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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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*

al., 2009, p.219) thus the understanding of the characteristics and features of different games help identify the aspects that align with learning principles thereby establishing the pedagogical values of games.   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).

Piaget's (1983) cognitive constructivism and Vygotsky's (1978) socio-

constructivism contribute significantly to the constructivist learning theories in

schools and are highly influential in extensive studies of related theories in

language learning covering social and cultural factors, psychological elements,

cognitive development, age and gender (Bruner,1986; Crookes and Schmidt, 1991;

Dörnyei, 1994a, 1994b, 2001a, 2005; Krashen, 1981; Schumann, 1986).

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;

Weisskirch, 2009).   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*

al., 1993).   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

at the appropriate answers" (p.24)

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.
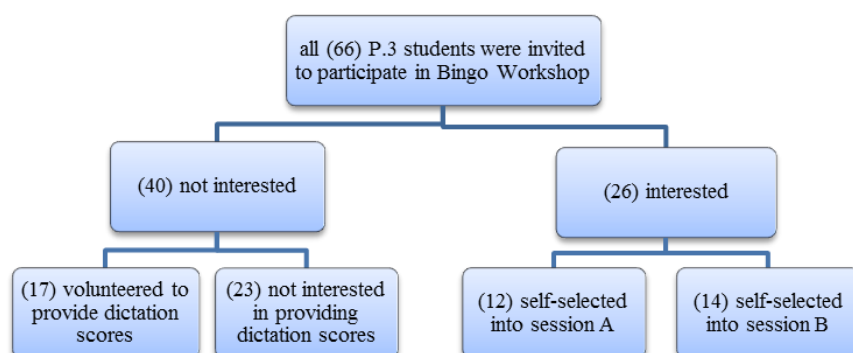
26 students volunteered to participate in Bingo Workshop. In order to minimize

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.

Control Group 17 (10)	Placebo Group 14 (9)	Experimental Group 12 (8)
B 5 (3)	B 6 (4)	B 7 (4)
G 12 (7)	G 8 (5)	G 5 (4)
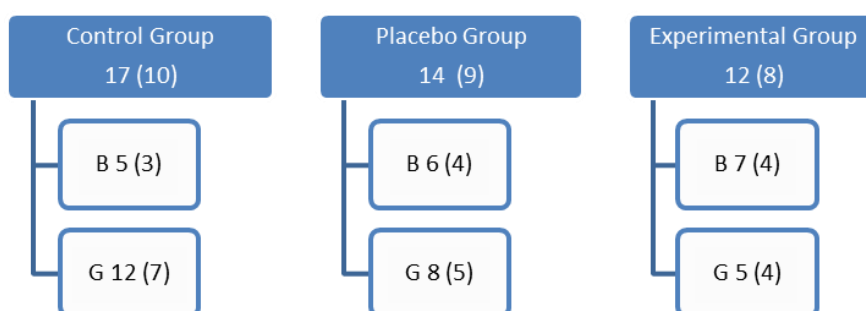
Note: B= boys, G=girls, in parenthesis is the number of students whose data were collected and
analysed.

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 1. Treatment of groups.

Activities involved	Control Group (n=10)	Placebo Group (n=9)	Experimental Group (n=8)
phonics instruction	x	✓	✓
pre-dictation	x	✓	x
common Bingo (non-phonics / non-spelling related)	x	✓	x
Letter Bingo encompassing phonics skills	x	x	✓

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 *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 *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.

Diagram 3. Number of boys and girls among groups.

	Control Group	Placebo Group	Experimental Group
■ Boys	3	4	4
■ Girls	7	5	4
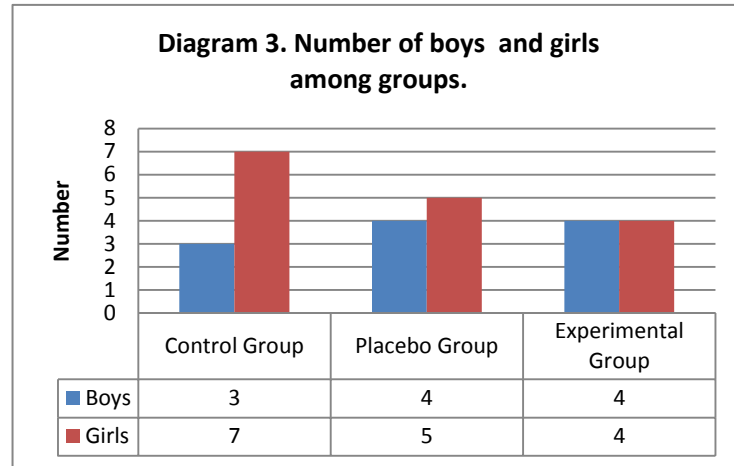
With regard to the control for the extraneous factor of age, Diagram 4 below

shows only 1 student in the Control Group was 9 years old.   In terms of age, the

three groups were almost homogeneous.

Diagram 4. Age of students among groups.

	Control Group	Placebo Group	Experimental Group
■ Aged 8	9	9	8
■ Aged 9	1	0	0
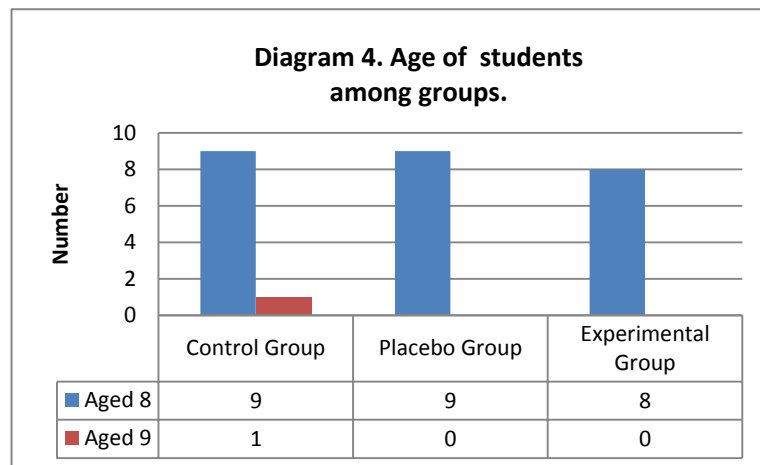
As mentioned in Section 3.3.1, the sample of this study was drawn from three

Primary 3 classes (3A, 3B, 3C) and Diagram 5 below shows the classes of

students among groups.

Diagram 5. Classes of students among groups.

	Control Group	Placebo Group	Experimental Group
P.3A	3	4	3
P.3B	2	3	1
P.3C	5	2	4
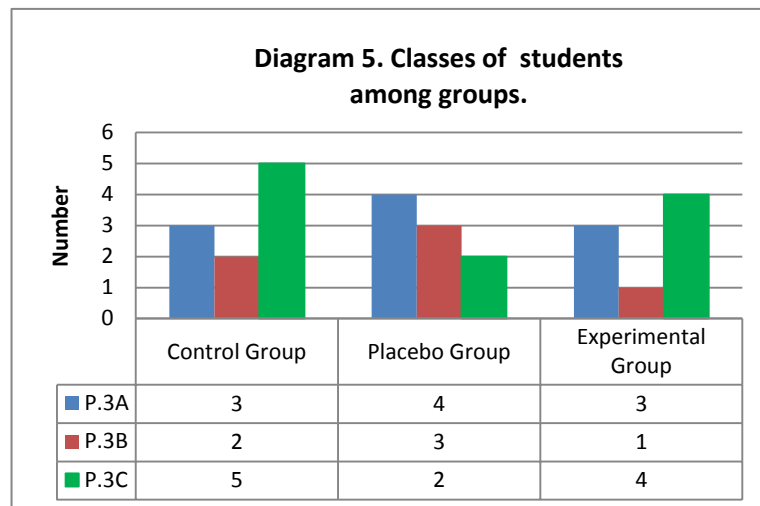
Encountering limited sign-ups for this study, it is acknowledged that the

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.

Interviews	Dictations	Bingo Sessions
•Pilot Interview (July, 2009)		
•Interview 1 (Sept. 20-22, 2009)	•Dict. 1 (Sept. 29, 2009) •Dict. 2 (Oct. 9, 2009)	•Pilot Game (Sept. 26, 2009)
		•Bingo 1 (Oct.17, 2009) - revise Dict. 2
		•Bingo 2 (Oct. 31, 2009) - prepare for Dict. 3
	•Dict. 3 (Nov. 6, 2009)	
•Interview 2 (Nov.12 - 13, 2009)		•Bingo 3 (Nov. 21, 2009) - prepare for Dict. 4
	•Dict. 4 (Nov. 24, 2009)	
		•Bingo 4 (Dec. 5, 2009) - revise Dict. 4 •Bingo 5 (Dec. 19, 2009) - prepare for Dict. 5
•Interview 3 (Jan. 6 - 8, 2010)	•Dict. 5 (Jan. 5, 2010)	

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 14 '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 2. Run-down of each Bingo session.		
Run-down	Placebo Group	Experimental Group
20 minutes	phonics instruction (same words)	phonics instruction (same words)
15 minutes	pre-dictation (same words)	Letter Bingo (same words)
15minutes	common Bingo	

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,

(d)   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

(Crookes and Schmidt, 1991, Dörnyei, 1990; 1994b; Ushioda, 2009).

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),

(e)   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,

(f)   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

learning.   Brown (1988) and Skehan (1991) assert while using self-report

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') – 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 3. Results of groups in pilot Bingo session.		
Bingo	Placebo Group	Experimental Group
first Bingo	at 9th question	at 8th question
number of students scoring Bingos	4	3
number of students not scoring any Bingo	5	5
highest Bingo scores	150	170
time to finish game (minutes)	18	16

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

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

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).

Diagram 7. Mean score differences between D1 and D2 among groups

	Dictation scores			
	1	2	change	change in %
Experimental Group	103.25	95.125	-8.125	-7.869
Placebo Group (without the SEN)	80.5	75.75	-4.75	-5.901
Placebo Group (with the SEN)	74	75.22	1.22	1.649
Control Group	75.1	70.3	-4.8	-6.391
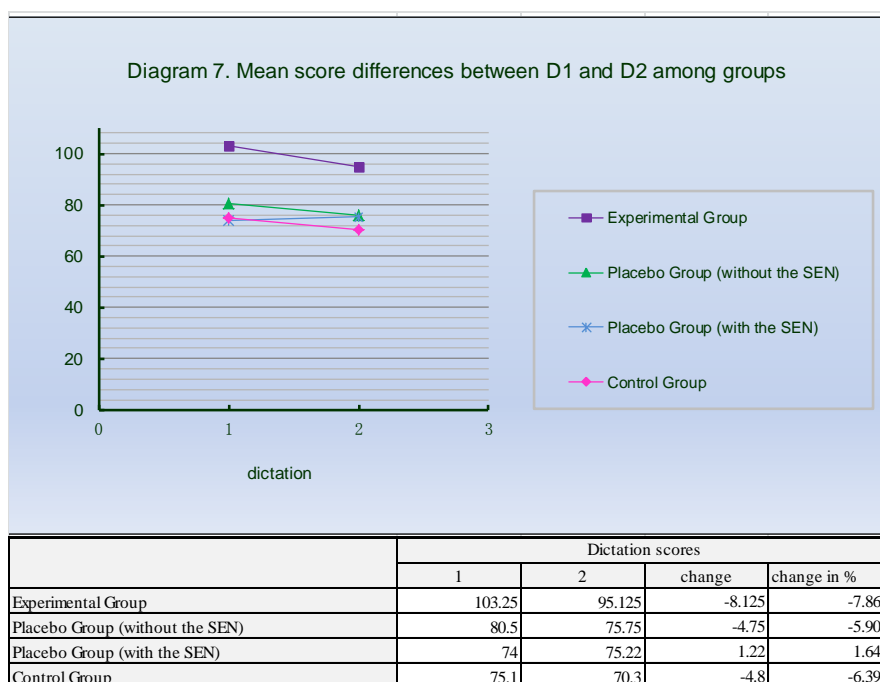
In terms of the change in mean scores from D1 to D2, the Experimental Group

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 5. Wilcoxon signed rank test for paired data (D1 and D2 mean scores).

	p-value
Experimental Group	0.03515*
Placebo Group	
with the SEN	0.14455
without the SEN	0.02735*
Control Group	0.0718

* $p < .05$

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).

```
Dependent Variable: mean scores of D1 and D2

                                Sum of

Source                DF        Squares    Mean Square   F Value   Pr > F

Model                  2      3341.29663    1670.64832     2.08    0.1483


Error                 23     18510.94375     804.82364


Corrected Total       25     21852.24038



              R-Square     Coeff Var     Root MSE    meandict12 Mean


              0.152904     34.37915      28.36941        82.51923



Source                DF       Anova SS    Mean Square   F Value   Pr > F

group                  2     3341.296635   1670.648317     2.08    0.1483
```

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

```
Dependent Variable: mean scores of D1 and D2

                                Sum of

Source                DF        Squares    Mean Square   F Value   Pr > F

Model                  2      3701.61644    1850.80822     2.29    0.1230


Error                 24     19399.95764     808.33157


Corrected Total       26     23101.57407



              R-Square     Coeff Var     Root MSE    meandict12 Mean


              0.160232     35.02015      28.43117        81.18519



Source                DF       Anova SS    Mean Square   F Value   Pr > F

group                  2     3701.616435   1850.808218     2.29    0.1230
```

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.

Groups	Dictation	N	*M*	SD
Experimental	1	8	103.250	13.86
	2	8	95.125	19.19
	average	*8*	*99.88*	*16.09*
	3	8	99.375	17.53
	4	8	95.625	15.17
	5	8[7]	87.25[93.143]	18.77[9.32]
Placebo	1	9 (8)	74.00 (80.50)	36.74 (33.29)
	2	9 (8)	75.22 (75.75)	30.08 (32.12)
	average	*9(8)*	*74.61(78.13)*	*32.27(32.60)*
	3	9 (8)	69.89 (77.00)	37.30 (32.72)
	4	9 (8)	61.33 (68.38)	39.48 (35.66)
	5	9 (8)	58.22 (65.50)	36.74 (31.58)
Control	1	10	75.10	31.15
	2	10	70.30	34.14
	average	*10*	*72.70*	*32.07*
	3	10	77.20	27.69
	4	10	65.30	32.05
	5	10	58.80	34.75

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)
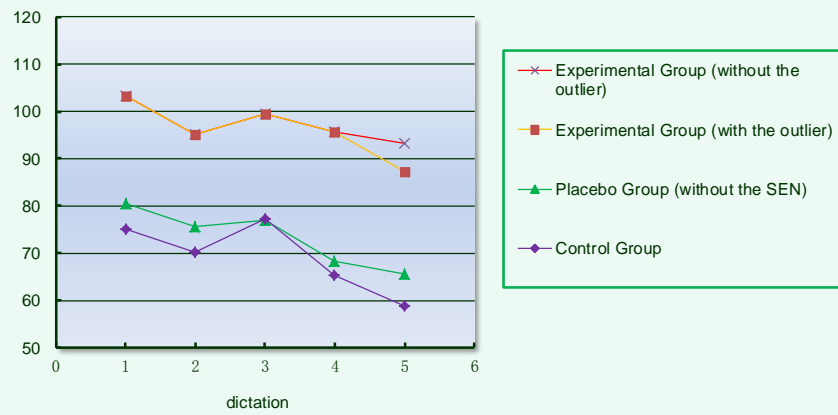
Dictation	1	2	3	4	5
Experimental Group (without the outlier)	103.25	95.125	99.375	95.625	93.143
Experimental Group (with the outlier)	103.25	95.125	99.375	95.625	87.25
Placebo Group (without the SEN)	80.5	75.75	77	68.375	65.5
Control Group	75.1	70.3	77.2	65.3	58.8

Diagram 9. Mean scores of D1 - D5 amoung groups (with SEN)
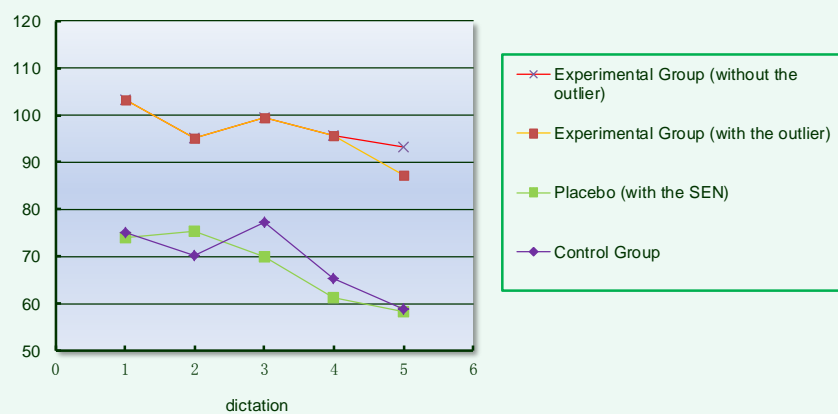
Dictation	1	2	3	4	5
Experimental Group (without the outlier)	103.25	95.125	99.375	95.625	93.143
Experimental Group (with the outlier)	103.25	95.125	99.375	95.625	87.25
Placebo (with the SEN)	74	75.22	69.89	61.33	58.22
Control Group	75.1	70.3	77.2	65.3	58.8

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. Pre-treatment and post-treatment mean scores for the Experimental Group

Dictation	(1and 2) average	5	change in scores	change in %
Experimental Group (without the outlier)	99.1875	93.143	-6.0445	-6.094
Experimental Group (with the outlier)	99.1875	87.25	-11.9375	-12.035
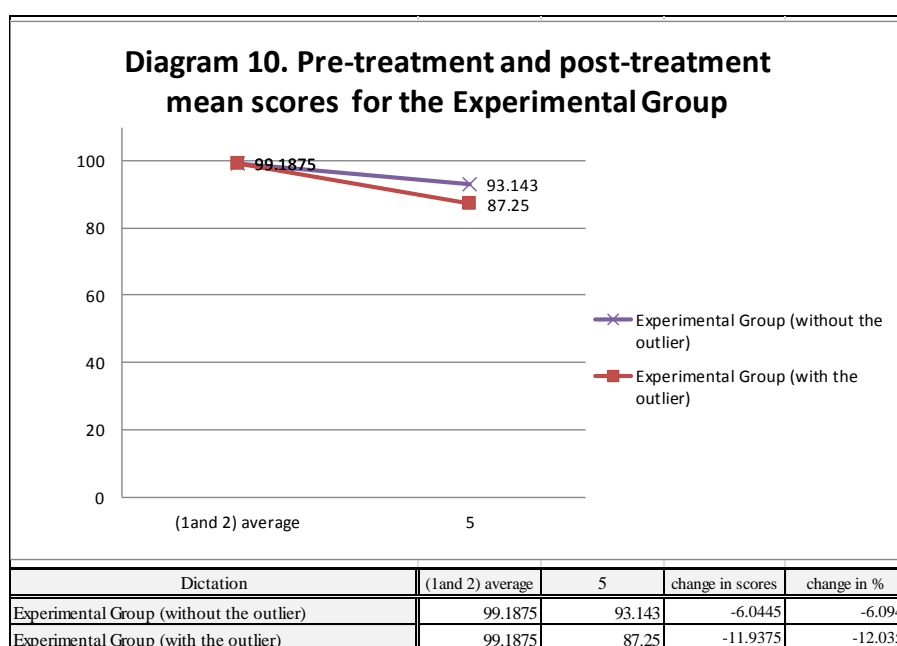
Diagram 10 shows, for the Experimental Group, there is a negative change of

6.094% (without outlier) or 12.035% (with outlier) in spelling performance.

Diagram 11. Pre-treatment and post-treatment mean scores for the Control Group

Dictation	(1and 2) average	5	change in scores	change in %
Control Group	72.7	58.8	-13.9	-19.12
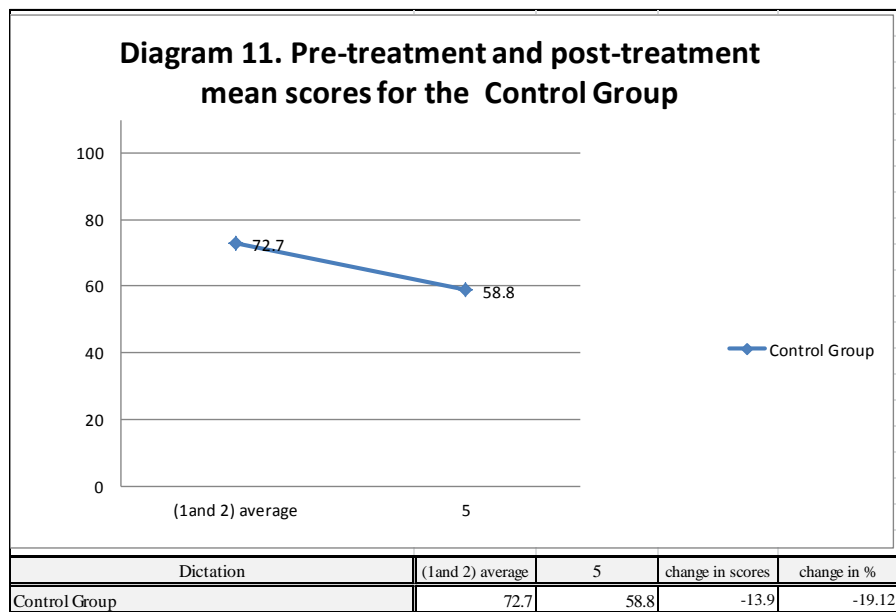
Diagram 11 shows, for the Control Group, there is a negative change of 19.12% in

spelling performance.

Diagram 12. Pre-treatment and post-treatment mean scores for the Placebo Group

	Dictation scores			
	(1and 2) average	5	change	change in %
Placebo Group (without the SEN)	78.125	65.5	-12.625	-16.16
Placebo (with the SEN)	74.61	58.22	-16.39	-21.968
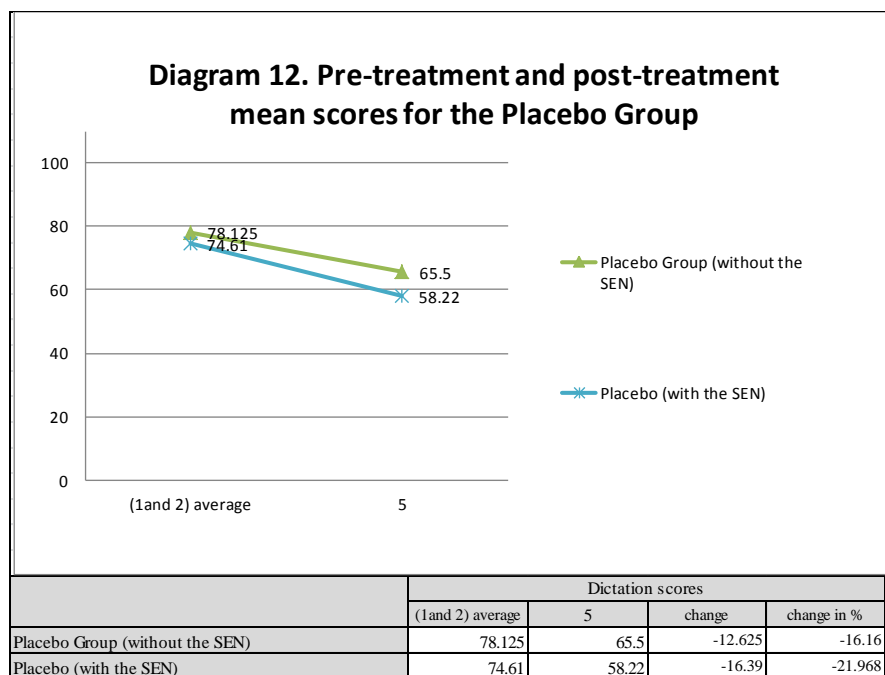
Diagram 12 shows, for the Placebo Group, there is a negative change of 21.968%

(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 9. Wilcoxon signed rank test for paired data (average of D1 and D2, D5).

Groups	p -value
Experimental Group	
with outlier	0.02735*
without outlier	0.0547
Placebo	
with SEN	0.0039*
without SEN	0.0078*
Control	0.03905*

*$p < .05$

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.
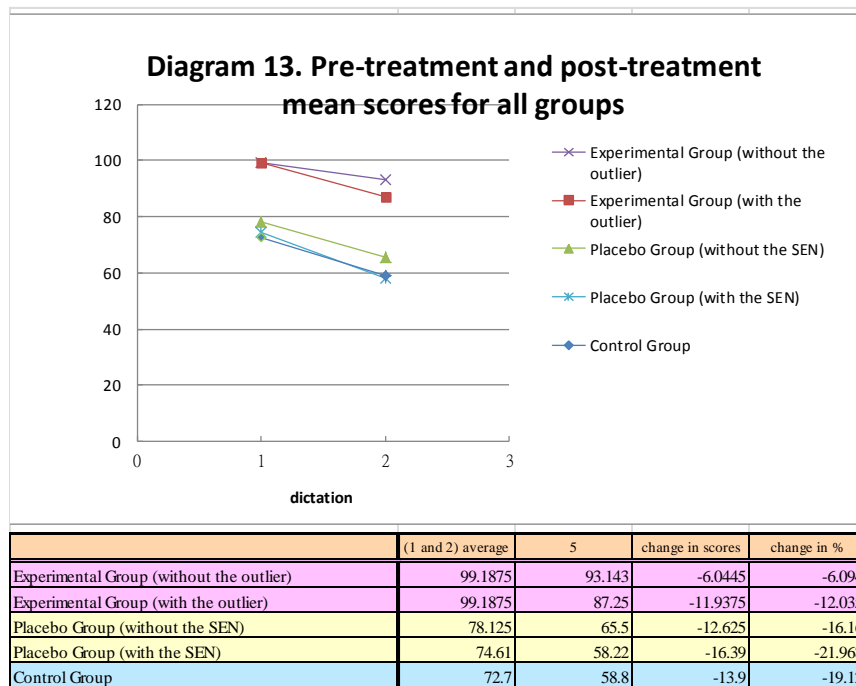
Diagram 13. Pre-treatment and post-treatment mean scores for all groups

	(1 and 2) average	5	change in scores	change in %
Experimental Group (without the outlier)	99.1875	93.143	-6.0445	-6.094
Experimental Group (with the outlier)	99.1875	87.25	-11.9375	-12.035
Placebo Group (without the SEN)	78.125	65.5	-12.625	-16.16
Placebo Group (with the SEN)	74.61	58.22	-16.39	-21.968
Control Group	72.7	58.8	-13.9	-19.12

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

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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).			
Experimental Group	Placebo Group		p-value
with outlier	with SEN student		0.5964
with outlier	without SEN student		0.8747
without outlier	with SEN student		0.3968
without outlier	without SEN student		0.6022
Experimental Group	Control Group		
with outlier			1
without outlier			0.8241

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.

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

group	Dict 1 p-value	Dict2 p-value	Dict3 p-value	Dict4 p-value		Dict5 p-value
Experimental Group - Control Group	0.0504	0.1094	0.0614	0.0293*	with outlier	0.1192
					without outlier	0.0703
Experimental Group - Placebo Group						
with SEN	0.1351	0.1354	0.0431*	0.1119	with outlier	0.0536
					without outlier	0.0294*
without SEN	0.2261	0.1886	0.0738	0.1886	with outlier	0.0917
					without outlier	0.0481*

*$p < .05$

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).

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 =

71.44; 95% CI, 55.74 – 87.15 and without outlier, mean = 72.94, 95% CI, 56.55 –

89.33).

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), the p value is <.05

and the null hypothesis is rejected, indicating the Experimental Group (without

outlier) performed significantly better than 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.

Table 12. Internal reliability of 5 sets of dictation scores

	D1	D2	D3	D4	D5
Control Group	0.910306	0.934239	0.912456	0.951439	0.924394
Experimental Group					
without outlier					0.8682
with outlier	0.929316	0.907151	0.912064	0.9285	0.933044
Placebo Group					
without SEN	0.987839	0.987953	0.98784	0.991567	0.992942
with SEN	0.969959	0.991605	0.970778	0.973075	0.975526

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.

Table 13. Test-retest for dictation scores.

	D1-D2	D2-D3	D3-D4	D4-D5	D1&2-D5
Control Group	0.92995	0.79633	0.80005	0.6766	0.79331
Experimental Group					
without outlier					0.49203
with outlier	0.89244	0.80288	0.83823	0.57976	0.7458
Placebo Group					
without SEN	0.98825	0.97437	0.9654	0.91359	0.95088
with SEN	0.86433	0.82831	0.97504	0.93871	0.91691

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.

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

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 15. Percentage of KS2 words in dictations and dictation scores in ranking order among groups.

Dictation	% of KS2 words in dictation	Dictation Scores in rank		
		Experimental Group	Placebo Group (without SEN)	Control Group
D1	10.53%	1	2(1)	2
D2	6.90%	4	1(3)	3
D3	2.27%	2	3(2)	1
D4	3.64%	3	4(4)	4
D5	6.56%	5	5(5)	5

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 16. Total number of words in dictations and dictation scores in ranking order among groups.

Dictation	Total number of words	Dictation Scores in rank		
		Experimental Group	Placebo Group (without SEN)	Control Group
D1	38	1	2(1)	2
D3	44	2	3(2)	1
D4	55	3	4(4)	4
D2	58	4	1(3)	3
D5	61	5	5(5)	5

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

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.

Table 18. Reasons for learning English as indicated by groups at Interview 3.				
	Experimental Group (n=8)		Placebo Group (n=9)	
Total no. of reasons provided	8 (100%)	examples of reasons	7 (100%)	examples of reasons
Classroom-related reasons	4 (50%)	my English is not good (S12, S13, S14), to enhance communication with others in class (S18)	4 (57.1%)	fail in exam (S4, S7), can improve English (S6, S9)
Teacher-related reasons	0 (0%)	/	0 (0%)	/
External reasons	1 (12.5%)	mother wanted him to (S13)	0 (0%)	/
Utilitarian reasons	3 (37.5%)	able to talk to foreigners (S11, S15, S17)	3 (42.9%)	able to talk to foreigners (S3, S7), English is important (S8)

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.

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.

n=8	Before Bingo comments	After Bingo comments	Change in desire (positive change, negative change, no change, not known)
S10	'I don't want to learn in the past' (line 12)	'Yes' (line 8), 'I don't know [why]' (line 10)	positive change
S11	'there is not much difference than before' (line 7)	'I always want to learn English, even now' (line 6)	no change
S12	'kind of' (line 12)	'yes, I want to' (line 14), 'because learning English is fun' (line 16)	no change
S13	'my result was not good and I want it to be better' (line 22)	'want' (line 16), 'because my result can be better' (line 18)	no change
S14	'yes' (line 8)	'yes' (line 10)	no change
S15	'no' (line 22), 'because in the past … I didn't know how to memorize English' (line 24)	'uh-huh' (line 26), 'I don't know [why]' (line 28)	positive change
S17	'yes I want to' (line 7)	'also want to' (line 9)	no change
S18	'before attending this class… it's not easy for me to discover the mistakes I made' (line 14)	'yes' (line 8), 'because English is interesting' (line 10), 'because we could see the mistakes … in the Bingo class' (line 16)	positive change

Table 20. Desire for learning English as indicated by the Placebo Group at Interview 3.

n=9	Before Bingo comments	After Bingo comments	Change in desire (positive change, negative change, no change, not known)
S1	'I didn't want to learn' (line 8)	'I don't want to learn' (line 6)	no change
S2	'yes too' (line 6)	'yes' (line 4)	no change
S3	'find it difficult as well' (line 12)	'so-so' (line 8), 'because English is difficult' (line 10)	no change
S4	'a little bit difficult before' (line 12), 'I spelled the word as a whole in the past' (line 18)	'[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)	positive change
S5	'I didn't usually get high grades before' (line 10)	'yes' (line 6), 'because I can get higher grades in English dictation' (line 8)	positive change
S6	'I don't like it before' (line 12)	'yes, because I can learn phonics and I can spell the words' (line 10)	positive change
S7	'in the past, I was not good at English' (line 14)	'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)	positive change
S8	'yes' (line 10)	'yes' (line 6), 'because … I can go to other countries … to communicate with foreigners' (line 8)	no change
S9	'no' (line 6)	'I don't want to' (line 8), 'because the words are a bit difficult' (line 10)	no change

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

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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 21. Change in desire for learning English between groups.		
Change in desire	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	3 (37.5%)	4 (44.4%)
Negative change	0 (0%)	0 (0%)
No change	5 (62.5%)	5 (55.6%)
Change not known	0 (0%)	0 (0%)

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	Change / No change / Not known (remarks)
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)

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

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

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 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 24. Change in strategies between groups.		
Change in strategies	Experimental Group (n=8)	Placebo Group (n=9)
Change	5 (62.5%)	6 (66.7%)
No change	3 (37.5%)	2 (22.2%)
Not known	0 (0%)	1 (11.1%)

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.

n=8	Before Bingo (Interview 1)	During Bingo (Interview 2)	After Bingo (Interview 3)	Change in view (positive change, negative change, no change, not known)
	comments	comments	comments	
S10	'very happy' (line 6), 'because I do it well' (line10)	'very happy' (line 8)	'very nervous' (line 23) but did not explain	negative change
S11	'quite funny' (line 6), 'sometimes the pronunciation is just like Chinese' (line 8)	'I become familiar with it' (line 18)	'My ability in spelling is better now' (line 25), 'I know more English spellings now' (line 27)	positive change
S12	'very difficult' (line 7), 'difficult to remember the vocabulary' (line 9)	'now, I know [phonics]' (line 44), 'if phonics is poor' (line 62), 'cannot spell [the word]' (line 64)	'it's easier than before' (line 6), '[before] I find English difficult for me' (line 10)	positive change
S13	'a little bit difficult' (line 4), 'I cannot remember the very long and difficult sentences' (line 6)	'am more familiar with, for example the word *invitation* ' (line 34)	'[now] I pay attention to English spelling' (line 30), 'spelling can …break words down into bits.. I like it more' (line 48)	positive change
S14	'sometimes it's quite difficult' (line 6), ' because some vocabulary... I haven't learnt them before' (line 8)	'the spelling …very interesting' (line 6), 'my spelling is much better' (line 14)	'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)	positive change
S15	'very delighted' (line 14), 'because I like English' (line 18), 'English spelling can enhance my memory' (line 22)	no answer	'is much better now' (line 33), 'English spelling is easier for me now' (line 35) 'I can get higher marks now' (line 39)	positive change

Table 25. Views on spelling as indicated by the Experimental Group at interviews.

Table 25 (cont'd).

S17	'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)	'more confident' (line 18)	'[now] break the words down and then spell the word' (line 21), ' just remember it as a whole in the past' (line 28)	positive change
S18	'quite interesting' (line 2) 'you can use difficult English to talk to people' (line 4)	more confidence' (line 44), 'now… I write more fluently .. With more confidence' (line 48)	'It's easier for me to spell words' (line 51)	positive change

Table 26. Views on spelling as indicated by the Placebo Group at interviews.				
n=9	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in view (positive change, negative change, no change, not known)
S1	'no feeling' (line 8)	'I don't know' (line 6)	'No feeling'(line 20)	no change
S2	'quite boring' (line 6), 'a little bit of fun' (line 8) but could not explain	'now I have ... a little progress' (line 2)	'a little bit unhappy' (line 12), 'the same as before' (line 14)	not known
S3	'boring' (line 6), 'annoying' (line 8), 'since there are many letters in a word' (line 12)	'annoying' (line 10)	'no feeling' (line 22)	not known
S4	'quite difficult' (line 6), 'because .. some words are difficult to spell. Some are not' (line 8)	'I don't know' (line 8)	'don't know' (line 22)	not known
S5	'words are difficult' (line 8), 'too many words' (line 10)	'I find it a bit difficult' (line 2) but could not explain	'no feeling' (line 22), 'before? No feeling as well' (line 24)	not known

Table 26 (cont'd).

S6	'takes very long time' (line 6), 'sometimes difficult but sometimes not' (line 12)	'I don't like it' (line 5)	'very difficult' (line 24), '(before) I played all the time' (line 20)	no change
S7	'enjoyable' (line 6), 'because … spelling is interesting' (line 8)	'feel a lot better' (line 6)	'it is good now' (line 20), 'I thought it was boring in the past' (line 22)	positive change
S8	'ok' (line 4), 'because some words are too long and some words are difficult to remember' (line 11)	'I get more used to it and I spend less time on spelling' (line 6)	'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)	positive change
S9	'feel very happy' (line 6) but could not explain	'very happy' (line 4)	'no feeling' (line 20), 'same [as before]' (line 22)	no change

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.

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 27. Change in views on spelling between groups.

Change in views on spelling	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	7 (87.5%)	2 (22.2%)
Negative change	1 (12.5%)	0 (0%)
No change	0 (0%)	3 (33.3%)
Change not known	0 (0%)	4 (44.4%)

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.

n=8	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Overall view (positive , negative , not known)
S10	'[phonics help me] scored 100 marks in exam' (line 18)	'very difficult' (line 30)	negative
S11	'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)	'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)	positive
S12	'now I know [phonics]' (line 44)	'much easier' (line 26), 'because I know how to pronounce the word and I know phonics now' (line 28)	positive
S13	'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)	'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)	not known
S14	'some words that I do not know before, I learned them from phonics' (line 16)	'find it [phonics] easier' (line 44), phonics … can help us to pronounce' (line 54)	positive
S15	'like it' (line 26), 'can get higher mark' (line 30)	no answer	not known
S17	'use phonics for spelling' (line 29)	'if you don't know that word, you can use phonics to spell it' (line 43)	positive
S18	'[phonics help] remember the words for a longer period of time' (line 24)	'my ability in phonics is better' (line 47), 'it's easier for me to spell words' (line 51)	positive

Table 28. Views on phonics as indicated by the Experimental Group at interviews.

n=9	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Overall view (positive , negative, not known)
S1	'I don't know' (line 10)	'no feelings' (line 24)	not known
S2	'break the words down into smaller bits' (line 4), 'This would be easier' (line 6)	'can break down [the words]' (line 16)	positive
S3	'phonics could shorten the words' (line 12)	'sometimes like it when there is game to play' (line 26)	positive
S4	'very nervous' (line 10), 'because some words are very difficult' (line 12)	'easy to remember' (line 26)	positive
S5	'find it difficult' (line 4) but could not explain	'I think phonics is difficult sometimes' (line 26) 'Before? ... even more difficult'(line 28)	negative
S6	'I don't like it' (line 7), 'because it's boring' (line 9)	'spell more words' (line 28)	not known
S7	'can help me guess the word, How to spell even though you do not know the word. Just try' (line 8)	'phonics … I think it is not very good because it is difficult to memorize' (line 24), 'I rarely used phonics in the past' (line 26)	not known
S8	'sometimes it's very difficult' (line 8) 'those words are very similar, which confuse me and I read them wrong' (line 10)	'can help …. pronounce the English words' (line 22)	positive
S9	'[now] I know [phonics]' (line 6)	'phonics … helps improve English' (line 24)	positive

Table 29. Views on phonics as indicated by the Placebo Group at interviews.

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 30. Overall views on phonics between groups.		
Overall views on phonics	Experimental Group (n=8)	Placebo Group (n=9)
Positive	5 (62.5%)	5 (55.6%)
Negative	1 (12.5%)	1 (11.1%)
Not known	2 (25%)	3 (33.3%)

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.

n=8	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in view (more positive, more negative, no change, not known)
S10	'very happy' (line 20)	'score 100 marks ' (line 18), 'no [difference than before]' (line 20)	'very happy' (line 38) but could not explain	no change
S11	'very happy' (line 42)	[marks are] much higher' (line 26), '5 marks [higher]' (line 28)	no answer	not known
S12	'it's average' (line 21), 'very happy' (line 29)	'very good, better than before' (line 12), 'about 90 marks before' (line 14), '[now] 100' (line 16)	'I get higher marks' (line 46'), 'happy' (line 50)	positive change
S13	'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)	'the third dictation, I have 103 marks' (line 44), 'I have 80 marks … 70 marks before' (line 46), 'happy' (line 48), 'like it very mcuh, mother does not scold me' (line 50)	'English dictation results are very good' (line 52), 'a little nervous' (line 54), 'every time I feel the same' (line 56)	not known
S14	'it's good' (line 18), 'very nervous' (line 30)	'scores are much higher' (line 30), 'I get about 100 marks before, now 110 marks' (line 32)	'the marks are much higher than before' (line 58), 'I'm happier' (line 76), 'no [not nervous anymore]' (line 80)	positive change
S15	'a good result' (line 36)	'I got about 90 marks before, but now I got around 100 marks' (line 46), 'happy' (line 54)	'it's much better now' (line 51), 'don't know [how much better]' (line 53)	positive change
S17	'quite good' (line 12), 'very happy' (line 18)	'more confident' (line 18)	'much higher [marks]' (line 49), '10 marks higher' (line 51), '[feel] good' (line 53)	positive change
S18	'quite good' (line 84)	'no [difference than before]' (line 28)	'feel [nothing]' (line 65), '[marks] higher [than before]' (line 69)	not known

Table 31. Views on dictation results as indicated by the Experimental Group at interviews.

n=9	Before Bingo (Interview 1)	During Bingo (Interview 2)	After Bingo (Interview 3)	Change in view (more positive, more negative, no change, not known)
	comments	comments	comments	
S1	'very poor' (line 16), 'don't like English' (line 18)	'I don't know' (line 23)	'very poor' (line 36)	no change
S2	'quite unhappy' (line 16), 'because of the marks' (line 18)	'a little bit happy' (line 20)	'not very good' (line 24), 'unhappy now' (line 26)	no change
S3	'afraid of getting zero marks' (line 20)	'average' (line 32), 'because … sometimes, I didn't study' (line 36)	'English is very difficult' (line 34)	no change
S4	'quite nervous' (line 20), 'because I don't know how many marks I will get' (line 22)	'very happy' (line 28), 'because I always got a pass in the dictation, every time' (line 30)	'very good' (line 34), 'very nervous' (line 47)	not known
S5	'nervous' (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)	'I feel nervous' (line 14), 'because I'm afraid that I wouldn't know some of the vocabulary' (line 16)	'very nervous' (line 36), 'worried that the grade is not good' (line 38)	no change
S6	'Nervous' (line 20), 'happy' (line 22), 'nervous because I don't know whether I can get full marks' (line 24)	'very nervous' (line 31), 'because I'm afraid that I spell them wrong' (line 33)	'happy' (line 42), 'because I can get better grades, big improvement' (line 44)	positive change
S7	'feel very excited' (line 14), 'because I've worked hard' (line 20)	'feeling better, because … I know more' (line 24)	'much better' (line 36), ' because.. I had revision' (line 38)	positive change
S8	'average' (line 18), 'because some classmates do better than me' (line 22)	'a bit nervous' (line 22), 'because I don't know … if the marks will fall behind' (line 24)	'feel very happy' (line 34) 'because … I can use phonics to write the words' (line 38)	positive change
S9	'felt very happy' (line 16), 'excited' (line 18), 'because I got 110 marks' (line 20)	'I'm very happy' (line 14), 'I got more than 100 marks every time' (line 16)	'a bit sad' (line 40) 'because I get below 100 marks' (line 42)	negative change

Table 32. Views on dictation results as indicated by the Placebo Group at interviews.

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 33. Change in views on dictation results between groups.

Change in views on dictation results	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	5 (62.5%)	3 (33.3%)
Negative change	0 (0%)	1 (11.1%)
No change	1 (12.5%)	4 (44.4%)
Change not known	2 (25%)	1 (11.1%)

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.

n=8	Before Bingo (Interview 1)	During Bingo (Interview 2)	After Bingo (Interview 3)	Change in time (positive change, negative change, no change, not known)
	comments	comments	comments	
S10	'an hour' (line 28)	'one hour' (line 24)	'one hour' (line 46)	no change
S11	from twenty minutes to half an hour (line 46 – 60)	'yes [different than before]' (line 40, 'in the past, I spent 5 minutes on revision' (line 42)	'half an hour. But I needed an hour in the past' (line 38)	not known
S12	'half an hour' (line 33)	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)	'about half an hour' (line 52), 'in the past… I need a longer time. More than half an hour' (line 56)	positive change
S13	'half an hour' (line 30)	'the same as usual' (line 78)	'zero' (line 64), 'one week' (line 66), 'no difference before and after [joining the course]' (line 68)	no change
S14	'about an hour' (line 34)	no answer	'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)	positive change
S15	'once a day' (line 122), 'an hour and twenty minutes [each time]' (line 129)	'about several minutes shorter [than before]' (line 76), '[feel] happy' (line 78)	I don't know' (line 41)	not known
S17	'about two or three days' (line 20)	'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)	'two to three days' (line 57), '[now] spend less time' (line 59)	positive change
S18	from half an hour to one hour (line 62 - line 66)	'no [different than before] (line 36)	'I need half an hour now' (line 71), 'I need 15 minutes shorter than before' (line 73)	positive change

Table 34. Time spent in preparing for dictation for the Experimental Group.

Table 35. Time spent in preparing for dictation for the Placebo Group.

n=9	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in time (positive change, negative change, no change, not known)
S1	'an hour' (line 26)	I don't know' (line 35)	'I don't' know' (line 50)	not known
S2	'an hour' (line 20), 'two to three hours' (line 22), 'four hours' (line 24)	'one hour' (line 26)	'one hour' (line 34), no different than before (line 36)	no change
S3	'for a while' (line 24)	'a while' (line 42)	'a while' (line 44), 'about 15 minutes' (line 46)	no change
S4	'over an hour' (line 24)	'one [hour]' (line 40)	'one hour' (line 51)	no change
S5	'quite fast' (line 24), from 'half hour' (line 26) to 'one hour' (line 28)	'half an hour' (line 22)	'about one hour' (line 42), 'no [different than before]' (line 44)	no change
S6	'sometimes fast but sometimes slow' (line 28), from 'five minutes' (line 30), to one hour' (line 32), 'the whole evening' (line 34)	'half an hour' (line 38)	'one hour' (line 52), 'no [different than before]' (line 54)	no change
S7	'around one hour' (line 22)	'one and half hour' (line 30)	'about two to three hours ' (line 44), 'one to two … one and a half hour in the past' (line 48)	no change
S8	'one hour' (line 27)	'half an hour' (line 32)	'the same as before' (line 40), 'one hour' (line 42)	no change
S9	'spend one hour to do so' (line 24)	'spend … very little time' (line 22), 'one minute' (line 24), 'five minutes' (line 26)	'one to two hours' (line 52), 'no [different than before]' (line 54)	no change

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 36. Change in time spent in preparing for dication between groups.

Change in time spent in preparing for dictation	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	4 (50%)	0 (0%)
Negative change	0 (0%)	1 (11.1%)
No change	2 (25%)	7 (77.8%)
Change not known	2 (25%)	1 (11.1%)

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 37. Views on Bingo game between groups.				
Views on Bingo game	Experimental Group (n=8)		Placebo Group (n=9)	
	No. of students (%)	Feedback provided at Interview 3	No. of students (%)	Feedback provided at Interview 3
Positive	7 (87.5%)	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); '[help] spelling vocabulary' (line 86); 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)	5 (55.6%)	S1 'can learn more English' (line 82); S3 'makes revision easier' (line 54); S7 'good' (line 54), 'learn phonics and it improves my English dictation result' (line 56); S8 'fun' (line 54); S9 'very enjoyable' (line 61), 'learn more English and phonics' (line 67)
Negative	0 (0%)	-	0 (0%)	-
Not known	1 (12.5%)	S10 '[feel] nothing' (line 52) but 'learn some spelling' (line 54)	4 (44.4%)	S2 '[feel] nothing' (line 44) but 'learned something about phonics' (line 48); S4 'don't' know' (line 61); S5 'no [feeling]' (line 52); S6 'happy, because we can play the game' (line 61), 'learned how to pronounce some vocabulary that I didn't know' (line 64) but 'those a/b/c/d in bingo game had no meaning' (line 85)

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 results?

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.				
Views on the Bingo game in relation to dictation	Experimental Group (n=8)		Placebo Group (n=9)	
	No. of students (%)	Feedback provided at Interview 3	No. of students (%)	Feedback provided at Interview 3
Positive	8 (100%)	S10 'because I can get 100 marks' (line 66); S11 'learnt how to spell words in the game' (line 66); S12 'can remember the vocabulary' (line 82); S13 'bingo game [is] not only fun but also help English dictation' (line 76), '[by] learning more English' (line 78); S14 'help me spell many words' (line 106); S15 'because the game is about spelling' (line 78); S17 ' can help ... separate the words so that I can remember easily' (line 87); S18 'I can look for letters in a shorter time' (line 97)	7 (77.8%)	S1 'yes, it can' (line 76); S2 'a little bit' (line 56); S4 'yes' (line 69); S5 'yes' (line 66), 'I don't know why' (line 70); S6 'yes' (line 75) 'because when you forget the words in dictation you can use phonics to spell' (line 77); S7 'because the teacher would teach us the words in Bingo class' (line 68); S9 'all are related to spelling' (line 82)
Negative	0 (0%)	-	1 (11.1%)	S8 'no' (line 68) 'because the game just wants you to have fun' (line 70)
Not known	0 (0%)	-	1 (11.1%)	S3 'so so' (line 70);

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.

Views on phonics in relation to dictation	Experimental Group (n=8)		Placebo Group (n=9)	
	No. of students (%)	Feedback provided at Interview 3	No. of students (%)	Feedback provided at Interview 3
Positive	7 (87.5%)	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); S 17 '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)	9 (100%)	S1 'yes' (line 42), 'I don't know [why]' (line 44); S2 'the letters when put together can form words' (line 68); S3 'phonics can help train my memory' (line 83); S4 'break a long word into small parts' (line 81); S5 'it can help me spell the words' (line 86); S6 'when you forget the words in dictation, you can use phonics' (line 77); S7 'I think phonics has to work with Bingo and it helps' (line 86); S8 'I think phonics can help us... pronounce the English words... even without revising .. can still do the dictation' (line 22); S9 'yes, it can' (line 86)
Negative	1 (12.5%)	S10 'no' (line 34), 'I don't know [why]' (line 36); S11 'no [relation]' (line 33)	0 (0%)	/
Not known	0 (0%)	/	0 (0%)	/

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.

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

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.

n=8	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in spelling performance (positive change, negative change, no change, not known)
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

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Table 41 (cont'd).

P12	'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)	'his English is not bad' (line 14)	'he should be cleverer'(line 22)	not known
P13	'of course not good' (line 168)	'I really [don't know]' (line 56)	'I don't' know because I didn't revise with him. I just heard him saying … it's easy to remember' (line 13)	not known
P14	'it is okay because S14 responses quickly' (line 20)	'her performance in spelling has improved a lot' (line 18), 'maybe spelling … is easier for her now' (line 34)	'actually, the difference is quite big'(line 12), ' yes [spell faster]' (line 28)	positive change
P15	'his memory is not very good' (line 20), but 'he doesn't have any difficulty' (line 22)	'I find that he knows [better]' (line 24), 'he can now teach me after the lesson' (line 32)	'he didn't know how to pronounce the words before. He knows more words now and knows how to pronounce them' (line 7)	positive change
P17	'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)	'very good' (line 6), 'she does ask me [for help] less frequently' (line 78)	'a little bit better' (line 5), 'do not need me to prepare dictation with her' (line 6)	positive change
P18	'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)	'probably improved' (line 16), 'sometimes he spells Eglish words. I think he spells them faster now' (line 20)	'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)	positive change

Table 42. Parents' view on child's spelling performance for the Placebo Group.			
n=9	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in spelling performance (positive change, negative change, no change, not known)
P1	'does not pay attention … does not remember. … easily distracted by others' (line 16), 'have a little bit of difficulty' (line 35)	'a little bit better' (line 10), 'he is not focused enough … often distracted by other things' (line 40)	'a little improvement' (line 10), 'I think that his memory becomes better' (line 16)	positive change
P2	'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)	'same as before' (line 6)	'about the same [as before]' (line 6)	no change
P3	'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)	'has shown a little bit improvement' (line 12)	'a little progress, but she always forgets what she learnt after class' (line 4)	positive change
P4	'average' (line 16), 'sometimes she knows how to spell … when she knows how to pronounce the word' (line 14)	'I can't see any difference' (line 12)	'no difference'(line 4), 'no progress' (line 6)	no change
P5	'I seldom pay attention to her English [performance]' (line 12),'she's ok in English spelling' (line 16)	'pretty much the same as before' (line 10)	'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)	not known

Table 42 (cont'd).

P6	'she's okay' (line 9)	'no difference' (line 8)	'she got some improvement' (line 6), she can now spell some words by phonics… words that she has not yet learned' (line 8), 'it seems that her English is better now' (line 11)	positive change
P7	'it's not too good' (line 10), 'he wouldn't remember anything' (line 12)	'better than before' (line 10), 'he was lazy and wasn't interested in it before' (line 12)	'a lot better than before' (line 8), 'at least he is now willing to read books… sometimes he will watch English TV programmes' (line 10)	positive change
P8	'I don't know whether she spells correctly or not, I don't know' (line 22)	'I can feel that she revises a lot faster … now can learn a lot faster' (line 14)	'about the same as before' (line 2), 'generally not very good' (line 6), 'not much difference [than before]' (line 8)	no change
P9	'quite satisfactory' (line 6), 'he is quite good at this' (line 8)	'quite good… he can spell the word according to my pronunication. Although he cannot spell thewords correctly sometimes, he can do so most of the times' (line 10)	'no big progress' (line 4), 'no big difference' (line 8)	no change

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%.

Table 43. Change in child's spelling performance as perceived by parents between groups.

Change in spelling performance	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	5 (62.5%)	4 (44.4%)
Negative change	0 (0%)	0 (0%)
No change	1 (12.5%)	4 (44.4%)
Change not known	2 (25%)	1 (11.1%)

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 44. Parents' view on child's phonics skills for the Experimental Group.		
n=8	During Bingo (Interview 2)	After Bingo (Interview 3)	Change in phonics performance (positive change, negative change, no change, not known)
	comments	comments	
P10	'[she spells] by rote learning' (line 54)	'she uses phonics to help her spelling' (line 9), 'remember English words' (line 11)	positive change
P11	'she still couldn't grasp it' (line 22), 'yes [she learns by rote]' (line 26)	'no big difference' (line 12)	no change
P12	no answer	no answer	not known
P13	'we seldom talk about this' (line 46)	no answer	not known
P14	'probably [helps in dictation]' (line 48) 'because … have checked her performance in dictation' (line 50)	'I didn't keep an eye on her phonics' (line 32)	not known
P15	'he knows how to divide [words] into different parts with lines' (line 40)	'he used to learn the words by rote before and now he knows how to break them down and spell them' (line 11)	positive change
P17	'she would draw line' (line 62) 'not very often [before] …'now she becomes more skilful … no need to ask me' (line 68)	'I don't know' (line 9)	not known
P18	'I think he is now more confident in reading English' (line 30)	'yes [he tried to underline the word and break them down into small bits]' (line 28), 'he seldom did this before' (line 30)	positive change

n=9	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in phonics performance (positive change, negative change, no change, not known)
	Table 45. Parents' view on child's phonics skills for the Placebo Group.		
P1	'still poor' (line 18) 'no difference' (line 20)	'it seems that his phonics skills got no improvement at all' (line 22)	no change
P2	'same as before' (line 12)	'no improvement in phonics' (line 10)	no change
P3	'I can't tell if there's any difference' (line 14)	'slightly better. If you read her a word, she can tell whether it starts with the letter 'a' or 'b' (line 14)	positive change
P4	'she knows how to spell but doesn't know how to pronounce. Pronouncing the words seems more difficult for her' (line 16)	'no difference' (line 8)	no change
P5	'it didn't change a lot' (line 14)	'it seems that her English has improved a little' (line 10)	positive change
P6	'pretty much the same as before' (line 14)	'could pronounce many words now' (line 13)	positive change
P7	'can remember the spellings of words quickly when I revise dictation with him' (line 16)	'slightly better than before' (line 12)	positive change
P8	'that's average' (line 16)	'not much improvement' (line 10)	no change
P9	'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)	'no big difference' (line 12)	no change

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

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 46. Change in child's phonics skills as perceived by parents between groups.		
Change in phonics skills	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	3 (37.5%)	4 (44.4%)
Negative change	0 (0%)	0 (0%)
No change	1 (12.5%)	5 (55.6%)
Change not known	4 (50%)	0 (0%)

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.			
n=8	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in dictation results (positive change, negative change, no change, not known)
P10	'about average' (line 32), 'I think she doesn't know all [the words]' (line 36), ' about forty, thirty marks' (line 54)	'I really don't know it' (line 40), 'not very good' (line 42)	'I don't know' (line 22), 'she does not let me look at it'(line 16)	not known
P11	'she's fine in managing her dictation or exam' (line 64)	'actually her marks have always been quite good' (line 30)	'her result has shown a little improvement but not very obvious' (line 14)	no change
P12	'The English dictation result is about the same every time… always gets full marks' (line 4)	'I don't know. His father signs (the dictation book)' (line 26)	'I don't know his result yet' (line 4), 'because his father signs it, he may get 100 marks' (line 14)	not known

Table 47 (cont'd).

P13	'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)	'sure there is [difference]' (line 32), 'around eighty to ninety marks [before]' (line 34), '[last time] he got 103 marks' (line 36)	'he hasn't had any dictation recently' (line 17)	not known
P14	'she is confident and she always says that she is smart' (line 40)	'no [difference]' (line 26)	'yes [maintained good scores], the scores are quite good' (line 50)	no change
P15	'he is pretty confident … he takes every dictation very seriously. He said he wants to get full marks' (line 42)	'there isn't any obvious difference because he always gets full marks' (line 66)	'he always gets high marks' (line 17), 'takes shorter time' (line 19)	no change
P17	'in general … more than ninety marks on average' (line 70), 'it's quite satisfactory' (line 76)	'almost same as before' (line 40)	'this time I don't' know the result yet' (line 22), 'probably better' (line 24)	not known
P18	'seems quite good … can score ninety-something or above' (line 82)	'there isn't any big difference' (line 24)	'the performance is quite satisfactory' (line 34), 'but the results had no significant improvement, just a few marks' difference' (line 43)	no change

Table 48. Parents' view on child's dictation results for the Placebo Group.			
n=9	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in dictation results (positive change, negative change, no change, not known)
P1	'very bad'(line 42), 'because he doesn't have enough time. He does not pay attention when revising. He said very tired …' (line 46)	'better, a little bit better' (line 24), 'before was worse … but now he can memorize, memorize some' (line 26)	'also very bad, bad' (line 24), 'a little improvement! A little bit better!' (line 26)	positive change
P2	very poor' (line 36), 'always fail' (line 38)	always fail' (line 16), 'no [difference]' (line 19)	'no big improvement' (line 14), ' slightly better maybe' (line 16)	not known
P3	'most of them failed … because she didn't remember the vocabulary' (line 34)	'not a big difference' (line 20)	'slightly better'(line 20), 'still failed' (line 30), 'but now, marks were not the same … slightly better now' (line 32)	positive change
P4	'she's ok'(line 28)	'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)	'her English dictation is okay always, no difference after joining the bingo class' (line 12)	no change
P5	'average only' (line 30)	'same as usual' (line 16)	'about the same' (line 16)	no change
P6	'at least 90 marks. Sometimes 100 and something. Sometimes 110'(line 27)	'her marks were pretty much the same as before' (line 18)	'it is almost the same' (line 17)	no change
P7	'he would forget [the spelling] very quickly' (line 20)	'he still fails but his marks are higher than before' (line 18)	'English dictation! Average.' (line 16)	not known
P8	'she always gets an 'A' for English dictation' (line 58)	'is pretty much the same' (line 20)	'just like before'(line 18)	no change
P9	'he is quite self-motivated [in terms of dictation]'(line 18)	'I didn't notice a big change because his performance has been quite satisfactory before' (line 16)	'I think it is ok' (line 14), 'no big difference' (line 16),'his marks have dropped' (line 41)	negative change

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 49. Change in child's dictation results as indicated by parents between groups.

Change in dictation results	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	0 (0%)	2 (22.2%)
Negative change	0 (0%)	1 (11.1%)
No change	4 (50%)	4 (44.4%)
Change not known	4 (50%)	2 (22.2%)

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.				
n=8	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in strategies (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
P11	'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
P12	'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
P13	'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

Table 50 (cont'd)/

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

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n=9	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in strategies (Yes / No / Not known)
P1	with mother's help (line 40)	'he studies by himself, I test him to see whether he learns it well. He studies on his own' (line 32)	'he did it by himself' (line 34),	no change
P2	'I request him … to write it down' (line 26), 'I help him' (line 32)	'spell and write' (line 21)	'copy the words' (line 18), with mother's help (line 28)	no change
P3	'she said her teacher helped her' (line 32)	'me [who helps him]' (line 24)	'she said she copied them' (line 26), 'not much difference [than before]' (line 28)	no change
P4	'if she doesn't know that word, ask her to check the dictionary' (line 22), revision with mother's help (line 26)	'she usually revises by herself. Sometimes she uses the computer and reads along' (line 24)	'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
P5	'by herself' (line 24), 'the sisters themselves study together and help each other' (line 26)	'she revises by herself' (line 20)	'by herself' (line 18)	no change
P6	'sisters help each other' (line 20)	'she revises by herself' (line 20)	'[by] herself' (line 21)	no change
P7	'I will ask him the pictures and he dictates' (line 28), sometimes 'his brother or himself' (line 35)	'asks me to read out for him' (line 20)	'he said teacher revised with him at school' (line 20)	not known
P8	'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)	'most of the times is me, I read (it out) and she writes' (line 28)	'I ask her in Chinese and she writes in English' (line 20)	no change
P9	'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)	'he just glances through it and then spells..I haven't noticed how he does his revision '(line 22)	'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

Table 51. 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 52. Change in child's strategies for preparing for dictation as indicated by parents between groups.

Change in strategies	Experimental Group (n=8)	Placebo Group (n=9)
Change	4 (50%)	0 (0%)
No change	4 (50%)	7 (77.8%)
Change not known	0 (0%)	2 (22.2%)

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	
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).

	Before Bingo	During Bingo	After Bingo	
P17	'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)	not much difference' (line 74) 'because she is so self-initiated … to handle everything' (line 76)	'in terms of time … I only know that she does not need me to study with her'(line 34)	not known
P18	'[read] usually once or twice' (line 90)	'probably … shorter and he seems more confident now' (line 28)	'I think he is faster' (line 57)	positive change

Table 54. Time spent in preparing for dictation as indicated by parents for the Placebo Group.				
n=9	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in time spent (positive change / negative change / no change / not known)
P1	'half an hour' (line 38)	'within an hour' (line 30)	'he just prepared for about fifteen minutes' (line 30)	positive change
P2	'I request him to revise for one or two hours' (line 26)	'one hour' (line 23)	'just like before, no big difference' (line 26)	no change
P3	'seldom revise … time for revision is relatively little (line 28)	'I don't know how longs he revises at school' (line 22)	no answer	not known
P4	'she would have plenty of time on Saturday and Sunday' (line 24)	'it takes quite long, half an hour to an hour' (line 26)	'one hour' (line 18)	no change
P5	'if she takes it seriously… about half an hour. If she doesn't, a bit longer' (line 22)	'sometimes she revises for a few hours but sometimes she revises for about half an hour' (line 18)	'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)	positive change
P6	'half an hour to one hour … most often, she could handle it within half an hour' (line 17)	'she can finish it in about half an hour' (line 20)	'it depends' (line 23), 'no [difference], but her spelling is better' (line 25)	no change
P7	'it was quite fast. He remembers them very fast.. but .. when you ask him to dictate again, he wouldn't remember anything.' (line 30)	'about an hour' (line 22)	'he said he revised at school so there is no need to study again at home' (line 22)	not known

Table 54 (cont'd).

P8	'I ask her to dictate once in the daytime and nighttime' (line 40), 'if she works hard, she can revise the dictation very fast. If she does not pay attention, she has to use more time to study and cannot remember it for too long' (line 78)	'she needs more time to study before, and needs less time now' (line 22), 'spends like twenty thirty minutes' (line 24)	'not every day .. revises for some ten minutes' (line 22), 'do not need to revise every day and sometimes revise like .. each time a few words' (line 44)	positive change
P9	'he doesn't take too long for revision'(line 14), 'he revises for around 10 minutes if there are 10 words' (line 12)	'he now needs shorter time for his revision' (line 16), 'he needs around ten minutes for revision if there are 20 words on the list' (line 24)	'I don't know how long he takes to revise' (line 20)	not known

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.

Change in time spent	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	5 (62.5%)	3 (33.3%)
Negative Change	0 (0%)	0 (0%)
No change	0 (0%)	3 (33.3%)
Change not known	3 (37.5%)	3 (33.3%)

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.

Child's view on bingo class	Experimental Group (n=8)		Placebo Group (n=9)	
	No. of students	Feedback provided by parents at Interview 3	No. of students	Feedback provided by parents at Interview 3
Positive	6 (75%)	P12 'positive. He likes going [to the class]'(line 10); P13 'yes … says it's quite good(line 3); P14 'she said .. that's quite good' (line 72), 'I asked her what it helps you most, she said spelling' (line 74); P15 'he quite likes the class. He is quite happy' (line 5); P17 'after the class, she always says "bingo bingo" (line 44), 'she enjoys it' (line 48); P18 'he told me voluntarily most of the times... he felt it was good' (line 10)	1 (11.1%)	P7 'yes' (line 4), 'spelling is very interesting' (line 6)
Negative	0 (0%)	/	0 (0%)	/
Not known	2 (25%)	P10 No answer; P11 'I asked her… she said spelling words and playing games (line 3)	8 88.9%	P1, P2, P4, P5 no comment made by child; P3 'very seldom [comment on bingo class]' (line 2); P6 no answer; P8 'she said that there are games and nothing else' (line 4); P9 'not too much [comment]' (line 2)

Table 56. Child's view on Bingo class as indicated by parents among 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. Parents' view on phonics between groups.

Parents' view on phonics	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	2 (25%)	P14 'it should help' (line 60); P18 'yes' (line 73)	1 (11.1%)	P9 'both [bingo game and phonics] help … he doesn't tell me about it but I think both help' (line 31)
Negative	0 (0%)		1 (11.1%)	P1 'phonics is not helpful to him, I think' (line 40)
Not known	6 (75%)	P10, P12, P13, P17 No answer; P11 'no big difference' (line 12); P15 'I don't know' (line 32)	7 (77.8%)	P2, P5, P6, P7 no answer; P3 'I have to ask her' (line 42); P4 'no difference' (line 28); P8 'I don't know. Because I don't know what she learnt in the class' (line 32)

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 59. Interview questions for teachers.		
21	How do you find (student)'s performance in English class, in terms of motivation? Any example?	motivation
22	How do you find (student)'s performance in spelling /dictation?	academic performance

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.

n = 8	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (Interview 3) comments	Change in motivation (more positive, more negative, no change, not known)
S10	'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)	'active, willing to raise hands' (T1, line 5), '[participation in class] similar to before' (line 8)	'same as before' (T1, line 26), 'very enthusiastic' (line 28), 'I think she likes [English], she isn't afraid of it' (line 32)	no change
S11	'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)	'pretty much the same as before' (T1, line 109), 'yes [voice still soft]' (line 115)	'no big difference… still very active to answer questions' (T1, line 76), 'but she's quite obedient and hardworking' (line 96)	no change
S12	'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)	'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)	'but then attentiveness in class is relatively poor' (T1, line 46), 'perhaps because those sitting next to him played' (line 50)	no change

Table 60. Teachers' view on students' motivation for the Experimental Group.

Table 60 (cont'd).

S13	'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)	'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 confident [compared with before]' (T2, line 45), 'very active [in answering questions]' (line 47)	positive change
S14	'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)	'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)	no change
S15	'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)	'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 chnaged 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)	positive change

Table 60 (cont'd).

S17	'very very active' (T3, line 110), 'very good [in confidence]' (line 114), 'loud enough [when answering questions]' (line 118)	'still keeping [up with her participation]' (T3, line 148)	'very confident' (T3, 3a, line 15), 'very self-initiated'(line 21)	no change
S18	'he is extremely interested in learning difficult words.. he uses phonics to spell' (T3, line 146)	'nothing special' (T3, line 205), 'like to be challenged' (line 219)	'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)	negative change

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

n=9	Before Bingo (Interview 1)	During Bingo (Interview 2)	After Bingo (Interview 3)	Change in motivation (positive change, negative change, no change, not known)
	comments	comments	comments	
S1	'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)	'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)	'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 perhpas could help him' (line 156)	not known

Table 61 (cont'd).

S2	'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)	'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)	'[suddenly standing up or rushing out during the lesson] less frequent. After changing seat, the situation was better' (T1, line 216)	not known
S3	'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)	'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)	'performance in classrroom] maintained' (T1, line 232), '[confidence] similar to before' (line 236)	no change
S4	'she responses to quesitons 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)	'same [in performance in class]! I think her confidence is not bad, it's good' (T1, line 291), 'she's loud enough' (line 295)	'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)	not known

Table 61 (cont'd).

S5	'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)	'yes [still not willing to raise her hands]' (T2, line 30)	'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)	positive change
S6	'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)	'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)	'S6's [confidence] better' (T2, line 96), 'increased a bit' (line 102)	positive change

Table 61 (cont'd).

S7	'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)	'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)	'easy to cry' (T2, line 114), 'he has no confidence in himself' (line 116), 'yes! [improvement] of course, but slight only' (line 120), 'but still there is. We couldn't deny it' (line 122), 'For him, he had to hesitate for a while and then spelled it very very slowly' (line 126)	positive change
S8	'very hard-working.. willing to answer questions' (T3, line 158)	'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)	'very enthusiastic' (T3, 3a, line 61), 'very eager [to answer questions]' (line 64)	no change
S9	'not very active' (T3, line182), '[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)	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)	'a bit quiet' (T3, line 101)	no change

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.

Table 62. Teachers' view on change in students' motivation between groups.

Change in motivation	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	2 (25%)	3 (33.3%)
Negative Change	1 (12.5%)	0 (0%)
No change	5 (62.5%)	3 (33.3%)
Change not known	0 (0%)	3 (33.3%)

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.

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.

n=8	Before Bingo (Interview 1)	During Interview (Interview 2)	After Bingo (Interview 3)	Change in performance in dictation (positive change, negative change, no change, not known)
	comments	comments	comments	
S10	'[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)	'failed in the third [dictation]' (T1, line 14), '[marks are] falling' (line 22)	'her performance maintains'(T1, line 12), 'I think she's probably using phonics' (line 18)	no change
S11	'[her spelling] not bad' (T1, line 105), 'willing to try [to guess the spelling]' (line 109)	'her English … is okay' (T1, line 93), 'yes [a bit unstable]' (line 101)	'but the dictation results are still poor and fluctuate'(T1, line 76), 'I guess she [spells] by memorizing' (line 86)	negative change
S12	'his English is quite good' (T1, line 47), 'he wouldn't [have difficulty in spelling], I think he's quite smart' (line 77)	'[dictation scores] pretty good' (T1, line 65), '[progressive improvement] 'yes! It's good for him' (line 71)	'he did well in all the dictations' (T1, line 42), 'he's within the top 3 among the class' (line 44)	no change
S13	'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)	'[performance in dictation] better and better' (T2, line 4), 'at least, for phonics, he seems to be more confident' (line 24)	'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)	positive change
S14	'[performance in spelling] very good' (T3, line 56), '[she] breaks words down' (line 58)	'she keeps doing well [in dictations]' (T3, line 18)	'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)	no change
S15	'[performance in] spelling .. a bit frustrating but acceptable' (T3, line 80), 'I think [he breaks the words down when spelling]' (line 82)	'roughly the same' (T3, line 48), 'his dictation result is stable' (line 52), 'very stable' (line 54), 'pretty much the same' (line 88)	'doing very well' (T3, 3b, line 30), 'marks did not go down' (line 32), '[performance in spelling] more or less the same' (line 34)	no change

Table 63 (cont'd).

S17	'she seldom has problems' (T3, line 126)	'it's good!' (T3, line 154), 'Steady, very stable' (line 159)	'[performance] very stable' (T3, 3a, line 11), 'yes [keep doing well in dictation]' (line 23)	no change
S18	'[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)	'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)	'[when] vocabulary are very demanding, then he would find it challenging' (T3, 3a, line 43), [performance is] stable' (line 53)	no change

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

n=9	Before Bingo (Interview 1) comments	During Bingo (Interview 2) comments	After Bingo (interview 3) comments	Change in motivation (more positive, more negative, no change, not known)
S1	'yes [spelling is relatively weak]' (T1, line 133), [performance with easier words] still bad ' (line 137), 'he's weak [in spelling]' (line153)	'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)	'still didn't pass the dictation' (T1, line 104), '[but performance in other English tests] was quite good' (line 110)	no change
S2	'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)	'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)	'[his] mark was very low' (T1, line 178), 'yes! Extremely low' (line 180), '[spell] by rote-learning' (line 222)	no change
S3	'not like those strong ones [in spelling]' (T1, line 213)	'she improved in the three dictations, although only by several marks' (T1, line 265)	'still got about 40 something in the dictation' (T1, line 224), 'learnt by rote' (line 228)	no change

Table 64 (cont'd).

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

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

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.

Change in academic performance	Experimental Group (n=8)	Placebo Group (n=9)
Positive change	1 (12.5%)	3 (33.3%)
Negative Change	1 (12.5%)	1 (11.1%)
No change	6 (75%)	5 (55.6%)
Change not known	0 (0%)	0 (0%)

Table 65. Teachers' view on change in students' academic performance between groups.

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.

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

($p < .05$; mean = 99.19; 95% 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,

(ii)   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,

2000; Joshi and Aaron, 2003; Piaget 1978, 1983).   According to Piaget (1983), in

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 motivated 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.*,

2005; Lepper and Malone, 1987; Malone, 1984; Malone and Lepper, 1987; Tüzün, 2007).   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)

Levels	Strategies	Examples
Language level	1. include a sociocultural component in the L2 syllabus	showing films, playing relevant music
	2. develop students' cross-cultural awareness	focusing on cross-cultural similarities
	3. promote student contact with L2 speakers	organising school trips
	4. develop students' instrumental motivation	discussing with students the potential usefulness of L2
Learner level	5. develop students' self-confidence	providing praise, encouragement, involving students in more favourable, 'easier' activities
	6. promote students' self-efficacy	teaching students strategies for problem-solving, learning and communication strategies
	7. promote favourable self-perceptions of competence in L2	highlighting what students *can* do
	8. decrease student anxiety	creating a supportive learning
	9. promote motivation-enhancing attributions	helping students recognise links between effort and outcome
	10. encourage students to set attainable subgoals	learning a certain number of new words every week
Learning situation level	11. make the syllabus of the course relevant	basing it on needs analysis
	12. increase the attractiveness of the course content	using authentic materials, using supplementary materials, visual aids
	13. discuss with students the choice of teaching materials	pointing out strong and weak points
	14. arouse and sustain curiosity and attention	not allowing lessons to settle into too regular a routine
	15. increase students' interest and involvement in the task	by designing or selecting varied and challenging activities, include game-like features
	16. match diffculty of tasks with students' abilities	so that students can expect to succeed
	17. increase student expectancy of task fulfillment	offering student ongoing assistance
	18. facilitate student satisfaction	celebrating success
	19. try to be empathetic, congruent and accepting	being sensitive to students' needs, non judgmental
	20. adopt the role of a facilitator	developing a warm rapport with
	21. promote student autonomy	minimsing threats and punishment
	22. model student interest in L2 learning	taking students' learning process very seriously
	23. introduce tasks so as to stimulate intrinsic motivation and help internalise extrinsic motivation	presenting tasks as learning opportunities to be valued
	24. use motivating feedback	giving positive competence feedback
	25. increase the group's goal-orientedness	initiating discussions
	26. promote internalisation of classroom	asking for students' agreement
	27. help maintain internalised classrooom	observing consistently
	28. minimise detrimental effect of evaluation	focusing on individual progress
	29. promote development of group cohesion, enhance intermember relationships	organising outings, game-like inter-group competitions
	30. use cooperative learning techniques	including groupwork in classes

Appendix 2

Classification of games

Researchers	Basis	Classification
McFarlane *et al.* (2002)	Genres of title	A. Adventure/quest games
		B. Simulations
		C. Race games
		D. Maze games
		E. Edutainment activities
		F. Creative/ model building
		G. Shooting / arcade games
		H. Traditional games
Kaptelinin and Cole (2001), Becta (2002)	Kinds of experiences that games provide	A. Action games
		B. Adventure games
		C. Fighting 'beat'em up' games
		D. Platformers (where game characters run and jump along and onto platforms
		E. Knowledge games
		F. Simluation / modeling / role-playing games such as mangagement and strategy games
		G. Drill-and-practice games
		H. Logical games
		I. Maths games
Swank (2008)	Nature of games	A. Physical skills
		B. Games of strategy
		C. Games of chance

Appendix 3

Game functions from Dempsey *et al.* (1993)

Function of games	Percentage of articles
Learn new skills	23%
Practise existing skills	21%
Not able to determine	14%
Change attitude	11%
Other	11%
Drill existing skills	9%
Tutor	6%
Promote self-esteem	3%
Amusement	2%

Appendix 4

Game functions from the constructivist learning perspectives

	Game functions
1	Strategy for drilling and practising
2	Strategy for introducing new contents
3	Strategy for reflection
4	Motivation stimuli for learning
5	Strategy for developing tasks
6	Strategy for developing collaboration and social skills

Appendix 5

Linguistic games focusing on accuracy

Learning targets	No. of studies
Vocabulary	3
Spelling	5
Grammar	0

Appendix 6

Summary of empirical studies on vocabulary games focusing on accuracy

References	L1/L2	Game(s)	Learning theories underpinning the game(s)	Game types (individual / group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Alemi (2010)	English as L2 in Iran	5 games: Twenty Questions, Charades, Definition Game's, Passwords, Crossword Puzzles	not specified	not specified	drill and practise vocabulary	cognitive - vocabulary retention	experiment	experimental group performed significantly better than control group in post-test	results could have been attributed to more reinforcement of vocabulary in games for experimental group while control group received no reinforcement
Kirby *et al.* (1981)	English as L1 in Canada	bingo	behavioural principles	individual	drill and practise sight words	cognitive- acquisition and retention of sight word vocabulary	experiment	noticeable improvement occurred for word sets receiving game treatment	no control group; a small sample size of 6 students
Laleh and Nasrin (2011)	English as L2 in Iran	digital computer game SHAIEx	cognitive learning theories	individual	introduce new vocabulary	cognitive - vocabulary acquisition	experiment	experimental group performed significantly better than control group in final test	only girl participants and no explanation provided; randomization unknown; no measurement of motivation but claimed experimental group was more motivated than control group

Appendix 7

Summary of empirical studies on spelling games

focusing on accuracy

Appendix 7. Summary of empirical studies on spelling games focusing on accuracy.

References	L1/L2	Game(s)	Learning theories underpinning the game(s) involved	Game types (individual / group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Cassar and Jang (2010)	English as L1 in Canada	a variety of games - including game-based activities including crossword puzzles and board games	phonological processing model and Vygotsky's cognitive developmental theories	individual / group	introduce, drill and practise spelling	cognitive - word recognition, spelling acquisition and retention; affective - level of engagement in learning	quasi-experiment	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	small sample of 6 students (all with reading disabilities and attention deficit disorders) limited generalizability
Garcia et al. (2008)	Spanish speaking students learning English as L2	a Pac-man like game	theories about orthography	individual / group	introduce, drill and practise spelling	cognitive - orthography, spelling acquisition and retention	experiment	claimed students made significant progress after game;	significant improvement was claimed without providing statistical significant difference; some students played in groups because of lack of equipment
Jolicoeur and Berger (1988)	English as L1 in U.S.	8 educational commercially sold software programmes (4 being spelling software - including 2 spelling tutorial and 2 spelling games)	cognitive learning theories	individual	(2 spelling games) introduce new contents	cognitive - fraction concepts, spelling acquisition	experiment	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)	in the delayed test, no comparison in performance between spelling tutorials and spelling games, effect cannot be compared

Appendix 7 (cont'd).

References	L1/L2	Game(s)	Learning theories underpinning the game(s) involved	Game types (individual / group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Keen (1983)	English as L1 in U.S.	commercially produced game Boggle	psycho-linguistic aspects of writing system and motivational aspects of students	individual / group	introduce, drill and practise spelling	cognitive - spelling acquisition and retention	experiment	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	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
Rosas et al. (2003)	English as L2 in Chile	a software designed with 5 video games	cognitive learning theories	individual	introduce new contents	cognitive - reading comprehension, spelling and math skils; motivation to use video games	experiment	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	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

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Appendix 8

Summary of empirical studies on language games

focusing on communication

Appendix 8. Summary of empirical studies on language games focusing on communication.

References	L1/L2	Game(s)	Learning theories underpinning the game(s)	Game types (individual / group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Gardner (1987)	English as L2 in UK	Describe and Arrange	not specified	group	drill and practise vocabulary, pronunciation and grammar	cognitive - vocabulary, pronunciation, grammar	action research	more positive impact on practising language related to description than location but little evidence to support self-correction and peer-correction	methodology (sampling, randomization, pairing of groups) was not known except the mentioning of a questionnaire
Liu and Chu (2010)	English as L2 in Taiwan	ubiquitous games HELLO	constructivism and motivation theories	group	drill and practise listening and speaking	cognitive- listening and speaking skills; motivation; collaboration	quasi-experiment	in both test scores and motivation, experimental group using ubiquitous games performed better than control group using non-gaming learning	students were assigned to experimental and control groups (then to teams in each group) but no control for differences among teams was noted
Nguyen and Khuat (2003)	English as L2 in Vietnam	a few vocabulary games (including Simon Says, Hangman)	communicative language teaching approach	group	drill and practise vocabulary	communicative learning cognitive- vocabulary building; perception and attitudes	action research	claimed games contributed to vocabulary learning and students welcomed new way of vocabulary teachng	objective measure of progress in vocabulary is limited

Appendix 8 (cont'd)

References	L1/L2	Game(s)	Learning theories underpinning the game(s)	Game types (individual / group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Rama et al (2007)	L1 in Singapore	5 communica-tive games	collaborative learning	group	introduce, drill and practise vocabulary	oral communication skills	experiment	experimental group showed greater improvement in post-tests of oral component	collaborative learning was noted in experimental group but not in control group; result may have been attributed to collaborative learning not gaming
Uberman (1998)	Polish speaking students learning English as L2	Vocabulary Picture-Puzzle and crossword puzzle	various vocabulary presentation techniques	group	introduce, drill and practise vocabulary	cognitive - vocabulary acquisition and retention	experiment	claimed that gaming group performed significantly better; claimed that from observation, students playing games were more motivated	claim that gaming group performed significantly better without providing statistical significant difference; sampling size, randomization are unknown; some games were played in pairs and how pairing was formed was not stated; observation procedures were not stated

Appendix 9

Summary of an empirical study on language games

focusing on both accuracy and communication

References	L1/L2	Game(s)	Learning theories underpinning the game(s)	Game types (individual/ group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Yu (2005)	German as L2 in Taiwan	13 games	communicative practices and motivation theories	groups	introduce and drill and practise	cognitive - grammar accuracy; motivation and perception on classroom atmosphere	quasi-experiment	no significant improvement in grammatical accuracy but significant improvement in motivation and classroom atmosphere for the experimental group	the number of students with different levels of motivation in learning German in each high /middle/ low language level group is not known

Appendix 10

Summary of empirical studies on language games

	Aspects	Linguistic games		Communicative games (5)	Language games focusing on accuracy and fluency	Total
		Vocabulary (3)	Spelling (5)		Grammar(1)	
Language	L1	1	3	/	/	4
	L2	2	2	5	1	10
Type	computer-related games	1	3	1	/	5
	non computer-reated games	2	2	4	1	9
Game source	employ or adapt from readily available games	3	4	5	/	12
	specifically designed games	/	1	/	/	1
Player	individual games	2	2	/	/	4
	group games	/	/	4	/	4
	individual /group games	/	3	/	1	4
	not specified	1	/	1	/	2
Theoretical perspectives	constructivist / cognitive learning theories	1	3	1	/	5
	others	1	2	3	1	7
	not specified	1	/	1	/	2
Game functions from constructivist perspectives	drill and practise	2	0	3	/	5
	introduce new contents	1	2	/	/	3
	introduce and drill and practise	/	3	2	1	6
	motivation stimuli	/	/	/	/	/
	develop tasks	/	/	/	/	/
	collaboration and social skills	/	/	/	/	/
	reflection	/	/	/	/	/
	others	/	/	/	/	/
Outcomes	cognitive outcomes	3	3	3	1	10
	cognitive and affective outcomes	/	2	2	1	5
Research design as reported by the author(s)	experimental design	3	4	2	/	9
	quasi-experimental design	/	1	1	1	3
	action research	/	/	2	/	2
General findings as reported by the author(s)	positive impact of games (academic and/or affective aspects)	3	3	5	1	12

Appendix 11

7 questions for considerations for language games

from Hong (2002)

1	Which language does the game target?
2	Which skills does it practise? The language skill focus could be
	any one of the major skills of listening, speaking, reading or writing.
3	What type of game is it?
4	What 's the purpose for using it?
5	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.
6	How much interaction and participation is there? Maximum
	involvement is something we are pursuing.
7	Do I like the game myself?

Appendix 12

Practical and organizational aspects of

choosing language games

Aspects	Specifics
Goal / objective	Which language, which skills (reading, writing, speaking, listening) do the game target?
Focus	accuracy or communicative purpose
Functions	e.g. drill and practise familiar materials, introduce new concepts, strategy for deep learning
Type	to be played individually or in pairs/groups; to be played in classroom or at home; digital game or pen-and-paper game
Appropriacy	corresponding to the number of students, students' age, proficiency, any simplication or modification required
Organizational process	time involved (e.g. before/during/after class, duration of each game); classroom setting and space
Materials/cost involved	pens and paper, cards and boards, any IT infrastructure e.g. computers, laptops, broadband accessibility, technical staff etc.
Culture	students' attitude towards participation, learning and fun

Appendix 13

Summary of empirical studies on Bingo in

various subject disciplines

References	Subject discipline	Learning theories underpinning the game(s) involved	Game types (individual / group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Chang *et al.* (2009)	Math	learning flow	individual	drill and practise arithmetic calculation	cognitive-math accuracy and fluency; affect	experiment	13/21 students improved in arithmetic fluency and game promotes positive affect including confidence, engagement	groups doing different arithmetic calculations were measured at the same time; no control group
Kirby *et al.* (1981)	English language as L1	behavioural principles	individual	drill and practise sight words	cognitive-acquisition and retention of sight word vocabulary	experiment	noticeable improvement occurred in word sets receiving game treatment	no random assignment of participants; no control group; a small sample size of 6 students
Klepper (2003)	Social sciences	information-processing	individual	review	cognitive-vocabulary retention	experiment	experimental group scored better than control group but no statistically significant difference	the experimental group received more reinforcement of words; a small sample size of 35 students

Appendix 13 (cont'd)

References	Subject discipline	Learning theories underpinning the game(s) involved	Game types (individual / group games)	Game functions	Learning outcomes	Design as reported by the author(s)	General findings as reported by the author(s)	Any methodological concerns noted
Tietze (2007)	Pharmacy	a variety of theoretical frameworks	individual	drill and practise and demonstrate learning, develop tasks, stimulus for learning	cognitive-acquisition and retention of contents; affective - attention, attitude	action research	students who achieved bingo had at least an average course grade 7 points higher than previous semesters compared to students who did not achieve bingo and had an average course grade 12 points lower	43% of students completed anonymous survey - low responding rate may affect the drawing of conclusion
Vanags et al. (2012)	Psychology	deep learning	groups	drill and practise specific terms	cognitive - recall and retention of terms	quasi-experiment	the experimental group showed significantly better recall for key terms than the control group in both post-test and follow-up test	no random assignment; in Experiment 1, control group lacked opportunity to familiarize themselves with terminology
Weisskirch (2009)	Developmental Psychology	cognitive learning	individual	drill and practise / review concepts	cognitive-recall and retention of concepts; affect	experiment	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	test score for exam was used for measuring academic performance but additional chapters' information was included in exam thus threatening the validity of study

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Appendix 14

Sign-up form I

小學　Primary　School

香港晴協會　Hong Kong Sunshine Association

Bingo workshop

活動名稱：Bingo workshop (共六堂)

活動性質：透過 Bingo 學英文，令學生掌握串字及發音的技巧，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(如超出報名人數，將以抽簽形式取錄)

費用　：全免(被取錄後才繳按金，先付按金$50 出席全部活動始獲全數發還)

導師　：認知培訓中心謝靜儀老師

活動地點：耀道小學

服裝　：整齊校服

裝備　：文具

如有任何查詢，請致電　小姐　　　　/

＿＿＿＿＿＿＿
香港晴協會主席

Chairman of the Hong Kong Sunshine Association

如有興趣參加，請填妥以下回條，於 9 月 15 日前交回班主任辦理，否則作放棄論。
2009 年 9 月 11 日

- -

Bingo Workshop 回條

☐ 本人有興趣讓子女參與 Bingo Workshop 活動，並希入讀　　☐ 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 ＿＿＿＿＿＿＿＿ (　)　　　　家長簽署：＿＿＿＿＿＿＿

聯絡電話：＿＿＿＿＿＿＿＿＿＿＿　　　　　2009 年 9 月＿＿＿日

Appendix 15

Completion form

小學 香港晴協會
Primary School Hong Kong Sunshine Association

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 : [認知培訓中心] 謝靜儀老師

所有資料只供「Bingo 遊戲對香港小學生學習英文串字之效用」
作研究報告之用、將實保密。

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:_____

小學　　　　　　　　　　香港晴協會
Primary School　　　　　Hong Kong Sunshine Association

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＿ 日前交回班主任辦理。

Bingo Workshop　回條

所有資料只供研究目的、將實保密

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

Sugar and Sugar's (2002) 'Letter Bingo'

Purpose	• To strengthen the association between letters and topic items.
	• To reinforce vocabulary and spelling skills.
Game Objective	To win by covering 4 game board squares in a horizontal, vertical, or diagonal (corner-to-corner) row
Players	4 or more. *Can be adapted for one-on-one tutoring.*
Time	15-45 minutes.
Grades	K-8.
Supplies	• A set of questions and clues about the topic.
	• 1 game sheet per team.
	• 1 marker (coin or chip or other small token) per team.
	• Paper and pencils for each team.
GAME STEPS	
Preliminaries	• Divide class into teams of two 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	
Preliminaries	• The class is divided into teams of two to three players.

B	O	K	H
E	D	J	P
M	J	F	C
G	N	L	A

• 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.
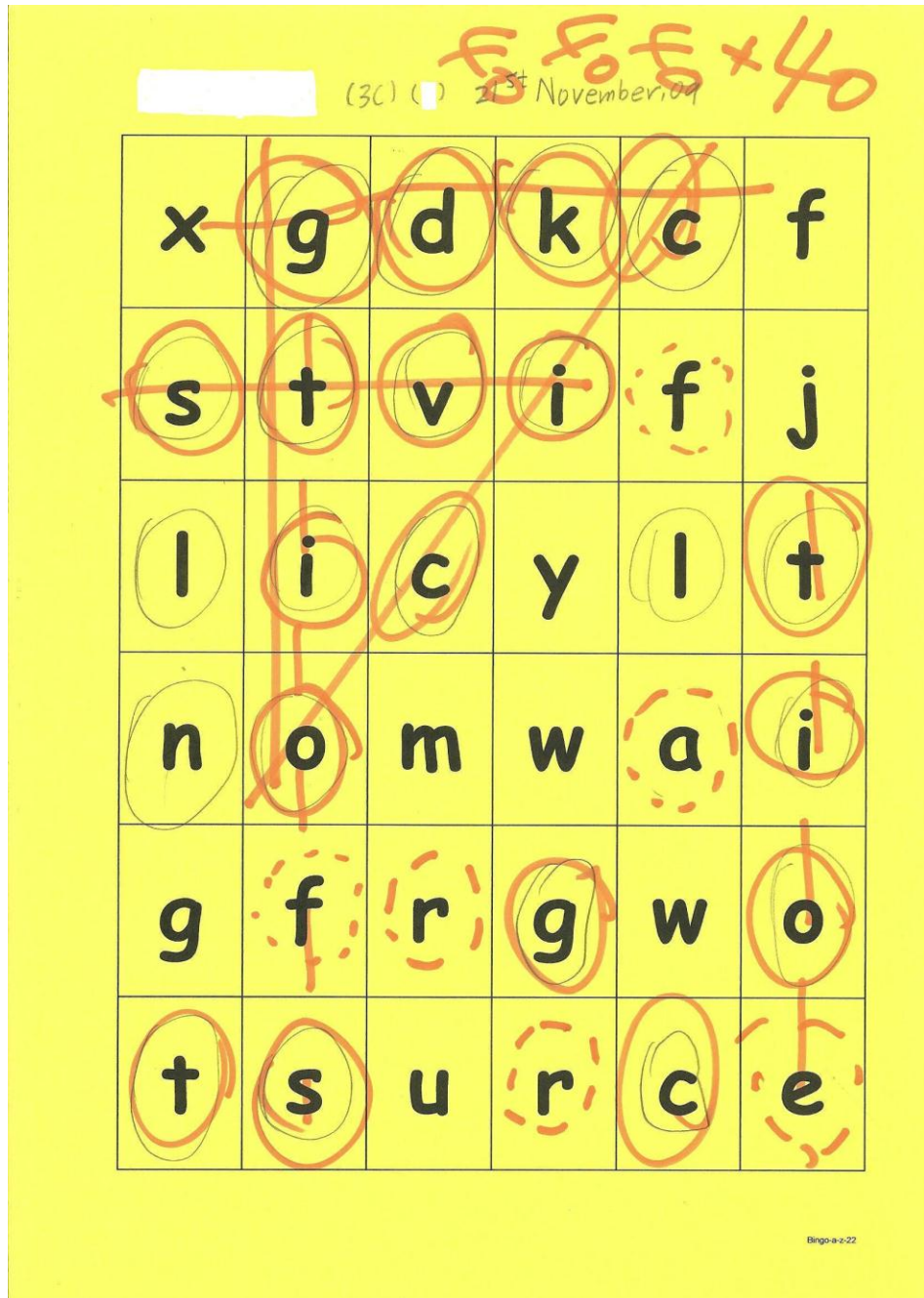
Appendix 19

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 of 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

Appendix 21

Extracts of interviews with students

S5(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

S5(1)

Appendix 22

Extracts of interviews with parents

P8(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

P8(2)

Appendix 23

Extracts of interviews with teachers

T1(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 tnow.
4. R: yes yes
5. I: hmm huh! Not so…
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.
13. I: hmm huh.
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 passing 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!

T1(3)

Appendix 24

Extracts of back-translation

1. I:請問你係咪張 XX 的家長?
   R: 係

3. I: X 小姐, 我想請問有關 XX 英文默書情況。我想問 XX 係屋企既時候, 除左講廣東話, 會唔會講下其他語言呢?
   R: 嗯…好少。好少!

5. I: 好少? 嗯! 咁 XXX 會唔會睇英文電視節目呢?
   R: 嗯…唔會! 有時連中文節目都唔會睇。哈哈

7. I: 嗯…
   I: 所以你覺得 XXX 既英文串字能力如何呢?

9. R: er…她 OK 的。她就算唔拎本書出離睇都可以串到字的
   I: 嗯! 所以你覺得 XXX 就算….ok! 你既意思係….? 她就算….

11. R: 基本上, 她的默書一般都可以拎到 90 分以上的。
    I: 嗯! 咁你覺得 XXX 既英文默書同串字之間有冇關係呢?

13. R: ER…佢讀完個英文字, 多多少少佢都會記得點樣串的
    I: 嗯

15. R: 佢都知道每個英文字既第一個同最後一個既英文字母
    I: 嗯! 所以你覺得 XXX 平時既默書, 你點睇呢? 平時佢會用幾多時間去溫英文默書?

17. R: 佢…用半個鐘至一個鐘頭到溫書。不過通常佢半個鐘頭到就可以溫完。
    I:嗯

19. I: 嗯….有冇人同佢一齊溫書? 邊個呢?
    R: 其實佢…會同佢姐姐一齊溫書…大家互相幫對方默書。姐姐溫完就問妹妹或者妹妹溫完問姐姐。

21. I: 嗯
    R:所以你覺得 XXX 平時英文串字同英文默書有冇關係呢?

23. R: ER…如果佢知道個個英文字, 但唔知道點串個個字。當老師讀個個英文字出離時, 或者講個英文字的第一個英文字母, 佢有時會記得番個個英文字點樣串。
    I: 嗯! 平時 XXX 英文既成績係點呢?

25. R: ER…英文成績?
    I: 英文默書?

27. R: 哦! 英文默書成績? 通常最少有 90 分, 有時有 100 分或者 110 分
    I: 所以你會唔會幫 XXX 提升她的英文串字能力呢?

29. R:唔會!靠佢自己
    I: 所以你有冇野關於 XXX 英文串字既野想問我?

31. R: ER…冇
    I: 你有冇野想問?

33. R: 冇

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