to prepare for English dictation? Every time...
24. R: quite Fast...
25. I: um
26. R: Half hour
27. I: Half hour. Er... How much time does it take if you’re slow?
28. R: er... one hour
29. I: OK! One hour! What are your feelings when you use half or one hour to
Appendix 22

Extracts of interviews with parents

PR(2)
1. I: er, Mother of XX!
2. R: Yes
3. I: That, Mrs. X, I would like to ask you something about XX's English spelling performance recently
4. R: Yes
5. I: Did XX mention anything about this class to you?
6. R: Yes! She said sometimes in class, er... the performance is not so good, and sometimes if it's good, she looks very happy
7. I: I see! So what does she feel about this class?
8. R: She is happy!
9. I: Happy
10. R: Yes
11. I: Then what about XX’s performance in English spelling recently?
12. R: Spelling... Sometimes when she brings home the word sheet, I ask her to revise but she would say she knows the words already. In case there are one or two words that she is not familiar with and I ask her to revise one more time, she will only then study once again.
13. I: Is there any difference... before and after attending (bingo class)?
14. R: I can feel that she revises a lot faster... when compared to before, she needed more time to study before, but now can learn a lot faster! Umm
15. I: So what do you think about XX’s recent performance in phonics?
16. R: That’s average
17. I: Average! Any difference... before and after? What’s the difference?
18. R: Also faster
19. I: Faster! Then how about XX’s English Dictation performance?
20. R: is pretty much the same
21. I: Pretty much the same, so, er... any changes compared to before?
22. R: Also pretty much the same. But she needs more time to study before, and needs less time now!
23. I: How does XX study for the dictation? How much time she spent on it?
24. R: No, she on her own, spends like twenty thirty minutes! Then she will say she’s finished
25. I: Oh! Twenty thirty minutes only
26. R: Yes! And (when) I test her and she can do it, only makes few mistakes
27. I: So anyone to revise with her? Who?
28. R: er... for most of the time is me, I read (it out) and she writes
29. I: Oh! You read (it out) and she writes

PR(2)
Appendix 23

Extracts of interviews with teachers

T(3)
1. I: ok! So let's take a look at class 3A.
2. R: hmm.
3. I: OK! So let’s see S10. S10, she speaks louder now.
4. R: yes yes
5. I: hmm huh! Not soon...
6. R: she's great.
7. I: she's great
8. R: she's great
9. I: e... how about these days? What do you think about her?
10. R: she could keep it.
11. I: she could keep it.
12. R: I think her performance maintains.
14. R: still very nice
15. I: but you... Did you notice if she split the words or learnt by role?
16. R: I think she started to master phonics
17. I: hmm huh!
18. R: I think she’s probably using phonics.
19. I: how’s her dictation? The third or forth time..
20. R: S10! E.... failed in the third time
21. I: hmm huh!
22. R: 2 marks below the pass mark, but she got 70 marks in the fourth dictation
23. I: hmm huh hmm! Hmm hmm!
24. R: that is similar to the first and second time?
25. I: similar. Hmm! But she, I mean, is active and aggressive during the lesson..
26. R: yes! Same as before.
27. I: same?
28. R: very enthusiastic
29. I: same?
30. R: same same!
31. I: hmm huh! What do you think about her attitude towards English? Especially English! Does she like it?
32. R: I think she likes it, she isn’t afraid of it
33. I: you think so?
34. R: I think so. She’s very enthusiastic
35. I: hmm huh!
Appendix 24

Extracts of back-translation

1. I: 想請問你哪裡買 XX 的家長?
   R: 有
2. I: XX 小組，我想請問有關 XX 英文教會情況，我想問 XX 會多星期聚會時，除
   外還有其他活動嗎?
   R: 恩…好像少，好像少
3. I: 好少呢！喝 XX 會有英文會聚會嗎?
   R: 喝一聚會！有時開中文聚會都會喝。哈哈
4. I: 喝…
   R: 所以你覺得 XX 英文教會字能力如何呢?
5. R: er…她 OK 的，她就算不幹本書出爛牌都可以拿倒手的
   I: 喝！所以你覺得 XXX 就算…Lexer 你願意信他…？他就算…。
   R: 基本上，她講的英文一般都可以抄到 30 分以上的。
   I: 喝！但你覺得 XXX 英文教會字與標準之間有可辨識的差異嗎?
6. R: ER…你認為英文教會，多多少少都會記得點數率的
   I: 喝
7. R: 拍拍都會每個字典第幾個字最後一個字英文字典?
   I: 喝！所以你覺得 XXX 平時就教會，你點數呢？平時有會記住去這英文教會?
8. R: 但我想知道一個字典至一個字典到這個書，不過通常都這個字典到就可以過完。
   I: 喝
9. R: 喝…有有人同你一齊過會是這個呢？
   R: 其實但…會否由詳細一詳細會…大家互相幫助對方學會。就姐記得妹妹
   妹妹妹妹過完同姐姐
10. I: 喝
8. R: 所以你覺得 XXX 平時英文教會字英文教會有可辨識的差異嗎?
11. R: ER…如果他有這個英文教會，他會會跳出一個字，當老師講這個英文教會
    學會時，或者講個英文教會時間一個英文字，但有時有會記得個英文字點
    標準。
   I: 喝！平時 XXX 英文教會都是這樣嗎?
12. R: ER…英文教會
13. R: XXX 英文教會
14. R: 喝！XX 英文教會字，本時少有 90 分，本時有 100 分或者 110 分
   I: 所以你會會幫 XXX 提升他的英文字能力呢?
15. R: B會…
16. I: 你有有事情等？
17. R: 有
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