

Comprehension strategies when listening to the teacher
in the ESL classroom



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Abstract

Listening comprehension strategies have been explored almost exclusively in uni-directional listening when learners are listening to audio recording. The lack of research on students' strategy use in understanding the teacher in the classroom is surprising, given how pervasive it is for students to listen to the teacher. In order to fill this research gap, this study explored the listening strategies adopted by learners in comprehending the teacher's input in the English as a Second Language (ESL) classroom in Hong Kong (HK). Additionally, motivated by previous literature which has foregrounded the need to take into account learners' linguistic knowledge (LK) as well as the tasks that the learners are doing, the present study attempted to examine the relationship between LK, task difficulty, task type, and strategic behaviour. Given the classroom context of this study, a task is defined as the different types of teacher input such as INFORM (explaining) and ELICIT (questioning).

This two-phased study adopted a sequential mixed methods design. In the preparatory phase, an open-ended questionnaire and interviews were used to elicit from Hong Kong (HK) Secondary 3 learners (n=100) their strategies used in the ESL classroom context. These qualitative data were fed into the construction of a Likert-scale questionnaire. This newly developed questionnaire was administered in the main phase to 867 HK Secondary 3 students, 646 of whom also completed a baseline test – a C-test – and two LK tests – a receptive Vocabulary Levels Test (VLT) and a grammaticality judgement task (GJT). A sub-sample of 59 students also took part in an innovative computer tracking programme which simulated classroom learning and incorporated different types of teacher's input while eliciting learners' strategy use targeted at these inputs. Lesson observation and stimulated recall interviews were also conducted to give insight into learners' strategy use in an authentic lesson from a more qualitative point of view.

Findings are presented in response to four research questions (RQs). In response to the first RQ on what strategies were used in this listening to the ESL teacher context, it was revealed that while some strategies identified were common to those found in previous research on listening to audio recording, there were some strategies which were unique and specific to listening to the teacher in the ESL classroom. Secondly, with respect to the second RQ – the effect of LK on strategy use, it was found that learners with lower LK tended to use more *translation* strategies and attend selectively to simple and familiar words. Learners with higher LK, in contrast, preferred to use a range of other strategies such as attending selectively to difficult words, recalling their prior knowledge, and using auditory representation and imagery. A further cluster analysis, however, indicated that there existed a sub-group of learners with low LK who were at least comparably strategic with learners with higher LK; at the same time, there existed a group of high LK learners who were less strategic, providing some evidence that strategy use is not wholly dependent on levels of LK.

Turning to the third and fourth RQs on the effect of task difficulty and task types, it was found that learners in general used more strategies when encountering difficult than easy tasks, although such a finding applied mostly to learners with higher LK. Furthermore, the analysis on the relationship between task types and strategy use revealed how the task variable might be important in the deployment of strategies. For example, a task such as DICTATION which requires focus on forms might necessitate more *repetition* strategies, whereas a READ ALOUD which contains richer content might require more *imagery* strategies.

Overall, the major contribution of this research is three-fold: to explore the comprehension strategies used by learners when understanding the teacher's input in the ESL classroom, to advance our understanding of the relationship between strategic behaviour and LK, task difficulty, and task types, and to develop a Likert-scale questionnaire and a computer programme as instruments for further research.

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List of Abbreviations

ANOVA	Analysis of Variance
CS	Communication Strategy
DA	Discourse Analysis
EFA	Exploratory Factor Analysis
EMI	English as the Medium of Instruction
EFL	English as a Foreign Language
ESL	English as a Second Language
GJT	Grammaticality Judgement Task
GLL	Good Language Learner
HK	Hong Kong
IRF	Initiation-Response-Feedback
L1	First language
L2	Second language
LK	Linguistic Knowledge
LLS	Language Learner Strategy
MALQ	Metacognitive Awareness Listening Questionnaire
MANOVA	Multivariate Analysis of Variance
OCSI	Oral Communication Strategy Inventory
QUAL	Qualitative
QUAN	Quantitative
RQ	Research Question
SILL	Strategy Inventory for Language Learning
SPSS	Statistical Package for the Social Sciences
VLT	Vocabulary Levels Test
WM	Working Memory

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Chapter 1 Introduction

This research explores the language learner strategies (LLSs), and more specifically the listening comprehension strategies, adopted by learners when they are trying to understand the teacher's input in the classroom. Given that teaching and learning in a typical English as a Second Language (ESL) classroom necessarily involves teacher talk directed to the whole class, such as providing explanations, posing questions, giving instructions and so forth, it is of interest to examine how strategies are used by learners in facilitating their understanding of the teacher's language. Applying such strategies effectively can potentially enhance learning in the classroom context.

This introductory chapter first provides the rationale of this research, along with its theoretical and practical importance. In so doing, I will try to flag up the research gaps in the field of LLSs and how my research attempts to address these gaps. Subsequently, a section is dedicated to laying out the organisation of the rest of this thesis by providing an introduction for each of the subsequent chapters.

1.1 Research rationale

There has been research examining LLSs involved in uni-directional listening when learners are listening to audio recording (see, e.g., Goh, 2002; Graham, Santos, & Vanderplank, 2010; 2011; O'Malley, Chamot, & Küpper, 1989; Vandergrift, 1998; 2003, and Macaro, Graham, & Vanderplank, 2007 for a review). And yet, there have not been studies investigating the strategies involved when learners are trying to understand the teacher in the ESL classroom. Although it is arguable that strategies documented in the previous literature of listening to audio recording could also be employed by learners in the classroom context and one might adopt the lists of strategies developed for these purposes, understanding the teacher's input may involve different strategies. Particularly, in light of the theoretical framework of LLSs proposed by Macaro (2006), strategies are used in relation to a task and can thus be task-specific. If we define task broadly as learners comprehending the utterances while listening, then it is arguable that making sense of the teacher's input in the classroom

is a different task from understanding audio recordings, which often aim to portray authentic social situations. For all of us who has gone through schooling, we know very well how classroom interaction is different from social interaction particularly when the teacher is telling students off, during which the students could not argue back. Tsui (1987) also gave the following example to show that some exchanges would be awkward in social discourse but prevalent in the classroom:

‘Passenger A: What’s the time. [sic]

Passenger B: Six.

Passenger A: Yes, good girl.’ (p. 339)

This exchange would be very awkward in an ordinary social setting because in the first place, a passenger would not ask a question of which s/he already knows the answer. Secondly, a passenger will not give positive feedback and praise the interlocutor for giving him/her the correct answer of what time it was. On the contrary, such a conversation would be quite common in the ESL classroom when the teacher tries to, in Tsui’s (1985) terminology, ask a display question and give positive evaluation to the student. In fact, since the 1970s, this distinctiveness of classroom discourse has led researchers such as Flanders (1970) to suggest a system of interaction analysis, and Sinclair and Coulthard (1975) to propose the Initiation-Response-Feedback (IRF) patterns for examining classroom interaction. Based on these models, Tsui (1985) has developed a 17-category system in analysing the various acts in classroom interaction, such as INFORM (explaining) and ELICIT (questioning). Later, Lo and Macaro (2012) further developed this into a 24-category system (to be discussed in Chapter 2.3).

However, despite its distinctiveness, the context of classroom interaction has, strikingly, not been explored in LLSs research. Previous research on listening comprehension strategies have examined learners’ strategic behaviour in response to oral texts which resembled, to some extent, authentic social interaction. For instance, Vandergrift (2003) used texts related to students’ life experience and covered topics such as ‘an announcement of a hockey game, an advertisement for a restaurant, and a dialogue’ (p. 472). Even for Graham et al. (2011) who stated that the listening texts they used did not

intend to emulate ‘authentic’ situations which students would encounter in the society, they argued that the context of the texts were authentically social (such as disasters and politics), rather than a strictly classroom interaction context.

More importantly, not only from the macro point of view that listening to audio recording and to the teacher can be considered different listening tasks (see section 2.3.1 for a comparison between the two), there is also a micro dimension of listening to different types of teacher input in the classroom, such as INFORM and ELICIT (see section 2.3.3 for further explanation). These different types of input can be conceptualised as different task types possessing different task demands. Under the theoretical framework of Macaro (2006), different strategies might be used in response to different tasks. Therefore, it is theoretically sound to find out how the change from listening to audio recording to listening to the different types of teacher input might play a role in learners using different strategies to facilitate their understanding.

Apart from the under-researched context of listening to the teacher in the ESL classroom, another pressing issue in listening strategy research is the inadequacy in controlling for linguistic knowledge (LK). Macaro et al. (2007) suggested that research has to take into account the different levels of LK, because higher LK could ‘free up working memory capacity to deal with comprehension problems’ (p.173). However, except for a limited number of studies such as Graham et al. (2010), most previous research into listening strategies has overlooked this important variable of LK in relation to strategy use and listening success (see section 2.2.2). The problem of the lack of control for LK is further aggravated by the negligence of task difficulty. Task difficulty plays a role because when encountering a more difficult task where LK alone is not sufficient, learners might need to rely more heavily on their strategic behaviour in order to arrive at an understanding of the utterances in the listening task (see Figure 1 in Chapter 2.1 for a graphical representation of the relationship between LK, task difficulty, and strategic behaviour proposed by Macaro [2010], and section 2.2.2 for a discussion on listening strategy research in relation to the variables of LK and task difficulty).

These gaps in research are made additionally wide because of the limitations of existing strategy elicitation methods and instruments. In the late 1990s, A.D. Cohen (1998) suggested six major methods in strategy elicitation: ‘oral interviews and written questionnaires, observation, verbal report, diaries and dialog journals, recollective studies, and computer tracking’ (p. 26) (to be discussed in detail in Chapter 3.3 where I justify the methods used in this study). More recently, Macaro (2009a) maintained that there are two major approaches used in strategy research – questionnaire and verbal self-report. We can thus see a shift of LLSs research methods towards relying even more heavily and predominantly on questionnaire and verbal self-report. However, while questionnaire could be useful in eliciting learners’ strategy use in the classroom context, they might not be targeted at specific types of teacher input as different tasks (such as ELICIT and INFORM discussed above), unless a task-specific questionnaire containing a massive number of items is devised. Moreover, some forms of relatively concurrent verbal self-report such as think-aloud protocol would not be possible without obstructing the teacher-student interaction in the classroom. Therefore, the underdevelopment of research methods and instruments poses a challenge to studies that investigate learners’ strategy use when listening to the teacher (to be discussed, again, in Chapter 3.3).

My research acknowledges these research gaps from both theoretical and methodological points of view, and attempts to fill them by exploring how Hong Kong (HK) Secondary 3 ESL learners employ listening comprehension strategies when understanding the teacher’s input in the classroom context. Incorporating elements of both sequential and parallel mixed methods design, and adopting multiple research methods and instruments, I intend to provide a relatively comprehensive picture of how this target population of learners used listening strategies in the classroom by taking into consideration LK, task difficulty, and task types (i.e. different types of teacher input). Particularly, I designed a computer tracking programme which involved learners clicking buttons to reveal their strategy use while listening to a simulated lesson on the computer. The innovative programme has potential in collecting data in a relatively concurrent and unobstructed way when compared to think-aloud protocol (to be discussed in section 3.3.3.2.2).

My research also stems from a viewpoint of yielding practical impact, given that ESL learning is ubiquitous around the globe. Specifically, HK learners take ESL classes from primary to secondary schools for at least 12 years in total and with at least 4 to 6 hours of instruction per week. It is logical that any instructed ESL lesson would essentially involve learners listening to the teacher, and in the HK context, a teacher-fronted classroom is still prevalent and teacher talk takes up a predominant portion of lesson time (as shown by e.g. Lo and Macaro (2012) in section 2.3). As such, examining how learners use strategies to arrive at an understanding is of practical importance, and the findings could potentially facilitate teaching and learning in the classroom, thus providing pedagogical value stemming from my research.

Given both theoretical and practical impetus, my research attempts to investigate the comprehension strategies deployed by students in this under-researched context of listening to the teacher in the ESL classroom, as well as how these strategies differ with respect to students' levels of LK, task difficulty and task types. The precise research questions (RQs) will be presented in Chapter 3.1.

1.2 Contents of the following chapters in this thesis

The rest of this thesis is organised in the following way. Chapter 2 is the literature review that discusses previous research relevant to the present study. Starting with a working definition of what a strategy is and a discussion on the seminal paper by Rubin (1975), the chapter outlines the debates and development over the past 40 years of LLS research. In particular, some researchers have problematised the poor definition of strategies across different studies and the lack of theoretical models in conceptualising what strategies are. In answer to this, Macaro (2006) proposed a theoretical framework to situate LLS with other conflicting constructs such as second language (L2) processes and L2 skills. It will be argued in the chapter why I deem this model as the most relevant to my present research. The chapter then narrows down to discussing listening strategies in Chapter 2.2, along with models in listening comprehension that provide insight to how listening strategies could be

situated in the models. This section also critically evaluates how different studies defined the ‘good listener’ differently and foregrounds, with the exception of very few studies, the negligence of the importance of LK when investigating strategic behaviour. Also, how previous listening strategy research explores the role of task difficulty and task types is reviewed. Chapter 2.3 moves on to examine the listening tasks in a more in-depth manner and explains why it is useful to distinguish between listening to audio recording and listening to the teacher as different tasks. In so doing, the importance of classroom interaction is brought up, borrowing support from previous literature on input and interaction, and thus reinforcing the need to investigate strategy use in the classroom context. The chapter then further narrows down to take a more refined and micro perspective of the listening tasks through introducing how previous researchers have classified the classroom discourse using discourse analysis (DA). Based on the previous literature, I propose a 24-category system in analysing classroom interaction, which will form the basis of my analysis of strategy use in relation to understanding the different types of teacher input.

Chapter 3 is the methodology chapter, and provides a comprehensive picture and justification of the research methods and instruments adopted in this study, as well as the procedure undertaken to develop the research instruments. The chapter begins with an overview of the research design and the research population and sampling. The methods for data collection are then discussed with a detailed account of the options available in investigating strategy use and their feasibility in my research. This is followed by a detailed description of each of the research instruments I employed and how they were refined through a series of pilot studies. Finally, the research procedure is outlined, and ethical considerations associated with this study are discussed.

Chapters 4, 5, and 6 are all on the findings of this research. Chapter 4 primarily adopts a quantitative approach to analyse the data gathered from the Likert-scale questionnaire. Following a description of the general findings of the questionnaire in terms of the most adopted and least adopted strategies by students, the chapter presents an exploratory factor analysis (EFA) of the questionnaire to identify the underlying groups of strategies, and in turn attempts to answer, in part, RQ1 on what listening strategies are used by learners in the context of understanding the teacher in the ESL

classroom. The chapter then moves on to explore differences in strategy use among learners of different LK as an attempt to answer RQ2. Three analyses are presented in relation to reported strategy use, taking into account the separate roles of vocabulary and grammar, as well as the combined role of vocabulary and grammar. Further, a cluster analysis is conducted to reveal more comprehensively the relationship between LK and strategy use by finding out whether there exists a sub-group of learners with low LK who are more strategic than their counterparts, and a sub-group of learners with high LK who are not as strategic, thus flagging up the suggestion that LK is not the sole predictor of strategic behaviour.

Chapter 5 uses both quantitative and qualitative analysis to examine the data obtained from the computer tracking programme. General descriptive findings are first presented, followed by an exploration of the use of strategies, individually as well as in combination, and in relation to LK, task difficulty, and task types (corresponding to RQ2, RQ3, and RQ4 respectively). A qualitative exploration of strategy use is subsequently presented in Chapter 5.5 before summarising the findings collected from the computer programme.

Chapter 6 adopts a primarily qualitative approach to analyse the data collected from the stimulated recall interviews. The chapter will first provide quotations from learners' self-report to show the range of strategies they employed in understanding the teacher. The chapter then closely examines data from four students in two classes, with different levels of LK and strategic behaviour, and find out how they used strategies in understanding their teacher in the classroom context.

Having presented the findings obtained from all the research instruments, Chapter 7 is dedicated to a discussion of the findings through situating my research in the existing literature and answering the four RQs. While acknowledging the limitations of this study, I will show how my research has advanced our understanding of listening comprehension strategies and contributed to the field of LLS in general, as well as implications for further research.

Chapter 2 Literature Review

This chapter first reviews the definition, debates and development of Language Learner Strategies (LLSs) over the years. It will also present the theoretical framework adopted in this study. From this, the literature review will then narrow down to listening comprehension strategies, presenting a selection of theoretical models in listening along the way. Next, the focus will shift to the special role the ESL classroom plays in bringing about learning, and literature will be discussed with a primary emphasis on input and interaction theories and a secondary accent on the classification of classroom discourse. The chapter will end with a summary indicating research gaps and highlighting the contribution of this study in filling these gaps.

2.1 Language learner strategies

2.1.1 Definition

From the outset, it is important to provide a working definition of what a strategy is. The present study adopts the definition of Macaro (2006) and defines a strategy as a goal-oriented mental action, operating in clusters in relation to a specific language learning or language use task. To give a concrete example, imagine the moment when intermediate ESL learners hear the following utterance:

Monday will be largely cloudy and there will be a heavy rainstorm on Tuesday. However, every cloud has a silver lining. Farmers have been expecting this rain for a long time to water their crop.

Learners might not have heard the phrase ‘every cloud has a silver lining’ before. With the goal of bridging the gap of understanding, they might use a range of strategies: They could try to make inferences on the meaning of the phrase by using contextual clues, such as the first part of the utterance and the word ‘however’, to figure out that it might mean something opposite. They might also try to use imagery and construct a picture in their mind of a dark cloud with the top layer having a silvery colour where the sun shines. Having tried to understand this difficult phrase, they might

connect all the language items in their mind and summarise them into ideas with regard to what the utterances are about. These mental actions of *inferencing*, *imagery*, and *summarisation* are examples of strategies, which could be used in a cluster by learners to help with their understanding of the utterance.

The definition does not preclude, however, learners' use of strategies when facing an easier task of listening (i.e. a listening text with simpler or more familiar language). Learners could still use strategies even when hearing the same utterances but with the difficult phrase replaced, as in:

Monday will be largely cloudy and there will be a heavy rainstorm on Tuesday. However, the rain will also bring benefits. Farmers have been expecting this rain for a long time to water their crop.

Learners could try to understand the whole utterance by using strategies such as listening for the gist and trying to convert and summarise the language items into ideas. Once the ideas are built up, they might be able to use them to understand utterances which may follow.

Arguably, however, even though some strategies could be used upon hearing both difficult and easy utterances, the extent to which these strategies are used could vary. At the very least, learners are required to figure out the additional meaning of the unknown phrase 'every cloud has a silver lining' when faced with the difficult 'task'. Macaro (2010) suggested the different extent to which strategic behaviour is drawn upon by learners when facing tasks of varying difficulty (see Figure 1).

Figure 1 deleted to comply with copyright issues. For the original diagram, please see Macaro, 2010: 279.

The Linguistic Knowledge (LK) of a learner stays the same regardless of the difficulty of a task at any given moment, because it is the resources the learner possesses at that particular stage. What differs is strategic behaviour. A learner might need to rely much more on their strategic behaviour to accomplish a more difficult task – in this case, comprehension of more difficult input from the teacher.

Such a heightened reliance on strategies, however, does not necessarily denote an increase in the quantity of strategies being used. It could as well point to the qualitative use of strategies. Connected with this issue is whether using more strategies and/or the qualitative use of strategies point to successful comprehension, and, going one step further, whether a learner using strategies in larger quantities and/or better quality could be regarded as a ‘better’ learner. As we shall see in the following section, there have been debates over the years regarding what being a good learner means and the relation of this with LLSs.

2.1.2 Debates and development in LLS

The discussion of LLS was initiated when Rubin (1975) proposed the notion of the Good Language Learner (GLL). Some researchers believed that learners could be classified into good or not so good, and one factor which distinguished GLLs from other learners was the strategies they employed (see

Naiman, Fröhlich, Stern, & Todesco, 1978; Stern, 1975). As more researchers delved into the field, debates also arose along several dimensions.

One controversy pertained to what distinguished GLLs from other learners. When the notion of GLL began to flourish, researchers tended to believe that there were ‘good’ strategies which GLLs used frequently while poor learners did not. For example, O’Malley, Chamot, and Küpper (1989) used think-aloud protocols with ESL learners and found that effective listeners tended to use some strategies more, such as the metacognitive strategy of *monitoring*¹ and the cognitive strategy of *elaboration* (use of prior knowledge), than less effective ones. Quantitatively, O’Malley, Chamot, Stewner-Manzanares, Küpper and Russo (1985a) revealed through interviews that intermediate ESL learners used proportionally more metacognitive strategies than beginners. Such findings led some researchers such as Oxford and Burry-Stock (1995) to conclude that the frequency of strategy use was meritorious, claiming that ‘more advanced or more proficient students use strategies more frequently’ (p. 10). However, when we study O’Malley et al. (1985a) more closely, the total number of strategies used by the beginners almost doubled that of intermediate learners, at 409 against 229 instances. While not discounting the argument that there were certain strategies upon which more effective and less effective learners tended to rely, the proposition that the overall quantity of strategy use is the decisive differentiation factor between more and less effective learners did not seem to hold water. Moreover, as Hsiao and Oxford (2002) later argued, instead of classifying strategies into good or bad, the effectiveness of using strategies should also be taken into account. Some researchers therefore turned to a more qualitative approach in examining strategy use and proposed the idea of strategy combinations (see, e.g. Chamot & El-Dinary, 1999; Graham, 1997; Macaro, 2001; Vandergrift, 1998). Indeed, O’Malley et al. (1985b) reported through interviews that overall 21% of strategies were being used in combination, and in O’Malley et al. (1989), there were examples of students using multiple strategies in tandem. Yet, even as researchers began to take strategy combination into account, as

¹ In O’Malley et al. (1989), monitoring also referred to redirecting learners’ attention, although more recent researchers in listening strategy, such as Vandergrift and Goh (2012), might term this *focusing attention*.

Grenfell and Macaro (2007) argued, questions remain as to how they are combined and why some learners use clusters of strategies better than others.

Another issue related to how GLLs are determined in LLS research was captured succinctly by Macaro (2010), who argued that previous research has adopted different views on how ‘good’ is measured (as for how ‘good’ is measured specifically in listening strategy research, see section 2.2.2.1 below). For instance, a highly proficient learner measured at one point of their performance in a baseline test was sometimes regarded as ‘good’, without taking into account how long the learner had taken to achieve that level. It would be unfair to compare these highly proficient learners with less proficient ones who might have just started learning English but achieved a certain level in terms of English proficiency. The progress or trajectory of a learner’s development needs to be accounted for, and it would be best to measure learners against their peers who have a similar language development background.

The greatest division that has remained unresolved until now, however, is perhaps the very fundamental definition of a strategy. The term ‘strategy’ was once used interchangeably with *technique, tactic, or trick* (Grenfell, 2007; Grenfell & Macaro, 2007); and although some researchers later distinguished strategies from other jargons, such as techniques (Stern, 1983), and tactics (Goh, 1998; Schmeck, 1988; Seliger, 1984), researchers to date still have not reached a consensus on what constitutes a strategy. Ellis (2003) maintained that researchers differed on whether a strategy is observable behaviour or mental, what its precise nature is, and what the level of consciousness is. Attempting to yield an ‘insider’-view, A.D. Cohen (2007) collected opinions from 19 prominent researchers in the field of LLSs through questionnaires, and the results were incongruent in many ways with a large proportion of disagreement, reflecting Ellis’ (2003) critique. For instance, some researchers challenged the view that a strategy is a mental activity, and instead claimed that a strategy might sometimes be realised as an observable action; yet another group of researchers did not even think that a strategy would necessarily encompass any action – strategies could simply be ‘mental’ (i.e. not putting thoughts in the mind into actions and hence not even termed as mental actions). However, depending on how ‘mental activity’ is defined, one could also argue that simply thinking or planning

in the mind could be regarded as a mental action. Another example of disagreement among researchers according to A.D. Cohen's (2007) study was the level of consciousness. While some researchers agreed that the use of strategies should be conscious and that there would be a metacognitive component in deploying strategies, others suggested that strategies might have become automated for high achievers and inflexibly repetitive for low achievers, to the extent that they could no longer be regarded as conscious. Nevertheless, Macaro (2006) suggested that the automated use of strategies in certain situations could at least be brought back to the conscious level when learners were making an effort to, for example, reevaluate the effectiveness of certain strategies towards different tasks. Indeed, if the use of strategies is subconscious and can never be brought back to consciousness once automated, it would be impossible to elicit strategies, at least not through the use of self-report, which is arguably the major method in strategy elicitation over the years (for a detailed description of methodology in strategy research, see section 3.3.1).

Although to a lesser extent than the two mentioned above, A.D. Cohen (2007) also presented other discrepancies among the 19 researchers, in areas such as levels of attention, presence of a goal orientation that can be articulated by learners, and strategy clustering and the size of strategies (macro- versus micro-strategies). It is interesting to point out that in the discussion of these aspects, some researchers alluded to their thoughts on, once again, whether strategy use is conscious or not. Perhaps all these inconsistencies with the nature of LLSs stem from the lack of an agreed theoretical framework for LLS among researchers, and this is what Bialystok (1983), Dörnyei and Skehan (2003), Rees-Miller (1993), Stevick (1990), and Tseng, Dörnyei and Schmitt (2006) have criticised.

2.1.3 Theoretical framework

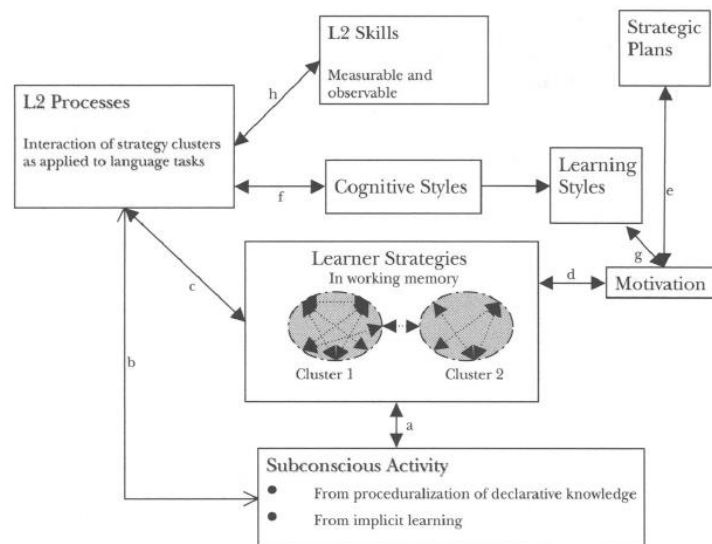
Dating back to the 1980s, Weinstein and Mayer (1986) described a strategy as a conscious mental process deployed to achieve comprehension, learning or retention. In contrast, Wenden (1987) stated that the umbrella term 'strategy' could include language learning behaviour, learners' knowledge of such behaviour, their self-realisation as learners and their understanding of the language they are

learning. Such a definition, however, could not dispel Dörnyei and Skehan's (2003) critique that strategies should not be cognitive, emotional, and behavioural, in which case strategies simply encompass everything.

Later in the 1990s, O'Malley and Chamot (1990) took up J.R. Anderson's (1983, 1985) cognitive framework and maintained the interconnection between the goal the learner wanted to achieve, the strategy the learner tried to apply, and the production systems. Still, researchers failed to resolve the size-abstractness problem observed by Stevick (1990): strategies cannot belong to different levels, with some being more abstract than others, and some further entailing other smaller strategies. Indeed, more than 15 years after Stevick's (1990) criticism, A.D. Cohen's (2007) survey revealed that most LLSs researchers still had no intention of distinguishing between macro- and micro-strategies, despite the fact that the benefits of making such a distinction were noted by some of these researchers.

It was against this convoluted background, with a lack of agreed definition among researchers, that Macaro (2006) proposed a theoretical framework. He intended to pin down the nature of learner strategies and its relationship with other constructs such as processes and skills (see Figure 2). Under this framework, a strategy is defined as a goal-oriented mental action, operating in clusters in relation to a specific language learning or language use task.

Figure 2: A Cognitive Framework for Learner Strategies (Macaro, 2006, p. 326)



Macaro's (2006) view of strategy explores the smallest, most basic, and most specific unit that can be called a strategy. Given such a perspective at a micro level, a strategy is defined as operating in clusters to specific tasks. He gave the example of 'rereading a text' with the goal of making improvement after writing it and suggested that this example might involve a combination of strategies such as reflecting on 'does it sound right?', 'does it look right?', and 'what are the mistakes I usually make?' (Macaro, 2006, p. 327). It is not difficult to observe that one possible critique towards this framework would be, as Macaro (2006) himself also conceded, a surge in the number of strategies. This being said, the present study will adopt this theoretical framework based on a number of reasons set out below.

First, this is one of the most developed theories that attempt to relate LLS to other constructs such as subconscious activity, L2 processes, L2 skills, cognitive styles, and others. Although the relationships between all these constructs need to be verified empirically, the framework is sufficiently comprehensive and it is useful to adhere to it while testing it. In fact, there has been a recent attempt to test the model by Takeuchi, Ikeda, and Mizumoto (2012), who employed Near-Infrared Spectroscopy, a neuroimaging technique, with 12 Japanese English as a Foreign Language (EFL) learners. It was revealed that while learners were performing reading tasks which included goals and necessitated the use of reading strategies, areas in their brain responsible for Working Memory (WM) were activated more when compared to a normal reading experience without particular goals or tasks. The use of reading strategies, therefore, appeared to be taking place in WM, and hence justifiably not a subconscious process, but a conscious one based on Baddeley's (1997) model, which Macaro's (2006) framework also drew on.

Second, because of the distinction made between, for example, subconscious activity and observable behaviour, the framework attempts to solve the problem of strategies being cognitive, emotional and behavioural. Indeed, previous research has documented some strategies that are unobservable mental actions, such as the use of imagery or repeating utterances silently in the mind. Particularly, given the power relationship in a HK classroom, learners might not put their strategies into observable behaviour, not least under the present research context of listening. In fact, it is

already difficult to observe the process of listening, let alone the use of listening strategies. Hence, the definition of strategy provided by this framework is useful in accounting for what learners are doing in their mind.

The framework also has the potential to remedy the seemingly contradictory findings in the field. O'Malley et al. (1989) recruited high school intermediate ESL learners in the United States, and used think-aloud protocols to elicit their strategy use when listening to an audiotape on a history lecture, a science lecture, a short story, and others. It was found through qualitative analysis that the use of top-down processing (comprising a variety of strategies, such as selectively listening for larger chunks or summarising² for the overall meaning) distinguished more effective listeners from less effective ones. On the other hand, Tsui and Fullilove (1998) argued that it was how well bottom-up processing was utilised that differentiated between skilled and less skilled learners. They adopted a quantitative approach to analyse a dataset consisting of public examination performance of HK ESL learners. It was revealed that skilled listeners scored significantly better in the non-matching schema type questions which required attention to specific linguistic input that did not match with the initial input. In other words, skilled listeners needed to attend to bottom-up processing and focus on the words in the utterances in order to excel in the listening examination. Under the present theoretical framework, these contradictory findings might be resolved by arguing that the tasks demanded different sets of strategies which could be used effectively in combination. In other words, the listening tasks that O'Malley et al. (1989) administered might not have consisted of non-matching schema type of information which learners had to pick up.

Indeed, taking into account the 'task' in strategy use is of paramount importance. It is logical to suggest that LLSs used in a listening task could be different from those in a writing task, but even within the listening domain, learners can use different clusters of strategies when tackling different listening tasks of varying difficulties (see section 2.2.2.2 below for a discussion). This is in line with

² O'Malley et al. (1989) did not use the term 'summarisation', but their claim to have found evidence for 'concatenating segments to produce overall meaning' (p. 429) was what some other researchers would term as a *summarisation* strategy (see, e.g. Vandergrift, 2003).

the discussion in section 2.1.1 that different task difficulties will place different cognitive loads on the learner. Strategies being task-specific does not preclude, however, the possibility of their transferability to other situations or tasks, as Macaro (2006) has maintained. Strategies could be transferred to different tasks particularly when a similar learning situation or task comes up, calling for comparable task demands on the learner who has a certain learning goal in his / her mind. Situating this ‘task’ variable in the context of the present study, it is justifiable to suggest that listening to an audio recording and listening to the teacher share some similarities which could result in some of the strategies being used in both contexts. At the same time, the task demands for the two listening contexts are also different in other ways (see section 2.3.1 below), and it is anticipated that some strategies might only be specific to the present research context of listening to the teacher. All these similarities (and hence transferability) and differences (and hence task-specificity) of strategy use could fit in rather well in Macaro’s (2006) framework.

Having discussed the broad development and debates within the field of LLS, and having justified the choice of the theoretical framework in understanding LLS, this literature review will now turn to models of listening comprehension and listening strategies, which are most relevant to the present research conducted under the context of listening to the teacher in the classroom.

2.2 Listening comprehension and listening strategies

Before delving into listening strategies, it is first necessary to describe what the mind operating in L2 is doing in the process of listening. Therefore, theoretical models of the listening process and how strategies are situated in these models will first be discussed.

2.2.1 Theoretical model of listening

J.R. Anderson (1983, 1985) held that listening comprehension can be divided into three phases: perceptual processing, parsing, and utilisation, each of which refers respectively to the focusing of

attention to the listening text and the retention of sounds in the phonological working memory, the construction of meaningful mental representations from words and messages, and the relation of the mental representations to existing knowledge in long term memory. Attempting to connect these three phases to strategy use, O'Malley et al. (1989) used think-aloud protocols to determine if strategies could be identified clearly in each phase of listening comprehension, and reported that strategies indeed appeared to fit in the three phases nicely. During the perceptual processing stage, some of the effective listeners demonstrated *selective attention*³: they consciously redirected their attention back to the task once they became aware that they were not focusing on the listening text due to various reasons, such as when somebody entered the room during the duration of the research. Some learners also did the same thing when they encountered a difficult vocabulary item and consciously stopped focusing on it and carried on listening to the rest of the utterance. In the parsing stage, some of the more effective learners attempted to listen for larger chunks such as a whole phrase; less effective listeners only listened for every word individually to construct meaning. Finally, in the utilisation stage, some effective listeners elaborated on the meaning of the utterances by using their prior knowledge, and practiced *self-questioning* by asking themselves questions about the meaning they had constructed, so that they could understand the listening text more thoroughly. One problem with O'Malley et al.'s (1989) research is that their data of the 11 participants were reported as a whole in their analysis, and that the range of strategies employed were reduced down to the three separate phases. This is an important limitation, for although the argument was that the listening comprehension process was staged, it became impossible to tell how each individual learner proceeded along these three stages. Questions could be raised as to whether every learner did actually proceed from perceptual processing through parsing to utilisation while using a range of strategies corresponding to each stage. An alternative way of analysis would be to adopt a within-subjects approach and treat the data longitudinally, thus going further to show how each individual learner used strategies in a sequence or cluster while proceeding through the three listening stages.

³ As pointed out above, O'Malley et al. (1989) used the term *monitoring* to cover *selective attention*.

Nevertheless, the study conducted by O'Malley et al. (1989) has provided valuable examples of how strategies could fit into J.R. Anderson's (1983, 1985) three-stage model.

Also focusing on the processes involved in listening, J. Field (2008a) suggested that listening comprises decoding – 'translating the speech signal into speech sounds, words and clauses, and finally into a literal meaning' (p. 125) – and meaning building – 'adding to the bare meaning provided by decoding and relating it to what has been said before' (p. 125). In the process of decoding, learners need to attend to various levels in the utterance, from the phoneme, syllable, word-form levels, to the chunk, syntax, intonation and finally meaning levels (J. Field, 2008a). It is possible that L2 learners may employ strategies such as listening for keywords by focusing their attention on words with stress, spelling out the words in the mind, translating some words into the first language (L1), and so forth. Attention to various micro-levels of the utterance is needed to first create a mental representation of the meaning, before the broader context in which the particular utterance is situated can be evoked. But the meaning constructed after the decoding stage is incomplete, and thus during the meaning building stage, learners could use strategies such as *elaboration*, *self-questioning*, and others that are associated with the utilisation stage in J.R. Anderson's (1983, 1985) model as reported in the previous paragraph.

We can observe, then, that J. Field's (2008a) model shares some similarities with J.R. Anderson's (1983, 1985) model in that the decoding stage corresponds, to some extent, to the perceptual processing and parsing stages when learners try to retain speech sounds and construct meaningful representations in their mind through attending to the words, whereas the meaning building stage is similar to the utilisation stage when relating to the existing knowledge in the mind. Moreover, the fact that both models, particularly J. Field's (2008a), suggested listening involves creating mental representations from the syntax, words, and even smaller units of sound segments could point to the importance of textual variables and linguistic knowledge in listening comprehension. This is also one reason the present study attempted to take into account these variables of vocabulary and grammatical knowledge (discussed in section 2.2.2 below). One other observation worth pointing out is how J. Field (2008a) described the process of decoding even at the

micro-level of segments of speech sounds. Such conceptualisation of the listening process could indicate how dynamic listening is, particularly in light of the hypotheses proposed in J. Field's (2008b) study on how meaning can be constantly formed (or discarded) as learners continue to decode an utterance as it unfolds.

J. Field (2008b) carried out his study with native English pupils and adult L2 learners using a gating paradigm, which involved separating utterances into four different 'gates' or chunks and allowed learners to listen to the chunks of increasing length while writing down what they thought they had heard. For instance, learners would hear at the first gate, gate a, /'weɪ/, then at gate b /'weɪtə/, at gate c /'weɪtə'ma:/, and finally at gate d /'weɪtə'ma:təʊz/. While learners might activate inaccurate words in their mind at the first two gates, such as 'waiter' or 'way to', gate c would allow learners to start resolving the ambiguity of word boundaries and gate d would reveal the entire phrase 'weigh tomatoes'. It was found that when the final two gates, gates c and d, were opened, native speakers accurately segmented the speech to retrieve the utterances significantly better than the L2 learners, with the difference being the greatest at gate d where the whole chunk was uncovered. J. Field (2008b) suggested that native speakers were more flexible in abandoning previously held interpretations which proved to be wrong with the coming of new words or evidence, particularly at the final gate that reveals complete information. In contrast, L2 learners were more likely to stick to their wrong interpretations of the utterances even when newer information or the entire chunk was revealed. Arguing that L2 learners should have been able to recognise the whole utterance when the whole context was given at the final gate, J. Field (2008b) seemed to favour 'perseveration effect' as an explanation rather than 'failure in recognition' (p. 48), which he nonetheless also conceded as a possibility. However, learners might indeed have failed to recognise some language elements, thus preventing them from decoding part of the utterance, because even when they were provided with the new and final part of the phrase, they did not succeed in understanding. J. Field (2008b) appeared to have discounted to a large extent the failure-in-recognition explanation when he wrote that 'an initial hypothesis, once formed, was adhered to in spite of evidence that it was wrong' (p. 48), assuming that learners understood the new information which opposed their original hypothesis. It is certainly

possible, nonetheless, that the two arguments, perseveration effect and failure in recognition could complement each other. Perseveration effect could have led to failure in recognition and vice versa, and together they could have played a role in the L2 learners' misunderstanding. If perseveration effect was not the sole explanation and that failure in recognition did account for the results at least in part, one could further argue that when the final gate was opened, learners could not fully complete the listening process through effective decoding and meaning building as per J. Field's (2008a) model.

Perhaps more interestingly, we can review J. Field's (2008b) findings through the lens of listening strategy research. If some of these L2 learners used strategies to understand the new information, they could have employed *inferencing* strategies where they interpreted the new chunks based on the contextual clues they had already understood (or misunderstood), without putting much mental effort in monitoring or evaluating their overall understanding. Given the experimental design of the gating paradigm, it was also plausible that some learners might have tried some bottom-up processing and directed their attention solely to the newly unfolded parts, without summarising the overall meaning of the entire utterance being revealed. All these propositions, certainly, are merely speculative because J. Field (2008b) did not elicit any listening strategy from learners; nevertheless, these speculations indicate how listening strategies could fit into the theoretical models of listening.

In sum, both J.R. Anderson's (1983, 1985) model and J. Field's (2008a) model suggest that listening is a staged process, and different strategies can be situated in different stages to construct meaning. While these models are staged, listening can also be dynamic, as J. Field's (2008b) gating paradigm suggests that learners might be constantly forming hypotheses while decoding. The two models do not necessarily preclude the possibility of learners decoding information from the listening text while making meaning simultaneously. What is particularly interesting is that this meaning building stage in both models proposes the establishment of some kind of link with ideas already possessed in learners and possibly developed from prior knowledge, such as from world knowledge, or contextual information based on the listening text. As we shall see in the next section, some researchers stated that some less effective listeners relied on bottom-up processing a lot and focused only on individual words without connecting what they had heard with what they were listening to. In

the light of these listening models, such findings suggest that some listeners have simply stayed at the decoding stage and could not complete the listening process effectively. This can also be substantiated by my earlier discussion on J. Field's (2008b) gating experiment, on the point that failure in recognition could have been working in tandem with perseveration effect at occasions of misunderstanding. However, to further discuss this complicated issue, this literature review will first need to turn to listening strategies.

2.2.2 Listening strategy

Over the past 30 years, research on listening strategies has followed two major traditions. First, many researchers explored listening strategies in uni-directional contexts where learners listened to audio recording individually (see, e.g. Goh, 2002; Graham et al., 2011; Vandergrift, 2003). Such a direction of research is not surprising because LLS research has grown from a general exploration (e.g. Naiman et al., 1978; Oxford, 1996) to an enquiry more specific to the four skills of reading, listening, writing and speaking, and listening to audio recording is a classroom activity parallel to, for instance, performing a reading task in the classroom. Although listening was once a neglected skill with the least attention from research (Vandergrift, 2007; Vandergrift & Goh, 2012), researchers such as Vandergrift (2003) have tried to identify a range of cognitive and metacognitive listening strategies as summarised in Table 1.

Table 1: Taxonomy of listening strategies, adapted from Vandergrift (2003, pp. 494-496)

Metacognitive strategies	1. Planning	Developing an awareness of what needs to be accomplished and devising an appropriate action plan to successfully complete the listening task
	2. Monitoring	Checking, verifying, or correcting one's comprehension while listening
	3. Evaluation	Evaluating the outcomes of listening comprehension
	4. Problem identification	Identifying the central point needing resolution in a task
Cognitive strategies	5. Inferencing	Using contextual information to guess the meaning of unfamiliar language items
	6. Elaboration	Using prior knowledge external to the text and making connection to knowledge about the listening text
	7. Imagery	Using mental images to represent information
	8. Summarisation	Making a mental summary of information presented in a listening task
	9. Translation	Rendering ideas from one language in another in a relatively verbatim manner
	10. Transfer	Using knowledge of one's other languages (e.g. cognates) to facilitate listening
	11. Repetition	Repeating a chunk of language in mind

Stemming from a slightly different and broader point of view, some researchers have also explored listening strategies when learners engaged in face-to-face communication, which some researchers have termed interactive listening strategies or reception strategies (see, e.g., Farrell & Mallard, 2006; Rost & Ross, 1991; Vandergriff, 2006; Vandergrift, 1997a). Farrell and Mallard (2006) investigated the use of reception strategies in a two-way information gap task when adult French learners communicated in pairs to reconstruct a story using different pictures they were given. Understandably, these studies in interactive listening strategies overlapped generously with, or rather originated from, research into communication strategies (CSs) which not only explored the listener's but also the speaker's role in a pair of interlocutors. However, such double intentions in CS research often led to an approach which classified strategies through observable behaviours reified in the spoken language, thus exposing strategy research once again to the critique concerning the nature of strategies as discussed in sections 2.1.2 and 2.1.3, i.e. whether strategy is both cognitive and behavioural, and encompasses both subconscious and observable actions. To give one example, Farrell and Mallard (2006) defined the strategy *text-level reprise* as one in which the 'listener repeats part of or whole speaker's utterance with rising or falling intonation to confirm what was heard' (p. 344). Although *text-level reprise* is classified as a reception strategy, we can see that it is more like a

confirmation check strategy (see, e.g. Nakatani, 2005) and has a strong observable speaking component.

While the latter tradition of listening strategy research could shed some light on the broader picture of the communication or interaction between the teacher and the students in an ESL classroom, I am mostly interested in the strategies used by the student as a listener, and not as a speaker, in my exploratory study. Therefore, only the first tradition of research, which adopted a stricter view of listening, is reviewed in detail below, although CS research will also be cited where relevant.

In order to identify the literature in the field, I first performed a cross-search on six databases on Applied Linguistics and Language Education⁴ using the search term ‘(Comprehen* OR Listen*) AND Strateg*’. This process was repeated at different times over the course of my doctorate and the last date of access was 19 November 2015. The reason for including *comprehen** in addition to *listen** was due to the practice that listening strategies and comprehension strategies are sometimes used interchangeably. Although such a search term would render some irrelevant literature dealing with reading comprehension strategies, the term ‘NOT Read*’ was not added lest there were studies which dealt with reading and listening comprehension strategies at the same time. Therefore, the 818 different articles found were screened one by one to include those dealing with listening strategies (either alone or in conjunction with reading). From this body of listening strategy research, I then adopted a snowballing literature search technique and identified also the relevant articles cited in them, rendering 148 research papers. I am aware that this is by no means a comprehensive list of research, because there could be articles not documented in the six databases and there could be research published after the last date of access, 19 November 2015.

Not all of these papers will be discussed in the following, because they included a broad range of enquiry into listening strategies. First, some of these papers explored the relationship between listening strategy and other variables – gender (e.g. Bacon, 1992; Vandergrift, 1997b), learning styles

⁴ These six databases were: British Education Index, ERIC, Linguistics and Language Behaviour Abstracts, MLA International Bibliography, PsycINFO, and Web of Science Core Collection, accessed through the Oxford Libraries Information Platform (OxLIP+).

(e.g. Liu, 2008), topic familiarity (e.g. Chou, 2015), multiple intelligence (e.g. Hajhashemi, Ghombavani, & Amirkhiz, 2011; Heidari & Panahandeh, 2013), self-efficacy (see, e.g. Graham & Macaro, 2008; Kassem, 2015; and Graham, 2011 for a discussion), listening anxiety (e.g. Golchi, 2012; Movahed, 2014), types of listening support such as previewing questions (e.g. A.C.-S. Chang, 2008), hearing the listening text twice (e.g. O'Bryan & Hegelheimer, 2009), and so forth. By far the most popular and one of the earliest variables being examined was some aspects of proficiency in listening, despite being termed differently as listening proficiency (e.g. Chien & W. Li, 1998; Taguchi, 2001), listening abilities (e.g. Goh, 1998), listening effectiveness (e.g. O'Malley et al., 1989) or skills in listening (e.g. Vandergrift, 2003), often based on results of listening comprehension tests or ratings of teachers. This body of research attempted to find out how better listeners adopted strategies as opposed to the not-so-good listeners. Arguably, however, listening proficiency can be affected by the additional variable of LK. Some researchers have therefore turned to include LK in strategy research (see, e.g. Graham et al., 2010). Given that the present research intends to investigate the relationship between LK and listening strategies, this body of research that controlled for listening proficiency and accounted for LK is discussed in more detail in the next section. As for the other two variables of interest to the present research, namely task difficulty and task types, they will also be discussed below despite the scarce number of research that dealt with them.

Second, because previous research has identified some differences in the ways strategies are deployed by more and less proficient listeners, some researchers were interested in the effects of listening strategy instruction (see, e.g. Goh, 2008; Goh & Taib, 2006; Graham & Macaro, 2008; Thompson & Rubin, 1996; and Vandergrift & Tafaghodtari, 2010). In other words, enquiry was made into whether and how learners became more strategic listeners through strategy instruction programmes. Given that the present research into the novel context of listening to the teacher in a classroom is exploratory in nature, strategy instruction literature will not be reviewed in detail below.

Third, among the papers identified, there is a distinction between research in a school or university context. The literature on listening strategy in tertiary education settings predominates but will not be discussed in great detail in this thesis, because the perception on or actual use of strategy

could be different among high school learners and adult learners. In fact, this was also one dilemma which Gu (2014) faced when considering whether or not to code the verbal report data using pre-existing taxonomies because he was working with primary school participants in Singapore – a research population which was different from most previous research focusing on adult learners. To cite but one theory in cognitive developmental stages, Inhelder and Piaget (1958) argued that children usually only start thinking logically about abstract phenomena in the formal operational stage, the onset of which is around 11 years old. However, studies have also found that as many as 70% of adults never reach the final cognitive developmental stage, as indicated by Kuhn, Langer, Kohlberg, and Haan (1977). Therefore, applying the findings of strategy research conducted with cognitively more mature adult learners onto less mature secondary school learners – the participants of the present study – might give rise to a picture of listening strategy which is too intricate for the sake of this thesis. Although studies on adult learners are possibly illuminative, it is conceivable that the level of cognitive maturity might have an effect on strategy use and so the generalisation from strategy research on adult learners might not be fully applicable on secondary school students. Therefore, in the following, while one of the seminal studies on adult learners by J.M. Murphy (1985) will be discussed in more detail, other research on university learners will only be summarised and described briefly. The major focus of the following section will be dedicated to the listening strategy research conducted with secondary school learners, which is most relevant to the research participants of the present study.

Taken together, the research papers selected to be examined more closely below were mostly conducted in a school context, and attempted to explore the relationship between listening strategy and listening proficiency (and LK), task difficulty, and task types.

2.2.2.1 *Listening strategy and the good listener – relationship between strategy use and listening proficiency / LK*

As mentioned above, one of the aims in early research was to find out whether more proficient listeners used some types of strategies which were less or not often used by less proficient listeners, in line with the earliest enquiry into the notion of the GLL already discussed in section 2.1.2. Although not dealing with secondary school learners, J.M. Murphy's (1985) study was one of the seminal papers in the investigation of listening strategies and will be discussed in more detail here. He recruited 12 university ESL students in the United States and asked them to report their thoughts and mental actions while listening to the tape, either orally or in written form. Splitting the learners into two groups of high and low listening proficiency based on 2 listening comprehension tests and one reading test, he found that the more proficient learners used a relatively wider variety of strategies more often, such as *paraphrasing* (using one's own words to recall the meaning of the listening text), *inferring* (making inferences based on textual clues), *personalizing* (using prior knowledge regarding private opinions), *connecting* (using prior knowledge regarding general knowledge), *anticipating* (predicting information to come), and so forth. One caveat here is that no statistical analysis was done, and so it would be difficult to arrive at the conclusion of real quantitative difference among the learners in the use of these strategies, although a tendency of such difference was observed. Furthermore, J.M. Murphy (1985) reported that the more proficient learners showed more sequential patterns of strategy use, a phenomenon similar to what other researchers termed a combination of strategies. However, the direction of causality between listening proficiency and strategy use was not established.

Other studies which have examined strategy use of university learners also found a distinction of strategy use between more proficient and less proficient ones. For instance, Goh (2002) revealed through think-aloud the use of combinations of strategies by her two listeners – one more effective and the other less effective based on the score of a listening test. Similar to J.M. Murphy (1985), the more effective listener used in combination a wider range of strategies, both cognitive and metacognitive, in facilitating her understanding of the listening passage. Such results were also true to

some extent for Goh (1998) who found that higher-ability listeners used a wider range of strategies including metacognitive ones such as monitoring and evaluating, which low-ability listeners used less.

Turning to research on high school learners, O'Malley et al. (1989) sampled 11 high school ESL students in the United States and tried to answer a similar question of whether more effective listeners used some strategies differently to less effective listeners. The classification of students as effective or ineffective listeners was mostly based on rather subjective indicators such as attentiveness in class and ability to respond in a conversation, although a standardised reading test of functional vocabulary was also administered. O'Malley et al. (1989) adopted a similar think-aloud method as J.M. Murphy (1985) did, but instead of asking learners to pause the tape recording, they designed predetermined pauses where students were asked to think aloud in their L1 Spanish or L2 English. However, O'Malley et al. (1989) did not provide sufficient information as to how to determine when to pause. If the intervals were too long, participants might have forgotten what they did while listening, which would have rendered the advantage of think-aloud protocols in collecting concurrent data useless. If the intervals were too short, participants might not have enough strategies to report and could make something up by themselves, thus reporting not the strategies they actually used in response to the specific task but just their normal practice in using strategies. Nevertheless, it was found that the more effective listeners generally used top-down processing, but would also rely on bottom-up processing when needed. That is to say, in addition to drawing on prior knowledge or information obtained from their ongoing analysis of the listening text's meaning, they also sometimes focused on linguistic information from the text, such as individual words. Less effective listeners, on the other hand, relied almost exclusively on bottom-up strategies. Such findings have led O'Malley et al. (1989) to conclude that top-down processing was a characteristic of effective listeners.

However, as pointed out in section 2.1.3, through their analysis of a dataset of secondary school public examination performance of HK ESL learners, Tsui and Fullilove (1998) argued otherwise that it was bottom-up processing that differentiated skilled and less skilled learners, although the researchers did not elicit strategies from learners directly and only arrived at such a conclusion indirectly. Vandergrift (1997b) contributed to the discussion by conducting research with 21 high

school French learners aged 16-17 years old, exploring three different variables – French language proficiency, listening ability, and gender. The first variable was determined by his interviewing the participants and classifying them into five different groups according to proficiency level. In addition, the variable of listening ability was operationalised using think-aloud data, with students reporting ‘the greatest frequency, variety, and sophistication of strategy use’ (Vandergrift, 1997b, p. 390) being classified as more successful listeners, and those who reported fewer strategies as less successful. Such a classification of listening abilities appears to assume that the quantity of strategy use predicts success in listening, the problem of which was perhaps identified by the author himself. He conceded that the quantitative results did not provide information on how strategies were used individually or in combination, and he attempted to bridge this gap by analysing some qualitative data of strategy use in the second half of his article. Notwithstanding the limitations concerning the classification of students, Vandergrift (1997b) found that more proficient learners used more metacognitive strategies, and that more successful listeners also did so. The question then, is how general language proficiency and listening abilities are related to each other. It does not seem very telling to find out that students who were more proficient in French also used more strategies and were the better listeners. In other words, the role of strategic behaviour was blurred and whether learners could use strategies to compensate for their weaker language proficiency in arriving at an understanding remained unknown. Faute de mieux, Vandergrift (1997b) also presented qualitative data from two learners – one more successful and the other less successful, and argued that the more successful listener used more metacognitive strategies and drew more on his prior knowledge, whereas the less successful listener relied on more bottom-up strategies such as *translation*. However, at this stage of analysis, the information about these two listeners in terms of their language proficiency was lacking, making it difficult to substantiate all the quantitative findings from the first half of the study.

Vandergrift (2003) later conducted another study with grade 7 French L2 learners in Canada. He used a listening comprehension test to split 36 learners into two groups of more skilled and less skilled listeners, and think-aloud protocol to elicit learners’ strategy use during a listening activity on texts which contained predetermined breaks. Quantitatively, similar results to Vandergrift (1997b)

were found – that skilled listeners used more metacognitive strategies and some other top-down strategies such as *elaboration* (the use of prior knowledge) than the less skilled listeners. The less skilled listeners, in contrast, used *translation*, a bottom-up strategy, significantly more than the more skilled ones. Qualitative analysis also revealed that a less skilled listener (Rose) used word-to-word *translation* frequently to make sense of segments of the listening text, although a top-down approach was also adopted occasionally. The more skilled listener (Nina), on the other hand, appeared to combine bottom-up and top-down processing frequently to make sense of the text. Vandergrift (2003) suggested that top-down processing or the combination of top-down and bottom-up processing would distinguish more skilled listeners from less skilled ones.

Yet, upon closer examination of the think-aloud data, we could dispute Vandergrift's (2003) explanation, and could arrive at an alternative explanation – that it was the successful use of bottom-up strategies that set apart the more skilled listeners. At one instance, Nina reported that she seemed to have heard the word 'gagner' (to win), which was both morphologically and semantically related to the word 'gagnante' (winner) in the actual text. In the following instance, she confirmed her understanding that the interlocutor in the listening text won something because she probably caught the word 'gagnez' (win). In contrast, Rose either could not catch the word 'gagnante' or 'gagnez' at all, or she did not have the vocabulary. And yet, these two vocabulary items played a major role in comprehension because the text was a phone call of prize winning notification. If Rose could not decipher the key linguistic information from the text, it would be futile for her to even use top-down processing. In fact, Rose did try but failed to connect everything together: 'I'm trying to figure out and [sic] everything. To see what they're saying you know' (Vandergrift, 2003, p. 481). Indeed, as Macaro (2010) maintained, some strategies cannot be deployed if a learner does not pass through a certain threshold of LK. Taking all these together, an alternative interpretation would be that the less skilled listeners did not use bottom-up strategies effectively, which would then be in line with the claim made by Tsui and Fullilove (1998).

There is, however, yet another dimension in explaining the contradictory claims regarding top-down versus bottom-up processing, offered by the listening models in section 2.2.1. As mentioned,

some listeners who relied exclusively on bottom-up strategies might not have fully completed all the stages in the listening process. Tsui and Fullilove (1998) did not directly elicit strategies from learners. When learners approached the non-matching schema type of questions, which required attention to specific linguistic input that did not match with the initial input, there were in fact two different variables – learners' attention to specific linguistic input, and learners' connecting the new information with old ones. Tsui and Fullilove (1998) speculated that learners had to rely on bottom-up strategies in order to get these questions correct. Therefore, the less proficient learners might not have used these bottom-up strategies effectively, just as Rose, the less proficient learner in Vandergrift (2003), was not able to pick up the important keyword 'gagnante'. However, an alternative explanation would be that the less proficient learners in Tsui and Fullilove's (1998) study were not trying to connect the new and old information. That is, learners might have attended to the new specific linguistic input but they did not attempt to connect it to the previous schema they had activated. In terms of the listening models introduced earlier, learners might not have proceeded to the final stage of establishing links between new and old information to achieve comprehension.

Stemming from a slightly different research aim, Graham et al. (2011) reported findings from a longitudinal study, intending to explore whether learners changed their strategy use and improved their listening proficiency over time, as well as the relationship between the two variables. Using recall protocols, the researchers had 15 French students aged 17 listen to audio recording at two time-points and write down everything they understood. The results allowed the researchers to classify the students into top, middle, and bottom listening proficiency bands. Students were also asked to complete a listening activity individually, where they listened to a text and completed some multiple-choice comprehension questions while thinking aloud about their strategies. The results indicated that learners in the top group used more *comprehension monitoring* strategies in combination with other strategies. The poorer listener, on the other hand, was trapped by his or her lack of understanding even if he or she had used *comprehension monitoring*, and did not move on by combining it with other strategies to facilitate his understanding. Such a difference was maintained at the two time-points of the study.

Focusing more on strategy use over time, a snapshot of two cases of students who participated in Graham et al. (2011) were analysed by Graham et al. (2008). Two 17-year-old learners of French were selected and they were matched according to their LK based on vocabulary and grammar. However, Alan belonged to the top proficiency group and Sue the bottom group at both time-points of data collection. Analyses of these two cases suggested that Alan employed some metacognitive strategies such as monitoring and evaluating his understanding, whereas Sue did not often do so. In addition, the two students' use of strategies were fairly consistent over the two time-points. These findings in general agreed with Graham et al. (2011), but what is more interesting and relevant to my study is that strategic behaviour, instead of LK, appeared to be differentiating these two students of differing listening proficiency. In other words, having matched the LK of the two students, strategic behaviour has become a value-added element in determining listening proficiency.

Graham et al. (2010) aimed to further explore this relationship between LK and strategic behaviour. They used a vocabulary recognition test and a GJT to categorise 14 secondary school students of French in England into two groups of top and bottom LK respectively. Administering think-aloud, one of their major findings was in line with Graham et al.'s (2008; 2011) on the more proficient listeners – but this time with students with higher LK combining *comprehension monitoring* with other strategies while their lower LK counterparts did not. Furthermore, it was found that some students with lower LK relied on particular strategies on a single-word lexical level. In other words, the lack of sufficient LK could limit the range of strategies available to these students, as well as the way these strategies are used. Yet, students with higher LK did not necessarily listen successfully and at times they could be inflexible and also ineffective in deploying strategies. Although Graham et al. (2010) recruited only a small sample and the findings may not be representative, their study as one of the very few studies controlling for LK has far-reaching contribution, pointing to the suggestion that the relationship between LK, strategic behaviour, and listening success is more complicated than what previous research has suggested.

With these studies, we can observe a convoluted picture of research on listening strategies. Perhaps the incongruence of research findings could also be attributed to the differences of the

independent and dependent variables in each of the studies [see Table 2 for a summary of these studies on high school learners, with the exception of J.M. Murphy (1985) as one seminal paper on listening strategy with university learners]. While J.M. Murphy (1985), Vandergrift (2003), and Graham et al. (2008; 2011) controlled for listening comprehension proficiency, O'Malley et al. (1989) controlled for vocabulary through a reading test, and Vandergrift (1997b) controlled for general proficiency. Nonetheless, these studies all attempted to explore the dependent variable of strategy use. Tsui and Fullilove (1998), on the other hand, took strategy use indirectly as the independent variable and explored its effect on the success in listening measured by a one-off listening test. There is thus a complicated picture in terms of the direction of causality. Is it listening proficiency which predicts different strategy use or different strategy use which predicts listening proficiency? Furthermore, the very first step in identifying skilled listeners and controlling for different variables might be problematic. In line with Macaro (2010), there would be a problem of having the independent variable including the dependent variable. In other words, given that listening proficiency will almost certainly have been achieved by certain strategic behaviour, we could run into a tautology if we say that listening proficiency predicts strategy use and at the same time strategy use predicts listening proficiency. Another problem, also argued by Macaro (2010), is that general or listening proficiency is often measured at one time point in the form of a test, without taking into account how much time learners have spent achieving the current level of listening proficiency. In other words, there could be some 'good' learners who have only spent a short amount of time to achieve a commendably high level of listening proficiency, compared to other not-as-good learners who spent much more time to achieve the same level. Using a listening proficiency test measured at one time point as a grouping variable would lump these learners into the same group; and yet, they are arguably different in terms of how 'good' they are. A better way then would perhaps be to take into account and control for linguistic resources as a first step, such as through administering tests for vocabulary and syntactic knowledge, as what Graham et al. (2010) did.

Table 2: IVs and DVs of eight studies on listening strategies

	Participants	Independent variables	Dependent variables	Direction of intended or implied causality	Major findings
J.M. Murphy (1985)	12 university ESL students in the United States	2 groups: High and Low listening proficiency, based on 2 listening comprehension tests and one reading test	Listening strategy use	Listening proficiency → Strategies	<ul style="list-style-type: none"> - More proficient listeners used a relatively wider variety of strategies more often, such as <i>paraphrasing, inferring, personalizing, connecting, anticipating.</i> - More proficient listeners showed more sequential or combined patterns of strategy use.
O'Malley et al. (1989)	11 high school ESL students in the United States	2 groups: Effective and ineffective listeners, based on subjective indicators + standardised reading test of functional vocabulary	Listening strategy use	Reading proficiency / vocabulary → Strategies	<ul style="list-style-type: none"> - The effective listeners used both top-down and bottom-up processing – i.e. using prior knowledge and textual information. - Ineffective listeners relied almost exclusively on bottom-up strategies.
Vandergrift (1997b)	21 high school French learners aged 16-17 years old (probably in Canada)	5 groups: Different levels of general language proficiency, based on interviews in French 2 groups: More and less successful listeners, based on number of reported strategies	Listening strategy use	General proficiency → Strategies; Listening ability (number of reported listening strategies used) → Strategies	<ul style="list-style-type: none"> - More proficient learners used more metacognitive strategies - More successful listeners also used more metacognitive strategies and drew more on their prior knowledge. - Less successful listeners relied on more bottom-up and surface processing strategies such as <i>translation.</i>
Tsui and Fullilove (1998)	Analysis of HK secondary school public examination database	Question types and schema types, pointing to different strategy use – top-down and bottom-up	Scores in a listening public exam (success in listening)	Strategies → Listening performance	<ul style="list-style-type: none"> - Bottom-up processing differentiated skilled and less skilled learners.

Vandergrift (2003)	36 Grade 7 French learners aged 12-13 years old in Canada	2 groups: More skilled listeners and less skilled listeners, based on a listening comprehension test	Listening strategy use	Listening proficiency → Strategies	<ul style="list-style-type: none"> - Skilled listeners used more metacognitive strategies and other top-down strategies such as <i>elaboration</i>. They also combined top-down and bottom-up processing frequently. - The less skilled listeners used more bottom-up strategy <i>translation</i>, particularly word-to-word <i>translation</i>.
Graham et al. (2011)*	15 secondary school French learners aged 17 years old in England	3 groups: Top, middle and bottom listening proficiency groups, based on listening recall protocol	Listening strategy use	Listening proficiency ↔ Strategies	<ul style="list-style-type: none"> - The top listeners used more <i>comprehension monitoring</i> strategies in combination with other strategies. - A poorer listener, even when using <i>comprehension monitoring</i>, stopped at his/her lack of understanding. - The differences maintained over two time-points.
Graham et al. (2008)	2 secondary school French learners aged 17 years old in England	One student belonged to the top listener group and the other the bottom group	Listening strategy use	Listening proficiency (with LK matched) ↔ Strategies	<ul style="list-style-type: none"> - Alan the top listener used more metacognitive strategies such as <i>comprehension monitoring</i> and <i>evaluation</i>. - Both students' strategic behaviour remained similar at the two time-points of data collection.
Graham et al. (2010)	14 secondary school French learners in England	4 groups: Top LK-Top listening proficiency; Top LK-Low listening proficiency; Low LK – Top listening proficiency; Low LK – Low listening proficiency; based on vocabulary and grammar tests, as well as listening recall protocol	Listening strategy use	Linguistic knowledge → Strategies	<ul style="list-style-type: none"> - Students with higher linguistic knowledge combined <i>comprehension monitoring</i> more with other strategies. - Students with lower linguistic knowledge stopped at lack of understanding even when using <i>comprehension monitoring</i>. Also, they relied on particular strategies on a single-word lexical level. - Students with higher linguistic knowledge did not necessarily listen successfully.

*Note that investigating strategy use was only one of the aims of Graham et al. (2011).

Taken together, despite attempts to identify differences in strategy use among different groups of learners, most previous research on listening strategies except Graham et al. (2010) did not adequately control for LK. The consequence is two-fold: first, instead of not trying to use strategies, some learners might simply not have sufficient LK which ‘short-circuited’ their deployment of strategies [as we can argue from the close examination of Vandergrift’s (2003) data and from other reading strategy research such as Razi and Grenfell (2012)]; and second, we might run into a tautology in the relationship between strategy use and listening proficiency. On top of these two consequences, there was also the methodological problem of measuring listening or general proficiency at one single time point with a test, without accounting for the time spent by learners to achieve the current proficiency level, which could be indicative of how ‘good’ these learners were. Nonetheless, this body of research has some findings in common – that more proficient listeners usually used more metacognitive strategies such as *monitoring* in combination with other strategies, whereas the less proficient ones relied on *translation* strategies. Furthermore, there is other supportive evidence from research on listening strategy training. Despite not being the focus of this paper and thus not reviewed, strategy training appeared to be useful in bringing about success in listening (see among others, Goh & Taib, 2006; Graham & Macaro, 2008; Harris, 2007; O’Malley et al., 1985b; Thompson & Rubin, 1996; Vandergrift & Tafaghodtari, 2010), and therefore, a causal relationship from strategy use to listening proficiency is gradually being established. However, in order to develop better strategy training programmes and understand the use of listening strategies in a more comprehensive way, the issue of what defines a more skilled listener or learner has to be more carefully researched by controlling for LK. An account of how strategies are used in context is also required to indicate whether learners have fully completed the stages in their listening processes.

2.2.2.2 *Listening strategy and task*

The second and third independent variables of interest are task difficulty and task types. As pointed out in the beginning of this chapter when providing a working definition for LLSs, Macaro (2010) has

suggested that task difficulty could have an effect on how students may need to draw on their strategic behaviour in order to complete the task. From the outset, then, the notion of a ‘task’ has to be defined. When Macaro (2006) constructed his theoretical framework for LLSs, he conceptualised ‘tasks’ as both ‘target tasks’ and ‘pedagogical tasks’. According to Wenden (1995), in turn based on Long and Crookes (1992) and Candlin (1987) among others, ‘target tasks’ referred to real-world tasks, such as buying a train ticket, which presented learners with an authentic context to use the target language; ‘pedagogical tasks’, on the other hand, referred to language learning activities with learning goals that required the use of different skills or knowledge to complete the target tasks. Related to the target task of buying a train ticket, then, pedagogical tasks might include identifying useful linguistic cues from a text or coming up with a list of useful phrases within a group. In this view, a ‘task’ usually has a goal which ultimately resembles real-world communication, especially when we consider how Skehan (1996) defined it as bearing ‘some resemblance to real-life language use’ (p. 20). Richard and Rodgers (2001) went even further and argued that tasks should require learners to engage in the negotiation of meaning because they conceptualised tasks as the use of language to achieve naturalistic and meaningful communication. We can, therefore, see a strong tradition of viewing ‘tasks’ as being based on communicative language teaching, as well as related to input and interaction theories in the L2 classroom (see also section 2.3.2 for input and interaction theories).

However, such definition for a ‘task’ is not entirely useful when we have ‘listening’ in mind. To be specific, the contexts of most listening strategies research to date, where students are often listening to audio recording in a uni-directional manner, do not involve much negotiation of meaning. Nonetheless, most of these listening strategies research employed texts that were authentic (e.g. listening to a history lecture or a radio broadcast), and such listening tasks could still to some extent be regarded as resembling real world listening (although not communication).

In the present research context, however, questions may be raised as to how listening to the teacher can be regarded as a listening ‘task’ that resembles real world communication (hence my choice of the term ‘task’). Justifiably, there are differences between listening to the teacher and

listening to audio recording, as pointed out in the research rationale in section 1.1 and will be discussed again in section 2.3.1 below. Some researchers argued that teacher talk in the classroom is a distinctive discourse which does not entirely resemble real-life communication (see, e.g. Nunan, 1993; Nunan & Bailey, 2009; Seedhouse, 1996). However, I would still use the term ‘task’ and regard teacher talk as a listening task for students, borrowing support from Oxford, Cho, Leung, and Kim (2004). Oxford et al. (2004) summarised five different meanings of ‘task’, one of which highlighted the distinction between ‘task’ and ‘activity’. They drew on Coughlan and Duff (1994) who, based on Vygotsky’s Activity Theory, maintained that a ‘task’ is ‘behavioural blueprint provided to students in order to elicit data’ (p. 175) while ‘activity’ is the actual behaviour in performing a task. Oxford et al. (2004) elaborated on this research-related conceptualisation of ‘task’, and argued for an instructional-related conceptualisation, namely that ‘a task consists of the instructions or directions that the teacher gives students for learning – that is, the behavioural blueprint provided to students in order to elicit learning’ (p. 7). Logically, then, ‘activity’ is what students actually do, as reflected by their observable or mental behaviour targeted to the given instructions.

In sum, while many scholars have argued that a ‘task’ has to resemble real-life communication, a listening task does not necessarily involve negotiation of meaning in communication due to its receptive nature. Moreover, Oxford et al. (2004) provided support for the prevalence of ‘tasks’ in an instructional setting to refer to the teacher’s talk in the classroom to elicit learning. This then means that listening to the teacher can be conceptualised and justified in its own right as a listening task. In addition, Oxford et al.’s (2004) definition of ‘task’ is closely related to the present research which adopts Macaro’s (2006) theoretical framework, because if task is defined in relation to the teacher’s input, then learners’ activity would be geared towards understanding the input, and hence can be conceptualised as mental actions⁵ – i.e. strategy use. Therefore, I have chosen to adopt a broader

⁵ Note that when A.D. Cohen (2007) set out to collect opinions from the 19 LLSs researchers, he adopted the definition of strategy as a ‘conscious mental activity’ (p. 31). Even though there are still substantial divisions as to whether strategy entails mental or observable actions, or whether it even includes simple thoughts without being put into actions (as discussed in section 2.1.2 above), strategy was nevertheless taken to be some kind of activity or action.

definition of 'task', which refers to the teacher's talk as a listening task for students in the ESL classroom. However, previous research has never taken this view and investigated how learners use strategies when listening to the teacher. In fact, not many listening strategy studies have considered the listening task variable, nor investigated how task difficulty and task types play a role in the use of listening strategy.

2.2.2.2.1 Listening strategy and task difficulty

In my literature search, I have identified no research that specifically and directly examined the relationship between listening strategies and task difficulty (i.e. the difficulty of the listening text in the context of listening to audio recording). However, there were traces of how researchers reported the effect of task difficulty on learners' use of strategies. For example, O'Malley et al. (1989), discussed in section 2.2.2.1 above, found that there were cases where learners failed to arrive at an understanding by direct parsing given the difficulty of the text, and so had to use several strategies in combination. Even though O'Malley et al. (1989) did not explain further why the text was considered difficult by the students, the verbal report data indicated that the difficulty had to do with unfamiliar word or vocabulary. Another study by Laviosa (2000) found that an easy listening task did not prompt much strategy use because there was no problem of understanding. There is thus an inclination that listening to more difficult texts would have an effect on strategy use.

Moreover, the effect of task difficulty on listening strategy use might receive some support from research on reading strategies. To cite but one example, Ikeda and Takeuchi (2001) recruited a sample of 192 university students and assigned them to three groups of no task, easy task, and difficult task, with the latter two being reading comprehension tasks based on two different texts on the same topic but with varying difficulty levels. Difficulty was operationalised using the Flesch Reading Ease scale, which took into account the number of words per sentence and number of syllables per word. Difficulty was thus, arguably, related to the complexity of grammar and the number of multi-syllabic words. After completing the reading task, students were asked to complete a reading strategy

questionnaire. The between-group comparison indicated that learners used more strategies in general when facing the difficult task.

To sum up, task difficulty has not been adequately dealt with in listening strategy research, despite indications by O'Malley et al. (1989) and Laviosa (2000) that a more difficult listening text, conceptualised as a more difficult listening task for students, would have an effect of listening strategy use. In the present research context which sees the teacher's input as a listening task, it would be interesting to explore if the teacher's input with varying difficulty in terms of vocabulary and grammar would have an effect on students' strategy use.

2.2.2.2.2 Listening strategy and task types

Task types were also inadequately explored in listening strategy research. If we hold that a listening task means basically to listen to a text, then different task types would refer to different types of texts of different genres (and thus in the case of the present research, different types of teacher input such as ELICIT and INFORM). However, once again I have identified no research that investigated the effect of task type effect on listening strategy use.

The closest evidence so far that does relate to listening task types to some extent is perhaps a study conducted by A.C.-S. Chang (2008) on the different levels of listening support on strategy use. Even though levels of listening support do not fit my understanding of different types of listening tasks, the levels do differ in terms of the task demands exerted onto the students. A.C.-S. Chang (2008) provided four different types of support to 22 university students before they completed some listening tasks – (1) previewing the task questions beforehand, (2) providing repeated input and listening to the text once, then previewing the questions and listening twice more, (3) preparing for the topic by reading two written texts on a topic similar to the listening text, and (4) giving out vocabulary instructions. A.C.-S. Chang (2008) argued that different types of support had an effect on the choice of different strategies deployed by the learners. For example, it was found that students

who previewed the task questions beforehand used more selective attention on lexical items, whereas students who prepared for the topic beforehand used strategies which helped them focus on the content or theme of the listening text.

Although A.C.-S. Chang's (2008) focus was on listening support provided before a listening test, the study still provided some insight into how different strategies could be used in connection with different task types with varying task demands. In the context of my present research, then, it would be interesting to investigate whether different task types, operationalised as different types of teacher input, would have an effect on listening strategy use.

2.2.2.3 Summary of research on listening strategies

This sub-section of 2.2.2 has revealed that while researchers have gone so far as to investigate the effects of strategy instruction, there were a few variables which have not been dealt with appropriately and adequately. Particularly, I have foregrounded the problem of how 'the good listener' is often defined as the more proficient listener or more effective listener based on a one time-point listening test, without taking into account the variable of LK. Moreover, task difficulty and task types are also variables that have not been studied; yet, there is obviously a need to study them with attention, given that strategies are task-specific according to Macaro's (2006) framework. More fundamentally, however, the gap in research is made wider still since all these previous studies focused on learners listening to audio recording. As we shall see in the following section, instructed or classroom learning is not only prevalent but also an important context for learners to acquire an L2. It was the major research aim of the present study to investigate the strategies involved in this ubiquitous ESL classroom context.

2.3 L2 classroom interaction

As mentioned, listening strategies have mostly been researched in a uni-directional context when learners listen to audio recording. What has been missing is strategy use in an authentic classroom, where listening occurs mostly when the teacher is talking. Apart from this research gap on strategy use in classrooms, the important difference between listening to the teacher and to audio recording also forms the impetus for the present research. First, as pointed out in Chapter 1, classroom discourse can be regarded as a distinctive type of discourse, and the differences between listening to the teacher in the classroom and listening to audio recording will be explored in section 2.3.1. There are also input and interaction theories by Krashen (1981, 1982) and Long (1985) which capture how special language learning in the classroom is and will be dealt with in section 2.3.2. However, these theories are limited in capturing the vibrant and dynamic nature of the L2 classroom, and so in section 2.3.3, what actually happens inside the L2 classroom will be discussed from the perspective of classroom discourse analysis. Studies and literature to be reviewed include Sinclair and Coulthard's (1975) model, Tsui's (1985) 17-category system that analyses acts in classroom interaction, and more recently Lo and Macaro's (2012) 24-category system. From this previous literature I will propose my own 24-category system in classifying different kinds of teacher talk in the classroom, which are conceptualised as different 'tasks' in the purview of the present research.

2.3.1 Differences between listening to the teacher and to audio recording

One of the rationales for the present research stems from the differences between listening to the teacher and listening to audio recording. The example given by Tsui (1987) cited in Chapter 1 has shown how a classroom context can include exchanges where the teacher asks a display question and subsequently provides positive evaluation to students, and this is something very atypical in social interactions. Given that audio recordings usually resemble real world interaction patterns (already discussed in section 2.2.2 above), listening to audio recording would be fundamentally different from

listening to teacher’s talk in an ESL classroom. There are many other differences between the two listening contexts, some of which are depicted in Table 3 below.

Table 3: Differences between listening to audio recording and to the teacher

	Listening to audio recording	Listening to the teacher in the ESL classroom
Nature	Recording usually resembles real world interaction patterns	Teacher talk as a distinctive type of interaction (e.g. asking display questions; giving feedback)
Purpose	Usually to understand the listening text and to develop listening skills	To understand the teacher for the purpose of learning, answering questions, or performing actions in relation to classroom management
Response required	Usually written responses required on a task sheet	More varied forms of responses required – spoken / written / physical actions; or no response required sometimes
Relationship	Usually no relationship between the student and the recording or the people speaking in the recording	Teacher-student relationship
Flexibility	Recording cannot be changed – everything is predetermined, such as vocabulary, grammar, intonation, and speed	Teacher’s talk is more dynamic and can be changed by the interaction between the teacher and students
Pausing	Usually include pausing internal to the recording (predetermined pausing) or external to the recording (e.g. paused manually by the researcher)	Usually ongoing, except when students are asked to work on their tasks, when students interrupt to raise a question, or when teacher notices interaction breakdowns
Complexity of language	Usually more complex and tuned at a level slightly higher than the students’ current level; however, the textbook writers or the people speaking in the recording do not know the exact proficiency levels of the class and individual students	Usually include some new elements for teaching and learning, and the teacher knows the proficiency level of the class and individual students
Explanations	Usually no explanations	Explanations are usually provided by the teacher, tuned to an appropriate level for students to understand through premodified input or interactionally-modified input
Recursiveness	Less recursive processes (i.e. the audio recording usually will not repeat the same information many times)	More recursive processes (e.g. the teacher may explain some language items again) and some set phrases are used for classroom management (e.g. take out your textbook)

As we can see, listening to the teacher’s talk in the ESL classroom can be very different from listening to audio recording in many dimensions. Particularly, the teacher can modify his or her input provided to the students during the lesson and give explanation wherever necessary. Furthermore, there are varied forms of response required of the students, which can be mapped onto the various functions achievable by the teacher’s talk, as conceptualised as different task types such as ELICIT and INFORM in the present study. In the next two sub-sections, theories behind the teacher’s modification of input and classification of classroom discourse are discussed respectively.

2.3.2 Input and interaction

Krashen (1981, 1982) first proposed the idea of comprehensible input and claimed that input can be made comprehensible to learners at a level slightly higher than the current level of learners, which he stated as the 'i + 1' principle. He further claimed that comprehensible input is a necessary and sufficient condition for learning to occur. In his view, then, teachers could pre-modify their input based on the 'i + 1' principle and should be able to bring about learning in an exclusive teacher→students direction of interaction.

Apart from the criticisms on Krashen's comprehensible input hypothesis regarding the vagueness of what the 'i + 1' level entails, Long (1985) challenged the predictive power of comprehensible input in bringing about learning and suggested the interaction hypothesis. He posited that learning could take place when learners tried to negotiate for meaning. To put it in another way, learners should not simply receive pre-modified input from teachers but also be involved in clarification requests; the teachers, at the same time, could initiate comprehension checks and confirmation checks. All these would contribute to the 'input' given to the learners, and it is this negotiation of meaning that brings about comprehension and possibly acquisition.

To test these two hypotheses, Pica, Young, and Doughty (1987) designed an experiment with a native speaker giving directions of a task to 16 ESL learners individually. 8 of them underwent the condition of pre-modified input and the remaining 8 engaged in the condition without pre-modified input but with the opportunity to negotiate for meaning. By measuring how well the learners completed the task, it was found that the meaning negotiation group did significantly better than the pre-modified input group at comprehending the directions given by the native speaker.

Following Pica et al. (1987), over the years, there have been other studies showing the advantage of interactionally-modified input over pre-modified input (see Ellis, Tanaka, & Yamazaki, 1994; Mackey, 1999; and Maleki & Pazhakh, 2012, among others). However, many of these studies only observed gains in vocabulary learning; whether interactionally-modified input brings more benefits than pre-modified input in various other areas such as acquisition of grammatical knowledge remains

a question to be answered. Furthermore, research along this line has very much ignored what is going on in the mind of the learners when engaged in input and interaction. In other words, the reasons underlying the benefits of interactions have not been sufficiently dealt with, especially not in relation to LLSs. I would argue that one crucial differentiation between interactionally-modified and pre-modified input would be the necessary level of involvement from students: the former necessitates involvement from learners to process the input to some extent (because there is negotiation going on) whereas the latter might not require any. In this context of the ESL classroom, strategy use would be one of the 'tools' for processing the teacher's input, and could be an important aspect in deciphering/understanding learners' involvement in bringing about learning through input and interaction in the classroom. It would be interesting, for instance, to find out whether pre-modified input and interactionally-modified input might exert different task demands onto students, and hence different combinations of strategies are deployed by students when they receive pre-modified input as opposed to when they are engaged in interaction with the teacher. It would also be revealing to investigate whether there are different levels of learning achieved if students employ the same cluster of strategies towards pre-modified and interactionally-modified input. All these being said, the present study does not intend to answer these questions, because it only serves as an exploratory study on listening strategy use in this novel context of listening to the teacher in the ESL classroom.

Taken together, the above discussion on input and interaction has suggested how learning might occur in the ESL classroom. In an authentic classroom, there exist many different types of input and interaction patterns, which are conceptualised as different task types in the present study. While this study does not delve into student talk and hence, strictly speaking, does not involve interaction, it can be argued that teacher talk includes not only teacher-initiated talk but also feedback to students – both of which are dealt with and considered in this research as utterances that students listen to in the classroom. Therefore, previous research on classroom interaction that has suggested the pattern of Initiation-Response-Feedback (IRF) from the Discourse Analysis (DA) perspective is also relevant to the present study, as will be discussed below.

2.3.3 Classroom discourse analysis

One of the seminal and most widely cited works in analysing classroom interaction is Sinclair and Coulthard (1975). They proposed a hierarchical structure of five levels – lesson, transaction, exchange, move, and act – with lesson being the highest level and act being the bottom level. As Willis (1992) stated, such a model represents a ‘ “consists of” relationship’ (p. 112). The levels which receive the most attention are ‘exchange’, ‘move’ and ‘act’, the last of which attempts to pin down the smallest unit of analysis in classroom interaction. Sinclair and Coulthard (1975) maintained that each exchange is characterised as comprising an initiating move of the teacher, followed by a response by learners, and thereafter a feedback from the teacher – this is termed an IRF pattern. Despite criticisms particularly on the over-simplification of classroom interaction (see, e.g., Malouf, 1995; Markee & Kasper, 2004; Seedhouse, 2004) as well as arguments against teacher-fronted interaction (see, e.g. Westgate et al., 1985), the IRF model has been widely used in classroom discourse analysis and seen as the most common pattern of classroom discourse (Cazden, 2001). Empirical studies also showed that teacher talk dominated in classrooms – Chaudron (1988) documented 60%, Lo and Macaro (2012) around 90%, Tsui (1985) around 80%, and Tsui (1987) around 70%. Further, the IRF pattern, together with other related patterns such as IRFRF appeared to be useful in analysing classroom interactions (see, e.g. Jiang, 2012; Yu, 2009) and particularly in the HK context (Wu, 1993; Tsui, 1985, 1987; Lo & Macaro, 2012).

Researchers over the years have attempted to modify the categories of the acts under the DA model in order to better capture what happens in the classroom. As this study looks into the HK context, studies related to the HK context will be discussed.

Based on the original model proposed by Sinclair and Coulthard (1975), Tsui (1985) developed a 17-category system to analyse acts in classroom interaction, divided into four major groups, ‘teacher-initiate’, ‘teacher-respond’, ‘student-initiate’, and ‘student-respond’. Such a categorisation is in turn expanded by Lo and Macaro (2012) into a 24-category system (see Table 4). For the sake of simplicity, the sub-categories are not shown.

Table 4: Comparison of categorisation system of acts in Tsui (1985, p. 11) and Lo & Macaro (2012, p. 52), with the additional categories in the latter *italicised*

		Tsui (1985)	Lo & Macaro (2012)
Teacher talk	Initiate	1. Elicit 2. Direct 3. Nominate 4. Inform 5. Recapitulate 6. Frame 7. Starter 8. Check	1. Elicit 2. Direct 3. Nominate 4. Inform 5. Recapitulate 6. Frame 7. Starter 8. Check 9. <i>Read aloud</i> 10. <i>Translate</i> 11. <i>Reprimand / Applaud</i> 12. <i>Self (Self-utterances)</i>
	Respond	9. Evaluate 10. Accept 11. Comment 12. Clue	13. Evaluate 14. Accept 15. Comment 16. Clue 17. <i>Answering questions</i> 18. <i>Pardon</i>
Student talk	Respond	13. Reply 14. Apologize	19. Reply 20. Apologise
	Initiate	15. Request 16. Elicit 17. Interrupt	21. Request 22. Elicit 23. Interrupt 24. <i>Express opinions</i>

The categories which Lo and Macaro (2012) presented certainly made advancement in attempting to provide a more comprehensive list of classroom interaction. The added categories such as ‘read aloud’, ‘translate’, and ‘reprimand/applaud’ could be commonplace in some HK English classrooms, particularly in classrooms with lower-proficiency learners as well as those having disciplinary or behavioural issues.

However, given that in my research listening to the teacher is the ‘task’ in which learners are engaged, the student talk category would not be relevant. Furthermore, Lo and Macaro’s (2012) enquiry was on the classroom interaction surrounding academic subjects such as biology and geography taught using English as the Medium of Instruction (EMI), which is different from the context of the present study in the ESL classroom. Therefore, there could be other interaction types specific to a HK ESL classroom, and such a claim is further supported based on my personal teaching

experience, discussion with other in-service teachers, and lesson observations during the pilot studies. For instance, administering dictations could be a common practice of some teachers. These dictations do not have to be in the form of long paragraphs; instead, they could be quite short texts involved in a listening activity. They could also be example sentences that demonstrate the use of certain grammatical structures or vocabulary items and that the teacher is asking the students to jot down in their notebooks. In addition, while there is the 'accept' category in teacher-respond, there should also be 'decline'; and borrowing terminologies from studies on negotiation of meaning, there could as well be 'clarification request' and 'confirmation check'. Furthermore, my pilot studies found that it was common for teachers to 'repeat' a learner's response, particularly when the learner was too quiet in articulating the answer. The teachers also made use of 'repeat' or even 'recast' to signal that the learner had made a mistake. Finally, I would also propose to modify the term 'self' to 'sharing' because the function or aim of the teacher initiating some 'self-utterances' could be that the teacher wants to share his or her opinions or experiences to learners, in contrast to saying something for the sake of uttering. Terming it as 'self' would have discounted the specific purpose in the mind of the teacher. Table 5 shows my proposed 24-category system in analysing teacher talk, and examples of each of the categories are presented in Appendix A.

I am fully aware that this 24-category system is merely a proposal and it is subject to more extensive analysis of authentic lessons in HK. Nevertheless, it has the potential to capture the possible interaction types in a classroom. Connecting this category system to the theoretical positions of input and interaction as depicted in section 2.3.2, some of the teacher-initiate categories which do not require response from learners, such as INFORM, READ ALOUD, and SHARING could formulate some pre-modified input to learners; whereas other such as CLUE, CLARIFICATION REQUEST and CONFIRMATION CHECK in teacher-respond could offer interactionally modified input to learners because these interaction types require learners to respond to the teacher. Even though, as mentioned above, it is not the intention of this study to connect input and interaction theories to strategy use, results of the present study can at least offer some insights into how listening strategies are used by learners against different types of teacher's inputs.

Table 5: Proposed new 24-category system of analysing teacher talk, with new or modified categories italicized

	Acts
Teacher initiate	<ol style="list-style-type: none"> 1. ELICIT – asking questions 2. DIRECT – giving commands for students to do something 3. NOMINATE – calling on students to respond 4. INFORM – giving explanation of a concept 5. RECAPITULATE – providing a recap of previous lessons 6. FRAME – framing or structuring the lesson 7. STARTER – direct students’ attention to the upcoming ELICIT 8. CHECK (<i>Comprehension check</i>) – checking if students understand 9. READ ALOUD – reading aloud 10. TRANSLATE – providing a translation for the English words in L1 11. REPRIMAND / APPLAUD – telling off / praising students 12. <i>SHARING</i> – teacher sharing with students his/her views 13. <i>DICTATION</i> – teacher speaking aloud for students to write down what s/he says
Teacher respond	<ol style="list-style-type: none"> 14. EVALUATE – evaluating students’ answer positively or negatively 15. ACCEPT – accepting students’ answer 16. <i>DECLINE</i> – declining students’ answer 17. COMMENT – expanding or developing students’ answer 18. CLUE – providing additional information for students to modify their answers 19. ANSWERING QUESTIONS – answering students’ questions 20. PARDON – asking students to repeat what they have said 21. <i>CLARIFICATION REQUEST</i> – asking students for an explanation or elaboration 22. <i>CONFIRMATION CHECK</i> – teacher checking if s/he understands the students correctly 23. <i>REPEAT</i> – repeating what the students just said 24. <i>RECAST</i> – repeating what the students just said but with the erroneous bits corrected

2.4 Chapter summary

This literature review has briefly examined the development and prevailing debates in LLS research. With respect to listening strategies, previous research provides a convoluted background in terms of the direction of causality – whether it is strategy use which predicts success in listening or vice versa. Another problem lies in the control for variables with respect to the linguistic resources that learners possess. There is a problem in claiming that more proficient learners are different from less proficient learners in strategy use without taking into account LK. Furthermore, listening strategies have almost exclusively focused on listening to audio recording despite the prevalence of teacher input in the classroom (and particularly in the Hong Kong classroom setting) and the importance of input and interaction in the classroom in bringing about learning. Yet, even though researchers have been claiming that input and interaction are important, what exactly is going on inside the student’s mind has not been sufficiently dealt with. It is reasonably important, therefore, to research into the

deployment of strategies, being defined as mental actions, in situations when learners with different levels of LK are listening to the teacher in the ESL classroom. Adopting the theoretical framework proposed by Macaro (2006), which defined effective strategy clusters as specific to tasks, it will be necessary to first define the different types of tasks or teacher input. For example, understanding instructions for a student-centred activity may itself be considered a different task from understanding the explanation of an unknown or unfamiliar L2 word, and again different from understanding the teacher's question. A DA approach will be adopted to describe these different types of tasks in classroom interaction. It could be seen that some types of interaction, such as READ ALOUD and INFORM require no response from students and could represent typical pre-modified input, whereas others in the teacher-respond category such as CLUE could further require learners to respond and give rise to interactionally-modified input. It would be interesting to explore whether learners facing these different task types would use different strategies in varying quantities and in different ways.

Chapter 3 Methodology

This section begins with an overview of the research design and RQs, followed by section 3.2 on the research population and sampling. Subsequently, the methods used for data collection are discussed and justified in section 3.3, whereas the procedure of data collection including the sample size for each phase is presented in section 3.4. Finally, section 3.5 describes how ethical consideration is being taken into account.

3.1 Overview of research design and research questions

Recalling the gaps in research depicted in the literature review in Chapter 2, most listening comprehension strategy research in the past has, surprisingly, ignored the context of classroom interaction where it is pervasive for learners to listen to the teacher's input. This research, therefore, attempts to first find out what comprehension strategies are used by learners while listening to the teacher's input (RQ1). Subsequently, motivated by Macaro's (2006) theoretical framework and previous literature which has argued that linguistic knowledge and tasks could play a role in strategy use, my research turns to explore how strategy use varies according to the variables of linguistic knowledge (RQ2), task difficulty (RQ3) and task types (RQ4). With task defined broadly as the teacher's input, different task types refer to the various forms of teacher input such as INFORM (explaining) and ELICIT (questioning), as discussed in Chapter 2.3. The research questions are:

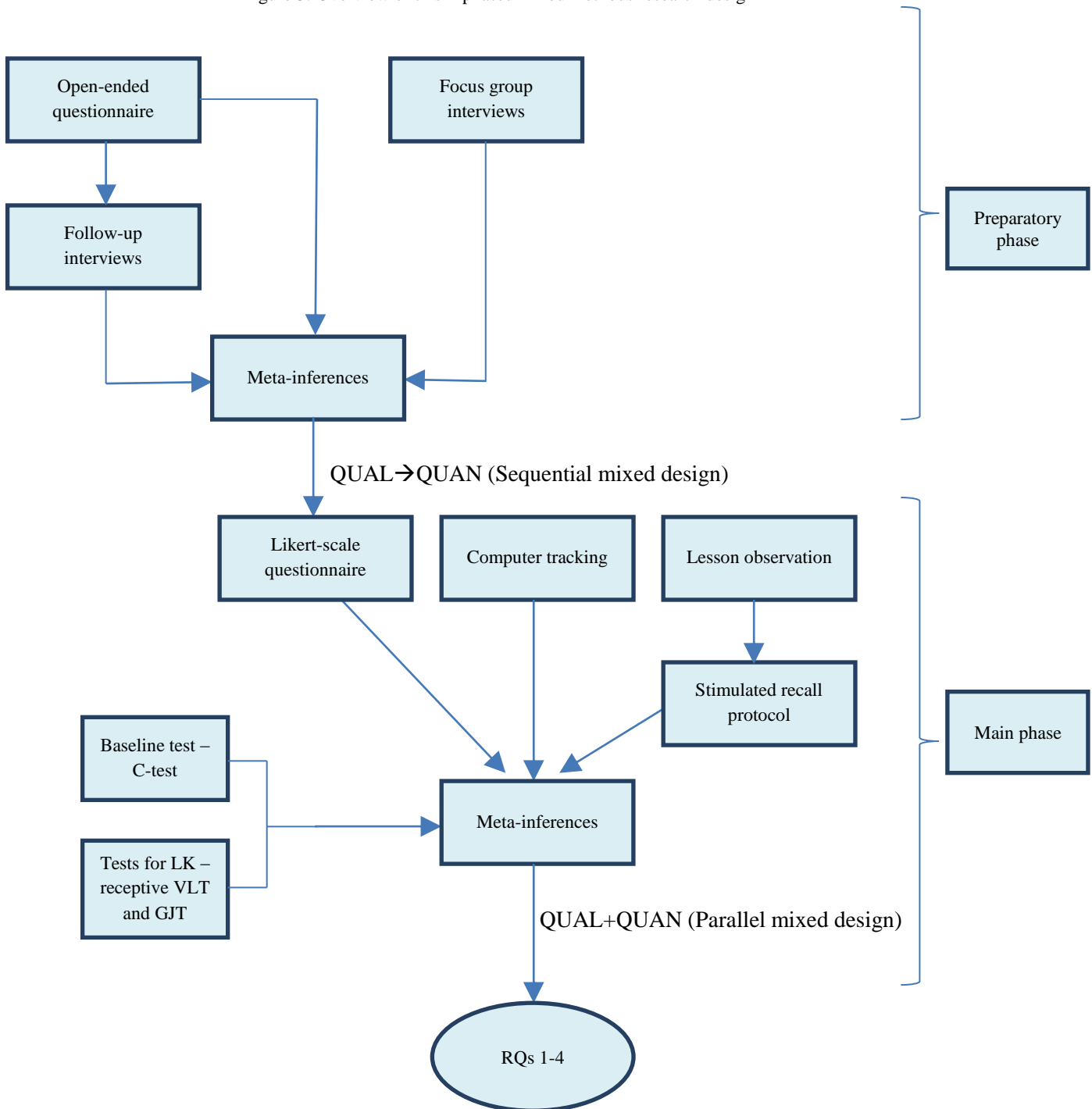
- RQ1 What comprehension strategies do Secondary 3 students use when listening to the teacher's input in the ESL classroom?
- RQ2 How do students with different linguistic knowledge differ in the strategies used?
- RQ3 How do students' strategies vary according to the difficulty of the listening tasks?
- RQ4 How do students' strategies vary according to different task types?

There are three different independent variables: linguistic knowledge, task difficulty, and task types, manifest in RQ 2, 3, and 4 respectively. The one dependent variable is students' strategy use. In order to answer the RQs, this study adopts mixed methods. It is noteworthy that despite stemming from triangulation techniques, mixed methods can be seen as a distinctive set of techniques rather than simply a separate execution of both quantitative and qualitative methods (see, e.g. Day, Sammons & Gu, 2008; Sammons, 2010; Teddlie & Sammons, 2010). Following the typology of mixed methods set out by Teddlie and Tashakkori (2006; 2009), my research can be described as including elements of both sequential and parallel mixed design. The former refers to the use of quantitative followed by qualitative methods, or vice versa, whereas the latter refers to the concurrent use of both types of methods. How these two mixed designs are realised in my study is discussed in the following paragraphs as I describe my overall research design.

This research was divided into two phases – a preparatory phase and a main phase. The purpose of the preparatory phase was to conduct an initial exploration of the range of strategies involved in the specific context of understanding the teacher in the ESL classroom in order to develop a research instrument for use in the main phase. To that end, an open-ended questionnaire with follow-up individual interviews, and focus group interviews were used to elicit from learners the comprehension strategies they used when listening to the teacher's input in the ESL classroom. Students' responses through all these different research methods in the preparatory phase were brought together at the inferential stage of research – what Teddlie and Sammons (2010) have termed meta-inferences. These results were summarised into items presented in the form of a Likert-scale questionnaire for use in the subsequent phase. Therefore, the procedure from the preparatory phase to the main phase represents a sequential mixed design of Qualitative → Quantitative (QUAL → QUAN), with the results from the qualitative open-ended questionnaire and interviews feeding into the design of a quantitative instrument.

In the main phase, the newly developed Likert-scale questionnaire, a computer tracking programme, and lesson observations together with stimulated recall protocol were used to tap into learners' strategy use. With the questionnaire and computer tracking being quantitative methods, and the stimulated recall being a qualitative one, the procedure demonstrates a parallel mixed design of QUAL and QUAN working in tandem. In addition, a baseline test for language proficiency – a C-test, and tests for linguistic knowledge – a receptive Vocabulary Levels Test (VLT) and a grammaticality judgement task (GJT) were administered. Figure 3 provides a graphical representation of the two phases.

Figure 3: Overview of this 2-phased mixed methods research design



Having looked at the broad picture of the research design, it is also important to elucidate how the RQs are addressed through the analysis of the data gathered through various research instruments. While the preparatory phase could be seen as a stage for research instrument development – that of the Likert-scale questionnaire, the main phase was the major stage of data collection to answer the four RQs. First, with the Likert-scale questionnaire, an

Exploratory Factor Analysis (EFA) was performed in order to identify the factor structures of different strategy variables. Through such identification, RQ1 on what strategies are used by learners can be partly answered. Bringing in the results of the C-test as the baseline test to justify whether some learners were outliers and had to be excluded, as well as those of the VLT and GJT which distinguished learners with lower and higher LK, RQ2 on the differences of strategies used by learners of different LK could also be partly answered through performing a statistical test of difference such as the t-test. The computer tracking programme complemented the answer to RQ2 by, again, performing a test of difference, although a qualitative exploration was also conducted. Additionally, given that the computer tracking programme contained a video carefully crafted to incorporate different types of teacher input with varying levels of difficulty, it could also answer RQ3 and RQ4. Finally, the lesson observation and stimulated recall protocol supplemented the answers to RQ1 and RQ2 from a more qualitative perspective. Table 6 summarises how the four RQs are addressed.

Table 6: Overview of how the four RQs are answered through the analysis of the various instruments

RQ	Instrument for eliciting strategy	Analysis
RQ1 What comprehension strategies do Secondary 3 students use when listening to the teacher in the ESL classroom?	Likert-scale questionnaire	Exploratory factor analysis
	Lesson observation plus stimulated recall protocol	Qualitative analysis
RQ2 How do students with different linguistic knowledge differ in the strategies used?	Likert-scale questionnaire (with results from LK tests)	Statistical test of difference (e.g. t-test)
	Computer tracking programme (with results from LK tests)	Statistical test of difference + qualitative exploration
	Lesson observation plus stimulated recall protocol (with results from LK tests)	Qualitative analysis
RQ3 How do students' strategies vary according to the difficulty of the listening tasks?	Computer tracking programme	Statistical test of difference
RQ4 How do students' strategies vary according to different task types?	Computer tracking programme	Statistical test of difference

A more detailed description of each of the research instruments can be found in section 3.3. In the subsequent section, I will first provide an overview of the population and sampling of this research.

3.2 Population and sampling

3.2.1 Population

The target population for this study was Secondary 3 (aged 14) intermediate ESL learners studying in mainstream (i.e. not private and international schools) Band One and Band Two schools in Hong Kong (HK). In HK, schools are divided into three bandings according to their students' average English proficiency. Band One schools consist of students who are on average more proficient in English than those in Band Two schools, and most Band One schools use EMI for subjects other than the Chinese language. One reason for excluding Band Three (the lowest banding) schools in the present study is that these schools typically consist of learners who have rather low proficiency in English. In some extreme cases, based on accounts given by teachers of Band Three schools with whom I have personal connection, some learners might not even be able to recall all the 26 letters in the English alphabet despite having studied English for six years in compulsory primary education. With such low proficiency, it would be difficult to elicit their comprehension strategies in understanding the teacher in ESL classes because the teacher might not even use English to teach them the language. Their inadequate linguistic knowledge could also limit their strategy use, as discussed in section 2.2.2 earlier.

Secondary 3 learners were chosen because they would be familiar with the ESL classroom setting in secondary schools. Recruiting younger (such as Secondary 1 or 2) learners may not have been appropriate because they may have limited experience in listening to the teacher speaking in English in a secondary school classroom – they are either new to, or have only received one year of, secondary school classroom instruction. Without sufficient

experience for them to draw on when reflecting on their strategy use, the data reported back from the students may be inadequate. Recruiting higher level (such as Secondary 4-6) learners might yield problems of access and difficulty in observing classroom interaction. Secondary 4 students in HK usually start preparing for the university entrance public exam. Schools might not easily allow researchers to conduct research on these learners. Also, some teachers adopt an exam-oriented approach and merely ask learners to do past exam papers individually and quietly in class, which would prove to be difficult for teacher talk to occur. Therefore, Secondary 3 learners are justifiably one of the more interesting and accessible groups of learners for the present research.

3.2.2 Sampling and sampling frame

Originally, this study aimed at a random sampling of schools. However, not all of the randomly-selected schools agreed to take part in this research. This was the case mainly because schools in HK were not accustomed to collaborating with researchers given the busy day-to-day school schedule. As a result, this study could only achieve a purposive sampling method through my personal connections. It was purposive in the way that I only approached the schools which fell into the criteria of Band one or Band two schools. The sampling frame included all three major regions in HK – Kowloon, Hong Kong Island, and the New Territories. Altogether, 11 different schools with a total of 1150 students took part in various phases of the research – 100 in the preparatory phase, 867 in the main phase, and 183 in all the associated pilot studies. Two of these schools took part twice, once in pilot study 1 and then again in the main study conducted in the following academic year (i.e. no student has participated in both the pilot and the main study and completed a similar research instrument twice). A more detailed description of the sample sizes in the different phases are presented in section 3.4 when the research procedure is discussed.

3.3 Methods for data collection

Given that comprehension strategies in the context of listening to the teacher in the ESL classroom have hitherto been unexplored, it is worthwhile to first review the possible methods in eliciting strategies based on the literature. Subsequently, the methods chosen in the present research are discussed and justified. Where appropriate, insights from the pilot studies are also presented (for a reflection on the first pilot study as an example, see Appendix B).

3.3.1 Major methods in strategy elicitation – the options available

A.D. Cohen (1998) maintains that there are six main methods in eliciting strategies used by students – ‘oral interviews and written questionnaires, observation, verbal report, diaries and dialog journals, recollective studies, and computer tracking’ (p. 26). Most of these methods, except observation and possibly computer tracking, are introspective in nature, i.e. they rely on learners’ self-report.

3.3.1.1 Oral interviews and written questionnaires

Oral interviews and written questionnaires are similar in the way that they both include sets of questions to elicit responses from learners (A.D. Cohen, 1998). In particular, written questionnaires are widely used in LLS research. Examples are Bedell and Oxford (1996), A.D. Cohen, Weaver, and T.-Y. Li (1998), Huang and Van Naerssen (1987), Macaro and Erler (2008), Nakatani (2006, 2010), Oxford (1996), Politzer (1983), and Politzer and McGroarty (1985). Contrastively, oral interviews have not been as prevalent, but it is interesting to note that they were often used together with other methods such as written questionnaires. For instance, Kaylani (1996) used questionnaires in tandem with interviews; Harish (2014) and Levine, Reves, and Leaver (1996) administered questionnaires, semi-structured interviews and observation in their studies.

Oral interviews, especially unstructured or semi-structured ones, hold the advantage of granting respondents the freedom to express their opinions; and yet, this might only yield individualised patterns because of the lack of control of what students might report back (A.D. Cohen, 1998). This would mean that the external validity or generalisability might suffer. Structured interviews, on the other hand, can give generally systematic data across different learners; however, the researcher may be guiding the students to think in certain ways, which could affect the internal validity of the research. As A.D. Cohen (1998) has argued, the use of explicit questions might motivate learners to respond in a certain way. Considering different types of oral interviews as a whole, there is also the disadvantage of being time-consuming, even though in-depth data might be collected.

In contrast, written questionnaires possess the clear advantage that abundant data can be collected without having to spend a tremendous amount of time. Such an advantage can be shown by the large amount of data generated by structured questionnaires such as Oxford's (1996) Strategy Inventory for Language Learning (SILL) and Nakatani's (2010) Oral Communication Strategy Inventory (OCSI), although open-ended questionnaires were also sometimes employed by studies such as Nakatani (2006). Furthermore, questionnaires will not be 'threatening' to the learners as they are not in direct contact with the researcher. The data can also be easily analysed quantitatively to obtain a generalised picture of strategy use by learners. However, as Oxford and Burry-Stock (1995) state, the use of questionnaires has the disadvantage of not being sensitive to specific language tasks.

In the context of the present research, semi-structured oral interviews can be utilised initially to allow learners to report their strategy use in understanding the teacher in the ESL classroom relatively freely. An unstructured interview is not appropriate because some learners could go off-track if they are not guided to report their mental actions, as evident in pilot study 1 (see Appendix B). On the other hand, a highly structured interview might constrain the learners too much in following the researcher's thoughts of what possible strategies could be utilised in the context of listening to the teacher in the classroom.

Therefore, a semi-structured oral interview would be preferred in the way that learners' attention can be constantly brought back to focus on strategies. Moreover, in order to address the issue of external validity, focus groups, as opposed to individual interviews, could be conducted. Carrying out interviews in groups (or pairs) instead of individually also contains the benefit of allowing participants feel more at ease, as Erler (2007) found.

The results of oral interviews can become more representative and generalisable when open-ended and/or structured written questionnaires are also administered to achieve triangulation. However, structured questionnaires should not be the sole research instrument in the present research, as the strategies reported would not be sensitive to the specific listening tasks of the different teacher's input; and such a limitation would be particularly problematic following Macaro's (2006) framework in defining strategies as used in relation to specific tasks. Structured questionnaires are, nevertheless, useful in eliciting general comprehension strategy use in the present research.

3.3.1.2 Observation

Observation is not so often used alone in LLS research. As aforementioned, both Harish (2014) and Levine et al. (1996) administered questionnaires and semi-structured interviews in addition to observation. O'Malley et al. (1985a, 1985b) also used observation together with interviews.

An advantage, proposed by A.D. Cohen (1998), is that the data obtained are uniform because it is the researcher who does the coding of the use of different strategies. This is opposed to other methods such as oral interviews or verbal reports where learners' description of their use of strategies may vary to a large extent. Further, it provides much insight in classroom-based study, as Macaro (2001) has argued. Given the argument that foregrounds the distinctiveness of the classroom context, observation is important in allowing the

researcher to capture what is going on in the classroom, instead of solely relying on students' self-report.

On the negative side, observation is constrained in the way that it might not be useful in revealing most strategies used by learners. Given that strategies are defined as mental actions in Macaro's (2006) framework, many strategies cannot be observed. For instance, in O'Malley et al. (1985b), the researchers recorded only an average of 3.7 strategies out of the 53 classroom observations they conducted. A.D. Cohen (1998) further maintains that observation might only collect data from extrovert speakers. On top of all these, there is also the problem associated with the 'observer effect', which denotes the possible non-normal behaviours of the teacher and the students when the researcher is observing in the classroom. Perhaps these limitations answer the question why recent LLS research has not adopted this method, not least in exploring listening strategies, which are by and large unobservable. Even for Harish (2014) who carried out observation to explore the use of social strategies, the findings from observation were not reported at all.

Therefore, observation may not be a useful means to understand learners' strategy use in the present research which has a focus on listening strategies. However, classroom observation could be useful in itself to understand what happens in the classroom, the teachers' teaching style, and to note down interesting episodes of teacher-student interaction in the classroom. In pilot study 1, lesson observation proved to be useful in understanding the classroom dynamics and noting down important moments where strategies might be used in understanding the teacher. For example, during a communication breakdown when the teacher received no response from the students after an ELICIT, some students reviewed their notes and some sought help from other students. These actions are termed opportunities for strategic behaviour by Briggs (2015) because although they do not point to any specific mental actions, they could give rise to opportunities for strategic behaviour to occur (see section 3.3.3.2.1 for a further explanation of why they are also important in the present study).

Taken together, lesson observation would be useful to a certain extent and its benefits can be maximised when it precedes stimulated recall protocol, during which the interesting teaching and learning episodes can be followed up. Stimulated recall is one type of verbal report and is discussed in the sub-section below.

3.3.1.3 Verbal report

Similar to questionnaires, verbal report is another common method of eliciting self-report data in LLS research. One difference between them is that verbal report typically requires learners to report their strategy use either concurrently (such as think-aloud) or shortly after a language task (such as stimulated recall). In other words, it is more contextualised. Examples of research adopting this method are N.J. Anderson and Vandergrift (1996), A.D. Cohen and Olshtain (1993), Graham et al. (2008, 2011), and Vandergrift (1998, 2003).

One type of concurrent verbal report that is widely used is think-aloud protocol. For instance, when Vandergrift (1998) investigated learners' strategy use in listening, he stopped the tape at some pre-determined breaks for students to verbalise their thinking. Graham et al. (2008), on the other hand, allowed learners to stop the recording by themselves when they wanted to tell the researchers what they were trying to do in their mind to arrive at an understanding. Whether learners are given the control of the recording is often a question to consider, as Santos, Graham and Vanderplank (2008) have suggested. One advantage of having pre-determined breaks is that the data will be more uniform and easily comparable among participants because the verbal report data are targeted to certain parts of the recording; however, there is the problem of interrupting the listening process that learners are engaged in and hence the validity of the verbal report might be questioned. Although the actual way of conducting think-aloud varies across different researchers, it is arguably one useful way to collect mentalistic data so that students' mental actions can be examined relatively concurrently.

Another type of verbal report is the stimulated recall protocol, which compared with think-aloud is more distant from the event of working on the task. It involves showing the learners the event in a retrospective way, and the prompt, as suggested by Vandergrift and Goh (2012), could be questionnaire responses or a recording of what learners had done before. For example, using the recording of learners completing an information gap task in pairs as the prompt, Farrell and Mallard (2006) examined how various listening strategies were employed by learners.

A.D. Cohen (1998) claims that verbal report is one of the most viable methods in LLS research. Such an argument could be attributed to the potential of verbal report in tapping into learners' mental behaviour, as well as to its specificity to the task which learners are (or were) doing. The main disadvantage of verbal report, however, is that it is very time-consuming given that it is a one-to-one data collection method. With stimulated recall protocol, there is an additional issue on memory constraints. If it is carried out long after the actual event of learners using the strategies, learners could have forgotten what they did and hence the data obtained might not be valid.

In the present research, think-aloud would not be practical because it is disruptive and almost impossible for learners to engage in an ongoing classroom interaction while being asked to report their strategy use concurrently. Other types of verbal report such as stimulated recall protocol, however, might be useful. For example, a lesson can be videotaped and learners can watch that video retrospectively and individually as a stimulus to report their strategy use during that lesson. Such a way could also give in-depth data on how learners actually use comprehension strategies and whether the strategies are employed successfully in bringing about comprehension. The validity and reliability of these verbal reports can be improved following the suggestions outlined by Ericsson and Simon (1980), Gass and Mackey (2000), and Santos et al. (2008). For instance, Santos et al. (2008) suggest that learners should be given the control of the recording in order to enhance the reliability of the

verbal report. All the considerations of administering stimulated recall will be picked up again in section 3.3.3 when presenting the research instruments.

3.3.1.4 Diaries and dialog journals

Diaries and dialog journals provide data that are generated by learners. Diaries refer to the learners' written reflection on language learning whereas dialog journals have an additional element of a reader responding to the learners' writing (A.D. Cohen, 1998). Diaries and dialog journals are used in studies such as Goh (2000), Graham and Macaro (2008), Ma and Oxford (2014), Oxford, Lavine, Felkins, Hollaway, and Saleh (1996), and Rubin (1981), among others.

A merit of this method is that learners might become more aware of their strategy use when writing their diaries or journals. Provided that strategies are mental actions, learners need to be aware of what they do in their mind in order to report their strategy use. Therefore, through writing diaries and journals, learners are in a better position to report their strategy use. They are also not very much constrained by the time spent on reflecting and reporting. On the other hand, there is the shortcoming of being difficult to control what the learners write in their diaries or dialog journals. A.D. Cohen (1998) states that learners may not mention anything about learning strategies at all.

Indeed, learners might not report any strategies. Pilot study 1 revealed that even with a fairly structured open-ended questionnaire, most learners could not report their strategy use (see Appendix B). Some learners reported on a superficial level and wrote, simply, 'listen and think' as their strategy. Given that diaries and journals are relatively uncontrolled – in terms of whether learners actually reflect on strategies, whether they remember what they did during class, and whether they follow the instructions and write an entry under a fixed time scale – it might not be a potentially useful method in the present research.

3.3.1.5 Recollective studies

Similar to diaries and dialog journals, recollective studies are retrospective in nature. They differ, however, in the way that journals are typically a periodic and ongoing record, whereas recollective accounts focus on learning experience that happened months or years before (A.D. Cohen, 1998). For instance, Oxford et al. (1996) asked university graduate students to recollect their language learning experiences.

An advantage of recollective studies is that learners can recall their learning experiences as a whole and therefore, the use of strategies might be compared against other variables such as learning styles, motivation, and so forth. One major limitation of this method, however, is the constraint of students' memory. If the time lapse between the language learning experience and the recollective account is too long, the data obtained might not yield internal validity. As A.D. Cohen (1998) maintains, learners might make generalisations about their strategy use in language learning rather than focusing on the specific task.

Given that this research adopts Macaro's (2006) definition of strategy, the context of how strategies are used with reference to specific tasks is important. As a result, recollective approaches might not be an appropriate method.

3.3.1.6 Computer tracking

One other method of strategy elicitation is computer tracking. One of the very few studies to have used computer tracking is quite an old paper – Chapelle and Mizuno (1989), who developed a computer assisted language learning programme with different resource functions such as dictionary, thesaurus, spell-checker, and so forth. By recording how learners used these functions to approach a grammar task, the researcher made inferences as to what strategies were used by learners. A recent attempt was made more than 20 years later by Roussel (2011), who recorded and made sense of the movement of the mouse in rewinding

the audio recording while learners were listening to it on the computer. For example, with some learners who first listened to the text non-stop before rewinding back to smaller chunks from the beginning, the researcher inferred that they first used a global listening strategy to understand the overall meaning and then went back to clarify their understanding. She argued that in such cases, students were clearly planning and monitoring.

The limited number of strategy research adopting computer tracking is perhaps one of the reasons why LLS expert Peter Gu, as a participant in A.D. Cohen and Griffiths (2015), called for construction of novel research tools in eliciting strategies. And indeed, there are benefits for computer tracking to be used in LLSs research.

A clear advantage of computer tracking is its ‘non-threatening’ nature. In other words, the learners are not in direct contact with the researcher and they can do the task on the computer by themselves. Hence, computer tracking can minimise the researcher effect, which could be an issue with the other research methods such as interview and observation. Computer tracking is also a very much controlled method because the researcher can pre-set all the tasks and instruction of what the learners are supposed to do. On the other hand, a weakness associated with computer tracking is that the researcher has to make inferences on the strategy use behind the learners’ observable actions of clicking the buttons of the computer programme, as stated by A.D. Cohen (1998).

However, computer tracking should not only include this kind of indirect way of recording strategy use. Learners can be instructed to report their strategy use directly through a computer programme. In the present research, for instance, learners could watch a video of simulation of classroom episodes and click buttons on the computer to indicate their strategy use, so that their strategies would be tracked by the computer programme while learners are taking the virtual lesson. In such a way, the problem of not being able to record concurrent data of strategy use in the classroom, as mentioned in section 3.3.1.3 when discussing think-aloud protocol, can be bridged to some extent. What is more is that a highly controlled

computer tracking programme has the potential to provide insights into how learners apply comprehension strategies in a relatively uncontrolled classroom context.

3.3.1.7 Summary

Taken together all the possible methods in eliciting strategies, they differ in a number of dimensions: degree of control by learner, involvement of researcher during data collection (which is related to the researcher effect), the distance or time lapse between the use and report of the strategies, whether it is learner's self-report or researcher's inferences, and whether the strategies reported tend to be general or specific to the task. Table 7 attempts to summarise all these differences. It should be noted that the table presents a succinctly simplified comparison of the methods, because there are so many other variables involved in the way these methods are actually carried out in research.

Table 7: Summary of possible strategy elicitation methods, depicting their differences in six dimensions

Research method	Learner's self-report or researcher's inferences	What can be controlled by learners	Involvement of researcher during data collection	Presence of researcher	Distance / time lapse between the use and report of strategies	General or task-specific strategies
Oral interviews (individual/ group)	Self-report	- What strategies to report	High – the researcher can give concurrent spoken prompts	Present	Distant	General strategies
Written Questionnaires	Self-report	- What strategies to report if open-ended; - Only the degree of use of different strategies to report if structured (e.g. SILL)	Low – instruction written on the questionnaires by the researcher in advance	Present / Absent	Distant	General strategies
Observation	Researcher's inferences	- What strategies to use in context	High – the researcher need to take notes of what is going on in the classroom	Present	Concurrent	Task-specific strategies
Verbal report – think-aloud	Self-report	- What strategies to report; - When to report strategies if learners has the control of the recording	High – the researcher can give concurrent spoken prompts	Present	Concurrent	Task-specific strategies
Verbal report – stimulated recall	Self-report	- What strategies to report; - When to report strategies if learners has the control of the recording	High – the researcher can give concurrent spoken prompts	Present	Moderately distant	Task-specific strategies
Diaries and dialog journals (repeated / longitudinal measurement)	Self-report	- What strategies to report; - How much time to put into reflecting and reporting use of strategies	Low – instruction given by the researcher in advance	Absent	Moderately distant	General strategies
Recollective studies (recollect previous experiences)	Self-report	- What strategies to report	Low – instruction given by the researcher in advance	Present / Absent	Distant	General strategies
Computer tracking	Self-report / researcher's inferences	- What strategies to report / use; - When to report / use strategies	Low – instruction given by the researcher in advance or presented in the programme	Present / Absent	Concurrent	Task-specific strategies

We can observe that most methods relied on students' self-report. This is logical because if we uphold that strategies are mental, they might not be directly observable and required the learners to self-report their strategy use. With the other dimensions, the methods are split more equally – for instance, some require a high level of involvement by the researcher and others allow a high degree of control by the learners. Situating all these possible methods in strategy elicitation in the context of my study, Table 8 evaluates the potential for their suitability in my research, along with the general advantages and disadvantages presented.

Table 8: Evaluation of possible strategy elicitation methods in my research

Method	Advantages	Disadvantages	My research
Oral interviews (individual/group)	<ul style="list-style-type: none"> - If unstructured / semi-structured, students free to express their opinions - Can yield in-depth data 	<ul style="list-style-type: none"> - Very individualised - Time-consuming 	<ul style="list-style-type: none"> ✓ Appropriate as a start to elicit strategy ✓ Focus groups possible to give in-depth data which are not too individualised
Written Questionnaires	<ul style="list-style-type: none"> - Abundant data particularly for structured ones - Easy to administer - 'Nonthreatening' 	<ul style="list-style-type: none"> - If structured, not specific to task - If open-ended, difficult to control: students might write unrelated things 	<ul style="list-style-type: none"> ✓ Possible to distribute open-ended questionnaire to elicit strategy use ✓ A structured questionnaire can also be used to investigate general comprehension strategy use
Observation	<ul style="list-style-type: none"> - Uniform data (coding done by researcher) - Classroom-based - NOT self-report 	<ul style="list-style-type: none"> - Cannot observe all the mental strategies, and not from the introvert students - Can obstruct the classroom – 'observer effect' 	<ul style="list-style-type: none"> × Not to be used as a means to investigate strategy use ✓ Can be useful in understanding the classroom, the teachers and the students
Verbal report – think-aloud	<ul style="list-style-type: none"> - Very much contextualised - Can tap into mental actions – strategies 	<ul style="list-style-type: none"> - Need to be done while doing the task - Time-consuming (one-to-one) 	<ul style="list-style-type: none"> × Think-aloud not possible because learners cannot simultaneously report their thoughts and engage in classroom
Verbal report – stimulated recall	<ul style="list-style-type: none"> - Very much contextualised - Can tap into mental actions – strategies 	<ul style="list-style-type: none"> - Memory constraints may be an issue, depending on the time lapse of doing the task and the verbal report - Time-consuming (one-to-one) 	<ul style="list-style-type: none"> ✓ Stimulated recall protocol can be helpful to understand strategy use qualitatively, provided that it is carried out shortly after the class
Diaries and dialog journals (repeated / longitudinal measurement)	<ul style="list-style-type: none"> - Learners become more aware, thus in a better position to report strategy use - Learners have abundant time to reflect and report strategy use 	<ul style="list-style-type: none"> - Difficult to control - Can be unrelated to strategy use 	<ul style="list-style-type: none"> × Not useful as it is too difficult to control what the learners write and learners may report strategies in very broad terms.
Recollective studies (recollect previous experiences)	<ul style="list-style-type: none"> - Can compare LLS with motivation, learning style, etc. 	<ul style="list-style-type: none"> - Might focus on general learning strategies only - Memory is a constraint 	<ul style="list-style-type: none"> × May not be specific to tasks
Computer tracking	<ul style="list-style-type: none"> - 'Nonthreatening' - Very much controlled 	<ul style="list-style-type: none"> - The researcher may need to make inferences on strategy use 	<ul style="list-style-type: none"> ✓ With simulation of a classroom context, concurrent data on strategy use can be collected

Having evaluated the pros and cons of a range of methods in eliciting LLSs as well as their respective potentials with reference to my research, it is noteworthy that many previous studies utilise more than one method in strategy elicitation. Therefore, apart from choosing instruments that are appropriate to the present LLS research, it is of crucial importance to administer multiple methods to triangulate the data obtained. With that in mind, the next sub-section will turn to the choice of methods in my study.

3.3.2 Choice of methods in my study

For the present research, focus group interviews, written questionnaires, stimulated recall protocol, and computer tracking could be justified as potentially useful. However, given that comprehension strategies in understanding the teacher in the ESL classroom has hitherto been unexplored, it would also be helpful to understand the methods used by researchers in the field of LLSs when examining strategies in a novel context. One most recent attempt was made by Nakatani (2006) in identifying oral communication strategies among peers during communicative tasks.

Nakatani (2006) conducted an exploratory study divided into three phases. In phase one, an open-ended questionnaire was administered to 80 EFL university students in Japan. They were asked to report their strategy use by completing sentences such as ‘When I am speaking English, I pay attention to ...’ (Nakatani, 2006, p.153), in Japanese. These responses were summarised into 70 items in Japanese, which in turn were used to construct the Oral Communication Strategy Inventory (the OCSI, as mentioned in the previous section), a Likert-scale questionnaire in phase two. Administering the newly developed OCSI to 400 university students in the same population as phase one, the researcher was able to perform an EFA in order to identify groups of various strategies. 12 items that possessed low loading on all factors were removed to enhance reliability. Therefore, the final questionnaire consisted of 58 items. In the

third phase, this final version of OCSI was conducted with a different sample of 400 university students within the same population, and a confirmatory factor analysis was conducted.

The design of Nakatani (2006) offers important insights in my study. First, all the strategies came from learners' self-report through the initial open-ended questionnaire. With a sufficiently large sample, the strategies reported were of a great variety and could together form a relatively comprehensive list of what learners did in their mind during communicative tasks.

Consequently, the Likert-scale questionnaire developed out of the responses from the open-ended questionnaire would bear construct validity because those strategies represented what learners in the same population might do in their mind. By carrying out an EFA, a data reduction technique which avoids multicollinearity as proposed by A. Field (2013), groups of items in the questionnaire which were likely to be measuring a certain strategy variable could be identified.

Recalling my RQs on finding out what comprehension strategies are used by learners when listening to the teacher in the ESL classroom and how these strategies vary according to linguistic knowledge, task difficulty and task types, it would be useful to first elicit from students their strategy use through a more open-ended form of self-report. In such a way, there would be minimal researcher bias in limiting what strategies students could report in this novel research context of listening to the teacher in the classroom. Gu (2014) also suggested that for an exploratory research, a relatively grounded approach for strategy elicitation would be beneficial.

Taking all these insights from the usefulness of individual methods and those from Nakatani (2006), my research was designed to include a preparatory phase and a main phase. The preparatory phase of my research generally followed Nakatani (2006), and an open-ended questionnaire was administered. On top of the open-ended questionnaire, some follow-up interviews were also administered because it was found from the questionnaire results that some strategies reported by learners were not sufficiently clear in meaning. In order to understand

more fully what the students meant when they wrote in the open-ended questionnaire, follow-up interviews were conducted. Moreover, focus group interviews were administered, the usefulness of which was discussed in section 3.3.1.1. With all the strategies coming from learners themselves, these responses were summarised into a list of items on a Likert-scale questionnaire.

In the main phase, this newly developed questionnaire was administered to a sufficiently large sample and an EFA was carried out to find out the strategy variables underlying the items in the questionnaire, thus contributing to answer RQ1. Linguistic knowledge tests – a receptive VLT and a GJT – were used to answer RQ2 and examine how strategy use varied with linguistic knowledge. A sub-sample of students was selected, based on access and facilities provided by schools, to report their strategy use through a computer tracking programme (discussed in section 3.3.3.2.2) in order to complement the data obtained from the questionnaire, and the results of computer tracking contributed to answering RQ2, RQ3, and RQ4 quantitatively. To delve into the issue more qualitatively and answer RQ1 and RQ2 more adequately, lesson observations and stimulated recall interviews were conducted.

3.3.3 Research instruments development

Having justified the choice of methods for data collection, this sub-section will discuss the development of the research instruments with insights from the pilot studies.

3.3.3.1 Preparatory phase

In the preparatory phase, an open-ended questionnaire with follow-up individual interviews, and focus group interviews were conducted in order to elicit a relatively comprehensive list of different comprehension strategies used by learners in understanding the teacher in the ESL classroom.

3.3.3.1.1 Open-ended questionnaire

The original questionnaire (see Appendix C), written in both English and Chinese so that learners should not have problems understanding the questionnaire itself, consisted of 12 typical scenarios which students would encounter in an ordinary ESL classroom in HK. Two scenario examples were ‘the teacher is asking questions’ and ‘the teacher is explaining the English language’. These scenarios were chosen after consulting two ESL teachers who had taught for at least four years in mainstream secondary schools in HK, and who confirmed that these scenarios are typical in HK classrooms (and in their classrooms). Beside each scenario was some space for students to report what they normally did in their mind when engaged in such a scenario. It was anticipated that students would report their strategy use. In order to keep the responses as open-ended as possible so that all the strategies would come from students, no example was given. Such a design largely followed what Nakatani (2006) did in his initial stage.

However, results from pilot study 1 revealed that only a small group of participants could report ‘real’ strategies – i.e. goal-oriented mental actions specific to tasks according to Macaro’s (2006) theoretical framework. In pilot study 1, 114 students from two secondary schools were asked to complete the open-ended questionnaire. While some students reported a variety of specific mental actions such as ‘repeat what the teacher has just said in my mind’, ‘search in my mind whether I have learnt the word before’, and ‘identify the keywords in what the teacher has just said’, others described some superficial actions such as ‘try to understand’ and ‘listen and think’. Therefore, the questionnaire had to be revised, so that it could collect more valid strategy data from learners, and at the same time maintain a certain degree of open-endedness. Furthermore, with some scenarios such as ‘the teacher is asking if we follow what s/he said’, almost no specific mental actions which could be regarded as strategies were reported. Such a finding could be attributed to the fact that these scenarios consisted of a rather fixed set of expressions that the teacher could use and that they are usually rather easy to comprehend, warranting no strategy use to facilitate understanding (see Chapter 2 the literature review on how task difficulty is related to strategy use).

In light of the results of pilot study 1, two revised versions of the open-ended questionnaire (see Appendix C) with different levels of ‘scaffolding’ were developed, and they were piloted again in pilot study 2 with 58 students. The more ‘scaffolded’ version consisted of more examples of what was expected of students in completing the open-ended questionnaire. For instance, there were some examples of what to write and what not to write as strategies in understanding the teacher. It was revealed from this second pilot study that the more ‘scaffolded’ version bore a greater potential to elicit strategies. Moreover, students did not only copy the examples of the strategies given and they appeared to report strategies entirely by themselves, contributing to the construct validity of the questionnaire. To put it in another way, if students only copied the examples of the strategies, one might doubt whether they were really reporting their strategy use or simply fulfilling the requirements of completing the questionnaire using the examples provided. Consequently, the final open-ended questionnaire used in the preparatory phase contained more ‘scaffolding’ and examples (see Appendix C).

3.3.3.1.2 Follow-up individual interview

With the intention of trying to understand more clearly and more deeply what students wrote, some students were selected purposively to be interviewed individually. They were chosen because the strategies that they wrote were not sufficiently clear in meaning. For example, a student wrote ‘analyse the teacher’s talk’ as his strategy and it was not obvious how he did the analysis. In the follow-up interview, he explained that what he meant was to recall his knowledge on English grammar, break down the teacher’s talk into smaller segments according to the structures and grammar in English (such as the functions of the words: subject, verb, and object, or the parts of speech of the words: verb, noun, and adjective), and then link these segments up to help him understand. The follow-up interviews were useful in clarifying what the students meant when they reported their strategy use in the classroom. Such a step was of

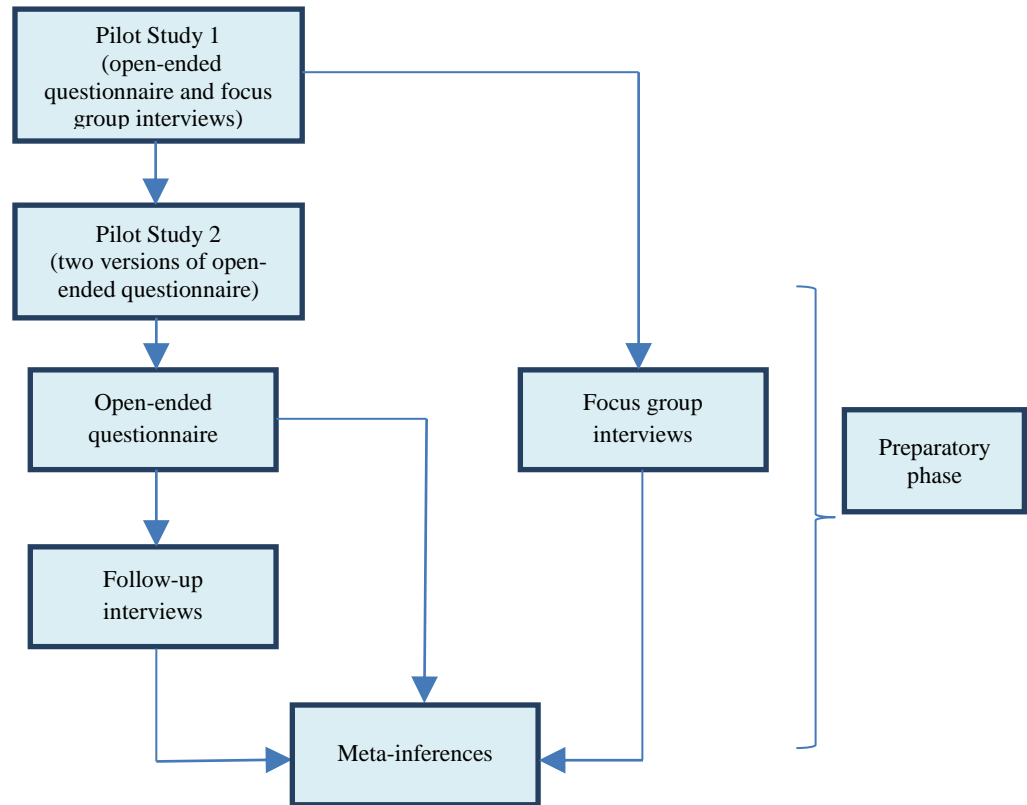
paramount importance when constructing the Likert-scale questionnaire, as will be depicted in section 3.3.3.2.1.

3.3.3.1.3 Focus group interview

Focus group interviews were also conducted in the preparatory phase to complement the data collected from the open-ended questionnaire. Learners in groups of 4 were interviewed in Cantonese as a means to elicit the comprehension strategies they would use in a more qualitative and in-depth way compared to the questionnaire. During the focus group interviews, students were presented with a scenario (similar to those in the open-ended questionnaire) written on little cards. Students took turns to read aloud the scenario and the other three students reported how they would react to that situation in their mind when understanding the teacher's language. The student who read aloud could also give comments. I did not interfere with their discussion unless they went off-topic. The focus group interviews were audio-taped.

Pilot study 1 showed that focus groups could indeed yield more in-depth data on strategy use. At times when the learners did not make clear their strategy use, I would have the opportunity to ask follow-up questions for them to clarify what they meant, without having to interpret what they meant by myself. Figure 4 sums up the research instrumentation in the preparatory phase and its related pilot studies.

Figure 4: Research instrumentation in preparatory phase and its preceding pilot studies



3.3.3.2 Main phase

In the main phase, research methods and instruments involved for strategy elicitation were a Likert-scale questionnaire, computer tracking programme, lesson observation, and stimulated recall protocol. Additionally, a C-test as a baseline test for general proficiency was conducted. In order to measure learners' LK, a receptive VLT and a GJT were also administered.

3.3.3.2.1 Strategy elicitation – Likert-scale questionnaire

The purpose of carrying out a Likert-scale questionnaire (see Appendix D for the questionnaire) was to answer RQ1 and RQ2 on what strategies are used by learners and whether learners of different linguistic knowledge differ in their strategy use in general. The questionnaire was constructed by summarising the strategy items reported by students through the open-ended questionnaire and individual as well as focus group interviews in the preparatory phase. There were several considerations in the construction and the design of the questionnaire.

First, when constructing the questionnaire, some opportunities for strategic behaviour (e.g. reviewing my notes, following what my classmates do, asking the teacher to repeat) were included. They might appear to be physical actions, but they also represent opportunities for strategic behaviour to occur. For instance, reviewing notes can give rise to the use of several strategies: attend to certain elements in the teacher's input selectively, make inferences, recall what was learnt in the previous lesson, and so forth. These items could be strategic to a certain extent, but they may not correspond to any specific mental actions, hence being termed as opportunities for strategic behaviour, as Briggs (2015) has named them.

It might be questioned why these opportunities for strategic behaviour were also included in the questionnaire, given that this research delved into strategies (mental actions). One justification for the inclusion of these opportunities for strategic behaviour is that they were frequently reported by students in the preparatory phase. In other words, they were what some students actually and usually said they did when trying to understand the teacher's talk, and therefore including them could provide a more comprehensive picture of the issue of how both mental actions as well as these opportunities for strategic behaviour played a role when learners were trying to understand the teacher in the classroom.

Theoretically, although these actions are rather general and could not be classified as strategies in my research, they are indeed what some researchers in the field of communication strategies (CSs) would regard as 'help-seeking strategies' (see, e.g. Nakatani, 2010, for a description). By including these actions in the questionnaire, my research can be better positioned and integrated into the field of research on LLSs in general. More importantly, they are strategy-related and could include a range of strategies under them, as depicted above. Hence, they bear indications of students' approach or what they usually do when engaged in the situations where they try to understand the teacher's input. In addition, it could be during times when students do not know what else to do in their mind that they perform these physical actions. Including these opportunities for strategic behaviour to occur makes the triangulation of

data collected through different instruments more comprehensive, which in turn allows us to understand more fully students' approach to listening comprehension when they are listening to the teacher in the classroom.

As a result of balancing both bottom-up grounded data from students and top-down theory-driven justification, these opportunities for strategic behaviour were included in the questionnaire.

Second, with the design of the questionnaire, the Likert-scale had to approximate an interval scale. Following Nakatani's (2006) development of the OCSI, the Likert-scale questionnaire was to undergo an EFA. Subsequently, items within each factor were to be averaged for comparison across learners of different LK. If the scale was not an interval scale with equidistance between the ratings assumed, averaging the ratings of the items would be methodologically flawed. In light of this, the questionnaire developed was modelled on Nakatani (2006) with a 5-point Likert-scale ranging from 1 (never or almost never true of me) to 5 (always or almost always true of me).

Moreover, similar to the open-ended questionnaire, it was essential to ensure that students found little or no difficulty in understanding the language of the items. With the help of a postgraduate student who specialised in translation between English and Chinese, the questionnaire was made bilingual (English and Chinese) and in a way that both languages expressed similar meanings.

Not only was it important to understand the language of the questionnaire, but it was also crucial to make sense of the content expressed by the strategy items. There was thus the issue of sharing common ground in understanding the strategy items between me as the researcher and Secondary 3 students as participants, lest I would misunderstand what they meant by their self-report of strategies through questionnaire. There could potentially be two gaps in understanding – (1) that of how I took students' self-report of their use of strategies in the open-ended questionnaire in the preparatory phase when constructing the Likert-scale questionnaire,

and (2) that of how students in the main phase understood my Likert-scale questionnaire items. The first gap was bridged to some extent by the aforementioned post-open-ended-questionnaire interview specified in section 3.3.3.1.2. It is also worthy to point out that inter-rater agreement was sought for 10% of the questionnaire in terms of extracting the strategies from the open-ended questionnaire. Inter-rater reliability was calculated as 91%, and the 9% discrepancies in coding were discussed among the raters, leaving no unresolved disagreements in the end.

As for the second gap of how students understood the questionnaire items, pilot study 3 was administered, involving interviews with four students. They were asked to read the Likert-scale questionnaire items and expand on the items – telling me how they understood them in their own words. Items which students found overlapping were merged into one item. For example, in the original Likert-scale questionnaire, the items ‘search in mind all knowledge about English grammar’ and ‘recall all knowledge about English grammar’ were considered the same by the interviewed students. As a result, one of the items was deleted. Moreover, for items that were misunderstood by the students, meaning that what they said in this interview in pilot study 3 was different from what was expressed by the students in the preparatory phase of my research through open-ended questionnaire and interviews, I modified the wordings. One example was the original wording of the item: ‘I recall recent events happening around’. All four students understood it as things going on around them at the time of the lesson, such as what their classmates were doing. In the preparatory phase, however, the students reported the strategy of recalling recent events happening in the world to help them understand the teacher. Therefore, the revised item was worded as ‘I recall recent events happening around the world’ to express this strategy of recalling world knowledge in a better way. Table 9 summarises all the steps taken to construct the Likert-scale questionnaire. Although the sample sizes will be discussed in section 3.4, they are included in the table to offer a fuller picture of the processes undertaken.

Table 9: Steps undertaken in developing the Likert-scale questionnaire

Step	Period	Action taken	Sample size
1 (Pilot study 1)	March – April 2013	Open-ended questionnaire and focus group interviews trialled and revised	114
2 (Pilot study 2)	September – October 2013	Two more versions of open-ended questionnaire trialled and revised	58
3 (Preparatory phase)	October – November 2013	Open-ended questionnaire	100
		Follow-up interviews administered to make sure I understood what students wanted to express when they wrote their strategies	10
		Focus group interviews to complement the open-ended questionnaire in strategy elicitation	12 (3 groups of 4)
4 (Analysis)	December 2013 – January 2014	Developed a Likert-scale questionnaire from the responses collected in Steps 1-3	
5 (Analysis)	December 2013 – January 2014	Obtained inter-rater agreement on extraction of strategies from questionnaire and translation of items	
6 (Pilot study 3)	January 2014	Likert-scale questionnaire and interviews – asking how students understood the items	4
7 (Analysis)	January – February 2014	Compared the results between data from Step 6 and Steps 1-3, and subsequently revised the Likert-scale questionnaire	
8 (Main phase)	March – May 2014	Administered Likert-scale questionnaire	867

3.3.3.2.2 Strategy elicitation – Computer tracking programme

The idea of administering the computer tracking programme was to simulate a classroom situation whereby learners could report their strategy use relatively concurrently, without intervening too much with their thought processes. The computer tracking programme has the potential of collecting data in large quantity with a non-threatening nature, because learners are not in direct contact with the researcher when they are using the programme. The programme contained a 10-minute carefully crafted video of an English language lesson, with different types of input which were of varying difficulty (see Appendix E for a selection of examples of these different types of input and Appendix F for the lesson transcript), in order to answer RQ2,

RQ3 and RQ4 partly. The lesson was modelled on an authentic lesson designed by a secondary school teacher, with a view to incorporating a topic which is up-to-date and which is likely to be taught in a real classroom, so that students should find it easy to position themselves in the virtual classroom. This intention proved to work well in pilot study 5, in which 4 students took part in the computer programme and were subsequently interviewed. They suggested that the video resembled an authentic English lesson and that it was close to what they had received at school. They also found it easy to position themselves as students in the lesson.

Task types

Also related to the video was the decision to incorporate different task types with varying levels of difficulty. As aforementioned, a task is defined in this study as the teacher's input which students listened to in the classroom, and so different task types would refer to different types of input from the teacher. It is worth pointing out that these different types of input are also related to different language usage functions (see Chapter 2.3 for the literature on the taxonomy of classroom interaction). Examples of these different task types serving different functions are INFORM – providing information or explaining language – and ELICIT – asking questions. The target task types were selected based on three main criteria:

- (1) that they are typical and common in a HK ESL classroom (e.g. teacher ANSWERING QUESTIONS is not common because HK ESL learners rarely ask questions),
- (2) that they can exist as more prolonged utterances to necessitate the possibility of strategy use (e.g. ACCEPT and DECLINE could be as simple as 'yes' and 'no' respectively, and thus not being selected), and
- (3) that there is a mix of task types of different nature, in terms of requirement of response and whether it is a teacher-initiate or teacher-respond utterance.

Given these criteria, the following target task types were selected: ELICIT (asking questions), INFORM (giving an explanation), DIRECT (giving instruction), READ ALOUD (such as reading aloud a passage that the student could not see), SHARING (such as giving personal opinions on some issues), DICTATION (the teacher speaking aloud while learners write down what s/he says), COMMENT (giving comments to an answer provided by students), and CLUE (giving clues to direct learners to modify an answer) (see, again, Appendix E for a selection of examples of these target task types).

Task difficulty

With regard to task difficulty, the classification of tasks as easy and difficult was based on two major criteria – the difficulty of the language and results from the interviews in pilot study 5. With regard to the language, easy tasks consist of simple vocabulary and grammar, with the former based on the vocabulary frequency lists compiled by Nation (2012). An easy task includes vocabulary up to the most frequent 2000 words, whereas a difficult task includes words up to the frequency level of 5000. Nation's (2012) list was used so that the results can be compared to the VLT test scores (including levels of up to the most frequent 5000 words). However, I am well aware that the frequency of occurrence of words does not equate to the difficulty of vocabulary, but less frequent words are arguably more likely to be unfamiliar to students, and hence could indicate a higher level of difficulty. Moreover, the relative ease and difficulty was corroborated through the interviews conducted in pilot study 5, when learners were asked to rate the difficulty of the various tasks (i.e. different utterances in the teacher's input) in the video.

One final point to note about the video of the lesson is that, given that it is created to resemble as closely to an authentic classroom as possible, the number of different task types of varying levels of difficulty is not the same. It would have been unnatural if there were as many SHARING and DICTATION as ELICIT and INFORM which are more prevalent in a typical classroom

in HK. In the final video, the number of task types of varying levels of difficulty is presented in Table 10.

Table 10: Number of different tasks in the computer programme

Task type (I) = Teacher-initiate; (R) = Teacher-respond	Difficulty	Number of occurrence
(I) ELICIT	Easy	4
	Difficult	5
(I) INFORM	Easy	4
	Difficult	4
(I) DIRECT	Easy	6
	Difficult	2
(I) READ ALOUD*	Easy	2
	Difficult	2
(I) SHARING	Easy	3
	Difficult	3
(I) DICTATION	Easy	2
	Difficult	2
(R) COMMENT	Easy	2
	Difficult	2
(R) CLUE	Easy	2
	Difficult	2
Total	Easy	25
	Difficult	22

*Note: READ ALOUD can be further classified into: ‘teacher reads aloud, students repeat’, or ‘teacher reads aloud, students listen’; but here I am focusing on the latter type of READ ALOUD because the former is often not an extended utterance.

Along the right hand side of the video were some buttons, on which different comprehension strategies were shown (see Figure 5 for a screen cap of the programme). Students could click on the buttons to indicate their strategy use anytime and their actions were recorded automatically by the programme. The strategies were taken and developed from the comprehension strategies Vandergrift (2003) used in uni-directional listening, except for the ‘doing nothing’ button which was included given the results from pilot study 1. In that pilot study, some students, after taking part in the computer programme, mentioned that they did not often click the buttons because they did nothing special in the process. They could understand

everything very easily and immediately in some instances. In order to differentiate the students who intended not to report any mental efforts in understanding the teacher in the video and those who were simply off-task, the button of ‘doing nothing’ was incorporated.

Figure 5: Computer tracking programme layout



One other issue related to the programme was when to allow learners to report their strategy use. The original computer programme had the video run non-stop unless students paused the video to buy time to report their strategy use. With such a design, students could pause the video and indicate their strategy use anytime they felt they were using some mental actions in understanding the teacher. This design can also receive some support from Santos et al.’s (2008) suggestion that allowing learners to pause the recording can enhance the validity of the self-reports, although they were more concerned with verbal reports and listening to the tape (i.e. without any accompanying videos and not in the context of listening to the teacher in the classroom). However, insights from J. Field’s (2008b) gating paradigm would suggest that learners are constantly formulating hypothesis in their mind while listening. During this process, some strategies might be used to facilitate their understanding. Furthermore, pilot study 1 indicated that not many students paused the video before clicking the buttons, making it unclear what target content they were trying to understand when they used those strategies. For instance,

when a student clicked a strategy item straight after the teacher said ‘okay’, did it mean that the student was trying to use the strategy to understand the teacher’s language ‘okay’? Such an interpretation would seem unreasonable; however, the exact utterances that corresponded to the strategy use remained unknown. Moreover, while some students participating in pilot study 1 appeared to be able to report some strategies as the virtual lesson was going on, others did not often report what they did through clicking the buttons. Two extreme cases had participants reporting only one strategy throughout the 10-minute video. Therefore, auto-pauses were incorporated into the computer programme with the purpose of (1) differentiating whether learners were ‘doing nothing’ or simply off-task; and (2) making it more ecologically valid because the strategies that students reported would be more likely to be targeted to the specific types of teacher input that were of interest in the present study.

When deciding on the frequency of auto-pauses, pilot study 5 was conducted using two versions – one with auto-pauses at a fixed 20-second time interval, and the other after a block of teacher’s talk featuring a certain target task type. In the pilot study, all students mentioned that the auto-pauses of the latter version were of appropriate intervals because most of them did not appear in the middle of a word or an utterance. Such a comment suggested that auto-pauses would be most appropriate, from the students’ point of view, if they happened at the end of an utterance (i.e. not ending in the middle of an utterance or even between syllables). Together with the aforementioned point that ecological validity could be achieved through having pauses targeting to specific task types, the second version with auto-pausing after the target task types was selected.

3.3.3.2.3 Strategy elicitation – Lesson observation and stimulated recall protocol

Lesson observation was conducted in order to gain a better understanding of the classroom before carrying out the stimulated recall protocol. In pilot study 1, it was found to be useful in identifying the teacher’s style in terms of the interaction patterns (such as the proportion of

teacher talk to student talk), the types of interaction initiated by the teacher (such as teacher's INFORM, DIRECT, or ELICIT), and the language focus of the lesson. It was also important to note down interesting episodes of teacher-student interaction. Therefore, after the pilot study, a simple lesson observation form (see Appendix G) was developed to help me jot notes for use in the stimulated recall interview, which was often scheduled soon after the lesson on the same day or the next day.

Stimulated recall protocol was adopted in the present research as a qualitative measure to answer RQ1 and RQ2 (originally also for RQ3 and RQ4 but the data turned out not to be useful in so doing). It tapped into learners' minds and elicited the comprehension strategies they used during the lesson, by showing them the video of the observed lesson as the prompt.

Considerations on how to administer the interviews were made largely following the suggestions by Ericsson and Simon (1980), Gass and Mackey (2000), and Santos et al. (2008). First, the time lapse between the lesson and the interview was kept to be rather short – within the same day or the next, so that students had fresh memory on the lesson and were in a good position of accessing the information kept in short-term memory and remembering what they did during the lesson. Secondly, learners were given the control of the video in terms of when to pause it for verbalisation. Similar to Santos et al. (2008), I only made interruptions and asked some general questions such as 'what were you thinking at that time' unless the students did not pause the recording for a prolonged period of time. During the stimulated recall interviews, I also tried to limit my responses to backchannelling, except during some occasions when learners were not reporting their strategy use that I asked some general questions to elicit whether they were using any mental actions back then. If students reported their not remembering what they did, I would stop and would not probe any further. Finally, the interviews were conducted in Cantonese, the students' native language, to allow them to express their thoughts more comfortably and easily without any additional language barriers.

3.3.3.2.4 Baseline test – C-test

A C-test was used as a baseline test for general English proficiency to identify general variability in the sample. It has been found that C-test is a test for general language proficiency with high validity and reliability (Dörnyei & Katona, 1992; Grotjahn, 2010; Klein-Braley, 1997; Klein-Braley & Raatz, 1984; Ward, 1989; Zhang, 1989). It was formed by mutilating the second half of every other word, beginning from the second word of the second sentence in a passage. Words with only one letter, compounds, names, numbers, and those which have been previously deleted were skipped. Further, it was claimed by Klein-Braley and Raatz (1984) that there should be at least 100 items located in several different short texts in order for a C-test to be a valid measure for general language proficiency.

In the beginning, two versions of C-tests, conforming to all the above-mentioned criteria, were developed. Each of the two versions consisted of four authentic English texts, taken respectively from the reading test of the Primary 6 and Secondary 3 2012 Territory-wide System Assessment (TSA), a standardised test developed by the Hong Kong Examinations and Assessment Authority (HKEAA). The TSA is administered to Primary 6 and Secondary 3 students in HK every year. Initially, only the Secondary 3 version was developed because it was considered that the reading texts should be at appropriate levels for the participants in this study. However, given that turning a reading text to a C-test would arguably increase the difficulty of the task due to the different task demands of a reading exercise as opposed to a C-test, the Primary 6 version was also constructed. It is also worthwhile to note that in using the materials, I had sought advice from government officials in the HKEAA to confirm that I could use their past question papers, including the 2012 one, published on the Internet. Moreover, the choice of the 2012 version was based on the fact that the Secondary 3 participants in my study would not have undergone the TSA examination using the same set of reading texts before. When they did the Primary 6 TSA, it was 2011; and nobody would be required to re-take the TSA examination unless they repeated Primary 6 the year after. However, they would not have been in Secondary 3 in 2013-2014, the academic year of data collection, if that was the case.

Three native speakers were invited to try out the two versions of the test and their contribution was important for at least two reasons. First, as Klein-Braley (1997) maintains, native speakers should normally give perfect scores or at least 90% correct on the test. If the test did not conform to this criterion, other texts should be selected. It was found that the native speakers scored almost perfectly in the test and so the test was not problematic in this sense. Secondly, the idea of having native speakers take the test was to come up with a list of possible answers for all the gaps, given that in some cases, there could be more than one possible solution.

Subsequently, the C-tests were piloted with three learners of the same population. It was revealed that in two of the texts of the Secondary 3 version, a floor effect was observed with the students being barely able to fill in two to three gaps out of twenty gaps; in one of the Primary 6 text, students achieved ceiling effect and obtained full marks. While ceiling and floor effects in baseline tests may not be as problematic as tests for differentiation (such as LK tests) depending on how the baseline is set, they are best to be avoided, lest the test was considered too easy or too difficult for learners. With such a view, the C-test was revised to include two Secondary 3 and three Primary 6 texts. The five texts incorporated 100 gaps conforming to all the criteria mentioned earlier. The revised C-test can be found in Appendix H.

3.3.3.2.5 Tests for linguistic knowledge

Linguistic knowledge was an independent variable in this study and two tests were used – a receptive VLT and a GJT – to measure vocabulary and grammatical knowledge. From the outset, it is important to explain why LK is operationalised as vocabulary and grammar only. For example, Andringa, Olsthoorn, van Beuningen, Schoonen, and Hulstijn (2012) investigated the effect of LK on the success of listening comprehension. They did not only consider learners' vocabulary and grammatical knowledge, but also some form of phonological awareness measured by a segmentation task (i.e. segmenting words from a speech stream). In my study,

however, phonological awareness was not measured because of both practical and methodological reasons. First, it was practically difficult to administer an additional test other than vocabulary and grammar. Students in the main phase were asked to complete a questionnaire, a C-test, a VLT, and a GJT, which would already take much time. If students were to complete more tests such as one on phonological awareness, schools might have more reservations about allowing this study to be conducted. Therefore, as an exploratory research, I have followed the suggestion by Macaro et al. (2007) that researchers trying to control for learners' LK should at least measure vocabulary and grammar. Such a way of measuring LK using a vocabulary and a grammatical test was also echoed by Graham et al. (2010), as discussed above in section 2.2.2.1.

Moreover, there are also methodological considerations. Measuring phonological awareness at a receptive level often requires a listening task, such as the segmentation task used by Andringa et al. (2012). When engaged in a listening task, learners might use strategies to help them decode the utterances. If a phonological awareness test which involved listening was used to classify learners in terms of their LK, there could be a problem of having the independent variable including the dependent variable of strategy use (see also section 2.2.2.1 for a similar justification but on the importance of controlling for LK instead of listening proficiency in strategy research). Therefore, while it was acceptable for Andringa et al. (2012) to measure phonological awareness as part of students' LK to determine the success of listening, it would be methodologically flawed if I included a test measuring phonological awareness in the listening modality to determine its effect on strategy use.

Taken together, given both practical and methodological considerations, this study only tested students' vocabulary and grammar as measures for LK. Having justified the operationalisation of LK as vocabulary and grammar, the selection of vocabulary and grammatical tests is also worth explaining. A receptive vocabulary test (see Appendix I) was employed because of its relevance to the context of listening to the teacher in classroom. First of

all, vocabulary knowledge is particularly important in listening. Nation (2006) maintains that coverage of 98% of vocabulary items in a listening text was required for unassisted comprehension. When learners do not have sufficient vocabulary knowledge, and hence it is considered a difficult task to them, they may be required to draw out more from their strategic behaviour to bridge the gap of understanding, as discussed in section 2.1.1. Second, it was receptive, as opposed to productive, vocabulary that was more closely related to listening to the teacher in classroom. Taken together, receptive vocabulary knowledge appeared to be an important variable in learners' strategy use in the present context.

This study adopted the Vocabulary Levels Test (VLT) developed by Nation (1990), with the words chosen from the word lists compiled by Nation (2012). The bilingual version with Chinese explanation was used such that students were tested on their receptive vocabulary knowledge, as opposed to understanding the explanation of the vocabulary in English. In other words, the given explanation of the vocabulary items would not induce an additional variable to the test. J.J. Li (2008) also proposed that the bilingual version of VLT was more valid than the monolingual one in terms of testing vocabulary knowledge, based on the fact that some students reported 'I know the meaning but in Chinese' (p.76) when working on the VLT.

Another reason for using the VLT but not other receptive vocabulary tests, was due to the use of the same word lists by Nation (2012) in determining task difficulty in the computer programme. In other words, the vocabulary knowledge measured by the VLT would match the task difficulty measurement in the computer programme. Moreover, other vocabulary tests such as the X Lex (Meara, 2005), which only require learners to answer yes or no in recognising the words, would not be appropriate because if we argue that strategies are conscious mental actions, both recognising and retrieving the meaning of vocabulary are important in the deployment of strategies.

Thoughts were also put on the modality of the vocabulary tests – whether to administer it in visual or aural modality. There were very few vocabulary tests which were designed in the aural

modality and the one which was more commonly known was the Aural Lex (Milton & Hopkins, 2005). V.A. Murphy and Castillo (2013) found that the Aural Lex was a better predictor of listening performance than the visual X Lex. In the context of this research which deals with listening, then, it might seem more logical to administer a vocabulary test in the aural modality. Yet, an Aural Lex which only involves recognition of vocabulary is not sufficient for the present study on listening strategies, as mentioned above. An alternative would be an aural version of VLT; however, such a test was not yet designed during the time of data collection, and McLean, Kramer, and Beglar (2015) have only started to create and validate a listening VLT in Japanese. Without better options, I decided to use the VLT in visual modality for the present study, although I would like to concede that further research should attempt to create and validate a listening VLT in Chinese, and subsequently use it to measure vocabulary knowledge when investigating listening strategies in the HK context.

Based on these reasons, the VLT was chosen as a research instrument. The original version of the VLT used in this study ranged from 1000 to 3000 level on the general service list, with 30 items in each level. The reason for using the higher frequency words and only testing up to the 3000 level could gain some support from Lo and V.A. Murphy (2010), who found that HK Secondary 3 learners in mainstream schools only scored a mean of 9.83 and 9.23 out of 18 in the 2000 and 3000 frequency level respectively. L. Li and MacGregor (2010) also found that university students in HK could only master up to the 3000 word level. One could not, therefore, expect a Secondary 3 learner to achieve more than the 3000 level.

In pilot study 4, however, a ceiling effect was observed with one of the three students – in that he only made one mistake at the 3000 level and scored full marks in the other two. In order to make the test a better indicator of students' varied LK, the VLT for use in this study was modified and included the 5000 and academic levels as well. The academic level was also added because teachers sometimes dealt with some academic vocabulary in Secondary 3 classes, as shown from one of the lesson observations in pilot study 1 that the teacher was teaching

argumentative essays along with some academic vocabulary in presenting an argument. Besides, even though the other two students in this pilot study almost achieved full marks at level 1000 (29 marks out of 30), this level was kept to avoid floor effect with students of weaker linguistic knowledge. The final VLT used in the main phase of my study, therefore, consisted of 5 levels – 1000, 2000, 3000, 5000, and academic level, each of which consisted of 30 items and amounted to a total of 150 items.

The second test was a GJT with error identification (see Appendix J), which was used to control for learners' morphosyntactic knowledge in English. The GJT is not without controversy, particularly in terms of reliability (see e.g., Birdsong, 1989; Ellis, 1991). Ellis (1991), for instance, found that re-testing the same learner with the same set of sentences could yield different results. However, most of the criticisms were only really relevant to the most basic type of GJT which only requires learners to rate sentences as correct or incorrect, without asking them to locate or correct the errors. This basic type of GJT was problematic particularly given Ellis's (2005) findings that within an untimed GJT, some sentences appeared to measure implicit knowledge and others explicit knowledge. In the context of the present study, adhering to the argument that the use of strategies is conscious, explicit knowledge might be more relevant because it was the knowledge that learners could draw on and process while using cognitive strategies to facilitate understanding. According to Ellis (1991), tasks that involve the location and correction of errors are likely to be testing explicit knowledge. However, it was considered inappropriate if learners had to also correct the errors – which would involve a productive dimension – because of the research context of listening which aimed to test morphosyntactic knowledge on a receptive level. Therefore, a GJT which only required learners to locate the errors was administered.

Another issue, similar to the discussion on the choice of VLT above, is the modality of GJT. V.A. Murphy (1997), for instance, found that an aural GJT exerted different task demands when compared to a visual GJT. Nonetheless, apart from the problem that an aural GJT would not

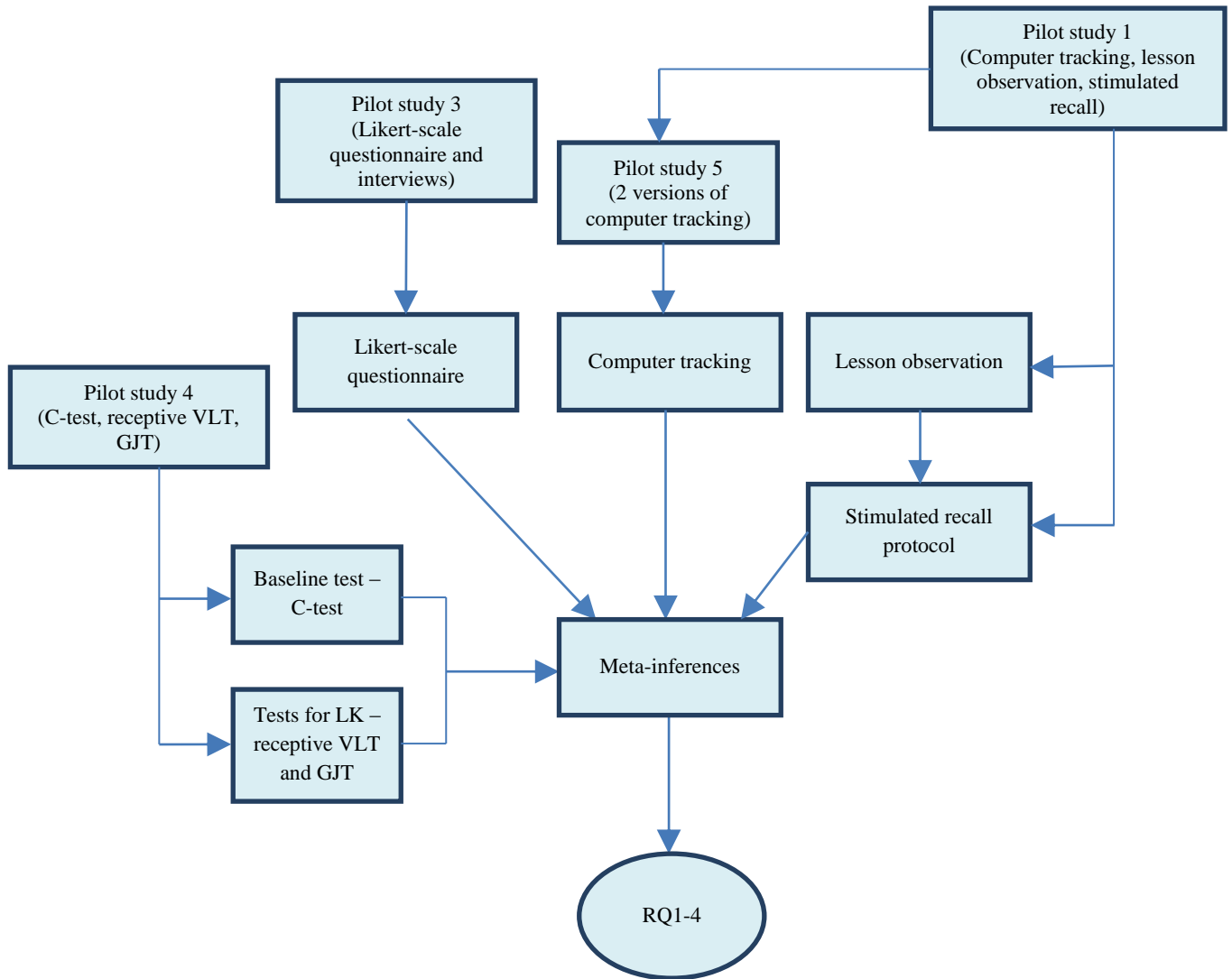
require learners to identify the error and hence not likely to be measuring explicit knowledge, an aural GJT has an additional constraint of how many words can be presented aurally in a sentence in order for learners to judge its grammaticality. Given that the target morphosyntactic knowledge was based on the Secondary 3 curriculum in Hong Kong (mentioned below), it involved some more complex structures, such as conditionals and relative clauses, which would be difficult to test within a short sentence. Taken together, it was considered justifiable to use a visually presented GJT which involved error location as a measure of grammatical knowledge in this study.

The GJT consisted of 30 items, with a variety of grammatical structures and tense-aspects – conditionals, relative clauses, passives, auxiliary verbs, the present perfect, the past simple and the present simple. Such selection was based on the curriculum set out by the Hong Kong Education Department (1999) in describing what learners should master in junior secondary (i.e. before the end of Secondary 3). There was an even split of grammatical and ungrammatical sentences to eliminate guessing.

With the aim to validate the GJT so that it did not contain any unintended errors and that every ungrammatical sentence contained only one error – the one related to the morphosyntactic knowledge which I intended to test, three native speakers were invited to complete the test by locating as well as correcting the errors. The native speakers were further asked if they found the sentences odd in order to circumvent semantic anomaly as an additional variable (see, for example, Bialystok, 1986, 1988, and Cromdal, 1999 for empirical studies exploring the effect of sentences with anomalous meaning used in GJT). Having confirmed that the sentences in the GJT bore construct validity and were testing the morphosyntactic knowledge they were supposed to test, the three students in pilot study 4 were asked to complete the GJT. The results of the three students scoring 17, 20, and 21 marks out of 30 appeared to indicate that it could be used as a test for differentiating students with stronger and weaker grammatical knowledge.

Without further revision, the GJT was used in the main phase of the study. Figure 6 summarises the instrumentation used in the main phase and its related pilot studies.

Figure 6: Research instrumentation in the main phase and its related pilot studies



3.3.4 Summary of methods for data collection

Following a review of the pros and cons of the most common strategy elicitation methods, as well as the discussion of Nakatani (2006) which provided important insights on how to delve into strategy use by learners in a novel context, a range of methods was selected for the present study. In the preparatory phase, an open-ended questionnaire with follow-up interviews, and

focus group shed light on what listening strategies were used by learners in the context of understanding the teacher's input in the classroom. Summarising all the responses gave rise to the Likert-scale questionnaire used in the main phase, which was accompanied by a C-test as a baseline test, as well as a receptive VLT and a GJT as tests for LK. Strategy use was also elicited through a computer tracking programme, and stimulated recall protocol following lesson observations.

3.4 Data collection procedure

This section presents the research procedure for the preparatory and the main phase, as well as the sample size for each of these phases. A series of pilot studies also took place, as mentioned in section 3.3.3 on the many processes involved in fine-tuning the research instruments. A diagram showing the comprehensive data collection procedure can be found at the end of this section.

3.4.1 Preparatory phase

Adopting purposive sampling, two schools took part in the preparatory phase in October and November 2013. Two classes of Secondary 3 students from each school participated in the study (n=100). All students were asked to complete the open-ended questionnaire, which lasted for 30 minutes of one lesson for each class, on their strategy use in understanding the teacher's input. Follow-up interviews were conducted with 10 students after class. These 10 students were selected purposively because what they wrote on the open-ended questionnaire was not sufficiently clear, and hence a follow-up interview allowed them to clarify their strategy use. Additionally, 12 other students were randomly selected to take part in focus group interviews in groups of 4 after school hours. They reported their comprehension strategy use when listening to the teacher in the ESL classroom.

3.4.2 Main phase

Secondary 3 students (n=867) in eight schools took part in this phase. All participants used 30 minutes to complete the Likert-scale questionnaire in class. When I went into the classroom to administer the questionnaire, students were reminded that the context of interest was the ESL classroom, which was arguably different from an EMI classroom where the focus would be heavier on the content subject and less on the language. With the help of the class teachers, I emphasised the importance of the questionnaire and requested students to take the study as seriously as possible. Such a request was crucial given the nature of the Likert-scale questionnaire – the format of which was very straightforward with a rating of 1 to 5, and students could easily mess up the data if not taking it seriously. However, I also mentioned that there was no right or wrong answer and that students should respond as accurately as possible to the questionnaire based on what they actually do in understanding the teacher.

Two of the eight schools only allowed time for the Likert-scale questionnaire; therefore, only Secondary 3 students (n=646) of six schools completed the C-test, the receptive VLT, and the GJT. The entire test batteries took 40 minutes of class time. Since the instructions given on the task sheets were self-explanatory, no additional oral instruction was given apart from my asking students to work on their own quietly without using a dictionary.

With two of the eight schools providing the necessary equipment (computers and headphones), computer tracking was carried out with the students in these two schools (n=59). Students were provided with an information sheet containing explanation of each of the strategies included in the programme. After verbally explaining the strategies one by one, a demonstration of the computer tracking programme with a teaching video distinctive from the one to be viewed by students was shown on a big screen in the classroom. Students were told that the video contained auto-pauses and they could pause by themselves or unfreeze the screen by pressing 'p' on the keyboard. Having understood what to do, students started the programme on their own and indicated their strategy use by clicking the buttons while watching the 10-

minute video. The computer tracking programme took 30 minutes to finish, inclusive of the instruction given and demonstration shown.

In two of the eight schools, with the approval of their principals, teachers, students and parents, lesson observation and videotaping, and stimulated recall protocol were carried out. Each school had two classes of students participating and with each of these classes, 4 students were randomly chosen and invited, and agreed to take part in a stimulated recall interview after school hours. Therefore, a total of 16 interviews were conducted. In the beginning of every stimulated recall, I gave students the instruction that I would like them to recall the lesson and report what they were doing in their mind in order to understand the teacher. I asked them to pause the video whenever they had some mental actions going on; but if I noticed that they did not pause the video for some time, I would do it myself. Such a way of administering the stimulated recall followed the guidelines of Santos et al. (2008) in that students had the control of when to pause (as mentioned in more detail above in section 3.3.3.2.3). In pilot study 1, it was found that quite a number of learners consistently reported their emotions – for instance, fear of being chosen to answer a question and how they dealt with it. However, this study focused mainly on cognitive and metacognitive strategies instead of affective ones. Therefore, in the instruction I gave, I made it clear that students should not tell me about their emotions, but how they were trying to understand the teacher’s input in their mind. Table 11 provides the entire picture of the research design and procedure.

Table 11: Summary of research design and procedure, and their purposes

Phase	Period	Method and research instrument	Sample size	Purpose and action taken
Pilot study 1	March – April 2013	Open-ended questionnaire, focus group, computer tracking, lesson observation, stimulated recall protocol	114 students in two schools	- To fine-tune all the research methods and instruments. - After the study, the open-ended questionnaire and the computer tracking programme were revised. The lesson observation form was developed, and the skills for stimulated recall refined.
Pilot study 2	September – October 2013	Open-ended questionnaire (2 versions)	58 students in one school	- To find out which of the two versions of the open-ended questionnaire was better - After the study, the more 'scaffolded' version was selected.
Preparatory phase	October – November 2013	Open-ended questionnaire	100 students in two schools	- Part of the methodology, used to explore the strategy use by students in classroom context and develop Likert-scale questionnaire
		Follow-up interview	10 students	
		Focus group	12 students	
Pilot study 3	January 2014	Likert-scale questionnaire and interview	4 students	- To find out whether students understood the items as I intended to question when constructing the questionnaire - After the study, changes were made to the questionnaire
Pilot study 4	February – March 2014	C-test, vocabulary test, GJT	3 students	- To find out if there were problems associated with the tests, including the possibility of ceiling and floor effects - After the study, two more levels were added to the vocabulary test, and the C-test was modified
Pilot study 5	April 2014	Computer tracking and interview	4 students	- To trial two versions of the computer programme and elicited students' responses in using the programme - After the study, the computer programme was revised and the version with auto-pauses after target task types was selected
Main phase	March – May 2014	Likert-scale questionnaire	867 students in eight schools	Answer RQ1 and RQ2
		Computer tracking	59 students in two of the eight schools	Answer RQ2-4
		Stimulated recall protocol	16 students, in two of the eight schools	Answer RQ1-4
		C-test	646 students in six of the eight schools	Measure of general linguistic proficiency as a baseline test
		Vocabulary test		Measure of linguistic knowledge, corresponding to RQ2
		GJT		

3.5 Ethical considerations

This study has undergone the process of ethical clearance and was approved by the Central University Research Ethics Committee (CUREC) of the University of Oxford (see Appendix K). All students took part in the study voluntarily and they were presented with an information sheet with contact information (see Appendix L) to bring home and discuss with their parents. There was also an opt-in consent form (see Appendix M) distributed to and signed by parents to indicate their understanding on who would have access to the data of the project as well as their freedom in withdrawing from the study at any time.

In this study, the major concern with research ethics was perhaps the confidentiality of the participants, particularly given that I was videotaping some of the students in a lesson and audiotaping them in interviews. Confidentiality was preserved by assigning participants with a code and no individuals were identifiable at any stage of the research. All the data were stored in an encrypted external hard drive and only my supervisor and I had access to the original data. In the case of the need to report findings from individual interviews, pseudonyms were created. This was the case when reporting the data from the stimulated recall interviews. All these measures of protecting students' identity were also made known to all the stakeholders involved, i.e. the principal, teachers, parents and students.

Chapter 4 Findings (Likert-scale questionnaire)

This findings chapter reports results from the Likert-scale questionnaire. The questionnaire contributes to answering the following research questions:

RQ1 What comprehension strategies do Secondary 3 students use when listening to the teacher's input in the ESL classroom?

RQ2 How do students with different linguistic knowledge differ in the strategies used?

This chapter is organised in the following way. First, students' rating in the Likert-scale questionnaire is taken as a whole in section 4.1 to examine the strategies that students in general favoured using in contrast with those which were less preferred. Then in section 4.2, results from an EFA of the questionnaire are reported, identifying the different strategy variables underlying the questionnaire. A tentative answer to RQ1 is provided at the end of this sub-section. In order to answer RQ2, section 4.3 first describes the way students were categorised in two groups with differing LK based on the results from the language tests, followed by an account of how the two groups of students differed in their reported strategy use as measured by the questionnaire. Subsequently in section 4.4, a cluster analysis was performed on both the low LK group and the high LK group as an attempt to identify clusters of less strategic and highly strategic learners – rendering four groups in total: low LK less strategic (LLK/LS), low LK highly strategic (LLK/HS), high LK less strategic (HLK/LS), and high LK highly strategic (HLK/HS). These four groups are then compared against each other to explore their differences in reported strategy use. Such an analysis was motivated by Macaro et al.'s (2007) call for exploring the relationship between LK and strategic behaviour more carefully by finding out whether students of comparable LK still differ in their strategy use. Finally, this chapter ends with a summary of what the questionnaire informs us in answering, in part, RQ1 and RQ2.

4.1 Likert-scale questionnaire – general findings

The Likert-scale questionnaire was developed to provide a general picture of how students arrived at an understanding through performing mental actions and taking opportunities for strategic behaviour to occur, when they were listening to the teacher’s talk in the ESL classroom. Students’ rating for each item was inputted into Statistical Package for the Social Sciences (SPSS) 22.0 to obtain descriptive statistics. All the 82 items indicated a fairly normal distribution with skewness and kurtosis less than 1.0. Table 12 shows the five items which gave the highest means, meaning that they were reported as most likely to be adopted by students in understanding the teacher in the classroom.

Table 12: Five most adopted items of strategies and opportunities for strategic behaviour

Questionnaire items		N	Mean	S.D.
Q16	I identify the overarching meaning of the teacher’s talk.	867	3.88	.863
Q17	I integrate everything I understand within the teacher’s talk.	866	3.83	.922
Q52	I focus attention on the words emphasised by the teacher.	867	3.68	1.058
Q25	I ask my classmates what the teacher means.	867	3.62	1.156
Q56	I observe what my classmates do to help me understand the present teacher’s talk.	867	3.61	1.073

Many students tried to summarise what the teacher said and find out the overarching meaning expressed by the teacher (Q16), and many also attempted to integrate everything they understood within the teacher’s talk (Q17). Students in general preferred focussing their attention on the words emphasised by the teacher (Q52). In addition, seeking help from classmates through a verbal request for information (Q25) and / or through students’ own observation of what their classmates were doing (Q56) were also common.

While students very often tried to solicit help from their classmates, they tended not to seek help from the teacher by asking for repetition (Q48) or further explanation (Q29). Students did not often write down what the teacher said (Q59) to facilitate their understanding. Furthermore, it was not

typical for students to anticipate the vocabulary which might come up in the current lesson (Q12), and neither was it common to use some kind of mental image to represent the learning which took place in the previous lesson (Q41). Table 13 shows the descriptive statistics of these five least used items as reported by students.

Table 13: Five least used items of strategies and opportunities for strategic behaviour

Questionnaire items		N	Mean	S.D.
Q59	I write down what the teacher said.	866	2.28	1.189
Q48	I ask the teacher to repeat.	867	2.38	1.109
Q12	I anticipate the key vocabulary of the topic of this lesson.	866	2.53	1.085
Q29	I ask the teacher what s/he means.	867	2.69	1.183
Q41	I visualise in my mind a picture of my learning in the previous lesson.	867	2.74	1.037

In general, students represented a fairly wide variation with regard to their preference of the use of different strategy items in understanding the teacher in the ESL classroom. Within the range of one standard deviation and hence representing around two-thirds of the participants based on normal distribution, the rating of the five most used items ranged from 2.5 to 4.7 (close to ‘always true of me’), whereas that of the five least used items ranged from 1.1 (very close to ‘always not true of me’) to 3.7.

Although it was interesting to take note of the reported use of individual strategy items, more central to my research was to find out the underlying variables of the questionnaire items and to identify the different groups of strategies used by learners. To this end, an EFA was conducted.

4.2 Exploratory factor analysis

The questionnaire consisted of two main groups of items – mental actions and opportunities for strategic behaviour to occur. The former group of items is what this study treated as strategies –

mental actions which are defined more narrowly and specific to the listening task of understanding the teacher's talk (e.g. focus attention on the content words in the teacher's talk; recall the vocabulary which I know, translate the familiar words in the teacher's talk into Chinese). On the other hand, the latter group of items can be seen as opportunities for strategic behaviour to occur. These items (e.g. review my notes, follow what my classmates do, ask the teacher to repeat) are very general and do not correspond to any specific mental actions, but they give rise to opportunities for strategic behaviour to occur. Even though the present research dealt mainly with strategies as mental actions, these physical actions denoting opportunities for strategic behaviour to occur were also included in the questionnaire and in the following analysis because they nevertheless could give rise to the use of listening strategies. Earlier in section 3.3.3.2.1 I gave the example of how reviewing notes could provide learners with the opportunities to use strategies such as attending selectively to certain elements in the teacher's input, making inferences to guess some unfamiliar language items, and recalling what was learnt in the previous lessons in order to bridge the gap in understanding the teacher. Furthermore, they were frequently reported by students in the various pilot studies as well as other strategy research in the literature (see section 3.3.3.2.1 again for a more detailed account of why these items are also included in the questionnaire). Therefore, I have made the decision to present them in the questionnaire as well as analysing them.

Given that the opportunities for strategic behaviour (observable behaviour) are very different in nature compared to strategies (mental actions), it was thought to be better to conduct the EFA separately to facilitate factor interpretation. Originally, the strategy group consisted of 67 items and the opportunities for strategic behaviour 15 items. Following Nakatani (2006), items which had a low loading on all factors (less than 0.4) were eliminated to facilitate the interpretation of each of the factors. Sixteen strategies and one opportunity for strategic behaviour were deleted for this reason. Therefore, the final questionnaire consisted of 65 items – 51 and 14 items in the group of strategies and that of opportunities for strategic behaviour respectively. The reliability of these items was determined by Cronbach's alpha, with the former yielding a figure of .95 representing a very high internal consistency, and the latter a figure of .77 denoting acceptable internal consistency.

4.2.1 Factors of strategy group

The EFA adopted the Kaiser's criterion of a minimum-eigenvalue criterion of 1.0. As Kim and Mueller (1994) have suggested, Kaiser's criterion is the most commonly used method in initial factor extraction. Furthermore, Dunteman (1994) claims that using other criterion such as Jolliffe (1972) of $\lambda = .7$ could make parsimony suffer. Therefore, Kaiser's criterion was selected for my analysis. Principal factor analysis and varimax rotation was then conducted, based on, again, its ubiquity of use in research (Child, 2006; Dunteman, 1994). 10 factors were extracted, explaining 54.8% of the total variance which will now be presented and described in detail.

Table 14: Descriptive statistics of 10 factors of strategy group (1=low; 5=high)

Strategy group	Mean	S.D.
Factor 1: <i>Contextualisation for the present lesson</i>	2.95	0.66
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	3.47	0.74
Factor 3: <i>Recall of prior knowledge</i>	3.39	0.72
Factor 4: <i>Relational – understanding through recalling teacher's approach</i>	3.00	0.76
Factor 5: <i>Summarisation / Appropriation</i>	3.56	0.65
Factor 6: <i>Translation</i>	3.17	0.98
Factor 7: <i>Selective attention on simple words or segments</i>	3.09	0.80
Factor 8: <i>Auditory representation and imagery</i>	3.23	0.82
Factor 9: <i>Evaluation</i>	3.12	0.73
Factor 10: <i>Repetition</i>	3.02	0.87

Table 14 shows that students in general preferred using *summarisation / appropriation* strategies the most (mean = 3.56), followed by *selective attention on difficult words* (mean = 3.47) and *recall of prior knowledge* (mean = 3.39). Conversely, *contextualisation for the present lesson* (mean = 2.95), *relational strategies* (mean = 3.00), and *repetition* (mean = 3.02) were among the least used ones. All 10 factors are discussed in more detail below. The items loaded on factor 1 are presented in Table 15.

Table 15: Strategy factor 1 – *Contextualisation for the present lesson* (Cronbach's Alpha = .86)

Question	Item	Factor loading	Communalities h ²
Q34	I recall the key contents of the previous lesson.	.643	.542
Q41	I visualise in my mind the picture of my learning in the previous lesson.	.604	.538
Q15	I list out in my mind what I learnt in the previous lesson.	.599	.531
Q27	I recall the key contents of this English lesson.	.576	.495
Q10	I recall what I read during my preparation for the lesson.	.574	.435
Q21	I recall what I have learnt in the previous lesson to help me understand the present teacher's talk.	.525	.497
Q32	I recall my previous experiences in doing English exercises.	.507	.436
Q75	I recall what I read in my English textbook.	.457	.495
Q12	I anticipate the key vocabulary of the topic of this lesson.	.442	.476
Q30	I recall all knowledge about English grammar.	.433	.464
Q40	I search in my mind to find out if I have learnt about the topic of this lesson before.	.402	.444

All items loaded on factor 1 appear to be related to efforts in contextualising the present lesson. The factor contains strategies which allow students to contextualise the current lesson through recalling the contents of this lesson (Q27, 12, 40) and the previous lesson (Q34, 41, 15, 21). It also includes strategies that draw on students' knowledge about the contents of the series of lessons that they are having, including the outside class preparation work or homework that they have done (Q10, 32, 75). Item 30 might not appear to sit very well under this factor at first sight, but it can be understood in light of the context of a typical Hong Kong Secondary 3 classroom. In most schools, grammar is very often an important focus and every lesson may well include a grammar point to discuss and to be acquired. Therefore, recalling knowledge about English grammar also provides a context for the current lesson – i.e. thinking what else to build on from previous lessons. Taken together, factor 1 can be termed as *contextualisation for the present lesson*. The term *contextualisation* is borrowed from Vandergrift and Goh (2012) who used the term to refer to

linguistic contextualisation (relating to the environment where the unfamiliar word was encountered before) and *schematic contextualisation* (relating to the information stored in the long-term memory). With the former, Vandergrift and Goh (2012) gave the example of ‘Theoretically? Is it related to theory?’ (p. 282). These *contextualisation* strategies, therefore, appeared to be more like recalling prior knowledge to assist the learners in understanding an unfamiliar word (see strategy factor 3 below). With the strategies identified in Factor 1 of my research, however, *contextualisation* strategies refer to those which provide more broadly the background for the present lesson to facilitate understanding. Therefore, while I have borrowed the term *contextualisation*, these strategies are not very much reported in previous studies in listening comprehension and it is justifiable that they are uniquely relevant in the present context of listening to the teacher in the classroom.

Table 16: Strategy factor 2 – Selective attention particularly on difficult words or segments (Cronbach’s Alpha =.86)

Question	Item	Factor loading	Communalities h ²
Q50	I focus attention on one of the difficult words in the teacher's talk.	.738	.657
Q43	I focus attention on all the difficult words in the teacher's talk.	.718	.634
Q57	I focus attention on the unfamiliar words in the teacher's talk.	.701	.605
Q51	I focus attention on the sounds of the difficult words.	.667	.686
Q52	I focus attention on the words emphasised by the teacher.	.646	.586
Q24	I focus attention on the keywords of the teacher's talk.	.510	.481
Q31	I focus attention on what the teacher has corrected me, when s/he repeats what I said.	.462	.443
Q60	I focus attention on the content words in the teacher's talk.	.450	.461

Table 16 shows that factor 2 consists of a bottom-up processing group of strategies, with students’ attention focused on different segments of the teacher’s input. It includes strategies which students adopt to attend selectively to individual words: the more difficult (Q50, 43, 51), the unfamiliar (Q57), the more important or essential ones (Q24, 60), and those words which the teacher emphasised (Q52), in order to arrive at the meaning. One other strategy which falls under this factor is the focus of attention on what the teacher has corrected the students, under the scenario of a recast. Therefore, this

group of strategies is all about students trying to attend selectively part of the teacher’s talk, while shutting out the redundant language being used. The name of the factor is borrowed from O’Malley et al. (1985a) and Vandergrift’s (2003) classification of *selective attention* under metacognitive strategies, although the focus here is particularly placed on the more difficult or important segments or words. This distinction is important as we shall see below that Factor 7 also involves *selective attention* but on simple words or segments.

Table 17: Strategy factor 3 – *Recall of prior knowledge* (Cronbach’s Alpha = .78)

Question	Item	Factor loading	Communalities h ²
Q67	I recall the vocabulary which I know.	.700	.609
Q65	I search in my mind to find out if I have learnt about this vocabulary before.	.670	.605
Q64	I recall the mistakes I made in the past.	.520	.452
Q73	I search in my mind to find out if I have learnt similar words before.	.485	.501
Q81	I integrate my old knowledge and the new content which I don't understand.	.466	.477
Q82	I recall what the teacher said previously to help me understand the present teacher's talk.	.433	.525

Factor 3 includes strategies which draw on students’ prior knowledge about their own English learning. It ranges from a word-level (Q67, 65, 73) to an event-based level of recalling past experience of learning English (Q64), including what the teacher has said in the past (Q82). In addition, when extracting prior knowledge, students could try to integrate their old knowledge and the new content which they do not understand (Q81). All these strategies appear to pertain to students’ prior knowledge and they are what Vandergrift (2003) has named *elaboration*. However, given that this group of strategies does not encompass all the different types of *elaboration*, a more general term of *recall of prior knowledge* is used instead.

Table 18: Strategy factor 4 – Relational – understanding through recalling teacher’s approach
(Cronbach’s Alpha =.77)

Question	Item	Factor loading	Communalities h ²
Q63	I anticipate what the teacher is going to ask me to do later.	.732	.648
Q13	I guess the intention of the teacher in saying something.	.672	.603
Q33	I anticipate what the teacher is going to say later.	.659	.570
Q7	I visualise in my mind what the teacher is asking me to do.	.474	.507
Q14	I list out in my mind step by step what the teacher is asking me to do.	.429	.467
Q66	I remind myself of the teacher's usual way of saying things.	.423	.430

As shown in Table 18, factor 4 is composed of some relational items where students make sense of the teacher by taking into account the teacher’s approach. Students recall what the teacher usually does or says (Q66), and they can make inferences on what the teacher would say or ask them to do later (Q33, 63), as well as what the teacher tries to achieve in saying something (Q13). Students using this factor of strategies may also try to create an image or a list of actions in their mind to represent what the teacher requires them to do (Q7, 14). All the six items, therefore, surround the theme of *relational* strategies of bringing into mind the teacher’s approach. This type of strategy is not well explored in previous research on listening strategies. Even with studies on CSs which examine social-affective strategies, they are only concerned with some more physical actions of *questioning for clarification and cooperation*, or *controlling the affective filters* (see, e.g. Chamot & O’Malley, 1987; Nakatani, 2006). In other words, this factor of strategies which take into consideration the relationship between the students and the teacher is quite distinctive to listening comprehension in the classroom context, and this is not surprising because teacher-student relationship is one of the differences between listening to the teacher and to audio recording, as pointed out in section 2.3.1.

Table 19: Strategy factor 5 – *Summarisation / Appropriation* (Cronbach's Alpha =.74)

Question	Item	Factor loading	Communalities h ²
Q17	I integrate everything I understand within the teacher's talk.	.656	.565
Q16	I identify the overarching meaning of the teacher's talk.	.635	.591
Q20	I rephrase what the teacher said into something I understand.	.539	.530
Q4	I simplify what the teacher said into something I understand.	.476	.475
Q78	I summarise what the teacher said into a short sentence.	.459	.598
Q79	I identify the important points of the teacher's talk.	.440	.541

The variables in factor 5 pertain to students' efforts in summarising and appropriating what the teacher is saying. These strategies include identifying the overarching meaning (Q16) and the important points (Q79) of the teacher's talk, as well as summarising what the teacher said (Q78). Students using this group of strategies also tend to appropriate the information by integrating (Q17), rephrasing (Q20) and/or simplifying (Q4) the teacher's talk to facilitate their understanding. The term *summarisation* is taken from Vandergrift (2003), but factor 5 is more than solely summarising because students using these strategies are trying to relate the summarised information to their understanding, hence the term *appropriation*.

Table 20: Strategy factor 6 – *Translation* (Cronbach's Alpha =.78)

Question	Item	Factor loading	Communalities h ²
Q8	I translate the entire teacher's talk into Chinese.	.800	.663
Q37	I translate the keywords in the teacher's talk into Chinese.	.743	.647
Q58	I translate all the familiar words in the teacher's talk into Chinese.	.741	.641

Factor 6 is composed of strategies of *translation*. Students try to translate what the teacher has said into Chinese their L1 in order to understand the message. The unit of translation ranges from individual words (Q37, 58) to the entire teacher's talk (Q8). There is also a degree of selective

translation for only the keywords to a non-selective translation of all the familiar words the students know or even the entire teacher's talk. *Translation* strategies also appear to be important in uni-directional listening as reported by studies dating back to, for instance, O'Malley et al. (1985a). However, the notion of selective translation has not been dealt with systematically in previous research.

Table 21: Strategy factor 7 – *Selective attention on simple words or segments* (Cronbach's Alpha =.70)

Question	Item	Factor loading	Communalities h ²
Q69	I break the teacher's talk into smaller segments to ease my understanding.	.580	.549
Q72	I focus attention on the simple words in the teacher's talk.	.521	.570
Q76	I focus attention on the familiar words in the teacher's talk.	.503	.607

Factor 7, similar to factor 2, involves *selective attention*. The difference lies in the difficulty of words or segments on which the students focus – on the simple (Q72) and familiar words (Q76) under this factor. It also includes understanding the teacher's talk in smaller chunks (Q69). These strategies are analogous to the *message reduction strategies* in CSs proposed by Bialystok (1990) and Nakatani (2006). In CS studies, such strategies are used when speaking with an aim to avoid communication breakdowns through simplifying the message and using only the simple and familiar words. In my study on listening, students try to focus their attention on the simple and familiar language which they could relatively more easily make sense of with an aim to facilitate their comprehension of the teacher's input. In other words, this strategy factor is distinctive from CS studies in that the selective focusing of attention and simplification is at a receptive level instead of a productive level.

Table 22: Strategy factor 8 – *Auditory representation and imagery* (Cronbach's Alpha =.60)

Question	Item	Factor loading	Communalities h ²
Q28	I use my knowledge on English pronunciation to help me understand.	.703	.624
Q18	I visualise in my mind a picture to represent the new vocabulary being taught.	.531	.531
Q71	I hold the sounds of the difficult words in my mind.	.525	.613

Factor 8 comprises strategies relying on phonological skills and imagery. Students using these strategies try to hold the sounds of the difficult words (Q71) and/or use what they know about the sound patterns in English to decipher the English words (Q28). They try to represent the words using a mental picture (Q18). The term *auditory representation* is borrowed from O'Malley et al. (1985a) who also found that some students tried to retain the sounds of words or segments. If these strategies are used in combination, it may be close to what some researchers have termed as the keyword method – representing a word through the combination of both sounds and image.

Table 23: Strategy factor 9 – *Evaluation* (Cronbach's Alpha =.63)

Question	Item	Factor loading	Communalities h ²
Q11	I evaluate how much attention I am giving to the teacher.	.653	.623
Q1	I focus attention on every word in the teacher's talk.	.547	.524
Q22	I evaluate my understanding and find out how much I understand.	.514	.507

Factor 9 contains strategies related to *evaluation*. Students using these strategies try to evaluate the extent to which they understand the teacher's talk (Q22). In order to evaluate their understanding, some students pay attention to every word to find out how much they understand (Q1). They also evaluate whether they need to focus more in listening to the teacher (Q11). *Evaluation* strategies are also discussed in other listening strategy research such as Vandergrift (2003).

Table 24: Strategy factor 10 – *Repetition* (Cronbach's Alpha =.57)

Question	Item	Factor loading	Communalities h ²
Q2	I repeat fully what the teacher just said in my mind.	.677	.658
Q49	I repeat partially what the teacher just said in my mind.	.563	.569

Only two items were loaded on factor 10. These two items both pertain to the use of *repetition* strategies – that students repeat what the teacher said in their mind either fully (Q2) or partially (Q49). These *repetition* strategies have been discussed in most previous research on listening strategy, and this is also one reason why despite the low Cronbach's Alpha these two items were kept.

4.2.2 Factors representing opportunities for strategic behaviour

Similar to the strategy group, the Kaiser's criterion of a minimum-eigenvalue criterion of 1.0 was adopted for this group of opportunities for strategic behaviour. Using principal factor analysis followed by varimax rotation, 3 factors were extracted, explaining 51.8% of the total variance. The descriptive statistics are shown in Table 25.

Table 25: Descriptive statistics of 3 factors of opportunities for strategic behaviour

Opportunities for strategic behaviour	Mean	S.D.
Factor 1: <i>Utilisation of personal physical resources</i>	3.05	0.77
Factor 2: <i>Hide and seek</i>	3.35	0.76
Factor 3: <i>Direct help seeking from the teacher</i>	2.61	0.97

Students mostly preferred hiding their lack of understanding while seeking help from external resources (mean = 3.35), followed by the use of personal physical resources (mean = 3.05). They did not prefer seeking help directly from the teacher (mean = 2.61). These 3 factors are discussed in more detail below. Table 26 presents the items loaded on factor 1 of opportunities for strategic behaviour.

Table 26: Opportunities factor 1 – *Utilisation of personal physical resources* (Cronbach's Alpha = .74)

Question	Item	Factor loading	Communalities h²
Q62	I look up the difficult words in my textbook.	.742	.569
Q46	I refer to my textbook or worksheets to remind myself the key contents of this lesson.	.683	.500
Q77	I refer to my textbook or worksheets to remind myself the key contents of the previous lesson.	.675	.483
Q19	I review my notes.	.626	.434
Q23	I look up the difficult words in a dictionary.	.580	.340
Q59	I write down what the teacher said.	.452	.378

Factor 1 comprises motor actions of understanding the teacher through students' own resources – for instance, the textbook or worksheets (Q62, Q46, Q77), the notes (Q19), and the dictionary (Q23).

It also involves writing down some notes of what the teacher said (Q59). O'Malley et al. (1985a) distinguished these actions as *resourcing* (mostly denoting reference materials) and *note taking* respectively, but they can be similar in the way that students using these physical actions are trying to utilise the variety of the personal physical resources in front of them, ranging from the dictionary to the textbook and the notebook which they can write something down, when trying to understand the teacher's input.

Table 27: Opportunities factor 2 – *Hide and seek* (Cronbach's Alpha = .68)

Question	Item	Factor loading	Communalities h ²
Q56	I observe what my classmates do to help me understand the present teacher's talk.	.743	.607
Q25	I ask my classmates what the teacher means.	.721	.590
Q3	I follow the physical actions that my classmates do.	.653	.455
Q74	I pretend that I understand (e.g. nod my head).	.610	.417
Q55	I find clues on the blackboard to help me understand the teacher.	.511	.506

Table 27 reveals that items loaded on factor 2 possess a certain degree of covering up the failure of understanding from the teacher, but at the same time include some help seeking actions. Students pretend that they understand and hide their lack of understanding (Q74). They seek help directly from their classmates (Q25), or sometimes more passively, observe what their classmates do (Q56) and/or follow suit (Q3). They can also find clues from the blackboard (Q55). The major similarity of these items is that students do not want to let the teacher detect their not understanding; even if they want to solicit help, they look for external resources instead of their own physical resources (opportunities factor 1), and definitely not trying to ask the teacher (opportunities factor 3). In previous literature on interactive listening where student-student interaction was explored, researchers have used the term *faking* (see, e.g. Vandergrift, 1997a; Farrell & Mallard, 2006). I did not opt for the term *faking* because it is only towards the teacher, but not other classmates, that students pretend to understand. Furthermore, there is a possibility that students do not want to disturb the class thus *sending continuation signals* (see, e.g. Rost & Ross, 1991) to the teacher while trying to deal with their not

understanding through other external resources. The term *feigning* which has been used to refer to pretending to understand as an attempt to carry on the interaction even without understanding (see, e.g. Dörnyei & Kormos, 1998) is closer to what this factor structure entails; and yet, it does not express aptly the effort to seek help from other classmates. Taken together, previous research may not be able to offer an appropriate name for this factor structure, and therefore, this *hide and seek* term is proposed to capture the nature of these actions in trying to hide not understanding from the teacher while utilising external resources to facilitate understanding.

Table 28: Opportunities factor 3 – *Direct help seeking from the teacher* (Cronbach's Alpha =.76)

Question	Item	Factor loading	Communalities h ²
Q29	I ask the teacher what s/he means.	.804	.673
Q54	I signal to the teacher that I don't understand.	.793	.660
Q48	I ask the teacher to repeat.	.789	.641

Contrary to opportunities factor 2, students using this group of items are active in trying to let the teacher know that they do not understand. To put it another way, the role of the teacher differentiates between these two factors. Students seek help from the teacher through direct verbal requests for further explanation (Q29) or simply for repetition (Q48). They could also indicate to the teacher that they do not get the meaning across through non-verbal gestural actions (Q54). This group of physical actions was classified as *question for clarification* under socio-affective strategies by O'Malley et al. (1985b). However, as pointed out in the beginning of Chapter 4.2, they are not conceptualised as strategies in the present study. This said, it would be interesting to situate my findings in the LLSs literature at large.

4.2.3 Summary of findings from Likert-scale questionnaire and RQ1

The Likert-scale questionnaire was used to answer, in part, RQ1: What comprehension strategies do Secondary 3 students use when listening to the teacher's input in the ESL classroom? Comparing with

previous strategy research on listening to audio recording, four major observations were noted (see Chapter 7 for a more detailed discussion).

First, there were some common strategies that the present context of listening to the teacher in the ESL classroom shared with previous research on listening to audio recording. They are: *selective attention*, *recall of prior knowledge*, *summarisation*, *translation*, *auditory representation and imagery*, *evaluation*, and *repetition*. By and large, these strategies covered most of the cognitive strategies and some of the metacognitive ones described by, for example, Vandergrift (2003).

Second, these categories of strategies which are also found in previous listening strategy research are not identical and have to be understood in the new light of the context of listening to the teacher. For example, *selective attention* included two main ways of attending to segments or words – the more difficult and unfamiliar ones (factor 2) as opposed to the simpler and familiar ones (factor 7). In other words, *selective attention* should not be taken as a whole and we need to be more precise in terms of what segments or words are being focussed on particularly in this classroom context.

Moreover, the *contextualisation for the present lesson* and *relational* strategies were not so much discussed in previous research on listening comprehension strategy. It can be argued that these strategies are uniquely relevant to the present context of listening to the teacher in the classroom.

Finally, the role of the teacher as well as that of other students within the classroom is important when considering listening strategy use. With the group of opportunities for strategic behaviour, the three factor structures show a varying degree of interpersonal relationship being considered by students. Factor 1 relates to students focusing on their personal physical resources (without situating him- or herself within the classroom with other people), factor 2 shows their awareness of both the teacher (hiding their lack of understanding) and other students in the classroom, and factor 3 indicates that the teacher is the target when students want to solicit help.

Taken together, I found that students used some strategies which they could also use in the context of listening to audio recording, but there were also some strategies which were uniquely

defined in the present classroom setting. Especially central to such strategies and opportunities for strategic behaviour is the role of the teacher and the teacher-student relationship. All these will be discussed in more detail in Chapter 7.

4.3 Linguistic knowledge and questionnaire findings

In order to answer RQ2 and find out whether students with different LK tended to use different strategies, we need to first delineate LK. Students' LK was operationalised as knowledge of vocabulary and grammar, measured by a receptive VLT and a GJT respectively. In the following, the results from the LK tests are first presented in section 4.3.1, followed by a discussion of the approach adopted to classify students as low and high LK in 4.3.2. Then in section 4.3.3, how students with different LK opted to use different strategies as reflected by the questionnaire is explored. Finally, this sub-section ends with a tentative answer to RQ2, before examining more evidence in Chapter 4.4 and from other research instruments in Chapter 5 and 6.

4.3.1 LK descriptive statistics

The receptive VLT consisted of five levels – level 1000, 2000, 3000, 5000, and academic level. In each of these levels, there were 30 questions and each question carried equal weighting. One mark was given when a student chose the correct answer for a question. Therefore, the maximum achievable score was 30 for each level and 150 for all levels.

The GJT which was comprised of 30 questions required students to judge the grammaticality of the sentences as well as to locate the errors for ungrammatical ones. In analysing the results, a sensitive scoring system was adopted⁶. For each of the 15 grammatical sentences, one mark was given

⁶ This sensitive scoring system is motivated partly by Ellis (2005) who has suggested that grammatical and ungrammatical sentences in an untimed GJT could measure different constructs. Particularly, with the identification and location of errors, the grammatical sentences might be testing more explicit instead of implicit knowledge. I am well aware that such scoring system might give rise to another problem. Particularly, allocating one mark only for grammatical sentences and a maximum of two marks for ungrammatical sentences would mean that the ungrammatical sentences carry a heavier weighting in the

if they were correctly rated as grammatical. For each of the 15 ungrammatical sentence, one mark was given if they were correctly rated as ungrammatical, and another mark was given if the error was correctly identified and located. Therefore, the maximum score for the GJT was 45.

Table 29: Descriptive statistics of VLT and GJT

	N	Range	Minimum	Maximum	Mean	S.D.	Skewness	Skewness S.E.	Kurtosis	Kurtosis S.E.
VLT 1000	646	11	19	30	29.02	1.088	-2.251	.096	12.231	.192
VLT 2000	646	15	15	30	28.26	2.338	-2.102	.096	5.192	.192
VLT 3000	646	30	0	30	23.54	5.121	-.744	.096	.403	.192
VLT 5000	646	30	0	30	19.55	6.284	-.496	.096	-.360	.192
VLT Academic	646	30	0	30	23.40	5.342	-1.339	.096	1.985	.192
VLT total score	646	96	54	150	123.77	17.476	-.799	.096	.287	.192
GJT	646	31	14	45	33.95	5.811	-.482	.096	-.260	.192

Table 29 shows the descriptive statistics of students' performance on the VLT and GJT. With regard to the VLT, the decreasing means from level 1000, through 2000 and 3000 to level 5000 demonstrated an increasing difficulty for students to complete the questions in each level. For the level of academic vocabulary, the mean was very close to that of the 3000 level. With all the five levels combined, the VLT presented a huge range of 96 marks from 54 to 150 marks. The mean was 123.77, indicating that students on average scored around 82.5% of the total score in the VLT. Concerning the GJT, there was also quite a wide variability as seen by the range of 31 (out of 45). The mean was 33.95, showing that students on average had a score of around 75%, and this mean was not exceptionally high because the grammar tested in the GJT was selected based on what students should achieve within the first three years of Secondary school (as discussed in section 3.3.3.2.5).

total score, hence not doing justice to the grammatical sentences (or the more implicit grammatical knowledge of the learners). However, the present sensitive scoring system at least takes into account the additional effort made by learners in correctly locating the errors. All this said, results obtained from the sensitive scoring have shown to be similar to those obtained from treating every grammatical and ungrammatical question in the GJT equally (i.e. one mark was only given for students to judge and locate the errors accurately for ungrammatical sentences, and one mark was also given for judging grammatical sentences as grammatical).

Turning to the distribution of the scores, the skewness and kurtosis parameters were examined. Miles and Shevlin (2011) purported that as a rule of thumb, having a value of greater than 2.0 would suggest non-normal distribution. Therefore, VLT levels 1000 and 2000 were negatively skewed and extremely leptokurtic. Such an observation was not surprising, and indeed expected, given that the two levels were comprised of rather simple and elementary English vocabulary items. In fact, pilot study 4 also revealed ceiling effects in these two levels and that was exactly the reason for including more levels of the VLT in the actual study.

Another way of dealing with the skewness and kurtosis statistics was to compute the z-scores through dividing them by their standard errors respectively. A. Field (2013) maintains that a value greater than 1.96 indicates $p < .05$ significance of deviating from normality. Examining the data, all the VLT and GJT scores appeared to be non-normal with such calculation. However, A. Field (2013) has also suggested that with relatively large samples of more than 200 participants, a significant value would almost always be achieved and these skewness and kurtosis z-scores test statistics might not be reliable in spotting normality. This was also why the Kolmogorov-Smirnov and Shapiro-Wilk tests were not conducted. Instead, histograms could be helpful to spot normality (see Appendix N). According to these histograms, only levels 1000 and 2000 appeared to be deviating drastically from normality.

Nonetheless, normality for these variables might not be very important in the selection of statistical tests to be conducted because they only acted as the independent variable of LK. Furthermore, these scores were only used to classify students as low and high LK for the sake of comparison and therefore, these scores, as an interval scale, were to be turned into a discrete dichotomous variable of low and high LK, as discussed in the next sub-section.

4.3.2 Categorising students in terms of LK

It will be the most straightforward if there is only one LK score computed through taking into consideration both vocabulary and grammatical knowledge. It will also be convenient if the contribution of lexical knowledge and that of syntactic knowledge are equal towards strategy use. Yet, studies which attempted to examine the effects of vocabulary and grammar on listening comprehension are few, and those which researched into the relationship between LK and strategy use in listening is even scarcer. The very limited literature available, to the best of my knowledge, is Mecartty (2000), Graham et al. (2010), Andringa et al. (2012), and Sağlam (2014). All these studies treated lexical as well as grammatical knowledge as the independent variable. Besides, apart from Graham et al. (2010) which had strategy use as the dependent variable, all the other studies defined listening comprehension as the dependent variable.

For Graham et al. (2010), they computed a score for LK combining both vocabulary knowledge measured by X-lex vocabulary recognition test (Meara & Milton, 2003) and grammatical knowledge measured by a GJT in order to classify learners as low or high LK. However, they did not provide more information on how they calculated the LK score from these two tests. For example, it would be helpful to find out if the two tests were taken to contribute with equal weighting when computing a LK score to classify students into their top and bottom LK groups. This said, it was not the intention of Graham et al. (2010) to find out quantitatively the amount of variances explained by vocabulary and grammar on strategy use and therefore, the study might not offer insights into how I could categorise students into different levels of LK based on my VLT and GJT. With the other three studies, they all performed a regression analysis. Although the relationship they explored (LK → listening comprehension) is not what I intended to examine, they are the closest I could find which are pertinent to my study.

These three studies, however, also had divergent foci and yielded different results. Mecartty (2000) found that only lexical knowledge (and not grammatical knowledge) significantly explained 14% of the variance in listening comprehension, whereas Sağlam (2014) showed that both lexical and

grammatical knowledge possessed a significant effect on listening and they together explained 55.6% of the variances. Sağlam (2014) also discovered that the vocabulary and grammatical knowledge separately explained 49.6% and 48.9% of the variances of listening comprehension respectively. Such findings informed us that vocabulary and grammar were similar in predicting listening comprehension, but a large proportion of the variances explained was shared among the two variables. Andringa et al. (2012) came from a different orientation because they adopted a differential or componential approach to tease apart a number of variables involved in listening comprehension. They treated the LK (what they termed as 'knowledge' including lexical knowledge, grammatical knowledge, and segmentation of speech to number of words) factor as a whole when conducting regression and revealed that LK explained 90% of the variance in listening comprehension.

The disparate results found by the three studies could be due to the use of dissimilar tests to measure LK and listening comprehension, as Andringa et al. (2012) also conceded. And because the results were so different, they were not able to indicate how different the roles of vocabulary and grammar were in listening comprehension, let alone that on strategy use.

It presented, therefore, a challenge to compute a single LK score to classify students into two groups of low and high LK. The best way, then, was to conduct separate analyses for vocabulary knowledge and grammatical knowledge. In other words, students could be classified into two groups based on vocabulary knowledge first and grammatical knowledge the second, using a median split. In each of these separate analyses, the two groups were compared against each other with regard to their strategy use. Subsequently, a third analysis was done through computing one single LK score by treating the two variables of vocabulary and grammar as carrying equal weighting, and using this score to classify students into two groups. This way of doing the calculation could receive some support from Sağlam (2014) cited above, even though the findings from this analysis had to be treated with caution given Mecartty (2000) has found that grammatical knowledge might not be playing a role as important as lexical knowledge in listening comprehension. The computation of this single LK

score was done by converting the VLT and GJT score into a score out of 100 and then averaged, as exemplified in Table 30.

Table 30: Examples of calculating one LK score for the third analysis taking into account both vocabulary and grammar

Student	VLT total	VLT converted score	GJT total	GJT converted score	LK score
S1	129	$(129/150) * 100 = 86$	31	$(31/45) * 100 = 68.9$	77.5
S2	136	$(136/150) * 100 = 90.7$	42	$(42/45) * 100 = 93.3$	92
S3	112	$(112/150) * 100 = 74.7$	39	$(39/45) * 100 = 86.7$	80.7
S4	124	$(124/150) * 100 = 82.7$	41	$(41/45) * 100 = 91.1$	86.9
S5	108	$(108/150) * 100 = 72$	37	$(37/45) * 100 = 82.2$	77.1

All these three analyses: vocabulary-only, grammar-only, and vocabulary and grammar as one LK score were conducted in the hope of revealing the relationship between LK and strategy use as comprehensively as possible. The next section will present these three analyses one by one.

4.3.3 Group differences of strategy use according to LK

This section demonstrates how students with low and high vocabulary and grammar knowledge, first treated separately then together, reported their use of different strategies. Therefore, section 4.3.3.1 will report the results of taking into account vocabulary only, 4.3.3.2 grammar only, and 4.3.3.3 the results of treating vocabulary and grammar equally as one independent variable.

4.3.3.1 Vocabulary-only analysis

Based on the total score of the VLT, students were classified into low and high vocabulary groups using a median split. Given the large sample of 646, it was logical to find some students who obtained the same score being categorised into different groups. Therefore, the 13 cases of students who were in the boundary were eliminated to make a better claim that the students in the two groups were truly different (i.e. no students obtaining the same score in the VLT were classified into two different

groups). To further ensure that the two groups were different statistically, the VLT scores for the two groups were analysed using two-tailed independent-samples t-tests. With levels 1000 and 2000 which were not normally distributed, as discussed in section 4.3.1, Mann-Whitney U tests were also conducted for comparison sake. Table 31 shows the descriptive statistics and Table 32 the t-test results.

Table 31: Descriptive statistics of students with low and high levels of vocabulary knowledge on VLT performances

VLT	Low Vocab (n=311)		High Vocab (n=322)	
	Mean	S.D.	Mean	S.D.
VLT 1000	28.69	1.295	29.34	.727
VLT 2000	26.90	2.688	29.54	.723
VLT 3000	19.49	4.066	27.42	2.398
VLT 5000	14.51	4.743	24.36	3.144
VLT Academic	19.66	5.264	26.95	2.097
VLT total score	109.26	13.521	137.61	6.531

Table 32: T-test of students with low versus high levels of vocabulary knowledge on VLT performances

VLT	df	t	p
VLT 1000	631	-7.640	.000*** (Mann-Whitney U test: p=.000***)
VLT 2000	631	-16.747	.000*** (Mann-Whitney U test: p=.000***)
VLT 3000	631	-29.757	.000***
VLT 5000	631	-30.675	.000***
VLT Academic	631	-22.756	.000***
VLT total score	631	-33.405	.000***

*** $p \leq .001$

The results corroborated that the two groups were truly different regarding their vocabulary knowledge measured by the VLT. Additionally, it appears promising to find that they were different across all levels of the VLT.

Next, the relationship between vocabulary knowledge and strategy use was explored. The descriptive statistics of strategy and opportunities for strategic behaviour categories among students with low and high vocabulary knowledge is depicted by Table 33. Students with higher levels of vocabulary knowledge tended to use most of the strategies more often and take more opportunities for strategic behaviour to occur, with the exception of *translation*, *selective attention on simple words*, *repetition*, and *hide and seek*.

Table 33: Descriptive statistics of students with low and high levels of vocabulary knowledge on strategy and opportunities for strategic behaviour

Strategy	Low Vocab (n=311)		High Vocab (n=322)	
	Mean	S.D.	Mean	S.D.
Factor 1: <i>Contextualisation for the present lesson</i>	2.91	0.63	2.97	0.70
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	3.41	0.68	3.61	0.74
Factor 3: <i>Recall of prior knowledge</i>	3.31	0.67	3.53	0.74
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	2.93	0.70	3.09	0.81
Factor 5: <i>Summarisation / Appropriation</i>	3.56	0.61	3.62	0.62
Factor 6: <i>Translation</i>	3.29	0.92	2.91	1.04
Factor 7: <i>Selective attention on simple words or segments</i>	3.10	0.69	2.94	0.82
Factor 8: <i>Auditory representation and imagery</i>	3.20	0.73	3.36	0.86
Factor 9: <i>Evaluation</i>	3.08	0.70	3.15	0.73
Factor 10: <i>Repetition</i>	3.11	0.81	3.03	0.88
Opportunities for strategic behaviour	Mean	S.D.	Mean	S.D.
Factor 1: <i>Utilisation of personal physical resources</i>	3.07	0.73	3.09	0.78
Factor 2: <i>Hide and seek</i>	3.43	0.70	3.25	0.78
Factor 3: <i>Direct help seeking from the teacher</i>	2.56	0.89	2.66	1.01

In order to select an appropriate statistical test to compare these means, normality of distribution was examined through plotting histograms (see Appendix O for the charts), indicating that the means were reasonably normally distributed. A two-tailed independent-samples t-test for each factor

structure was thus conducted to explore whether there were differences between the two groups of students with different vocabulary knowledge. Table 34 presents the t-test results.

Table 34: T-test of students with low versus high levels of vocabulary knowledge on strategy and opportunities for strategic behaviour

Strategy	df	t	p	r
Factor 1: <i>Contextualisation for the present lesson</i>	631	-1.080	.280	0.04
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	631	-3.630	.000***	0.14
Factor 3: <i>Recall of prior knowledge</i>	631	-3.959	.000***	0.16
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	631	-2.589	.010**	0.10
Factor 5: <i>Summarisation / Appropriation</i>	631	-1.135	.257	0.05
Factor 6: <i>Translation</i>	631	4.908	.000***	0.19
Factor 7: <i>Selective attention on simple words or segments</i>	631	2.742	.006**	0.11
Factor 8: <i>Auditory representation and imagery</i>	631	-2.600	.010**	0.10
Factor 9: <i>Evaluation</i>	631	-1.160	.246	0.05
Factor 10: <i>Repetition</i>	631	1.253	.210	0.05
Opportunities for strategic behaviour	df	t	p	r
Factor 1: <i>Utilisation of personal physical resources</i>	631	-.316	.752	0.01
Factor 2: <i>Hide and seek</i>	631	3.189	.001***	0.13
Factor 3: <i>Direct help seeking from the teacher</i>	631	-1.348	.178	0.05

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

With the strategy variables, factors 2, 3, 4, 6, 7, 8 all showed a significant difference. For factors 2, 3, 4, and 8, the contrast was due to students with higher levels of vocabulary knowledge using these strategies more than those with lower vocabulary knowledge. In other words, students who had a larger vocabulary tended to selectively attend to difficult words, recall their prior knowledge, use relational strategies, and use auditory representation and imagery more often. On the other hand, factors 6 and 7 showed a contrast of students with lower levels of vocabulary knowledge using these strategies more significantly. Therefore, students who were weaker in vocabulary preferred to use

translation strategies and attend selectively to the simple words more than their counterparts who had better lexical knowledge.

Concerning opportunities for strategic behaviour, the only difference was found in the use of *hide and seek*, and the contrast was due to students with lower levels of lexical knowledge performing these actions significantly more than those with better vocabulary knowledge. In other words, they tended to deal with their not understanding through soliciting help from external resources such as asking their classmates. In so doing, they tried not to make their deficiencies known to the teacher.

It is noteworthy that the effect sizes were quite small. As J. Cohen (1988, 1992) has suggested, an effect size of 0.1 represents a small effect whereas 0.3 a medium effect and all the contrasts discussed above had small effects. These small effects could be due to the highly individualistic use of strategy among learners. With the relatively large sample size of more than 600, grouping learners into only two groups of low and high LK meant that a high level of variability within group was bound to occur, and such variability could counter balance the effect of LK on reported strategy use.

4.3.3.2 Grammar-only analysis

Similar to the analysis conducted with vocabulary knowledge, students were classified into two groups of low and high grammatical knowledge using the results of the GJT only. Upon performing a median split, the students lying in the boundary were eliminated so that learners belonging to the two groups could be regarded as potentially different. 35 cases were taken out and this was explicable given that the GJT score was distributed rather normally. Furthermore, the total score was only 45 (compared to 150 in the VLT), allowing less variability and hence more students obtained the same score. Before delving into the effect of grammatical knowledge on the reported strategy use, a two-tailed independent-samples t-test was conducted to investigate whether the two groups were significantly different from each other in terms of their grammatical knowledge. Table 35 shows the descriptive statistics and Table 36 the t-test results.

Table 35: Descriptive statistics of students with low and high levels of grammatical knowledge on GJT performances

	Low Grammar (n=324)		High Grammar (n=287)	
	Mean	S.D.	Mean	S.D.
GJT	29.04	4.120	39.20	2.243

Table 36: T-test of students with low versus high levels of grammatical knowledge on GJT performances

	<i>df</i>	<i>t</i>	<i>p</i>
GJT	510.66	-38.442	.000***

*** $p \leq .001$

A highly significant result was revealed from the t-test, thus suggesting that the two groups were significantly different in their grammatical knowledge measured by the GJT. Next, group differences in reported strategy use were examined (see Table 37 for the descriptive statistics). A rather similar trend was observed when compared to the vocabulary-only analysis in the previous sub-section: students with higher grammatical knowledge tended to use more of most of these strategies and take more opportunities for strategic behaviour to occur, except for *translation*, *selective attention on simple words*, and *hide and seek*.

Table 37: Descriptive statistics of students with low and high levels of grammatical knowledge on strategy and opportunities for strategic behaviour

Strategy	Low Grammar (n=324)		High Grammar (n=287)	
	Mean	S.D.	Mean	S.D.
Factor 1: <i>Contextualisation for the present lesson</i>	2.90	0.65	3.00	0.65
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	3.46	0.73	3.59	0.69
Factor 3: <i>Recall of prior knowledge</i>	3.34	0.70	3.51	0.71
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	2.99	0.75	3.03	0.76
Factor 5: <i>Summarisation / Appropriation</i>	3.56	0.60	3.62	0.62
Factor 6: <i>Translation</i>	3.24	0.95	2.90	1.01
Factor 7: <i>Selective attention on simple words or segments</i>	3.07	0.73	2.98	0.78
Factor 8: <i>Auditory representation and imagery</i>	3.21	0.79	3.36	0.80
Factor 9: <i>Evaluation</i>	3.06	0.71	3.19	0.72
Factor 10: <i>Repetition</i>	3.02	0.86	3.09	0.82
Opportunities for strategic behaviour	Mean	S.D.	Mean	S.D.
Factor 1: <i>Utilisation of personal physical resources</i>	3.06	0.74	3.09	0.77
Factor 2: <i>Hide and seek</i>	3.39	0.70	3.25	0.77
Factor 3: <i>Direct help seeking from the teacher</i>	2.54	0.92	2.67	0.98

Subsequently, given the approximate normal distribution of the scores (see Appendix P for the histograms), a two-tailed independent-samples t-test for each category of reported strategy use was conducted to explore whether there were group differences. Table 38 shows the t-test statistics. A slightly different picture was revealed when compared to the vocabulary-only analysis. Strategy groups 2, 3, 6, 8, and 9 showed significant differences. All but strategy 6 was used more often by students with higher grammatical knowledge. In other words, students who had better grammar tended to attend selectively to difficult words, recall their prior knowledge, use auditory representation and imagery, and evaluate their understanding more often. Students with poorer grammar, conversely, preferred to use more *translation* strategies. With regard to the opportunities for strategic behaviour, similar to the vocabulary-only analysis, only one difference was spotted. Students with weaker grammar tended to hide their not understanding and seek help from other external

resources. Additionally, similar to the vocabulary-only analysis, all significant differences had small effect sizes.

Table 38: T-test of students with low versus high levels of grammatical knowledge on strategy and opportunities for strategic behaviour

Strategy	df	t	p	r
Factor 1: <i>Contextualisation for the present lesson</i>	609	-1.921	.055	0.08
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	609	-2.278	.023*	0.09
Factor 3: <i>Recall of prior knowledge</i>	609	-3.099	.002**	0.12
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	609	-.673	.502	0.03
Factor 5: <i>Summarisation / Appropriation</i>	609	-1.160	.247	0.05
Factor 6: <i>Translation</i>	609	4.286	.000***	0.17
Factor 7: <i>Selective attention on simple words or segments</i>	609	1.374	.170	0.06
Factor 8: <i>Auditory representation and imagery</i>	609	-2.332	.020*	0.09
Factor 9: <i>Evaluation</i>	609	-2.204	.028*	0.09
Factor 10: <i>Repetition</i>	609	-1.038	.300	0.04
Opportunities for strategic behaviour	df	t	p	r
Factor 1: <i>Utilisation of personal physical resources</i>	609	-.524	.600	0.02
Factor 2: <i>Hide and seek</i>	609	2.398	.017*	0.10
Factor 3: <i>Direct help seeking from the teacher</i>	609	-1.774	.077	0.07

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

4.3.3.3 Vocabulary and grammar as one LK score

Described earlier in section 4.3.3, one LK score was computed by converting the VLT total and GJT score to a 100-based score and subsequently averaged. Upon performing the median split, no case was eliminated. Similar to the analyses above, independent-samples t-tests were conducted in the first place to justify that the participants split into the two groups of lower and higher LK were significantly different in terms of their VLT and GJT scores. With VLT levels 1000 and 2000, the Mann-Whitney U tests were also carried out because of the non-normal distribution. Table 39 shows the descriptive statistics and Table 40 the t-test statistics.

Table 39: Descriptive statistics of students with low and high levels of LK [VLT and GJT performances combined]

LK tests	Low LK (n=323)		High LK (n=323)	
	Mean	S.D.	Mean	S.D.
VLT 1000	28.71	1.290	29.33	.717
VLT 2000	27.08	2.728	29.44	.845
VLT 3000	20.27	4.706	26.80	3.014
VLT 5000	15.85	5.685	23.24	4.419
VLT Academic	20.26	5.561	26.53	2.579
VLT total score	112.17	16.118	135.34	9.138
GJT	29.53	4.564	38.31	3.082

Table 40: T-test of students with low versus high levels of LK [VLT and GJT performances combined] on VLT and GJT performances

LK tests	<i>df</i>	<i>t</i>	<i>p</i>
VLT 1000	505.63	-7.615	.000*** (Mann-Whitney U test: p=.000***)
VLT 2000	384.55	-14.910	.000*** (Mann-Whitney U test: p=.000***)
VLT 3000	550.09	-21.002	.000***
VLT 5000	608.86	-18.469	.000***
VLT Academic	456.15	-18.397	.000***
VLT total score	511.52	-22.505	.000***
GJT	567.12	-28.691	.000***

*** $p \leq .001$

Having confirmed that the two groups were different in all measures of VLT and GJT as shown in the significant t-test statistics in Table 40, the effect of LK, taking into account both vocabulary and grammatical knowledge, on strategy use was explored. First, Table 41 presents the descriptive statistics.

Table 41: Descriptive statistics of students with low and high levels of LK [VLT and GJT performances combined] on strategy and opportunities for strategic behaviour

Strategy	Low LK (n=323)		High LK (n=323)	
	Mean	S.D.	Mean	S.D.
Factor 1: <i>Contextualisation for the present lesson</i>	2.90	0.64	2.99	0.68
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	3.41	0.71	3.62	0.70
Factor 3: <i>Recall of prior knowledge</i>	3.31	0.69	3.54	0.72
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	2.96	0.75	3.07	0.77
Factor 5: <i>Summarisation / Appropriation</i>	3.56	0.60	3.63	0.63
Factor 6: <i>Translation</i>	3.29	0.94	2.92	1.02
Factor 7: <i>Selective attention on simple words or segments</i>	3.06	0.71	3.00	0.81
Factor 8: <i>Auditory representation and imagery</i>	3.18	0.77	3.38	0.82
Factor 9: <i>Evaluation</i>	3.03	0.73	3.20	0.70
Factor 10: <i>Repetition</i>	3.06	0.85	3.07	0.85
Opportunities for strategic behaviour	Mean	S.D.	Mean	S.D.
Factor 1: <i>Utilisation of personal physical resources</i>	3.04	0.72	3.12	0.78
Factor 2: <i>Hide and seek</i>	3.39	0.72	3.29	0.76
Factor 3: <i>Direct help seeking from the teacher</i>	2.54	0.91	2.67	0.99

The descriptive statistics indicated, again, a very similar picture to both the vocabulary-only and the grammar-only analyses: students with higher levels of LK used most of the strategies and opportunities for strategic behaviour more often, except for *translation*, *selective attention on simple words*, and *hide and seek*.

Next, given the normal distribution of the scores (see Appendix Q for the histograms), independent-samples t-tests were conducted. Results are shown in Table 42. A very similar picture in terms of areas which had significant differences was yielded when compared to the grammar-only analysis, although the levels of significance were slightly different. Strategies 2, 3, 6, 8, and 9 showed significant differences. Among these items, strategies 2, 3, 8, and 9, were favoured by students with high levels of LK, whereas strategy 6 was adopted by students with low LK more often. In other

words, students with higher levels of LK tended to selectively attend to difficult words or segments, recall their prior knowledge, use auditory representation and imagery, and evaluate their understanding more than the low LK group. The low LK group, in contrast, used *translation* strategies significantly more than their counterparts of the high LK group. All these differences revealed only small effect sizes. Finally, no significant results were identified for the three factors of opportunities for strategic behaviour.

Table 42: T-test of students with low versus high LK [VLT and GJT performances combined] on strategy and opportunities for strategic behaviour

Strategy	df	t	p	r
Factor 1: <i>Contextualisation for the present lesson</i>	645	-1.866	.062	0.07
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	645	-3.856	.000***	0.15
Factor 3: <i>Recall of prior knowledge</i>	645	-4.193	.000***	0.16
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	645	-1.946	.052	0.08
Factor 5: <i>Summarisation / Appropriation</i>	645	-1.441	.150	0.06
Factor 6: <i>Translation</i>	645	4.869	.000***	0.19
Factor 7: <i>Selective attention on simple words or segments</i>	632.25	.979	.328	0.04
Factor 8: <i>Auditory representation and imagery</i>	645	-3.217	.001**	0.13
Factor 9: <i>Evaluation</i>	645	-2.955	.003**	0.12
Factor 10: <i>Repetition</i>	645	-.072	.942	0.002
Opportunities for strategic behaviour	df	t	p	r
Factor 1: <i>Utilisation of personal physical resources</i>	645	-1.343	.180	0.05
Factor 2: <i>Hide and seek</i>	645	1.764	.078	0.07
Factor 3: <i>Direct help seeking from the teacher</i>	645	-1.771	.077	0.07

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Taken together, while grammar-only analysis and one-LK-score analysis provided similar results, vocabulary-only analysis was different in some ways. Particularly, the vocabulary-only analysis suggested that students with lower levels of vocabulary knowledge also used strategy group 7 – *selective attention on simple words* more often, on top of strategy 6 *translation* which was supported

by all three analyses. Moreover, although all analyses revealed that students with higher levels of LK used more strategy 2 *selective attention on difficult words*, strategy 3 *recall of prior knowledge*, and strategy 8 *auditory representation and imagery*, the vocabulary-only analysis suggested that these students also tended to use more *relational* strategies. Grammar-only analysis and the one-LK-score analysis, on the other hand, suggested that *evaluation* was also adopted more often by higher LK students.

One caveat, however, relates to the possibility of a familywise error rate, given the multiple tests conducted. In other words, there could be an inflated Type I error. As A. Field (2013) has stated, if all the significance levels were set at 0.05, conducting 10 tests would have increased the probability of making a Type I error from 5% to 40%. Bonferroni correction could be done to rectify such possibility of false positive results through dividing the significant values by the number of tests conducted. Yet, the correction is very conservative, as A. Field (2013) has conceded. Additionally, if the correction was made to all the tests, it could as well produce a Type II error. Some researchers in different academic fields have even proposed to abandon the Bonferroni correction (see, e.g. Nakagawa, 2004; and Perneger, 1998, among others) or any correction for multiple comparisons in general (see, e.g. Rothman, 1990; and Saville, 1990). Everything considered, perhaps one practical way was to treat the statistical test results which had a significance value between .01 and .05 with caution. As for those which possessed a highly significant value of $p \leq .01$ or $p \leq .001$, it would be more justifiable to suggest some real differences between groups because they would still be significant even if a Bonferroni correction was applied. Table 43 summarises the findings for the effect of LK on strategy use.

Table 43: Summary of findings concerning different levels of LK on reported strategy use measured by questionnaire

Group differences	Vocabulary-only analysis	Grammar-only analysis	Vocabulary and grammatical knowledge taken together
Students with lower LK used more	<p>*** <u>Strategy 6: Translation</u></p> <p>**<u>Strategy 7: Selective attention on simple words or segments</u></p> <p>*** <u>Opportunities for strategic behaviour 2: Hide and seek</u></p>	<p>*** <u>Strategy 6: Translation</u></p> <p>* <u>Opportunities for strategic behaviour 2: Hide and seek</u></p>	<p>*** <u>Strategy 6: Translation</u></p>
Students with higher LK used more	<p>***<u>Strategy 2: Selective attention particularly on difficult words or segments</u></p> <p>*** <u>Strategy 3: Recall of prior knowledge</u></p> <p>** <u>Strategy 4: Relational – understanding through recalling teacher’s approach</u></p> <p>** <u>Strategy 8: Auditory representation and imagery</u></p>	<p>* <u>Strategy 2: Selective attention particularly on difficult words or segments</u></p> <p>** <u>Strategy 3: Recall of prior knowledge</u></p> <p>* <u>Strategy 8: Auditory representation and imagery</u></p> <p>* <u>Strategy 9: Evaluation</u></p>	<p>*** <u>Strategy 2: Selective attention particularly on difficult words or segments</u></p> <p>*** <u>Strategy 3: Recall of prior knowledge</u></p> <p>** <u>Strategy 8: Auditory representation and imagery</u></p> <p>** <u>Strategy 9: Evaluation</u></p>

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

4.3.4 Tentative answer to RQ2

Having conducted relevant statistical tests in section 4.3.3, I can now partly answer RQ2: How do students with different linguistic knowledge differ in the strategies used, based solely on the results gathered from the questionnaire (for more results in response to RQ2, see Chapter 5 – computer programme analysis, and Chapter 6 – stimulated recall interviews analysis, and Chapter 7 – discussion). First of all, referring back to Table 43, all three analyses of LK showed highly significant results for students with low LK using significantly more *translation* strategies. The preference of such *translation* strategies was also supported by previous research on listening comprehension strategies such as Vandergrift (2003). Results shown in Table 43 also suggested that the low LK students performed more *hide and seek* actions in the first two analyses, despite a lower significance level found in the grammar-only analysis. Additionally, solely the vocabulary-only analysis revealed

significantly more use of *selective attention on simple words* by the low LK students. This was interesting because the statistics appeared to show that the disadvantage in terms of vocabulary defined a difference of these students focussing more on the simple and familiar words.

On the other hand, students with higher LK tended to attend selectively to more difficult words and recall their prior knowledge more often. All three analyses also substantiated their use of *auditory representation and imagery* strategies more than their counterparts with low LK, although the level of significance with the grammar-only analysis was not as high. The vocabulary-only analysis uniquely identified a significant difference in the use of *relational* strategies. With the other two analyses, they indicated that students with higher LK used more *evaluation*. An explanation of these different results arising from the three analyses of LK will be brought up in the discussion chapter. Table 44 tabulated the tentative answer to RQ2 according to the results from the Likert-scale questionnaire.

Table 44: Tentative answer provided by questionnaire to RQ2: How do students with different linguistic knowledge differ in the strategies used?

Linguistic knowledge	Strategy use
Low	<ul style="list-style-type: none"> • Used more <i>translation</i> strategies • <u>Probably</u> performed more <i>hide and seek</i> actions • With weaker vocabulary, attended selectively to simple and familiar words more often
High	<ul style="list-style-type: none"> • Attended selectively to difficult words more often • Drew on prior knowledge more often • Used <i>auditory representation and imagery</i> more often • With stronger vocabulary knowledge, used more <i>relational</i> strategies • With better grammatical knowledge and LK taking into account both vocabulary and grammar, evaluated understanding more often

4.4 Cluster analysis to identify a highly strategic low LK group and a less strategic high LK group

The analysis of the Likert-scale questionnaire so far has focused on the contrast between the low and high LK groups. Although such a contrast is revealing and is what previous listening strategy research has usually investigated⁷, it does not tease out how some learners of low LK might use strategies to compensate their inadequate LK. As pointed out in the literature review in Chapter 2, learners might draw more on their strategic behaviour when facing a difficult task where LK alone is insufficient. While task difficulty will only be explored in the next section on the findings of the computer programme, the variable of LK can be examined more closely using the questionnaire data.

Particularly, Macaro et al. (2007) suggested matching learners with similar LK in order to investigate the variable of strategy *per se* and reveal whether some learners of comparable LK are more strategic than their counterparts. And indeed, the comparison of learners with low and high LK presented in section 4.3 produced relatively small effect sizes, which could be indicative of great variability within group.

To that end, a cluster analysis was conducted using SPSS 22.0 to break down the group of students with low LK into two distinctive clusters of more strategic and less strategic learners. Non-hierarchical K-means clustering was employed so that within-cluster homogeneity was maximised. The analysis started with randomly assigning k participants (two in this case because two groups were to be formed) as the centroids and then classified the other participants one after another to the nearest centroids, while recalculating the value of the centroids each time until all participants were classified (Bouhmala, 2014). It was considered most appropriate to employ non-hierarchical clustering because of its usefulness in exploratory data analysis (Morissette & Chartier, 2013). Moreover, as Tan, Steinbach, and Kumar (2006) maintains, hierarchical clustering should only be used if subclusters are

⁷ In fact, most previous research was interested in the differences of students with high and low listening proficiency, as discussed in section 2.2.2.1. Nevertheless, the high/low or good/bad distinction is often the centre of enquiry into listening strategies.

permitted. Given that the major aim of performing the cluster analysis was to identify two separate clusters from the low LK group, K-means clustering was used. Additionally, a similar procedure was used to break down the students with high LK into two distinctive clusters.

Subsequently, these four groups of students – low LK less strategic (LLK/LS), low LK highly strategic (LLK/HS), high LK less strategic (HLK/LS), and high LK highly strategic (HLK/HS) were compared against each other to explore their differences in terms of strategies reported through the Likert-scale questionnaire. Originally, given the different ways of calculating LK (taking into account vocabulary-only, grammar-only, and vocabulary-and-grammar combined) as noted in section 4.3, it was considered most appropriate to conduct the cluster analyses with each of the three ways of classification. However, due to space limitation of this thesis, this was not done. The second choice would be to include only the learners who were consistently categorised as low or high in all three computations of LK for this cluster analysis. Such a consideration arose from the fact that there were some learners who were better at vocabulary but weaker at grammar being classified into the high and low groups respectively in different analyses. In order not to mess up the cluster analysis and make a better claim that learners in the low LK group were truly matched with each other in terms of having weaker LK when compared to the high LK group, including only those who constantly belonged to the same LK group in different computations would be advantageous. However, it turned out that only 413 out of 646 students (around 64% of the sample) consistently belonged to the low or high LK group in the three classifications. Moreover, it was found that using the vocabulary-and-grammar-combined LK score yielded similar results with the analysis of using only these 413 students. Therefore, with a view to not eliminate participants unnecessarily and to give more statistical power to the analysis, only the vocabulary-and-grammar-combined LK score results are reported below.

In order to perform a cluster analysis, it was important to select the variables used to predict the group membership of more versus less strategic learners of low LK. In light of the findings from the previous sub-sections that learners of higher LK tended to use certain strategies in at least two (including that of the vocabulary-and-grammar-combined analysis) of the three analyses (*selective*

attention particularly on difficult words or segments, recall of prior knowledge, auditory representation and imagery, and evaluation) significantly more than those with lower LK, these strategies were selected as the predictor variables. Such a selection allowed me to identify a sub-group within the group of lower LK who were more strategic and resembled more to learners of higher LK. Specifying two clusters to be identified, learners of low LK were broken down into a less strategic group (LLK/LS) and a highly strategic group (LLK/HS). Similar procedures were employed to divide the high LK learners into two clusters of less (HLK/LS) and highly strategic (HLK/HS). Table 45 shows how these four groups differed in terms of the reported strategies through the questionnaire.

Table 45: Descriptive statistics of reported strategies in questionnaire across the LLK/LS, LLK/HS, HLK/LS, and HLK/HS groups

	Low LK				High LK			
	(1) Less strategic (LLK/LS) low LK (n=180)		(2) Highly strategic (LLK/HS) (n=143)		(3) Less strategic (HLK/LS) (n=125)		(4) Highly strategic (HLK/HS) (n=198)	
Strategy	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Factor 1: <i>Contextualisation for the present lesson</i>	2.52	0.52	3.37	0.45	2.51	0.58	3.30	0.54
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	3.03	0.64	3.88	0.48	3.01	0.58	4.01	0.45
Factor 3: <i>Recall of prior knowledge</i>	2.89	0.55	3.83	0.45	2.93	0.60	3.93	0.48
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	2.61	0.66	3.38	0.61	2.58	0.70	3.39	0.64
Factor 5: <i>Summarisation / Appropriation</i>	3.31	0.58	3.87	0.48	3.27	0.66	3.86	0.50
Factor 6: <i>Translation</i>	3.18	0.93	3.42	0.94	2.73	0.99	3.04	1.02
Factor 7: <i>Selective attention on simple words or segments</i>	2.80	0.66	3.38	0.64	2.66	0.80	3.21	0.75
Factor 8: <i>Auditory representation and imagery</i>	2.77	0.67	3.69	0.54	2.72	0.68	3.80	0.60
Factor 9: <i>Evaluation</i>	2.67	0.63	3.49	0.57	2.81	0.66	3.45	0.60
Factor 10: <i>Repetition</i>	2.79	0.84	3.41	0.72	2.67	0.85	3.32	0.76
Opportunities for strategic behaviour	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Factor 1: <i>Utilisation of personal physical resources</i>	2.79	0.68	3.36	0.65	2.68	0.71	3.39	0.69
Factor 2: <i>Hide and seek</i>	3.38	0.71	3.40	0.75	3.07	0.81	3.43	0.69
Factor 3: <i>Direct help seeking from the teacher</i>	2.29	0.87	2.87	0.86	2.45	1.03	2.82	0.95

The descriptive statistics indicated that the LLK/HS group reported more frequent use of all the strategies when compared to the LLK/LS group, and an almost identical trend was observed with the HLK/HS group reporting more use of the strategies than the HLK/LS group. Interestingly, the LLK/HS group and HLK/HS group resembled each other in almost all the strategies variables except for the figure for *translation* strategies which we observed some difference. A similar observation could be drawn by comparing the LLK/LS and HLK/LS groups with by and large similar descriptive statistics except for *translation*, but on top of *translation* there was also a more substantial difference in *hide and seek*. In order to find out if there were significant results, appropriate statistical tests were required. However, before comparing the four groups, it was important to confirm whether the LLK/LS and LLK/HS groups were still equally low in LK. To put it in another way, if the cluster analysis had separated the low LK group into two groups of differing LK, it might not be interesting to reveal group differences in strategy use because LK acted as a confounding variable. Likewise, it was of crucial importance to find out if HLK/LS and HLK/HS groups were still comparable in their levels of LK, and that both groups were significantly better than the two low LK groups. Therefore, one-way analyses of variance (ANOVAs) were conducted with these four groups as the independent variable, and VLT and GJT scores as the two dependent variables. Results indicated a main effect of group with large effect sizes on VLT score ($F[3,642]=173.20; p<.001; r=.67$) and on GJT score ($F[3,642]=278.83; p<.001; r=.75$). Given that the variances were heterogeneous, Games-Howell was selected as a post-hoc comparison to find out where the differences lay, following the suggestions of A. Field (2013) that it can be used for datasets with unequal samples sizes and heterogeneous variances. With the VLT score, it was found that both the HLK/LS and HLK/HS groups outperformed the other two groups with low LK ($p<.001$) whereas the two high LK groups did not differ from each other ($p=.903$), as was the case with the two low LK groups ($p=.137$). With the GJT score, similar results were found that the two higher LK groups outperformed the two lower LK groups (all $p<.001$) and that the two high LK groups being comparable ($p=.993$), as were the two low LK groups ($p=.739$).

Having confirmed that the two low LK groups were equally low in terms of their levels of LK when compared to the two equally high LK groups, we can turn back to the differences across groups in their strategy use. As such, one-way ANOVAs for each strategy were performed and the results are shown in Table 46. It is noteworthy that the estimate of effect sizes reported here is r in order to give a better comparison with all the other statistical results in the thesis.

Table 46: One-way ANOVAs showing main effects of groups on the various strategy factor structures

Strategy	<i>F</i>	<i>r</i>
Factor 1: <i>Contextualisation for the present lesson</i>	131.41 ***	.62
Factor 2: <i>Selective attention particularly on difficult words or segments</i>	160.85 ***	.66
Factor 3: <i>Recall of prior knowledge</i>	194.28 ***	.69
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	78.32 ***	.52
Factor 5: <i>Summarisation / Appropriation</i>	57.37 ***	.46
Factor 6: <i>Translation</i>	12.15 ***	.23
Factor 7: <i>Selective attention on simple words or segments</i>	33.29 ***	.37
Factor 8: <i>Auditory representation and imagery</i>	139.31 ***	.63
Factor 9: <i>Evaluation</i>	78.11 ***	.52
Factor 10: <i>Repetition</i>	33.16 ***	.37
Opportunities for strategic behaviour	<i>F</i>	<i>r</i>
Factor 1: <i>Utilisation of personal physical resources</i>	47.15 ***	.42
Factor 2: <i>Hide and seek</i>	7.02 ***	.18
Factor 3: <i>Direct help seeking from the teacher</i>	15.89 ***	.26

*** $p < .001$

There were significant main effects of groups in all strategies ($p < .001$). With regard to the effect sizes, adopting the guidelines suggested by J. Cohen (1988, 1992) that $r = .10$, $r = .30$, and $r = .50$ as representing small, medium, and large effect sizes respectively, it can be observed that except for *translation*, *hide and seek*, and *direct help seeking from the teacher* which revealed small to medium effect sizes, all the other comparisons showed medium to large effect sizes.

Next, in order to identify where the differences lay, post-hoc tests were conducted. Given that *Contextualisation for the present lesson, selective attention particularly on difficult words or segments, recall of prior knowledge, summarisation / appropriation, selective attention on simple words or segments, and auditory representation and imagery* did not meet the assumption of homogeneity of variances, Games-Howell post-hoc tests were conducted for these variables. With the rest of the strategy variables, Bonferroni tests were employed to identify the differences between the groups. Table 47 presents the results of the post-hoc tests.

Table 47: Post-hoc tests to identify differences across groups (1=LLK/LS, 2=LLK/HS, 3=HLK/LS, 4=HLK/HS)

Strategy	Bonferroni	Games-Howell
Factor 1: <i>Contextualisation for the present lesson</i>		2>1 *** ($r = 0.66$) 2>3 *** ($r = 0.66$) 4>1 *** ($r = 0.60$) 4>3 *** ($r = 0.57$)
Factor 2: <i>Selective attention particularly on difficult words or segments</i>		2>1 *** ($r = 0.61$) 2>3 *** ($r = 0.65$) 4>1 *** ($r = 0.69$) 4>3 *** ($r = 0.74$) 4>2 ($p = .051$) ($r = 0.14$)
Factor 3: <i>Recall of prior knowledge</i>		2>1 *** ($r = 0.67$) 2>3 *** ($r = 0.67$) 4>1 *** ($r = 0.71$) 4>3 *** ($r = 0.73$)
Factor 4: <i>Relational – understanding through recalling teacher’s approach</i>	2>1 *** ($r = 0.51$) 2>3 *** ($r = 0.52$) 4>1 *** ($r = 0.51$) 4>3 *** ($r = 0.51$)	
Factor 5: <i>Summarisation / Appropriation</i>		2>1 *** ($r = 0.47$) 2>3 *** ($r = 0.49$) 4>1 *** ($r = 0.46$) 4>3 *** ($r = 0.51$)
Factor 6: <i>Translation</i>	1>3 *** ($r = 0.23$) 2>3 *** ($r = 0.34$) 2>4 ** ($p = .002$) ($r = 0.19$) 4>3 * ($p = .033$) ($r = 0.15$)	
Factor 7: <i>Selective attention on simple words or segments</i>		2>1 *** ($r = 0.40$) 2>3 *** ($r = 0.47$) 4>1 *** ($r = 0.28$) 4>3 *** ($r = 0.33$)
Factor 8: <i>Auditory representation and imagery</i>		2>1 *** ($r = 0.61$) 2>3 *** ($r = 0.64$) 4>1 *** ($r = 0.63$) 4>3 *** ($r = 0.64$)
Factor 9: <i>Evaluation</i>	2>1 *** ($r = 0.56$) 2>3 *** ($r = 0.49$) 4>1 *** ($r = 0.53$) 4>3 *** ($r = 0.45$)	

Factor 10: <i>Repetition</i>	2>1 *** ($r = 0.37$) 2>3 *** ($r = 0.43$) 4>1 *** ($r = 0.31$) 4>3 *** ($r = 0.37$)	
Opportunities for strategic behaviour	Bonferroni	Games-Howell
Factor 1: <i>Utilisation of personal physical resources</i>	2>1 *** ($r = 0.40$) 2>3 *** ($r = 0.45$) 4>1 *** ($r = 0.40$) 4>3 *** ($r = 0.44$)	
Factor 2: <i>Hide and seek</i>	1>3 ** ($p = .002$) ($r = 0.22$) 2>3 ** ($p = .002$) ($r = 0.21$) 4>3 *** ($r = 0.26$)	
Factor 3: <i>Direct help seeking from the teacher</i>	2>1 *** ($r = 0.32$) 2>3 *** ($r = 0.22$) 4>1 *** ($r = 0.28$) 4>3 ** ($p = .003$) ($r = 0.18$)	

* $p < .05$; ** $p < .01$; *** $p < .001$

It can be seen that most of the differences favoured group 2 the LLK/HS group and group 4 the HLK/HS group, meaning that they reported to be more strategic than the LLK/LS (group 1) and HLK/LS (group 3) students. At the same time, the two highly strategic groups did not differ from each other in most strategies, suggesting that they were comparably strategic in general despite their different levels of LK. Similarly, the two less strategic groups did not differ from each other in most of the strategy variables. The results were interesting in the sense that the LLK/HS group actually used more strategies than some students with higher levels of LK (the HLK/LS group) in general. Such findings indicated that some lower LK learners might rely more on their repertoire of strategies when their LK was inadequate. Further, they appeared to use all kinds of strategies to help their understanding.

These trends – the two HS groups being comparable and both reporting more strategies than the two comparable LS groups – were maintained in all strategies and opportunities for strategic behaviour with medium to large effect sizes except two: *translation* and *hide and seek*. For *translation*, it was found that the two LLK groups did not differ from each other, and both groups reported a higher use of *translation* strategies than the HLK/LS group. The LLK/HS group also used more *translation* than the HLK/HS group, which in turn used more *translation* than the HLK/LS group,

although the significance value was not as high ($p = 0.33$). These findings could indicate that while the two highly strategic groups were comparable in a range of strategies, the lower LK students relied more on *translation* strategies than those with higher LK. In a similar vein, the LLK/LS group was comparable to the HLK/LS group in a range of strategies but the former group relied more heavily on *translation*. More interestingly, while the LLK/LS group was usually less strategic than the two HS groups, these LLK/LS students were comparable in their use of *translation* strategies with the HS students, further showing their heavy reliance on *translation*. Such an observation contrasted how the HLK/LS students did – that they were consistently using fewer strategies in the whole range of strategies including *translation*, without relying on any particular strategies more than the other three groups.

With *hide and seek*, the contrasts revealed that the HLK/LS group used less *hide and seek* than the other three groups, further suggesting their not favouring any particular strategies than the other three groups. Interestingly, the LLK/LS group was again comparable with the two highly strategic groups – the LLK/HS and HLK/HS groups, in their use of *hide and seek*.

Finally, it was also noteworthy that the HLK/HS group almost significantly ($p = .051$) used more *selective attention particularly on difficult words or segments* than the LLK/HS group. This finding could show that the levels of LK did play a role in strategy use because the limited LK of the LLK/HS students might constraint how they could selectively attend to the more difficult words.

To summarise the findings of the cluster analysis, it was revealed that the LLK and HLK groups can each be broken down into two clusters of less and highly strategic. Using this new classification of groups based on their levels of LK and degrees of being strategic, it was found that the LLK/HS group was comparably strategic to the HLK/HS group in general, but they relied more heavily on *translation*. In addition, the LLK/LS group was usually less strategic than the two highly strategic groups, but they did not differ in and indeed relied heavily on the use of *translation* and *hide and seek*. Their HLK/LS counterparts, in contrast, were consistently using less strategies inclusive of

translation, suggesting their not relying on any particular strategies when compared to the levels of strategy use by the other three groups.

4.5 Chapter summary

This chapter centred on the use of the Likert-scale questionnaire in measuring students' strategy use when listening to the teacher's input in the classroom. Following an EFA of the questionnaire, RQ1 on what strategies are used by students in this specific classroom context was answered to a certain extent. While some strategies were commonly found in both the present context and that of listening to audio recording in previous research, they had to be understood in a novel manner. There was the example provided on how *selective attention* had to be viewed as strategies stemming from different goals and orientation when the target elements being focused on differed from simple to difficult words. Furthermore, there were some different strategies identified – *contextualisation for the present lesson* and *relational* strategies, and the importance of interpersonal relationship was flagged up.

The chapter then turned to a description on how LK was manifested through the VLT and GJT, and how challenging it was to arrive at one single LK score given the scarcity of literature on the differential role of vocabulary and grammar in listening research. Three analyses of LK – vocabulary-only, grammar-only, and computation of one LK score from VLT and GJT were conducted to classify students into low and high LK groups. Group differences on strategy use measured by the questionnaire were explored. Thereafter, RQ2 was answered in part, showing some major differences of LK on strategy use as reported in Table 43 and Table 44.

However, examining only the differences of students with low and high LK without taking into account the variability within the low LK group might have overlooked the fact that this group of low LK consisted of some learners who were more strategic than the others. A cluster analysis was thus carried out to divide the learners with low LK into two distinctive groups of less strategic (LLK/LS) and highly strategic (LLK/HS) learners. Similarly, the learners with high LK were broken down into

two groups of less (HLK/LS) and highly strategic (HLK/HS). Subsequently, a series of ANOVAs together with post-hoc tests revealed that there existed this group of LLK/HS learners who were relatively more strategic than their LLK/LS counterparts. It was interesting that the highly strategic low LK group (LLK/HS) used a wider range of strategies than the high LK group (HLK/LS), although they also relied a lot on *translation* strategies. The LLK/LS group, however, relied heavily and almost solely on *translation* and *hide and seek*.

Before arriving at a more elaborated answer to RQ2 on the role of LK on strategic behaviour, results from the computer programme and stimulated recall protocol have to be taken into account. These results are presented in the following two chapters.

Chapter 5 Findings (computer programme)

Having presented the findings from the Likert-scale questionnaire in the previous chapter, this chapter turns to the results obtained from the computer programme. The computer programme is used to complement the answer to RQ2 presented in Chapter 4, and at the same time provide an answer to RQ3 and RQ4.

RQ2. How do students with different linguistic knowledge differ in the strategies used?

RQ3. How do students' strategies vary according to the difficulty of the listening tasks?

RQ4. How do students' strategies vary according to different task types?

This chapter is organised in the following way. First, in section 5.1, data from the computer programme is taken as a whole to provide a general picture of the strategies that students favoured using in contrast with those less preferred, as well as how frequent students combined different strategies in understanding the teacher in the video. Section 5.2 then builds upon the tentative answer to RQ2 on how strategy use varies according to LK presented in the previous chapter. In so doing, the variables of task difficulty and task types will also be included in the analysis to give a more comprehensive picture of the interplay between different variables on strategy use. Subsequently, in section 5.3, particular attention is paid more closely and solely on the variable of task difficulty on strategy use, hence providing an answer to RQ3 on the effect of task difficulty. Section 5.4 then contributes to answering RQ4 which focuses on the effect of different task types, such as ELICIT, INFORM, and DIRECT on strategy use. Upon conducting and presenting all the quantitative analysis, section 5.5 adopts a slightly different and qualitative approach towards the analysis of the data from the computer programme. This chapter ends with a summary of all the findings of the computer programme in relation to how strategy use varies according to the three variables of LK, task difficulty, and task types.

5.1 Computer programme – general findings

The computer programme which involves students watching a teaching video and reporting strategy use through clicking buttons was developed to investigate the effect of three different independent variables – LK, task difficulty, and task types on the dependent variable of strategy use. In total, 59 students took part in the computer programme and Table 48 presents the descriptive statistics of how many times each button on the computer programme was clicked by the students taken together – the first six buttons being six different strategies and the seventh being ‘doing nothing’ (not using any particular strategies to facilitate understanding). It is worth noting that the sequence of presentation of the six strategies and ‘doing nothing’ in this table (and the other tables in this chapter) follows the list that learners saw on the computer programme (see Figure 5 in Chapter 3.3.3.2.2).

Table 48: Descriptive statistics of individual strategies used by learners in the computer programme

	N	Minimum	Maximum	Mean	S.D.	Skewness	Std. Error	Kurtosis	Std. Error
<i>Inferencing</i>	59	0	16	4.88	4.186	1.243	.311	.996	.613
<i>Elaboration</i>	59	0	42	8.22	7.996	1.846	.311	4.454	.613
<i>Imagery</i>	59	0	28	4.78	5.506	2.144	.311	5.742	.613
<i>Summarisation</i>	59	0	21	4.27	4.831	1.702	.311	2.524	.613
<i>Translation</i>	59	0	33	7.83	8.247	1.639	.311	1.992	.613
<i>Repetition</i>	59	0	36	7.29	6.023	2.189	.311	8.192	.613
Doing nothing	59	0	23	7.56	6.390	.892	.311	-.139	.613

The descriptive statistics revealed several noteworthy points as reflected by the minimum, the mean, and the distribution. First, the minimum being 0 for all 6 strategies suggests that some students did not use all six strategies while watching the teaching video. In other words, there were some strategies which individual students never used. Such finding adds, however minimally, to the validity of the computer programme because students did not click all buttons provided to them. If they never

used, for instance, *inferencing*, they did not click the button simply because the button was there. On the other hand, the minimum for ‘doing nothing’ was also 0, meaning that no student did nothing throughout the virtual lesson. To put it another way, all students used at least some strategies during the course of the data collection using the computer programme.

Turning to the means of the six strategies, *elaboration* (recall of prior knowledge), *translation* (use of L1), and *repetition* (repeating what was said by the teacher in mind) were most preferred by students with means more than 7, suggesting that students on average used these strategies more than 7 instances on average during the course of the 10-minute teaching and learning video with a total of 47 different tasks (or different exchanges featuring different types of teacher input, see Appendix E again for examples of these tasks and Appendix F for the lesson transcript). These three strategies were used 50% more frequently than the other three strategies of *inferencing* (guessing of words based on contextual clues), *imagery* (use of mental images to represent information), and *summarisation* (converting language items into ideas). With ‘doing nothing’, the mean was also rather high (mean= 7.56), indicating that on average there were 7 to 8 instances (again, out of 47 tasks in total) that students did nothing to understand the teacher in the video.

The distribution of the use of strategies was also revealing. All of the strategies and the orientation of ‘doing nothing’ did not show a normal distribution according to the skewness and kurtosis values. Following A. Field’s (2013) suggestion, one way of detecting normality for a small sample of less than 200 participants such as this dataset is to compute the z-scores through dividing skewness and kurtosis statistics by their standard errors respectively. If the figure is greater than 1.96, it indicates $p < .05$ significance of deviation from normality. Following this guideline, all the six strategies and the orientation of ‘doing nothing’ were significantly positively skewed and showed a non-normal distribution. However, the use of strategies not being normally distributed was not surprising because the sample of 59 participants might not be able to yield normality due to the highly individualistic strategy use. The very high standard deviation also suggested such very different orientations of strategy use by learners.

Apart from the descriptive statistics of individual strategies, it was also of interest to explore how frequently students combined different strategies to understand the teacher in the video. Combination of strategies was recorded by the computer programme when learners clicked two or more buttons (excluding the ‘doing nothing’ button) at the same time, indicating their use of two or more strategies. Table 49 provides the descriptive statistics for the instances of combination of strategies.

Table 49: Descriptive statistics of combination of strategies

	N	Minimum	Maximum	Mean	S.D.	Skewness	Std. Error	Kurtosis	Std. Error
Instances of combination	59	0	40	5.17	8.583	2.521	.311	6.498	.613

Similar to the analysis above on individual strategies, the minimum, the mean and the distribution are worth mentioning. First of all, the minimum being 0 indicates that there were some students who did not combine strategies at all. At the same time, there was at least one student who combined strategies 40 times out of the 47 tasks, showing his/her frequent combination of strategies to facilitate his/her understanding. Secondly, the mean shows that there were 5 instances on average where students clustered strategies in order to understand the teacher in the video. Moreover, the skewness and kurtosis figures suggest that the distribution was non-normal, which was again expected because strategy use can be highly individualistic. It may not be necessary for students to combine strategies to facilitate understanding especially when the teacher’s input is easy to comprehend.

5.2 Computer programme – The effect of LK

5.2.1 Introduction

Given that the participants in the computer programme are a sub-group of the questionnaire, the classification of learners into low and high LK follows that of the analysis of the questionnaire. In so doing, the results of the questionnaire and computer programme can be compared and examined

together to answer RQ2 on how strategy use varies according to LK. As depicted in section 4.3, there were three different ways of classifying learners into low and high LK groups by taking into account vocabulary only, grammar only, and vocabulary and grammar combined respectively. However, given that the computer programme results obtained through these three analyses were similar, only the latter analysis is presented below.

The computer programme also included the variables of different task types and task difficulty. Given that these two variables linked to the tasks were also hypothesised to have an effect on strategy use (as in RQ3 and RQ4), it might be more appropriate and revealing to acknowledge the potential effects of these two variables while examining the relationship between LK and strategy use. In the following, the use of individual strategies by learners of different LK, taking into account the variables of task types and task difficulty, will first be explored in section 5.2.2. Subsequently, section 5.2.3 compares the frequency of combination of strategies between learners of low and high LK. Section 5.2.4 will then attempt to compare the results with those found by the questionnaire in the previous chapter. Finally, a summary is provided in section 5.2.5.

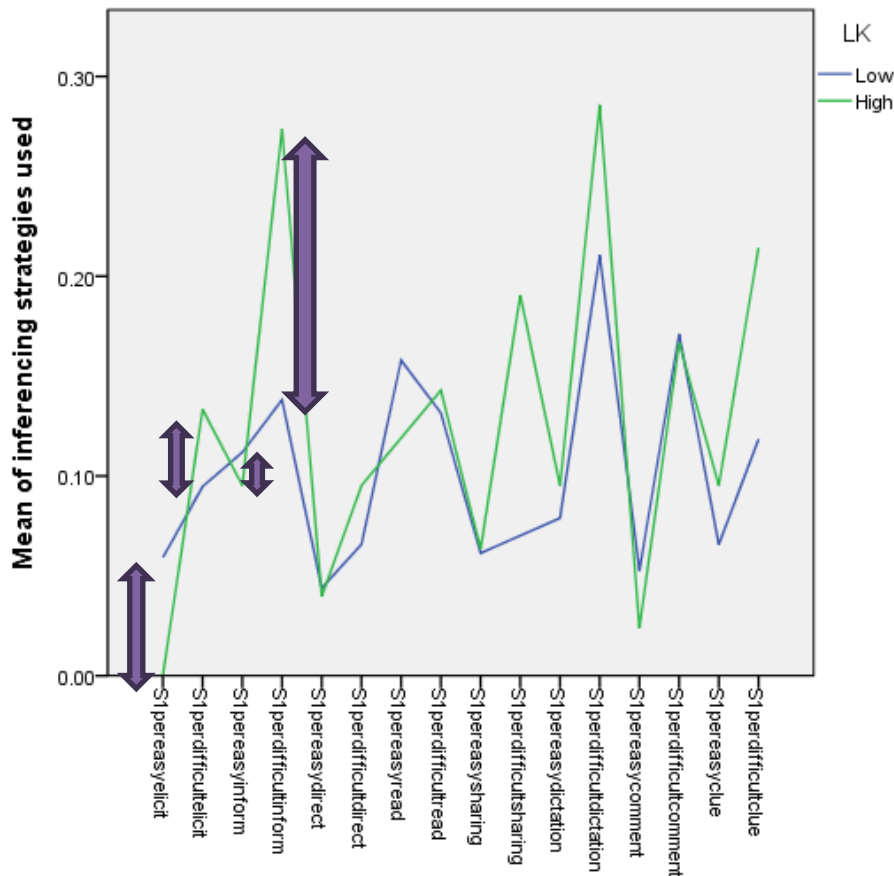
5.2.2 Use of individual strategies by learners of low and high LK

From the outset, it is important to decide what kind of analysis would be meaningful to explore the effect of LK on strategy use. It is justifiable that the analysis could be described as a mixed design – there is a between-subject independent variable of LK, as well as two within-subject independent variables of task difficulty and task types because every student underwent all the conditions of different task types of varying difficulties. The dependent variable was the use of different strategies targeting to these different tasks. The most straightforward way of analysing the data appeared to be a mixed ANOVA; however, as the data were non-normally distributed (as shown below), a non-parametric test would be required. And yet, A. Field (2013) has conceded that there is no non-parametric equivalent for a mixed ANOVA. One alternative, then, would be to conduct some separate planned contrasts and apply Bonferroni correction to safeguard against Type I error for carrying out

multiple tests. More importantly, it might not be meaningful to contrast the use of strategies against all the different task types with varying difficulties within group. In other words, it does not make much sense if we, for instance, find out that learners of higher LK used an *inferencing* strategy more when facing an easy ELICIT task than a difficult DICTATION task. Such a comparison is not meaningful because different task types arguably have different task demands: for example, an ELICIT requires a verbal response and a DICTATION requires a written response. At the same time, different levels of task difficulty, based on vocabulary and grammar, are also related to the cognitive demands for learners. In other words, an easy version of a task with higher cognitive demand and a difficult version of a task with lower cognitive demand might require same levels of use of different strategies, hence complicating the picture and masking up the potential effect of different tasks types of varying difficulties on the use of strategies.

Therefore, a more appropriate analysis would perhaps be matching the different task types with varying levels of difficulty, and explore the main effect of the between-group variable of LK on strategy use. In such a way, the potential effects of task types and task difficulty will be taken into account, and at the same time the results would give a clear picture on how learners with different LK used different strategies. Originally, based on the insight from the cluster analysis in the previous chapter, it was also considered revealing to contrast the four groups of learners with varying levels of LK and strategic behaviour (i.e. LLK/LS, LLK/HS, HLK/LS, HLK/HS). However, the small sample for the computer programme did not allow such a between-group comparison. As such, the following analysis adopts a between-subjects design contrasting only learners with low and high LK. Figure 7 shows graphically the contrasts which are of interest in the following analysis by having *inferencing* strategies as an example.

Figure 7: Graphical representation showing how the effect of LK on the use of *inferencing* was analysed for easy INFORM, difficult INFORM, easy ELICIT, and difficult ELICIT



Another issue related to analysing the data is the unequal number of tasks of different types and varying difficulty because as mentioned in Chapter 3.3.3.2.2, the teaching video in the computer programme was made as close to authentic classroom teaching as possible. Therefore, the number of occurrence for tasks of different types and difficulty was constrained by how naturally they were supposed to occur in an authentic classroom. In order to make a valid comparison, students' use of strategies per task was chosen to be the unit of analysis. For example, if a student used an *inferencing* strategy in 2 out of the 4 easy ELICIT tasks, the figure for this student's use of *inferencing* per easy ELICIT task would be 0.5 (or 50%). Data from each student were calculated in this way and inputted into SPSS for analysis. As the descriptive statistics is too complicated to be presented here, it is shown in Appendix R instead. However, it is still worthwhile to present what strategies were most and least preferred by learners of differing LK across different task types and of varying task difficulty (See Table 50).

Table 50: Most and least used strategies by learners of different LK across different task types and of varying difficulty

	LK groups	Low LK (n=38)		High LK (n=21)	
	Task difficulty	Easy	Difficult	Easy	Difficult
(1) ELICIT	Most used strategy	<i>Translation</i>	<i>Repetition</i>	<i>Elaboration</i>	<i>Elaboration</i>
	Least used strategy	<i>Imagery and summarisation</i>	<i>Imagery</i>	<i>Inferencing</i>	<i>Summarisation</i>
(2) INFORM	Most used strategy	<i>Translation</i>	<i>Elaboration</i>	<i>Elaboration</i>	<i>Elaboration and summarisation</i>
	Least used strategy	<i>Imagery</i>	<i>Imagery</i>	<i>Summarisation</i>	<i>Imagery</i>
(3) DIRECT	Most used strategy	<i>Translation</i>	<i>Repetition</i>	<i>Repetition</i>	<i>Elaboration</i>
	Least used strategy	<i>Summarisation</i>	<i>Summarisation</i>	<i>Inferencing</i>	<i>Inferencing and repetition</i>
(4) READ ALOUD	Most used strategy	<i>Imagery</i>	<i>Imagery</i>	<i>Imagery</i>	<i>Imagery</i>
	Least used strategy	<i>Summarisation</i>	<i>Summarisation</i>	<i>Summarisation</i>	<i>Summarisation</i>
(5) SHARING	Most used strategy	<i>Elaboration and translation</i>	<i>Translation</i>	<i>Imagery and translation</i>	<i>Summarisation</i>
	Least used strategy	<i>Summarisation</i>	<i>Summarisation</i>	<i>Inferencing</i>	<i>Repetition</i>
(6) DICTATION	Most used strategy	<i>Repetition</i>	<i>Repetition</i>	<i>Repetition</i>	<i>Repetition</i>
	Least used strategy	<i>Inferencing</i>	<i>Summarisation</i>	<i>Imagery</i>	<i>Imagery</i>
(7) COMMENT	Most used strategy	<i>Translation</i>	<i>Repetition</i>	<i>Elaboration</i>	<i>Translation</i>
	Least used strategy	<i>Summarisation</i>	<i>Summarisation</i>	<i>Inferencing</i>	<i>Imagery</i>
(8) CLUE	Most used strategy	<i>Translation and repetition</i>	<i>Translation</i>	<i>Elaboration</i>	<i>Repetition</i>
	Least used strategy	<i>Imagery and summarisation</i>	<i>Imagery</i>	<i>Summarisation</i>	<i>Imagery</i>

Some general observations can be made with the descriptive statistics (see Appendix R). First, the standard deviations were very high compared to the means, suggesting that huge variability existed between learners. Second, there was a 0 with the use of *inferencing* by the high LK group

when facing easy ELICIT tasks, meaning that no *inferencing* strategy was used (or required) by learners of high LK in those situations. Third, contrasting the low and high LK group, it appears that *elaboration* and *summarisation* was used more often by learners of the high LK group across many situations of different task types and difficulty, also shown in Table 50.

In order to explore whether the differences existed by chance or not, statistical tests had to be performed. Given that the standard deviations were very high (shown in Appendix R) and that the skewness and kurtosis metrics also revealed some rather high values which suggested non-normality, non-parametric tests might be more appropriate to compare the means between the low and high LK groups. As there were two groups of low and high LK, Mann-Whitney U tests would be appropriate.

To illustrate, take *inferencing* strategy as an example. The use of *inferencing* across the eight different task types, each with two levels of difficulty, were tested by 16 Mann-Whitney U tests. Given that it involved multiple comparison of the same dependent variable of *inferencing* strategy, a Bonferroni correction was made to safeguard against Type I error (A. Field, 2013) and the accepted significant level was $0.05/16 = 0.003125$. In a similar vein, learners of low and high LK were compared against each other in their use of *elaboration*, *imagery*, *summarisation*, *translation*, and *repetition* strategies, as well as the orientation of ‘doing nothing’. It is noteworthy to explain why Bonferroni correction was made for these analyses, and not for those with the Likert-scale questionnaire in the previous chapter. When analysing the Likert-scale questionnaire, 13 t-tests were performed to find out whether there were mean differences between the different factor structures of strategy variables. With the present scenario, however, the sets of 16 Mann-Whitney U tests were performed on the use of the same strategy (e.g. 16 tests for *inferencing*, then another set of 16 tests for *elaboration*). As A. Field (2013) has suggested, Bonferroni correction is used to control for familywise error and the same ‘family’ denotes the same experimental data. While what is considered a ‘family’ of experimental data is controversial (see, e.g. M. Chang, 2009 from the medical or pharmaceutical perspective), it is arguable that the use of the same strategy (such as *inferencing*) at different task conditions might be considered a ‘family’ while the use of different strategies as

different dependent variables not. If the use of different strategies were considered one ‘family’ and Bonferroni correction were to be applied, all the 7 sets of 16 Mann-Whitney U tests on the 6 strategies and orientation of ‘doing nothing’ had to be taken into account as a whole. The consequence would be a much lower significance level to be accepted, giving rise to the high possibility of making a Type II error. Therefore, it is justifiable for a Bonferroni correction to be applied to each set of 16 Mann-Whitney U tests for the present analysis, but not for the Likert-scale questionnaire in the previous chapter.

Having conducted the series of Mann-Whitney U tests and applying Bonferroni correction, only 6 significant results were found. Students of higher LK used significantly more *elaboration* strategy than those of lower LK when facing difficult ELICIT tasks, $U = 163.5$, $z = -3.970$, $p < .001$, $r = -0.52$, easy READ ALOUD, $U = 235.5$, $z = -3.322$, $p < .001$, $r = -0.43$, and easy CLUE, $U = 212.0$, $z = -3.477$, $p < .001$, $r = -0.45$. The higher LK group also used significantly more *summarisation* strategy than their lower LK counterparts when facing difficult SHARING, $U = 212.0$, $z = -3.530$, $p < .001$, $r = -0.46$, easy COMMENT, $U = 248.0$, $z = -3.537$, $p < .001$, $r = -0.46$, and difficult COMMENT, $U = 247.0$, $z = -3.251$, $p < .001$, $r = -0.42$. All these significant results had medium to strong effect sizes.

The use of more *elaboration* in difficult ELICIT tasks could suggest that the higher LK students relied more on their prior knowledge to help them understand the teacher’s questions. They did so even when facing easy READ ALOUD task – indicative of their trying to understand the meaning through associating the new knowledge with their prior knowledge much more than their counterparts with lower LK. When the teacher in the computer programme gave an easy CLUE as feedback to students’ responses, the higher LK students also tried to activate their prior knowledge significantly more than those with lower LK.

Concerning *summarisation* strategy, the higher LK group tried to identify the overarching meaning of the teacher’s input in form of difficult SHARING significantly more than the lower LK group. In addition, regardless of whether the COMMENT given by the teacher in the computer programme were easy or difficult, they tried to summarise what the COMMENT meant, potentially

yielding a broad picture of the connection between the teacher’s initiation, learner’s response and teacher’s feedback.

To conclude, results suggested that *inferencing*, *imagery*, *translation* and *repetition* were by and large used similarly by learners of low and high LK across the eight task types of varying difficulty. With *elaboration* and *summarisation*, students with higher LK used them significantly more than those with lower LK in some tasks.

5.2.3 Combination of strategies by learners of low and high LK

The combination of strategies by learners of low and high LK when facing different tasks is another measure of interest. Table 51 shows the descriptive statistics of instances of combination per task by students of low and high LK.

Table 51: Combination of strategies per task by low and high LK groups

		Low LK (n=38)	High LK (n=21)
Task type	Task difficulty	Mean (S.D.)	Mean (S.D.)
(1) ELICIT	Easy	.0197 (.0897)	.1429 (.2027)
	Difficult	.0263 (.0828)	.1619 (.2500)
(2) INFORM	Easy	.0526 (.1185)	.1905 (.3251)
	Difficult	.0658 (.1386)	.2857 (.3190)
(3) DIRECT	Easy	.0132 (.0456)	.1111 (.1851)
	Difficult	.0395 (.1366)	.2143 (.3381)
(4) READ ALOUD	Easy	.0658 (.2070)	.2143 (.3732)
	Difficult	.0921 (.1964)	.3095 (.4024)
(5) SHARING	Easy	.0263 (.1196)	.3333 (.3496)
	Difficult	.0702 (.1760)	.2540 (.3146)
(6) DICTATION	Easy	.0789 (.2183)	.3333 (.4282)
	Difficult	.1447 (.2575)	.4286 (.4551)
(7) COMMENT	Easy	.0132 (.0811)	.1429 (.2803)
	Difficult	.0789 (.2183)	.2857 (.4053)
(8) CLUE	Easy	.0263 (.1132)	.1667 (.3291)
	Difficult	.0789 (.2183)	.2381 (.3748)

Descriptively, it can be observed that across all task types of different difficulty, the high LK group combined strategies more often than the low LK group. In order to explore whether the differences were statistically significant, Mann-Whitney U tests were conducted given the non-normal distribution. Similar to the analysis of section 5.2.2, a Bonferroni correction was made to prevent Type I error due to the 16 tests of difference conducted and the level of significance accepted was .003125.

Three significant results were identified: learners of higher LK combined strategies more often than those of lower LK when facing easy ELICIT tasks, $U = 251.0$, $z = -3.458$, $p < .001$, $r = -0.45$, difficult INFORM, $U = 222.0$, $z = -3.298$, $p < .001$, $r = -0.43$, and easy SHARING, $U = 190.0$, $z = -4.444$, $p < .001$, $r = -0.58$. All the differences had medium and strong effect sizes.

The findings indicated that even when facing easy ELICIT and easy SHARING tasks, learners with higher LK were more likely to combine different strategies to facilitate their understanding. Those with lower LK, on the other hand, often only relied on individual strategies under these situations. With the finding related to difficult INFORM tasks, the following explanation is possible. An INFORM task usually involved some new knowledge brought up by the teacher. When it contained particularly difficult elements, learners of higher LK tried to deploy a range of strategies to facilitate their understanding, whereas learners of lower LK, due to their limited LK, might also be limited in the strategy options they had. As such, students who possessed lower LK remained using individual strategies. All this will be discussed in Chapter 7 again.

5.2.4 Computer programme results compared with Likert-scale questionnaire

The computer programme results were in line, to a certain extent with the findings from the Likert-scale questionnaire reported in Chapter 4. First, the questionnaire revealed that learners with higher LK tended to recall their prior knowledge more often. Using the computer programme, it was also

revealed that students with higher LK indeed tried to recall their prior knowledge when facing the task types of difficult ELICIT, easy READ ALOUD and easy CLUE.

Another finding from the questionnaire was that learners of lower LK used *translation* strategies more often. At first sight, based on the above analysis, the computer programme did not appear to reveal any differences regarding the use of *translation* strategies by students with different LK. However, we should as well take note of the subtle differences between what was measured by the questionnaire and the computer programme as research instruments. What the questionnaire asked of learners was how true it was for them to use certain strategies when understanding the teacher's input. As such, a high rating for *translation* strategies in the questionnaire could be indicative of the learners' preference in using *translation* compared to other strategies. In contrast, the computer programme measured the actual use of certain strategies such as *translation*, and the above analysis compared the quantity of *translation* strategies being used in context between high and low LK learners. Therefore, it might also be revealing if we examine the proportion of individual strategies out of all strategies used by learners of low and high LK (see Table 52). For example, for a learner who reported using 30 strategies in total through clicking the buttons of the computer programme, 3 of them were *translation* and so *translation* represented 10% (or a proportion of 0.1) of all strategies s/he used. The mean proportions of individual strategy use by learners of low and high LK are shown in Table 52. It can be observed that descriptively, learners of low LK used a larger proportion of *translation* strategies, whereas those with higher LK employed a larger proportion of *elaboration* strategies, out of all the strategies they used during the course of the 10-minute teaching and learning video.

Table 52: Proportion of individual strategies out of all strategies used by low and high LK groups

	Low LK (n=38)	High LK (n=21)
Strategy	Mean (S.D.)	Mean (S.D.)
Inferencing	.1571 (.1211)	.1206 (.0768)
Elaboration	.1821 (.1346)	.2952 (.2068)
Imagery	.1321 (.1198)	.1272 (.0963)
Summarisation	.0840 (.0705)	.1411 (.0956)
Translation	.2243 (.1722)	.1476 (.0937)
Repetition	.2204 (.1566)	.1682 (.0733)

To explore whether any significant differences existed, independent samples t-tests were carried out because the distribution was approximated to normal after checking the skewness and kurtosis values. Results indicated that students with higher LK used significantly more *elaboration*, $t(57) = -2.544$, $p < .05$, $r = 0.32$ and *summarisation* strategies, $t(57) = -2.619$, $p < .05$, $r = 0.33$ than students with lower LK. In contrast, students with lower LK preferred *translation* strategies more than their higher LK counterparts, $t(57) = 2.216$, $p < .05$, $r = 0.28$. All these differences had medium effect sizes.

Therefore, the computer programme results agreed with the questionnaire in the way that learners of lower LK indeed preferred to use *translation*, among other strategies, when understanding the teacher's input. On the other hand, learners of higher LK preferred to use *elaboration* among other strategies. It was also interesting to note that the *summarisation* strategy represented a larger proportion of all the strategies used by higher LK learners in comparison to those with lower LK. Such a difference not being picked up by the questionnaire could be attributed to the fact that the *summarisation* strategy factor structure in the questionnaire included also *appropriation* strategies.

Taken together, the computer programme agreed with the findings from the questionnaire to a certain extent. Particularly, the use of more *elaboration* strategies by learners of higher LK was

confirmed, whereas the heavy reliance on *translation* strategies by learners with lower LK was also supported.

5.2.5 Summary of strategies used by learners of low and high LK in the computer programme

This sub-section has informed us that learners of different LK deployed strategies differently across a range of task types of varying difficulties. Where a difference was identified, it was in favour of the learners with high LK. These learners used more *elaboration* strategies when encountering the task types of difficult ELICIT, easy READ ALOUD and easy CLUE. They also used more *summarisation* strategies when facing the task types of difficult SHARING, and both easy and difficult COMMENT. Furthermore, they combined strategies significantly more often while understanding the teacher's input in forms of easy ELICIT, easy SHARING, and difficult INFORM, when compared to learners of lower LK.

When comparing the results from the computer programme with those revealed by the questionnaire in the last chapter (Chapter 4), it appeared the findings were in line with each other in that *elaboration* strategies were more preferred by learners of higher LK, whereas *translation* strategies represented a larger proportion of the strategies that learners with lower LK deployed. Table 53 summarises the findings.

Table 53: Summary of effect of LK on strategy use

Strategies	General preferences of strategy use	Effect of LK after matching task types and task difficulty
<i>Elaboration</i>	High LK > Low LK	High > Low LK in Difficult ELICIT, easy READ ALOUD, easy CLUE
<i>Summarisation</i>	High LK > Low LK	High > Low LK Difficult SHARING, easy and difficult COMMENT
<i>Translation</i>	Low LK > High LK	
Combination of strategies		High > Low LK Easy ELICIT, easy SHARING, difficult INFORM

5.3 Computer programme – The effect of task difficulty

5.3.1 Introduction

Having presented the general findings of the computer programme and how learners of different LK used strategies in different ways, it is of interest to pay particular attention to the variable of task difficulty. In the following, the use of individual strategies is first examined in section 5.3.2 to find out whether some strategies were used more often when learners encountered an easy or difficult task in general. However, the previous section has shown that LK has an effect on strategy use, and the variable of task types was also hypothesised to have an effect. Therefore, after the general exploration, levels of LK and task types are matched to examine the effect of task difficulty on the use of individual strategies in section 5.3.3. Similarly, in section 5.3.4, the general frequency of combining different strategies to facilitate understanding against all easy and difficult tasks is delved into, and in section 5.3.5, the levels of LK and task types are controlled for to examine the variable of task difficulty. A summary is provided in section 5.3.6 on the effect of task difficulty on strategy use.

5.3.2 Use of individual strategies when facing easy and difficult tasks – general trends

The tasks of understanding the teacher were classified into easy and difficult as depicted in Chapter 3.3.3.2.2, based on the vocabulary and grammar used in the tasks as well as the results from pilot study 5. However, analysis would not be as simple as doing a series of independent-samples t-tests because it was not the tasks but students as participants which was the unit of analysis. Given that all participants watched the same 10-minute teaching video and faced the same set of conditions of easy and difficult tasks, it would best be described as a within-subjects design. In other words, participants were compared against themselves in using strategies when listening to the teacher in the video containing different levels of task difficulty.

Similar to the analysis on LK presented in section 5.2 above, the number of strategies per task was explored, given the unequal number of easy and difficult tasks present in the teaching video,

which was made as close to an authentic lesson as possible. Table 54 shows the descriptive statistics of strategy use per easy or difficult tasks. Examining the overall trend, it could be observed that *elaboration*, *translation*, and *repetition* were similarly favoured by learners when facing easy or difficult tasks. Such a tendency was also observed when the number of individual strategy use was taken as a whole as reported by Table 48 in section 5.1. However, whereas *inferencing* strategies were not very much used to deal with easy tasks, they were quite highly preferred by learners when they encountered difficult tasks. In fact, all six strategies were used more often when learners were facing difficult tasks. On the other hand, with the orientation of ‘doing nothing’, students did nothing descriptively more when facing easy task than when facing difficult task.

Table 54: Descriptive statistics of strategy use per easy or difficult task

		N	Minimum	Maximum	Mean	S.D.	Skewness	Std. Error	Kurtosis	Std. Error
Use of strategy per easy task	Inferencing	59	0	.40	.0685	.0793	1.994	.311	5.274	.613
	Elaboration	59	0	.96	.1736	.1953	1.896	.311	4.050	.613
	Imagery	59	0	.52	.0997	.1164	1.754	.311	3.243	.613
	Summarisation	59	0	.36	.0692	.0863	1.731	.311	3.025	.613
	Translation	59	0	.84	.1566	.1917	2.041	.311	4.094	.613
	Repetition	59	0	.76	.1397	.1257	2.212	.311	9.148	.613
	Doing nothing	59	0	.60	.1905	.1663	.886	.311	-.043	.613
Use of strategy per difficult task	Inferencing	59	0	.55	.1441	.1324	1.147	.311	.900	.613
	Elaboration	59	0	.82	.1764	.1656	1.648	.311	3.446	.613
	Imagery	59	0	.68	.1040	.1297	2.382	.311	7.576	.613
	Summarisation	59	0	.55	.1156	.1357	1.646	.311	2.251	.613
	Translation	59	0	.64	.1780	.1785	1.236	.311	.739	.613
	Repetition	59	0	.77	.1726	.1444	1.748	.311	4.780	.613
	Doing nothing	59	0	.45	.1271	.1277	1.081	.311	.359	.613

Treating task difficulty as the independent variable and strategy use as the dependent variable, it was of interest to find out if there were significant differences between strategy use against easy and difficult tasks. To that end, seven paired-samples t-tests, one for each strategy as well as the orientation of ‘doing nothing’, were performed. Paired-samples t-tests were chosen because of two main reasons. First, even though performing a multivariate analysis of variance (MANOVA) might be an option, as Tabachnick and Fidell (2007) suggested, MANOVA should be used when the dependent variables are highly correlated or moderately correlated. Taking a closer look at the dataset, there were some very high values of skewness and kurtosis and so the various strategies per easy or difficult task appeared to distribute non-normally. Therefore, a series of Spearman’s correlation tests were initially conducted to justify whether a MANOVA would be the best statistical test. Results indicated that strategies were either uncorrelated or weakly correlated. As such, it might not be appropriate to conduct a MANOVA.

Secondly, the assumption of normality was matched. Although the strategy use per easy or difficult task appeared to distribute non-normally, it was the difference of scores instead of the scores themselves which has to be normally distributed for a paired-samples t-test, according to A. Field (2013). Appendix S shows the histograms of the difference of the scores of strategy use per easy and difficult task, suggesting that the differences were fairly normally distributed. Therefore, a series of paired-samples t-tests were conducted to find out if students used different strategies when encountering easy as opposed to difficult tasks in general.

Table 55: Paired-samples t-tests of strategy use per easy or difficult task

Strategy per easy or difficult task	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Inferencing	-4.812	58	.000***
Elaboration	-.170	58	.866
Imagery	-.453	58	.652
Summarisation	-3.971	58	.000***
Translation	-1.348	58	.183
Repetition	-3.019	58	.004**
Doing nothing	3.913	58	.000***

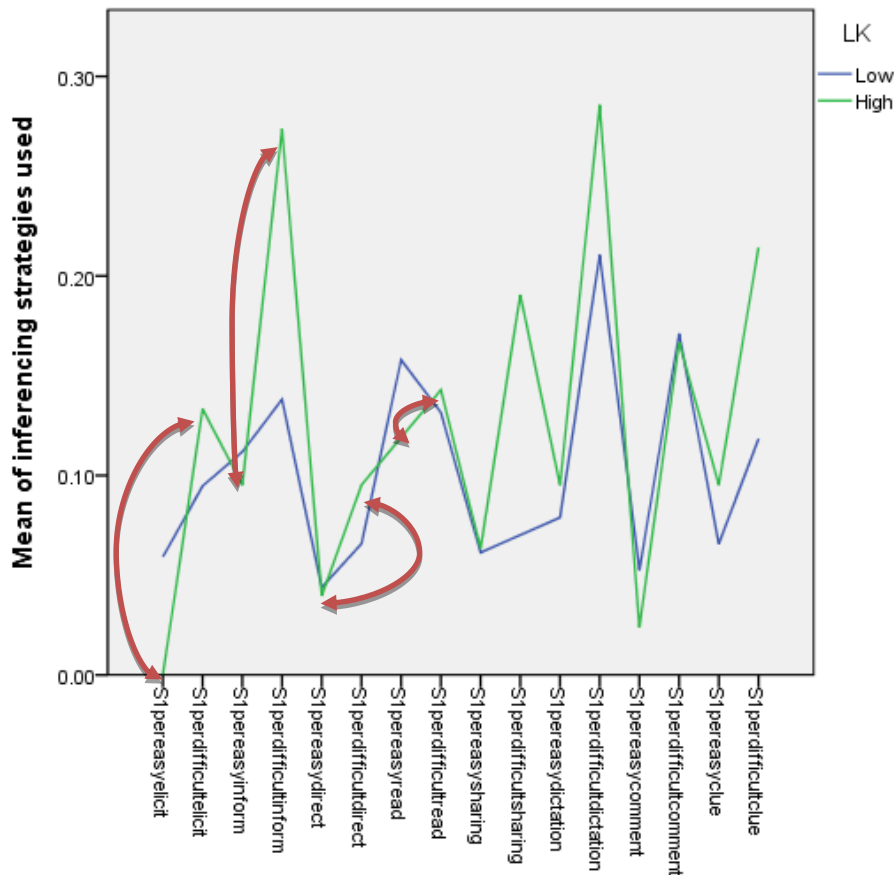
* $p < .05$; ** $p < .01$; *** $p < .001$

The t-tests indicated that learners used significantly more *inferencing*, *summarisation*, and *repetition* strategies when facing difficult tasks than easy ones. For *inferencing*, $t(58) = -4.812$, $p < .001$, $r = 0.53$; for *summarisation*, $t(58) = -3.971$, $p < .001$, $r = 0.46$; for *repetition*, $t(58) = -3.019$, $p < .01$, $r = 0.37$. On the other hand, students were ‘doing nothing’ when facing easy task more than when facing difficult ones: $t(58) = 3.913$, $p < .001$, $r = 0.46$. All these differences had medium to large effect sizes.

5.3.3 Use of individual strategies when facing easy and difficult tasks – matching LK and task types

Having explored the general trends without accounting for the effects of LK and task types, it would be more useful to match students’ LK and the types of tasks they were facing in order to tease out the variable of task difficulty *per se*. The descriptive statistics were already mentioned in the previous section and presented in Appendix R. The contrasts in which this section is interested are depicted in the following diagram, with the use of inferencing strategies against easy and difficult versions of INFORM, ELICIT, DIRECT, and READ ALOUD tasks as examples.

Figure 8: Graphical representation showing how the effect of task difficulty on the use of *inferencing* were analysed for easy vs difficult ELICIT, easy vs difficult INFORM, easy vs difficult DIRECT, and easy vs difficult READ ALOUD, with respect to learners with high LK



To illustrate, take *inferencing* as an example. Learners were split into low and high LK, and within each group of students with the same level of LK, the use of *inferencing* for an easy ELICIT was contrasted against a difficult ELICIT using a paired-samples t-test or a Wilcoxon signed-rank test, depending on whether the distribution was normal. In fact, normality of all the differences between easy and difficult tasks, after splitting the file in SPSS into low and high LK groups, were checked by skewness and kurtosis values and it was found that the distributions were non-normal. Therefore, Wilcoxon signed-rank tests were performed. For each strategy as the dependent variable, a set of 8 Wilcoxon signed-rank tests was performed to contrast the easy and difficult versions of the 8 task types of ELICIT, INFORM, DIRECT, and so forth, and the analyses were performed separately with low and high LK groups. Therefore, a Bonferroni correction was applied and the accepted level of significance was $0.05/8 = 0.00625$.

Having performed these Wilcoxon signed-rank tests, there were no significant differences found for learners with low LK (n=38) in easy versus difficult tasks across all task types. For learners with high LK (n=21), there were four significant results identified: they used *inferencing* more when facing difficult ELICIT than easy ELICIT: $z = -2.754, p < .00625, r = -0.42$, as well as when facing difficult INFORM than easy INFORM: $z = -3.035, p < .00625, r = -0.47$. They also used *summarisation* more when facing difficult INFORM than easy INFORM: $z = -2.910, p < .00625, r = -0.45$, as well as when facing difficult CLUE than easy CLUE: $z = -2.828, p < .00625, r = -0.44$. The lack of more significant results could be due to the small sample sizes of each group, and the high individuality of strategy use by learners.

5.3.4 Combination of strategies when facing easy and difficult tasks – general trends

Next, it was of interest to find out if learners combined strategies more often when facing easy or difficult tasks. A general picture will first be provided with the data across all task types and of all students taken together. Similar to the analysis of section 5.2.3, it was the instances of combination of strategies per easy or difficult task which was the variable of interest. Table 56 presents the descriptive statistics.

Table 56: Descriptive statistics of instances of combination per easy or difficult task

	N	Minimum	Maximum	Mean	S.D.	Skewness	Std. Error	Kurtosis	Std. Error
Instances of combination per easy task	59	0	.76	.0881	.1586	2.712	.311	7.802	.613
Instances of combination per difficult task	59	0	.95	.1348	.2139	2.294	.311	5.125	.613

Descriptively, students were more likely to combine strategies when encountering a difficult task than an easy one. In order to find out if a paired-samples t-test was appropriate for comparison, normality of the difference of the two scores had to be computed. Given that the skewness and

kurtosis of the difference of the scores were -1.363 and 1.381 respectively, and the standard errors of skewness and kurtosis were .311 and .613 respectively, the z-score computed from these figures would have an absolute value of more than 1.96, suggesting a non-normal distribution according to A. Field (2013). Therefore, a Wilcoxon signed-rank test was performed to find out if there were significant differences in terms of the combination of strategies against easy versus difficult tasks. Results indicated that learners combined strategies significantly more when facing difficult than easy tasks: $z = -4.632$, $p < .001$, $r = .43$, with a medium to large effect size.

5.3.5 Combination of strategies when facing easy and difficult tasks – matching LK and task types

Similar to section 5.3.3, it would be useful to match students' LK and the types of tasks they were facing in order to explore the effect of task difficulty *per se*. The descriptive statistics were already presented in Table 51 earlier. Given that the distributions were non-normal, Wilcoxon signed-rank tests were conducted to explore whether learners of low and/or high LK combined strategies significantly differently when facing easy ELICIT versus difficult ELICIT, easy INFORM versus difficult INFORM, and so forth. The only difference observed was students with high LK combined strategies more often when facing difficult INFORM than easy INFORM: $z = -2.309$, $p < .05$, $r = 0.36$.

5.3.6 Summary of the effect of task difficulty on strategy use

The analysis in this chapter was centred on learners' strategy use when facing tasks of differing difficulty – what RQ3 attempts to answer. The paired-samples t-tests for individual strategies indicated that *inferencing*, *summarisation* and *repetition* were used more often for difficult tasks than easy ones. The highly significant values, even if the conservative Bonferroni correction was applied, were still significant. It is plausible that when dealing with the higher cognitive loads associated with the more difficult tasks, learners need to rely more on contextual clues to make inferences on the meaning of individual difficult words or the overall meaning. They might also repeat the utterances in

their mind to facilitate their understanding. When facing easy tasks, however, these three strategies could be less important because learners understood relatively more easily and may not need to attend to these specific contextual clues and make inferences. It is also noteworthy that the other strategies such as *elaboration* and *translation* are not unimportant, but equally important whether the teacher's input was easy or difficult.

Through matching the learners' levels of LK and the different task types, the variable of task difficulty was explored in greater depth. Results indicated that the only differences were learners with high LK using more *inferencing* when facing difficult ELICIT than easy ELICIT, more *summarisation* strategies when facing difficult CLUE than easy CLUE, and more of both *inferencing* and *summarisation* when facing difficult INFORM than easy INFORM.

Furthermore, possibly also due to the heavier cognitive loads of the difficult tasks, learners taken as a whole combined strategies more often when dealing with these tasks. When trying to understand difficult teacher input, a combination of various strategies might be required to facilitate understanding.

Through matching learners with the same level of LK and the different task types they were facing, the variable of task difficulty was examined more comprehensively. It was found that learners with higher LK combined strategies more often when facing difficult INFORM than easy INFORM.

To sum up, learners in general used *inferencing*, *summarisation*, and *repetition* strategies more often when they encountered difficult teacher's talk, taking into account all different types of inputs. They also combined strategies more often when dealing with these difficult tasks. However, a closer look at the data by controlling for learners' levels of LK across different task types indicated that learners with high LK used *inferencing* and *summarisation*, and combined strategies more often when facing certain difficult task types than easy ones, especially difficult INFORM. Table 57 summarises the findings for the effect of task difficulty on strategy use.

Table 57: Effect of task difficulty on strategy use

Strategies	General trends	Effect of task difficulty after matching LK and task types
Inferencing	Difficult > Easy tasks	<u>For learners with high LK</u> Difficult ELICIT > Easy ELICIT Difficult INFORM > Easy INFORM
Summarisation	Difficult > Easy tasks	<u>For learners with high LK</u> Difficult CLUE > Easy CLUE Difficult INFORM > Easy INFORM
Repetition	Difficult > Easy tasks	
Combination of strategies	Difficult > Easy tasks	<u>For learners with high LK</u> Difficult INFORM > Easy INFORM

5.4 Computer programme – The effect of task types

5.4.1 Introduction

This section is organised similarly to the previous one. First, the use of individual strategies will be examined to find out whether learners preferred different strategies when facing various task types in general. Subsequently, section 5.4.3 examines the effect of task types when controlling for learners' level of LK and task difficulty. Section 5.4.4 focuses on the frequency of strategy combination against different task types in general, and section 5.4.5 is also on combination of strategies against different task types but with learners' LK level and task difficulty controlled for. Finally, a summary is provided in section 5.4.6 on the effect of task types on strategy use.

5.4.2 Use of individual strategies when facing different task types – general trends

There were 8 task types which were of interest:

- (1) ELICIT (asking questions),
- (2) INFORM (giving explanation),
- (3) DIRECT (giving instructions),
- (4) READ ALOUD (teacher reading aloud and students listen),
- (5) SHARING (such as giving personal opinions on some social issues),
- (6) DICTATION (the teacher speaking aloud while students write down what s/he says),
- (7) COMMENT (giving comments to an answer provided by students), and
- (8) CLUE (giving clues to direct learners to modify an answer).

Given that every participant underwent all the conditions of different task types when watching the teaching video, it was more appropriate to conduct within-subjects analysis. Second, as mentioned in section 5.3.2, the teaching video was designed in a way that the number of occurrence for different task types was not the same (see Chapter 3.3.3.2.2 for a detailed description of the teaching video). Therefore, similar to the analysis of easy and difficult tasks, students' use of strategies per task was computed for comparison. Furthermore, similar to the analysis of LK in Chapter 5.2, the descriptive statistics were quite difficult to read and so they were presented in Appendix T. Instead, a table showing the most used and least used strategies across the different task types was constructed (see Table 58).

Table 58: Most and least used strategies by learners across different task types

	Most used strategy	Least used strategy
(1) Elicit	Elaboration	Imagery and Summarisation
(2) Inform	Elaboration	Imagery
(3) Direct	Repetition	Summarisation
(4) Read aloud	Imagery	Summarisation
(5) Sharing	Translation	Inferencing
(6) Dictation	Repetition	Imagery
(7) Comment	Elaboration	Imagery
(8) Clue	Translation	Imagery

The descriptive statistics (see Appendix T) showed that with (1) ELICIT, (3) DIRECT, (6) DICTATION, (7) COMMENT, and (8) CLUE, there were some similarities that *elaboration*, *translation*, and *repetition* ranked the first three most used strategies. This finding was interesting because all these tasks except (7) COMMENT required learners to make a response. And perhaps it was also arguable that a COMMENT made by the teacher was processed similarly by the learner in the sense that the learner may react to it given that it was an exchange between the teacher and the class, whereas the remaining three task types of (2) INFORM, (4) READ ALOUD and (5) SHARING could simply be one-way teacher's talk to the whole class. For (6) DICTATION, specifically, *repetition* was very much favoured as shown by its exceptionally high mean (.3517 *repetition* strategy used per DICTATION task) compared to other strategies. Such a finding may be attributed to the nature of a DICTATION task that learners need to attend to every fine detail of the teacher's utterance, and therefore, it was necessary for learners to repeat the utterance in their mind.

With (4) READ ALOUD and (5) SHARING, apart from *elaboration* and *translation* strategies, *imagery* was also frequently employed. One reason for this result could be that these two task types were more likely to include some richer contents which made it easier and more natural to use

imagery to facilitate understanding. As for (2) INFORM, on top of *elaboration*, *translation* and *repetition*, *inferencing* strategies were equally frequently used.

The descriptive statistics also suggested that the distribution of these scores was not normal, as evident from some very high skewness and kurtosis values. A parametric test such as repeated measures ANOVA to compare strategy use across different task types might not be suitable. As such, seven Friedman's ANOVAs, one for each strategy and orientation of 'doing nothing' as the dependent variable, were conducted to explore whether individual strategies were favoured when facing certain task type(s) in contrast with other task type(s).

5.4.2.1 *Inferencing strategy against different task types*

The use of *inferencing* strategy per task was analysed through a Friedman's ANOVA. It was found that participants used *inferencing* significantly differently across the eight different task types, $\chi^2(7) = 27.35, p < .001$. In order to find out where the differences existed, Wilcoxon signed-rank tests were conducted. There were 28 Wilcoxon tests conducted in total to contrast every one task type against any other one. A Bonferroni correction was applied to prevent inflated Type I error due to the multiple tests conducted with the same dataset. As such, all effects are evaluated against $0.05/28 = 0.00179$ level of significance. Table 59 presents the test statistics z .

Table 59: Wilcoxon tests for Inferencing per task type

Task type	(1) Elicit	(2) Inform	(3) Direct	(4) Read aloud	(5) Sharing	(6) Dictation	(7) Comment	(8) Clue
(1) Elicit		-3.570 * (r = -0.46)	-.387	-2.387	-.850	-3.087	-1.720	-1.547
(2) Inform			-4.320 * (r = -0.56)	-.419	-3.080	-.609	-1.640	-1.617
(3) Direct				-3.199 * (r = -0.42)	-2.299	-3.782 * (r = -0.49)	-2.500	-2.875
(4) Read aloud					-1.757	-.791	-1.390	-.988
(5) Sharing						-2.743	-.993	-.537
(6) Dictation							-1.843	-1.392
(7) Comment								-.142
(8) Clue								

* $p < .00179$

In total, 4 significant differences were identified. Students used significantly more *inferencing* when encountering INFORM than ELICIT and DIRECT, and when facing READ ALOUD and DICTATION than DIRECT. One possible explanation is that these three task types of INFORM, READ ALOUD and DICTATION existed in longer and extended utterances where learners might have to rely on the context to guess the meaning of the difficult words. As such, *inferencing* strategies were employed significantly more by learners in situations when they listened to the teacher explaining something, reading aloud a passage, and asking students to do a dictation.

5.4.2.2 Elaboration strategy against different task types

Students' use of *elaboration* strategy underwent a Friedman's ANOVA. Results were non-significant $\chi^2(7) = 7.82, p = .348$, meaning that *elaboration* was used to a similar extent by learners across the eight different task types. The non-significance could suggest that *elaboration* was not bound by task

types. In other words, whether learners chose to draw on their prior knowledge did not depend on what type of teacher input it was. It appeared logical to think that the use of prior knowledge could be more related to the content, instead of the type, of the teacher's input.

5.4.2.3 Imagery strategy against different task types

The use of *imagery* was analysed by a Friedman's ANOVA. Significant result was found: $\chi^2(7) = 57.00, p < .001$. Wilcoxon signed-rank tests were conducted to follow up. Similar to the analysis of *inferencing* strategy in 5.4.2.1, a Bonferroni correction was applied due to the multiple tests conducted with the same dataset. Therefore, all effects accepted only $0.05/28 = 0.00179$ as the level of significance. Table 60 shows the test results.

Table 60: Wilcoxon tests for Imagery per task type

Task type	(1) Elicit	(2) Inform	(3) Direct	(4) Read aloud	(5) Sharing	(6) Dictation	(7) Comment	(8) Clue
(1) Elicit		-1.601	-1.694	-4.877 * (r = -0.63)	-4.009 * (r = -0.52)	-2.436	-1.729	-.753
(2) Inform			-.144	-4.536 * (r = -0.59)	-3.415 * (r = -0.44)	-1.315	-.467	-.556
(3) Direct				-4.849 * (r = -0.63)	-3.163 * (r = -0.41)	-1.357	-.233	-.759
(4) Read aloud					-3.114	-3.784 * (r = -0.49)	-4.542 * (r = -0.59)	-4.541 * (r = -0.59)
(5) Sharing						-1.244	-2.553	-3.411 * (r = -0.44)
(6) Dictation							-1.293	-1.510
(7) Comment								-.619
(8) Clue								

* $p < .00179$

There were 10 significant results identified. Where a difference was found, (4) READ ALOUD and (5) SHARING were favoured. Students used significantly more *imagery* when understanding the teacher's READ ALOUD than ELICIT, INFORM, DIRECT, DICTATION, COMMENT and CLUE – that is all other tasks except (5) SHARING. Moreover, they also used more *imagery* strategy when facing a SHARING task than ELICIT, INFORM, DIRECT and CLUE. A possible explanation for the more frequent use of *imagery* in READ ALOUD and SHARING is that these two task types allowed more room for the use of mental images to represent information. Compared to task types such as DIRECT (teacher giving instructions) and ELICIT (teaching asking questions), READ ALOUD and SHARING were arguably richer in content. Furthermore, the goal could be different when encountering different task types. It was possible that when students were engaged in a DICTATION task, their major goal could be noting down every word without attending to the meaning. Hence, it was not common for students to use *imagery* strategy to represent the information.

5.4.2.4 Summarisation strategy against different task types

Regarding the use of *summarisation* strategy, Friedman's ANOVA identified significant result: $\chi^2(7) = 27.26, p < .001$. To follow up, Wilcoxon signed-rank tests were conducted. Again, a Bonferroni correction was applied and the level of significance accepted was 0.00179. Table 61 shows the test statistics z of the Wilcoxon signed-rank tests.

Table 61: Wilcoxon tests for Summarisation per task type

Task type	(1) Elicit	(2) Inform	(3) Direct	(4) Read aloud	(5) Sharing	(6) Dictation	(7) Comment	(8) Clue
(1) Elicit		-3.735 * (r = -0.49)	-.176	-.502	-3.268 * (r = -0.43)	-2.661	-2.698	-1.707
(2) Inform			-3.825 * (r = -0.50)	-2.672	-.695	-.646	-.143	-1.330
(3) Direct				-.574	-3.659 * (r = -0.48)	-3.057	-2.900	-1.653
(4) Read aloud					-2.632	-2.165	-1.858	-.898
(5) Sharing						-.000	-1.097	-1.647
(6) Dictation							-.993	-1.480
(7) Comment								-1.255
(8) Clue								

* $p < .00179$

4 significant differences were identified. Learners used significantly more *summarisation* strategy when encountering (2) INFORM than (1) ELICIT and (3) DIRECT. They also summarised information more often when understanding the teacher's (5) SHARING than (1) ELICIT and (3) DIRECT. The infrequent use of *summarisation* strategy in ELICIT and DIRECT could be due to the fact that ELICIT and DIRECT were shorter in duration. It might not be necessary for learners to employ *summarisation* strategies in order to get the meaning across. In contrast, INFORM and SHARING were more elaborated utterances. Although it was arguable that READ ALOUD could also involve longer utterances, students might not find the need to understand the overarching meaning and summarise the information obtained. DICTATION could also involve longer utterance, but as pointed out in section 5.4.2.3, learners' goal when engaged in DICTATION might not be focused on the meaning.

5.4.2.5 Translation strategy against different task types

Friedman's ANOVA indicated that the difference of *translation* strategy use among the various task types was non-significant: $\chi^2(7) = 7.31, p = .397$. Such result suggested that *translation* strategy was used similarly frequently across different task types.

5.4.2.6 Repetition strategy against different task types

The use of *repetition* strategy across the eight task types was analysed, again, by a Friedman's ANOVA. A significant result was found: $\chi^2(7) = 35.95, p < .001$. 28 Wilcoxon signed-rank tests were used as follow up to contrast each task type with the others. Applying a Bonferroni correction, the accepted level of significance is 0.00179.

Table 62: Wilcoxon tests for Repetition per task type

Task type	(1) Elicit	(2) Inform	(3) Direct	(4) Read aloud	(5) Sharing	(6) Dictation	(7) Comment	(8) Clue
(1) Elicit		-.321	-.473	-1.206	-.897	-4.188 * (r = -0.55)	-.448	-.865
(2) Inform			-.390	-1.002	-.738	-4.401 * (r = -0.57)	-1.107	-1.459
(3) Direct				-.869	-.995	-4.680 * (r = -0.61)	-.550	-1.203
(4) Read aloud					-.977	-4.440 * (r = -0.58)	-1.651	-1.758
(5) Sharing						-4.904 * (r = -0.64)	-1.055	-1.397
(6) Dictation							-4.227 * (r = -0.55)	-4.024 * (r = -0.52)
(7) Comment								-.451
(8) Clue								

* $p < .00179$

Table 62 shows some highly consistent results that students used significantly more *repetition* with (6) DICTATION than all the other seven task types. One possible reason was related to the nature of a DICTATION task. Students needed to follow what the teacher said and were supposed to convert the teacher’s utterance into writing on paper. In so doing, students naturally repeated the utterance in mind when trying to write down what they heard.

5.4.2.7 ‘Doing nothing’ against different task types

The orientation of ‘doing nothing’ across the eight task types was analysed by a Friedman’s ANOVA. A significant result was found: $\chi^2(7) = 64.20, p < .001$. 28 Wilcoxon signed-rank tests were used as follow up to contrast each task type with the others. Applying a Bonferroni correction, the accepted level of significance is 0.00179.

Table 63: Wilcoxon tests for ‘doing nothing’ per task type

Task type	(1) Elicit	(2) Inform	(3) Direct	(4) Read aloud	(5) Sharing	(6) Dictation	(7) Comment	(8) Clue
(1) Elicit		-.205	-1.736	-2.431	-2.847	-4.629 * (r = -0.43)	-.465	-2.538
(2) Inform			-2.189	-2.027	-2.564	-5.102 * (r = -0.47)	-.700	-2.190
(3) Direct				-2.769	-3.858 * (r = -0.36)	-4.762 * (r = -0.44)	-1.504	-3.616 * (r = -0.33)
(4) Read aloud					-.256	-2.583	-1.814	-.107
(5) Sharing						-2.567	-1.640	-.124
(6) Dictation							-3.630 * (r = -0.33)	-3.127 * (r = -0.29)
(7) Comment								-1.710
(8) Clue								

* $p < .00179$

It was found that students did nothing significantly more when listening to the teacher's ELICIT, INFORM, DIRECT, COMMENT, and CLUE than DICTATION. Furthermore, students more often 'did nothing' when encountering a DIRECT task than a SHARING and a CLUE. Perhaps given that a DICTATION task was naturally a longer utterance, as opposed to shorter utterances where there was not as much information to parse, some strategies were more likely to be used by most learners. On the other hand, DIRECT was usually more mechanical, together with the fact that the Secondary 3 learners had already studied at secondary schools for more than two years, they might be very familiar with the DIRECT act and so did not need to use any particular strategies to facilitate their understanding.

5.4.2.8 Summary of individual strategy use against different task types

To sum up the use of individual strategies against the eight different task types, it was found that *elaboration* as well as *translation* was used by learners at a comparable frequency regardless of what task types they encountered. On the other hand, *inferencing*, *imagery*, *summarisation*, *repetition*, and 'doing nothing' showed different frequencies of use by learners when they faced different task types. Table 64 sums up all the significant results identified by the statistical tests, and Table 65 reveals the relative frequency of the six strategies deployed by learners against the eight task types.

Table 64: Summary of significant results identified for strategy use across different task types

Strategies	Significant results identified
Inferencing	Inform > elicit, direct; Read aloud > dictation, direct
Elaboration	None
Imagery	Read aloud > elicit, inform, direct, dictation, comment, clue; Sharing > elicit, inform, direct, clue
Summarisation	Inform > elicit, direct; Sharing > elicit, direct
Translation	None
Repetition	Dictation > elicit, inform, direct, read aloud, sharing, comment, clue
Doing nothing	Elicit, inform, direct, comment, clue > dictation Direct > sharing, clue

Table 65: Summary of relative frequency of individual strategies used across task types

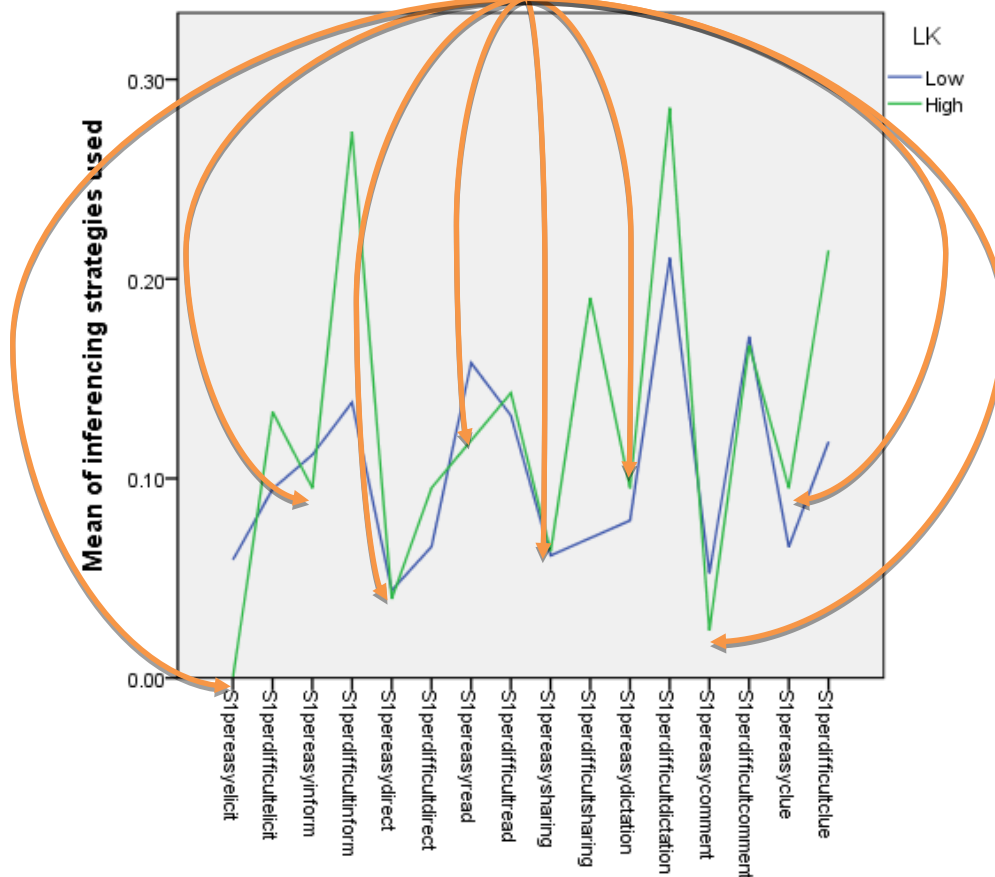
	Inferencing	Elaboration	Imagery	Summarisation	Translation	Repetition	Doing nothing
(1) Elicit	Low	Used at a similar frequency across different task types	Low	Low	Used at a similar frequency across different task types	Low	
(2) Inform	High		Low	High		Low	
(3) Direct	Low		Low	Low		Low	High (i.e. did nothing)
(4) Read aloud	High		High			Low	
(5) Sharing			High	High		Low	Low (did something)
(6) Dictation	Low		Low			High	Lowest (did something)
(7) Comment			Low			Low	
(8) Clue			Low			Low	Low (did something)

5.4.3 Use of individual strategies when facing different task types – controlling for LK and task difficulty

Having explored the general trends of the use of individual strategies against different task types, it might be more revealing to match students' LK and the difficulty of the task they were facing in order

to delineate the variable of task types *per se*. The descriptive statistics, once again, were presented in Appendix R. To exemplify the contrasts being of interest in this sub-section, Figure 9 presents a graphical representation with respect to the analysis of the use of *inferencing* in all the 8 easy tasks of varying task types by learners of high LK.

Figure 9: Graphical representation showing how the effect of task types on the use of *inferencing* were analysed for the 8 easy tasks by learners of high LK



Taking *inferencing* as an example, learners were split into low and high LK, and within each group of students with the same level of LK, the use of *inferencing* for an easy ELICIT, easy INFORM, easy DIRECT, easy READ ALOUD, easy SHARING, easy DICTATION, easy COMMENT, and easy CLUE were contrasted against each other. Given that normality of distribution was not matched, a Friedman’s ANOVA was used. If there was a significant difference identified, a set of 28 post-hoc Wilcoxon signed-rank tests were performed, similar to the analysis in section 5.4.2. A Bonferroni correction was applied and the accepted level of significance was $0.05/28 = 0.00179$.

Having performed the Friedman’s ANOVAs and subsequently the Wilcoxon-signed rank tests, some significant differences were identified. Given that there were not as many significant results for each comparison, for simplicity sake, they were all shown in Table 66.

Table 66: Summary of significant results identified for strategy use across different task types, with LK and task difficulty matched

Strategies	Significant results identified
Inferencing	None
Elaboration	None
Imagery	<p><u>Learners with low LK</u></p> <p>Easy READ ALOUD > easy ELICIT, INFORM, DIRECT</p> <p>Easy SHARING > easy INFORM</p> <p>Difficult READ ALOUD > difficult ELICIT</p> <p><u>Learners with high LK</u></p> <p>Difficult READ ALOUD > difficult ELICIT, DICTATION</p>
Summarisation	<p><u>Learners with low LK</u></p> <p>Difficult INFORM > difficult ELICIT</p> <p><u>Learners with high LK</u></p> <p>Difficult INFORM > difficult READ ALOUD</p>
Translation	None
Repetition	<p><u>Learners with low LK</u></p> <p>Easy DICTATION > easy SHARING, COMMENT</p> <p><u>Learners with high LK</u></p> <p>Easy DICTATION > easy ELICIT, CLUE</p> <p>Difficult DICTATION > difficult DIRECT</p>
Doing nothing	<p><u>Learners with low LK</u></p> <p>Easy ELICIT, INFORM, DIRECT, COMMENT > easy DICTATION</p> <p><u>Learners with high LK</u></p> <p>Difficult DIRECT > difficult DICTATION</p>

First, the use of *imagery* by learners with low LK across the eight easy task types was analysed by a Friedman's ANOVA. A significant result was found: $\chi^2(7) = 29.22, p < .001$. 28 Wilcoxon signed-rank tests were used as follow up to contrast each task type with the others. Applying a Bonferroni correction, the accepted level of significance is 0.00179. It was found that learners used more *imagery* strategies for easy READ ALOUD than easy ELICIT ($z = -3.134, p < .00179, r = -0.36$), easy INFORM ($z = -3.441, p < .00179, r = -0.39$), and easy DIRECT ($z = -3.202, p < .00179, r = -0.37$). More *imagery* was also used for easy SHARING than easy INFORM ($z = -3.268, p < .00179, r = -0.37$). There were also significant differences for low LK learners' use of *imagery* across the eight difficult task types revealed by the Friedman's ANOVA: $\chi^2(7) = 23.46, p < .001$. A set of follow-up Wilcoxon signed-rank tests, however, identified only one significant difference of using more *imagery* when facing difficult READ ALOUD than difficult ELICIT: $z = -3.169, p < .00179, r = -0.36$.

The use of *imagery* by learners with high LK across the eight easy task types did not reveal any significant differences, but there was a significant difference for the eight difficult task types shown by the Friedman's ANOVA: $\chi^2(7) = 35.42, p < .001$. Hence, a set of Wilcoxon signed-rank tests were used as post hoc tests. It was revealed that learners used more *imagery* for difficult READ ALOUD than difficult ELICIT ($z = -3.204, p < .00179, r = -0.49$) and DICTATION ($z = -3.276, p < .00179, r = -0.51$).

With *summarisation*, no differences were identified for both groups of learners with different levels of LK across the eight different easy task types. With the eight difficult task types, Friedman's ANOVA showed that learners with low LK used *summarisation* differently: $\chi^2(7) = 16.85, p < .01$. Post hoc Wilcoxon signed-rank tests revealed the only difference being learners using more *summarisation* for difficult INFORM than difficult ELICIT: $z = -3.344, p < .00179, r = -0.38$.

Similarly, significant difference was also revealed for learners with high LK in their use of *summarisation* against the eight difficult task types: $\chi^2(7) = 24.96, p < .001$, and the difference was due to more *summarisation* strategies used against difficult INFORM than READ ALOUD: $z = -3.286, p < .00179, r = -0.51$.

Third, *repetition* strategies were also used differently by learners of low LK across the easy task types as indicated by Friedman's ANOVA: $\chi^2(7) = 21.05, p < .01$. Wilcoxon signed-rank tests showed that the difference was due to learners using more *repetition* for easy DICTATION than SHARING ($z = -3.837, p < .00179, r = -0.44$) and COMMENT ($z = -3.358, p < .00179, r = -0.39$).

With learners of high LK, Friedman's ANOVA revealed a significant difference across their use of *repetition* across the easy task types: $\chi^2(7) = 35.56, p < .001$. Post hoc Wilcoxon signed-rank tests indicated that the differences were attributed to the use of more *repetition* for easy DICTATION than CLUE ($z = -3.226, p < .00179, r = -0.50$) and ELICIT ($z = -3.260, p < .00179, r = -0.50$).

Learners of higher LK also used *repetition* differently across the difficult task types: $\chi^2(7) = 20.19, p < .01$, and the contrast was due to their using more *repetition* for difficult DICTATION than DIRECT: $z = -3.357, p < .00179, r = -0.52$.

Finally, for the orientation of 'doing nothing', learners with low LK showed a significant difference across the easy, and not difficult, task types: $\chi^2(7) = 26.97, p < .01$. Post hoc Wilcoxon signed-rank tests found the following contrasts: learners did nothing more often when facing easy ELICIT than DICTATION ($z = -3.457, p < .00179, r = -0.40$), easy INFORM than DICTATION ($z = -4.456, p < .00179, r = -0.51$), easy DIRECT than DICTATION ($z = -3.180, p < .00179, r = -0.36$), and easy COMMENT than DICTATION ($z = -3.260, p < .00179, r = -0.37$). In other words, learners with low LK did something more often when encountering an easy DICTATION than four other tasks.

For learners with high LK, the only difference was their doing nothing more often when facing difficult task types: $\chi^2(7) = 32.79, p < .001$, in that they did nothing more often when facing a difficult DIRECT than a difficult DICTATION: $z = -3.207, p < .00179, r = -0.49$.

All these results, similar to section 5.4.2, could be attributed to how long and how rich in content the different task types were, as well as the plausible goals of learners when facing these task types. However, in this section, there were also the variables of LK and task difficulty being taken into account, and it was interesting to examine how these variables interrelated with task types. To name

but one interesting result, learners with low LK did nothing more often to react to a range of tasks than DICTATION when they were easy in terms of the vocabulary and grammar. However, such a contrast was no longer true when the tasks were difficult, and there were no significant differences between task types, suggesting that perhaps learners with low LK need to do something across all task types to facilitate their understanding. What these contrasts mean will be discussed in Chapter 7.

5.4.4 Combination of strategies when facing different task types – general trends

Apart from the use of individual strategies, another point of interest was the combination of strategies against different task types. Table 67 shows the instances of combination per task type.

Table 67: Descriptive statistics of instances of combination per task type

Task types	N	Minimum	Maximum	Mean	S.D.	Skewness	Std. Error	Kurtosis	Std. Error
(1) Elicit	59	0	.67	.0697	.1398	2.525	.311	6.903	.613
(2) Inform	59	0	1.00	.1229	.2208	2.610	.311	7.363	.613
(3) Direct	59	0	.75	.0614	.1381	3.122	.311	11.43	.613
(4) Read aloud	59	0	1.00	.1441	.2754	1.881	.311	2.473	.613
(5) Sharing	59	0	1.00	.1356	.2346	1.955	.311	3.424	.613
(6) Dictation	59	0	1.00	.2076	.3085	1.474	.311	1.094	.613
(7) Comment	59	0	1.00	.1059	.2188	2.239	.311	4.888	.613
(8) Clue	59	0	1.00	.1059	.2284	2.410	.311	5.359	.613

The descriptive statistics indicated a higher mean for DICTATION and lower ones for ELICIT and DIRECT. In order to find out if there were any statistical significance, a Friedman's ANOVA was carried out because the distribution was non-normal as shown by some rather high values of skewness and kurtosis. A significant result was found: $\chi^2(7) = 40.89, p < .001$. To follow up, 28 Wilcoxon tests

were conducted to find out where the contrasts lay. Similar to the analysis in section 5.4.2, the accepted level of significance is 0.00179 after having applied a Bonferroni correction.

Table 68: Wilcoxon tests for combination per task type

Task type	(1) Elicit	(2) Inform	(3) Direct	(4) Read aloud	(5) Sharing	(6) Dictation	(7) Comment	(8) Clue
(1) Elicit		-3.550 * (r = -0.46)	-.172	-2.649	-3.406 * (r = -0.44)	-4.318 * (r = -0.56)	-2.115	-1.672
(2) Inform			-3.347 * (r = -0.44)	-.630	-1.090	-2.965	-.905	-.813
(3) Direct				-3.043	-3.553 * (r = -0.46)	-4.496 * (r = -0.59)	-2.008	-2.600
(4) Read aloud					-.246	-2.438	-1.659	-1.532
(5) Sharing						-2.874	-1.262	-1.506
(6) Dictation							-3.077	-3.111
(7) Comment								-.022
(8) Clue								

* $p < .00179$

In total, 6 significant results were identified. Students combined strategies to understand the teacher's INFORM, SHARING, and DICTATION more than ELICIT and DIRECT. One explanation for such finding is that ELICIT and DIRECT typically came as shorter utterances. There might not be a lot of information which learners need to decipher within these short utterances and hence the use of combination of strategies might not be necessitated.

5.4.5 Combination of strategies when facing different task types – controlling for LK and task difficulty

Similar to section 5.4.3, it would be meaningful to match students' LK and the types of tasks they were facing in order to explore the effect of task difficulty *per se*. The descriptive statistics were

already presented in Table 51 earlier. Given that the distributions were non-normal, A Friedman's ANOVA was conducted to explore whether learners of low and/or high LK combined strategies significantly differently when facing the eight easy task types: ELICIT, INFORM, DIRECT, READ ALOUD, SHARING, DICTATION, COMMENT, and CLUE. If there was a significant difference, a set of 28 post hoc Wilcoxon signed-rank tests were used to follow up and identify where the differences lay. A Bonferroni correct was made given multiple testing. The same procedure was conducted for the eight difficult task types. No significant differences were revealed, which could be due to the small sample sizes for each group of low (n=38) and high LK (n=21).

5.4.6 Summary of the effect of task types on strategy use

This sub-section attempted to contribute to answering RQ4 and examined how students used different strategies when facing different task types in the computer programme. When analysing all the data regardless of learners' LK and task difficulty, Friedman's ANOVAs indicated that with the exception of *elaboration* and *translation* strategies, *inferencing*, *imagery*, *summarisation*, *repetition*, and the orientation of 'doing nothing' were used differently across different task types. In general, *inferencing* was favoured when learners encountered teacher's INFORM (giving an explanation of language) and READ ALOUD (teaching reading aloud a passage and students listen), tasks which might require more attention drawn to contextual information and individual words. Additionally, *summarisation* was preferred for INFORM and SHARING. Here, we saw an interesting picture that while INFORM might require both attention to meaning of individual words and the overall meaning, READ ALOUD might only necessitate focus on the former and SHARING the latter. On the other hand, DICTATION might be considered a task which demanded not much focus on meaning but a high level of focus on forms, thus revealing an exceptionally high frequency of *repetition* strategy use when compared to other task types. This was perhaps also the reason why learners often did something when facing a DICTATION task, in contrast with a DIRECT task which were usually more mechanical and might not require any mental actions to facilitate understanding. One other finding was that *imagery* was used more

frequently for READ ALOUD and SHARING. Although it was only speculative, such result could point to the additional variable of the richness of content of the task type which could have an effect on how learners choose to deploy different strategies. In fact, the content associated with the different types of teacher input could act as an extraneous variable.

Additional analyses were conducted to match learners' LK and task difficulty in order to explore the variable of task types *per se*. By and large, the results were similar to the general trends, such as the preference of *imagery* when learners encountered READ ALOUD, *summarisation* for INFORM, and *repetition* for DICTATION. However, there were also some interesting intricate differences which will be picked up in Chapter 7.

Apart from the individual strategy use, the combination of strategies across different task types was also revealing. It was found that learners combined strategies significantly more often when facing INFORM, SHARING and DICTATION than ELICIT and DIRECT. Perhaps it could be explained by the fundamental difference of the various task types in terms of the amount of information presented – that ELICIT and DIRECT normally came with shorter utterances with fewer idea units, whereas INFORM, SHARING and DICTATION could include longer ones. However, possibly due to the small sample, no significant results were identified after having controlled for the effects of LK and task difficulty.

To conclude, learners did use different strategies when understanding different types of teacher input, and potentially due to the nature of different task types, students also combined strategies more often when dealing with the tasks of INFORM, SHARING, and DICTATION. Table 69 summarises all the findings.

Table 69: Comparison of the results from sections 5.4.2 and 5.4.3 to show how the effects of LK and task difficulty were at play with task types in the use of strategies

Strategies	General trends	Effect of task types after matching LK and task difficulty
Inferencing	INFORM > ELICIT, DIRECT; READ ALOUD > DICTATION, DIRECT	None
Elaboration	None	None
Imagery	READ ALOUD > ELICIT, INFORM, DIRECT, DICTATION, COMMENT, CLUE; SHARING > ELICIT, INFORM, DIRECT, CLUE	<u>Learners with low LK</u> Easy READ ALOUD > easy ELICIT, INFORM, DIRECT Easy SHARING > easy INFORM Difficult READ ALOUD > difficult ELICIT <u>Learners with high LK</u> Difficult READ ALOUD > difficult ELICIT, DICTATION
Summarisation	INFORM > ELICIT, DIRECT; SHARING > ELICIT, DIRECT	<u>Learners with low LK</u> Difficult INFORM > difficult ELICIT <u>Learners with high LK</u> Difficult INFORM > difficult READ ALOUD
Translation	None	None
Repetition	DICTATION > ELICIT, INFORM, DIRECT, READ ALOUD, SHARING, COMMENT, CLUE	<u>Learners with low LK</u> Easy DICTATION > easy SHARING, COMMENT <u>Learners with high LK</u> Easy DICTATION > easy ELICIT, CLUE Difficult DICTATION > difficult DIRECT
Doing nothing	ELICIT, INFORM, DIRECT, COMMENT, CLUE > DICTATION; DIRECT > SHARING, CLUE	<u>Learners with low LK</u> Easy ELICIT, INFORM, DIRECT, COMMENT > easy DICTATION <u>Learners with high LK</u> Difficult DIRECT > difficult DICTATION
Combination of strategies	INFORM, SHARING, DICTATION > ELICIT, DIRECT	None

5.5 Computer programme – A qualitative exploration

5.5.1 Introduction

So far in this chapter I have adopted a primarily quantitative approach towards the analysis of the computer programme. Any such quantitative analyses, however, cannot capture comprehensively the continuous nature of teaching and learning in classroom. Indeed, the teaching video attempts to resemble an authentic lesson and therefore, it is important to take into account the ongoing nature of the virtual lesson and investigate how learners deploy strategies over time – during the course of the lesson in the computer programme. Moreover, section 5.2.2 above mentioned that given the small sample, it was not possible to conduct a quantitative analysis to find out if there existed a group of learners with low LK who were actually rather strategic, as inspired by the cluster analysis from the previous chapter on the Likert-scale questionnaire. In contrast, a qualitative study of individual cases might shed light on this issue. To that end, a more qualitative approach of analysis is adopted to complement the quantitative analysis conducted earlier in this chapter.

In the following, data from six participants were purposively selected. These participants were selected based on the results from the cluster analysis in the Chapter 4.4. Two of these participants belonged to the less strategic low LK group (LLK/LS) and two belonged to the highly strategic high LK group (HLK/HS). On top of these, one participant was selected from the highly strategic low LK group (LLK/HS) and one from the less strategic high LK group (HLK/LS). The unequal number of participants selected for each of these four groups was justified as it maps, to some extent, onto the sample sizes of these groups in the Likert-scale questionnaire (for LLK/LS, n=180; LLK/HS, n=143; HLK/HS, n=198; HLK/LS, n=125). In addition, these unequal sample sizes might, arguably, also reflect how the population was represented, particularly given how so much previous literature has revealed the differences between more proficient and less proficient listeners in terms of their strategy use (although most of this research did not study the effect of LK, as mentioned in section 2.2.2.1). In other words, while the larger proportion of learners with low LK were less strategic, there existed a small group of learners who were, almost like going against the trend, highly strategic. As such, it

would be interesting to examine two learners who were less strategic low LK learners (LLK/LS) to investigate the general trend, if any, but at the same time explore how a LLK/HS learner existed in my sample for the computer programme. Such a justification is similar with the selection of two highly strategic high LK learners (HLK/HS) but one less strategic high LK learner (HLK/LS).

Therefore, six students were purposefully selected. In the following, section 5.5.2 will first analyse two cases of LLK/LS students, section 5.5.3 will then move on to analyse the case of the LLK/HS student. Section 5.5.4 then deals with the two cases of HLK/HS students and section 5.5.5 a case of HLK/LS student. In each of these cases, I will plot a broken line graph to examine how strategies were used over time; based on these observations, I will summarise the findings and try to suggest some qualitative differences between learners of different levels of LK and strategic behaviour in section 5.5.6.

5.5.2 Two cases of less strategic low LK learners (LLK/LS)

The data of two students who belonged to the group of LLK/LS are presented in Figure 10 and Figure 11 respectively. These two figures are broken line graphs which show the progression of the use of strategies over time when the teacher in the video was giving a variety of input (such as INFORM, ELICIT, and so forth). The horizontal x-axis shows these inputs in the chronological order presented in the video, whereas the numbers of 1 to 6 represent the six strategy buttons (from *inferencing*, *elaboration*, *imagery*, *summarisation*, *translation* to *repetition*) which students clicked to indicate their strategy use. The number 0 indicates the orientation of 'doing nothing'. All these numbers are put in blue circles in the figure. However, at times when a student clicked several buttons simultaneously during the pauses to indicate a combination of strategy use towards understanding the teacher's input, these strategies are marked in different colours – the first one which they clicked is still marked with blue, with the second in red, third in green, fourth in purple, and fifth in orange (in the six cases presented, students used only up to a combination of 5 strategies). However, even though

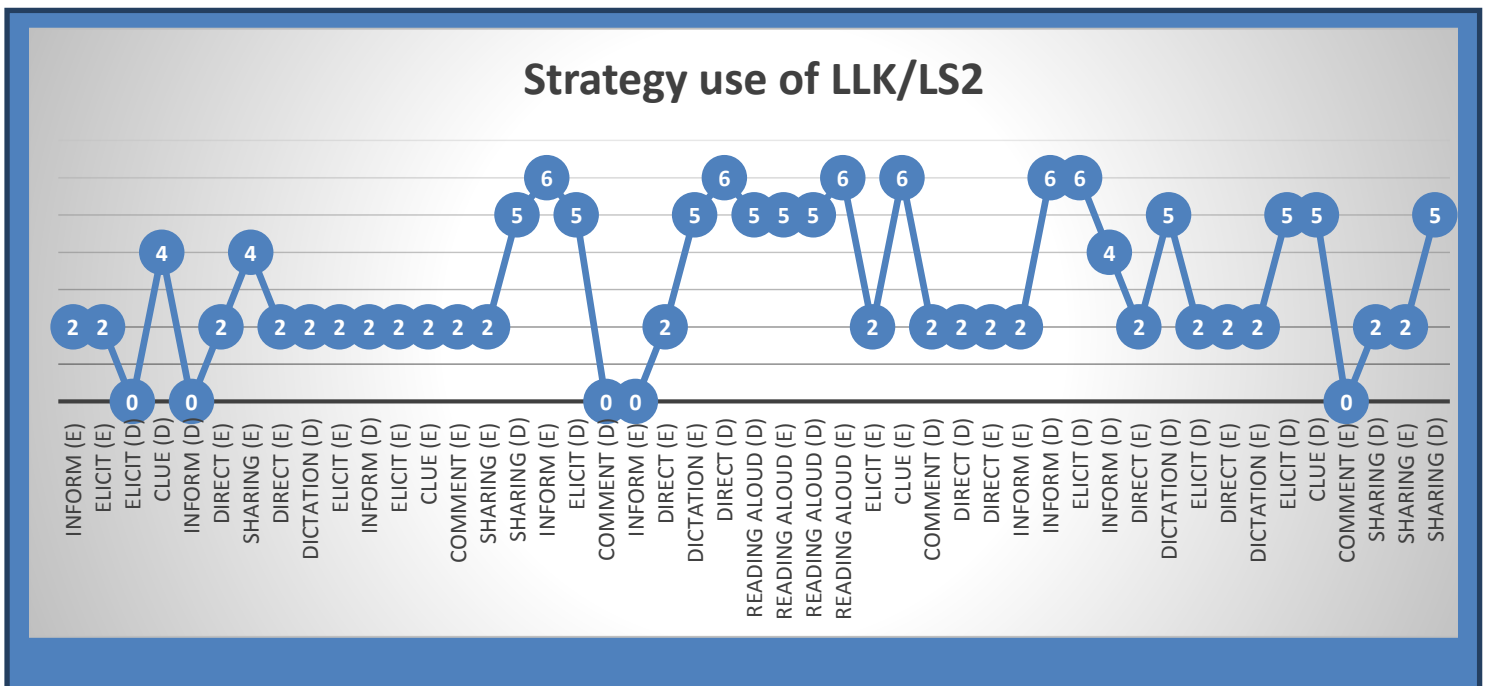
the time they clicked the buttons differed, they were targeting to the same teacher input because they clicked the buttons at the times when the video automatically paused.

Figure 10: Strategy use of LLK/LS 1 over time



Strategy 1: Inferencing; Strategy 2: Elaboration; Strategy 3: Imagery; Strategy 4: Summarisation; Strategy 5: Translation; Strategy 6: Repetition

Figure 11: Strategy use of LLK/LS 2 over time



Strategy 1: Inferencing; Strategy 2: Elaboration; Strategy 3: Imagery; Strategy 4: Summarisation; Strategy 5: Translation; Strategy 6: Repetition

Some similarities can be observed between the two learners with lower LK. First, *translation* strategy (denoted by 5 in the figures) represented a high proportion of the strategies used by them. Particularly with LLK/LS 1, it appears that she used *translation* predominantly across different task types. With both of them but particularly with LLK/LS 1, it was often the case that *translation* was used in a row for different task types. LLK/LS 2, on the other hand, also used a lot of *elaboration* strategies, but whether he used *translation* or *elaboration*, he often continued using the same strategy inflexibly over time.

Another observation was that, albeit very limited, there were some combinations of strategies used by LLK/LS 1. As denoted by the red and green circles in the two figures, LLK/LS 1 combined *translation* and *summarisation* at two instances, and *imagery*, *translation* and *repetition* at another instance. It can be discovered that whenever LLK/LS 1 used a combination of strategies, *translation* was often one of these strategies. In other words, it was often some kind of strategies used in a cluster with *translation*.

Taken together, although it was not the intention to generalise findings from these two cases, both learners did show two similar trends of use of strategies. First, it can be argued that *translation* could be seen as one of the ‘default’ strategies for them. To put it in another way, whenever the two students tried to understand the teacher’s input, regardless of what task type it was, they showed an inclination to use *translation*. Even when LLK/LS 1 combined different strategies to facilitate her understanding, *translation* was always one strategy in the cluster. Furthermore, the predominant use of *translation* strategies for LLK/LS 1 and *translation* and *elaboration* strategies for LLK/LS 2 might also be indicative of a rather inflexible way of using a variety of strategies. The fact that the broken line graph did not show frequent fluctuation indicated that both students were rather inflexible in choosing a range of strategies to help them understand the teacher’s input.

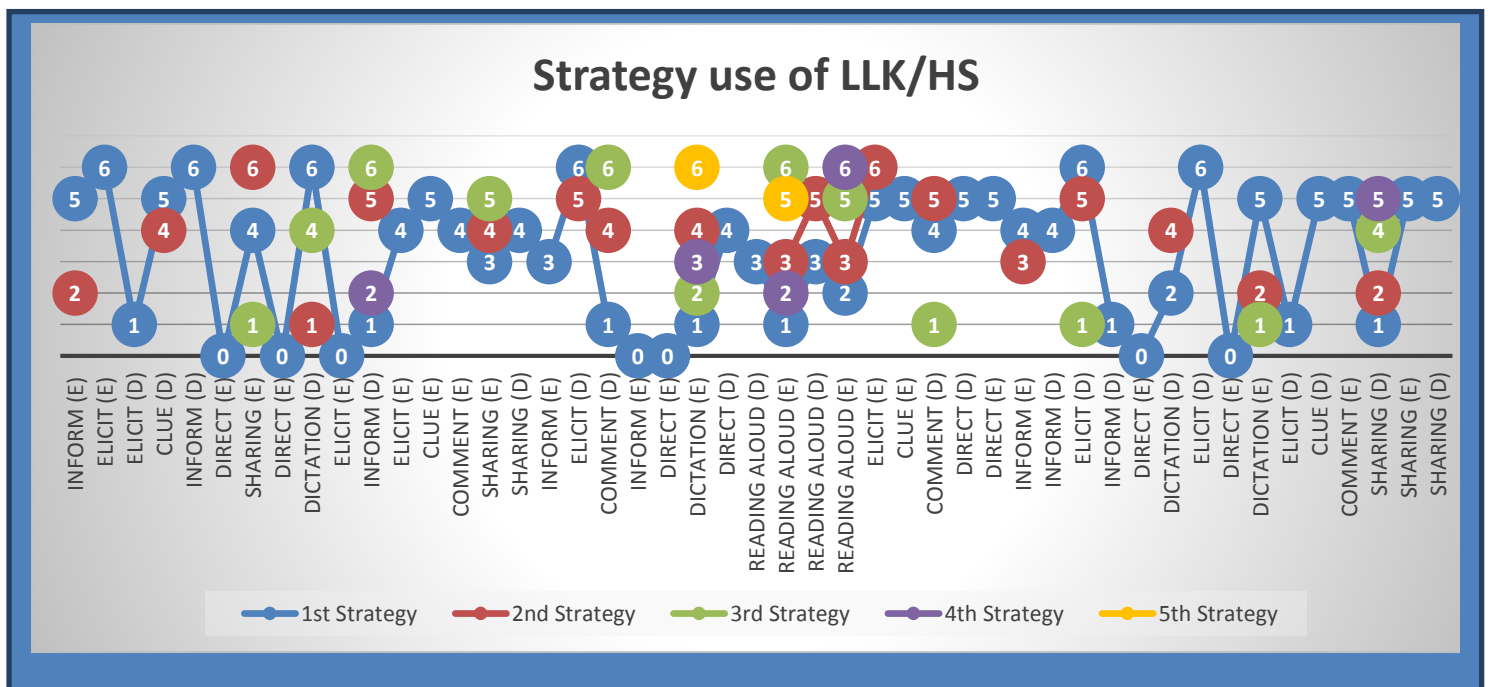
There were some dissimilarities between them. One major observation was that strategy use is highly individualistic. While LLK/LS 1 used all the six strategies at some point throughout the

computer programme session, LLK/LS 2 did not use *inferencing* and *imagery* strategy at all. The next section will turn to look at the case of a learner who had a low level of LK but highly strategic.

5.5.3 One case of highly strategic low LK learner (LLK/HS)

Figure 12 shows the data from a learner with low LK but was highly strategic. It can be seen that she was much more strategic than the two LLK/LS students discussed above in several ways. First, she used the full range of six different strategies at different time points, and more often than not, she combined different strategies to understand the teacher's talk in the computer programme. There were 7 instances when she did nothing, but all these instances happened when the teacher's talk in the video was an easy task – mostly a DIRECT. However, even though this student appeared more strategic than the two LLK/LS students in the use of the range of strategies in clusters, she still relied rather partly on *translation* strategies (as denoted by 5 in the figure). Whenever she combined different strategies, with the exception of a few instances, she used *translation* as one of these clusters.

Figure 12: Strategy use of LLK/HS over time



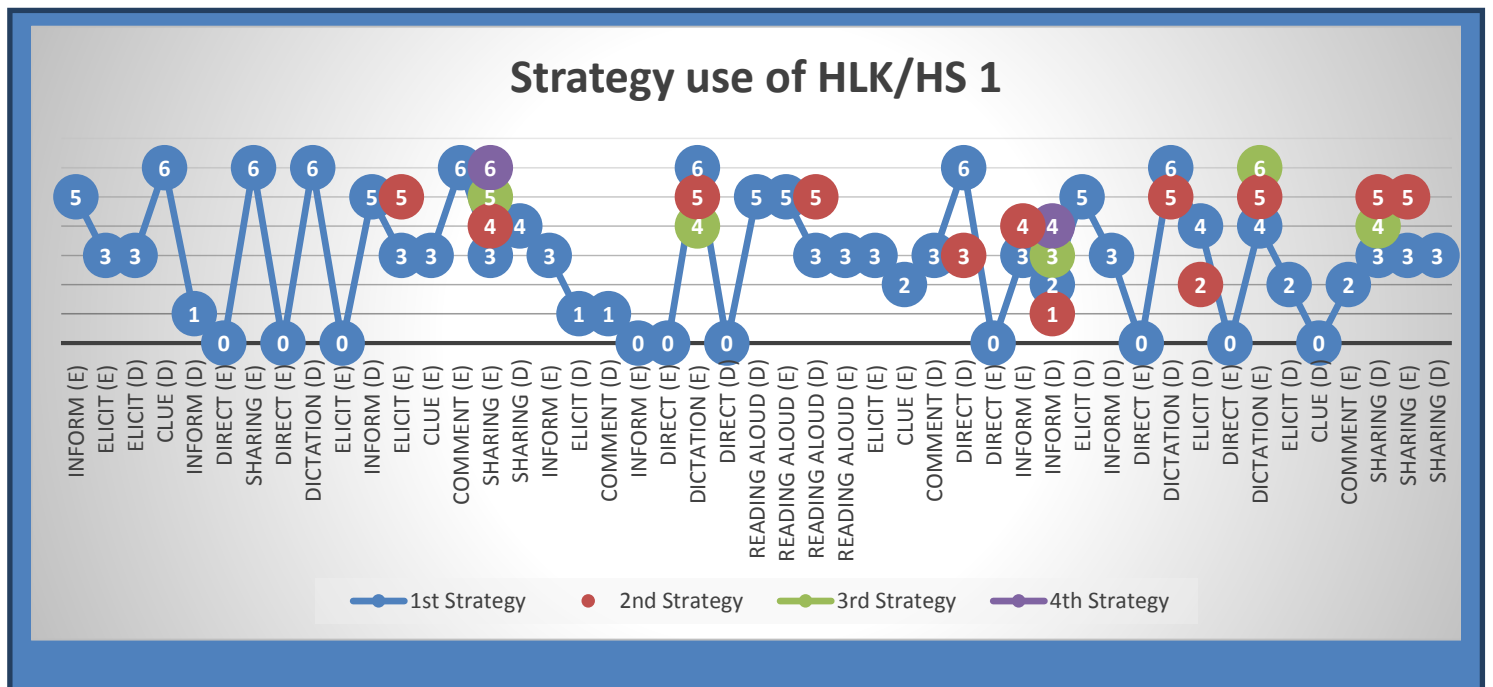
Strategy 1: Inferencing; Strategy 2: Elaboration; Strategy 3: Imagery; Strategy 4: Summarisation; Strategy 5: Translation; Strategy 6: Repetition

The next two sections will present the data of learners with high LK – first with the two HLK/HS learners and second the one case of HLK/LS learner.

5.5.4 Two cases of highly strategic high LK learners (HLK/HS)

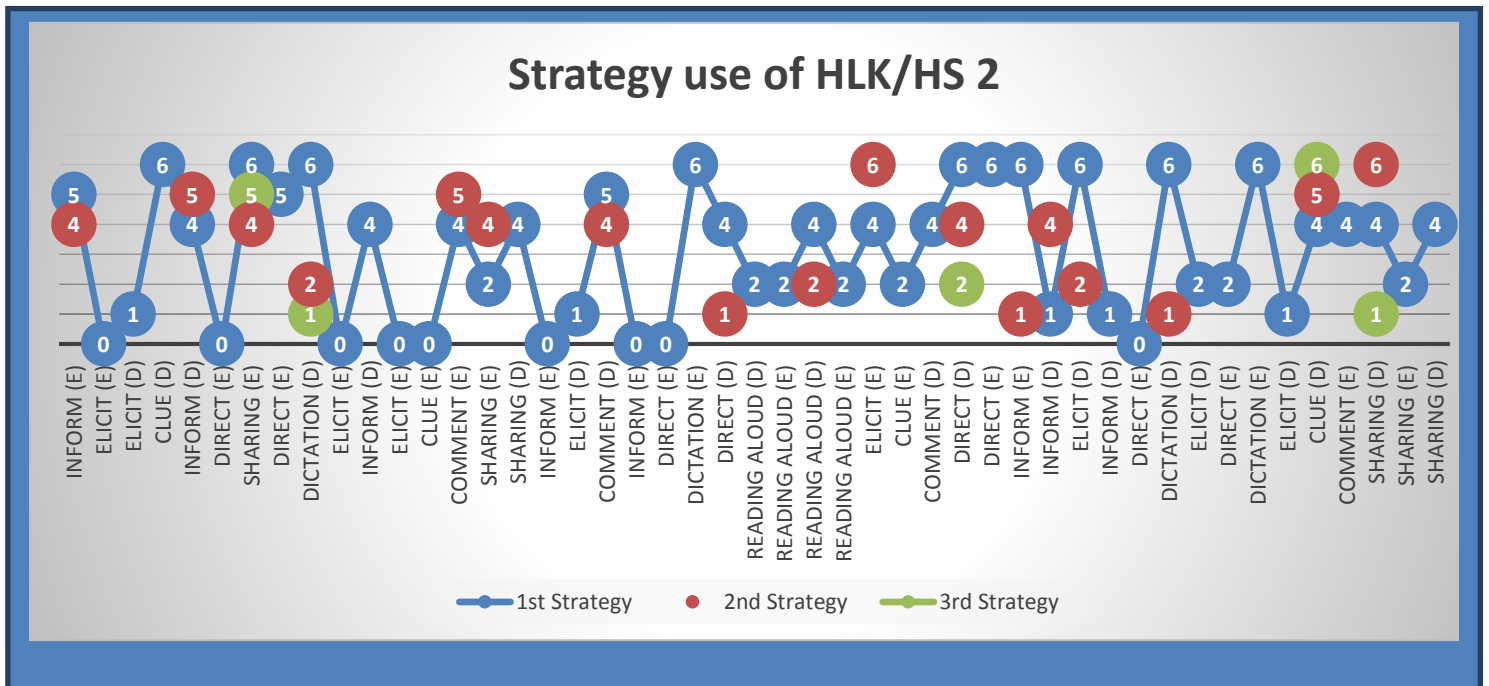
The data of the two students with high LK who were also highly strategic are presented in Figure 13 and Figure 14 respectively. Similar to the previous sub-section, these two figures are broken line graphs which show the use of strategies over time in the computer programme. Whenever there was a combination of strategy, they were marked in different colours – blue, red, green, and purple, according to the sequence that the learners clicked the buttons.

Figure 13: Strategy use of HLK/HS 1 over time



Strategy 1: Inferencing; Strategy 2: Elaboration; Strategy 3: Imagery; Strategy 4: Summarisation; Strategy 5: Translation; Strategy 6: Repetition

Figure 14: Strategy use of HLK/HS 2 over time



Strategy 1: Inferencing; Strategy 2: Elaboration; Strategy 3: Imagery; Strategy 4: Summarisation; Strategy 5: Translation; Strategy 6: Repetition

First, it can be observed that both learners exhibited a rather flexible use of strategies, as reflected by the frequent fluctuations in the broken line graphs. Secondly, there were quite a lot of combination of strategies used by learners. Unlike the student LLK/LS 1 discussed in section 5.5.2, the combinations were much more flexible and not limited to only some kind of strategies used in combination with *translation*. For instance, HLK/HS 1 showed a highly flexible trend of clustering of strategies. Sometimes HLK/HS 1 would use together *imagery* and *translation*, *summarisation* or *repetition* or even all four of them. There was also an instance when she combined *elaboration* and *summarisation*, and another with *inferencing* and *imagery* added. HLK/HS 2 also combined *summarisation* with a number of other strategies – *inferencing*, with *elaboration* and *repetition*. There were also occasions when HLK/HS 2 used *repetition* in conjunction with *inferencing* and/or *elaboration*.

These similarities said, it can also be observed that strategy use varied to some extent between the two students. While HLK/HS 1 used all six strategies at some point when taking the lesson in the

computer programme, HLK/HS 2 used no *imagery* at all. However, these two students did not differ completely in terms of the occasions when they did not use any strategies. HLK/HS 2 did not use any strategies towards understanding 9 tasks, and all these were coded as ‘easy’ tasks. A similar picture of nil-strategy with 5 of these easy tasks was shared by HLK/HS 1, who also used no strategies in 3 other easy tasks (all being the task type DIRECT), and 2 other difficult tasks (a DIRECT in the middle and a CLUE towards the end of the computer programme). The fairly consistent pattern of the use of no strategies for learners with high LK might suggest that given their higher LK, tasks which were coded as easy would be reasonably easy for them that no strategy was required.

5.5.5 One case of less strategic high LK learner (HLK/LS)

Finally, it would be of interest to explore a case of a learner with high LK but less strategic. The results of this HLK/LS student is presented below.

Figure 15: Strategy use of HLK/LS over time



Strategy 1: Inferencing; Strategy 2: Elaboration; Strategy 3: Imagery; Strategy 4: Summarisation; Strategy 5: Translation; Strategy 6: Repetition

For this HLK/LS student, he usually used only one strategy (i.e. not in combination) when understanding the teacher in the computer programme. Such a trend resembled to some extent how the two LLK/LS students deployed strategies. However, perhaps given his high LK, he did not rely on any particular strategies, not least *translation*. There were still some flexibility of strategy use (i.e. not using one single strategy for a prolonged period of time against different task types), although he was not as flexible as the two HLK/HS students.

5.5.6 Summary of qualitative exploration of the computer programme

This section has presented a more qualitative approach towards the analysis of the computer programme. The six cases indicated a number of differences between students with lower and higher LK, who were less and highly strategic. Table 70 summarises the qualitative findings.

Table 70: Summary of qualitative findings of the computer programme

Students	Characteristics within group	Differences within group
Less strategic low LK students (LLK/LS)	<ul style="list-style-type: none"> - Used <i>translation</i> predominantly - Infrequent combination of strategies - Inflexible use of strategies – sticking to one strategy across time 	<ul style="list-style-type: none"> - LLK/LS 1 combined strategies inflexibly (always included <i>translation</i>) - LLK/LS 2 relied on <i>elaboration</i> on top of <i>translation</i> - LLK/LS 2 did not use <i>inferencing</i> and <i>imagery</i> at all
Highly strategic low LK student (LLK/HS)	<ul style="list-style-type: none"> - Used the full range of six different strategies, but relied heavily on <i>translation</i> - Frequent but not very flexible combination of strategies, but usually involves a <i>translation</i> - Did nothing only when the teacher’s talk was ‘easy’, usually when it was a DIRECT task. 	-
Highly strategic high LK students (HLK/HS)	<ul style="list-style-type: none"> - Very flexible in the use of different strategies – not sticking to one strategy across time - More combination of strategies - More flexible combination of strategies - Fairly consistent in occasions when no strategy was used 	- HLK/HS 2 did not use <i>imagery</i>
Less strategic high LK student (HLK/LS)	<ul style="list-style-type: none"> - Did not rely on any particular strategies, not least <i>translation</i> - Rather flexible in the use of different strategies – not sticking to one strategy across time - Infrequent combination of strategies 	-

5.6 Chapter summary

This chapter has presented the analysis of the computer programme as an attempt to answer the RQs pertaining to how students' strategy use vary according to their levels of LK, the task difficulty and task types. First, it was revealed that learners of higher LK in general preferred *elaboration*, whereas learners of low LK preferred *translation*, when considering the proportion of individual strategies out of all strategies used. With the use of strategies against specific task types with varying difficulties, learners of high LK used more *elaboration* strategies for difficult ELICIT, easy READ ALOUD, and easy CLUE. They also used more *summarisation* strategies in difficult SHARING, and both easy and difficult COMMENT. Moreover, they tended to combine strategies more often when facing easy ELICIT, easy SHARING, and difficult INFORM.

With regard to the variable of task difficulty, learners in general used more *inferencing*, *summarisation*, and *repetition* strategies when facing more difficult teacher input. At the same time, they also combined strategies more often in such situations. An additional analysis with learners' LK and task types matched revealed that learners with higher LK used more strategies in a range of situations, especially when encountering difficult INFORM than easy INFORM. They used more *inferencing* for difficult ELICIT than easy ELICIT, as well as difficult INFORM than easy INFORM. They also used *summarisation* more when they encountered difficult CLUE than easy CLUE, as well as difficult INFORM than easy INFORM. Finally, they combined more strategies when facing difficult INFORM than easy INFORM.

Turning to the effect of task types, the general trends showed that *inferencing* strategy was used more often when learners tried to understand the teacher's INFORM and READ ALOUD, whereas *summarisation* strategy was used more often towards INFORM and SHARING. Additionally, *repetition* strategy was frequently deployed to understand a DICTATION task, and *imagery* strategy for READ ALOUD and SHARING. They also did nothing more often when facing a DIRECT task than a DICTATION task. Learners also combined strategies more often when trying to understand the teacher's INFORM, SHARING and DICTATION than ELICIT and DIRECT. After exploring the general trends, analyses were

conducted to match students' LK and task difficulty to explore the variable of task types *per se*. A number of differences were revealed, mainly pointing to firstly, both learners of high and low LK using more *imagery* when facing difficult READ ALOUD. The latter group also used more *imagery* when facing easy READ ALOUD and easy SHARING than a range of other task types especially INFORM. On the other hand, a difficult INFORM task required learners of both low and high LK to use more *summarisation* strategies. Furthermore, an easy DICTATION task required both groups of learners to use more *repetition*, and a difficult DICTATION task also prompted the learners with high LK to use more *repetition*. With DICTATION, learners of low LK always did something to try to understand an easy DICTATION, whereas learners of high LK did so for a difficult DICTATION.

Finally, a qualitative exploration was attempted with a view to capture the ongoing nature of the video in the computer programme – one which resembled an authentic classroom. It was revealed that learners with lower LK who were also less strategic generally relied on *translation* and used strategies rather inflexibly. Even with the infrequent combination of strategies they used, *translation* was always inflexibly placed on the list of one of the strategies in the combination. Learners with higher LK showed a completely different trend – that they were more flexible in the use of individual strategies as well as their combination of strategies. However, there existed some learners who went against the general trend, as evident from the data from the LLK/HS student. She was a highly strategic low LK learner and she used the full range of individual strategies and combined strategies frequently. However, she still had to rely on *translation* probably given her low LK. Finally, there was also the case of HLK/LS, who had high LK but less strategic. While he was rather flexible in terms of the individual strategies he used and did not rely on any particular strategies, he combined strategies infrequently.

It is noteworthy, however, that all the findings up till now targeting to the different RQs are by no means comprehensive. The following chapter will provide some more qualitative data and analysis of the stimulated recall protocol, which could complement the findings particularly with respect to RQ1 and RQ2 revealed so far.

Chapter 6 Findings (stimulated recall protocol)

This chapter reports findings from the stimulated recall interviews, providing some qualitative data to substantiate the results obtained from the Likert-scale questionnaire and computer programme. This chapter is organised in the following way. First, adopting a thematic approach, the different types of strategies reported by learners through the stimulated recall interviews are presented in section 6.1. Then in section 6.2, the data from four learners in two different classrooms are discussed in a more detailed way to examine how the variable of LK interacts with strategy use by learners. The chapter ends with a summary of the findings from the stimulated recall protocol.

6.1 A general picture of different strategies used in context

The stimulated recall interviews were transcribed verbatim and then translated from Chinese into English. It is worth pointing out that where English words were used by learners during the stimulated recall interviews, they will be put in inverted commas to show that English was used to refer to those words (e.g. ‘past participle’). In places where a specific Chinese term was used by learners with an intention to contrast it with the English words, the Chinese words will be presented [e.g. the meaning of charcoal is 炭 (charcoal)].

Students’ self-reports were then coded using the categories of strategies identified through the EFA of the Likert-scale questionnaire in Chapter 4. However, Vandergrift and Goh’s (2012) fairly comprehensive list of listening strategies, which synthesised previous research on listening to audio recording, was also taken into account to code any items which did not fall into my taxonomy. Inter-rater reliability was achieved by having an Applied Linguistics researcher code 4 out of 16 cases (25% of the sample). The reliability was calculated as 89%, and the discrepancies were discussed among the raters, leaving no unresolved disagreements. In the following, a general portrait of the different types of strategies used by learners is provided.

Some learners reported their use of *contextualisation for the present lesson* strategies. For example, excerpt (1) below demonstrates how a student recalled what she had read in her preparation for the present lesson when the teacher was asking students to give her a past participle with a unique spelling (i.e. not the same as the past tense form).

(1) I recalled what I read from the textbook during my preparation for this lesson. I also focused on the word ‘participle’. I remembered I had seen the term ‘participle’ before, but didn’t understand it.

It was quite clear that the student was thinking back to the preparation she had done, which provided her with a context for the present lesson, in order to help her understand what the teacher was saying. Although she did not arrive at an understanding, the preparation that she recalled had allowed her to pick up the term ‘participle’, and she adopted a strategy of *selective attention on difficult words*. In a similar vein, another student also used *contextualisation for the present lesson* strategies.

(2) I recalled in my mind the verb table which I studied before the lesson. I thought ‘past participle’ was something related to the conjugation of the ‘past perfect tense’.

The student was trying to recall what he had done before the lesson and remembered the verb table. Such a strategy appeared to be useful to his understanding of the teacher’s question because it had led him to think about the conjugation of verbs into the past perfect tense-aspect, which included a past participle. Moreover, we can observe from excerpts (1) and (2) that both students appeared to be also trying to recall their prior knowledge on the word ‘participle’. *Recall of prior knowledge* or what some researchers such as Vandergrift (2003) termed as *elaboration* was indeed a strategy which a number of students used consistently, sometimes in combination with other strategies. At a moment when the teacher was explaining what ‘patrol’ and ‘watchman’ meant, a student reported that she was trying to arrive at an understanding through various strategies:

(3) I heard the word ‘watchman’ and I thought that it was related to the verb ‘watch’. I was not sure. And then the teacher said that this person walked around and was involved in some night-time

work. It might be what we call 保安 (security guards) who walk around at night because they work at night in our society.

Here, the student first selectively attended to the difficult word ‘watchman’ and adopted an *inferencing* strategy. She used the internal structure or morphology of the word ‘watchman’ to guess its meaning by relating it to the verb ‘watch’. Vandergrift and Goh (2012) would call this a *linguistic contextualisation* strategy, although I would argue that it could as well be treated as the student drawing on her prior knowledge about the vocabulary she knew (i.e. ‘watch’) which was related to ‘watchman’. She also used other textual information provided in the teacher’s input – a person walking around and working at night, and combined such information with her prior knowledge of the world [Vandergrift (2003) termed this strategy as *world elaboration*] to make inferences on the meaning of ‘watchman’. When dealing with the same teacher’s input, another student opted for a *translation* strategy, as shown in (4).

(4) ‘Patrol’ – I didn’t understand. I used Chinese to think the meaning of the whole sentence the teacher said. I thought perhaps ‘patrol’ equalled 行來行去 (walked around)?

Although the student could not decipher the full meaning of ‘patrol’, his *translation* of the teacher’s input into Chinese allowed him to arrive at an approximate understanding of the word.

Another strategy which was employed by learners was *selective attention on simple words* in order to arrive at an understanding. Sometimes, however, the difficult words were ignored. Before students’ self-report of excerpt (5) below, the teacher was explaining the past participle form of ‘burnt’, she gave the example of ‘the food has been burnt’. Then, she elicited from the students, ‘What is the colour of the burnt food?’ When other students responded ‘black’, she said, ‘Black, yes, as black as charcoal. Alright? So it’s burnt already. Dark. Finished. Then we use past participle’.

(5) I caught the words ‘black’ and ‘burnt’, so I thought we use the ‘past participle’ ‘burnt’ for something black and already finished burning.

The student here focused his attention on the two simple words which he knew and arrived at an understanding of the use of past participle, whereas another student recalled what he just learnt about present participle and compared the two forms to arrive at an understanding.

(6) I thought that in real life, either something is burning or something has already been burnt. I compared this ‘past participle’ with what the teacher just said about ‘present participle’ earlier, and I thought I understand.

We can observe that after having recalled his prior knowledge of the world, the student also employed a *summarisation* strategy and pinpointed the important information about present and past participles to help him understand more fully. These two students in excerpts (5) and (6) did not mention any effort in understanding the slightly more difficult word ‘charcoal’ in their self-report, but some students did try to understand what ‘charcoal’ meant as well.

(7) Originally, I thought ‘charcoal’ was something hot, but then I caught the word ‘black’ as well. I tried to imagine what is black in our daily lives which can be burnt and understood that the meaning of ‘charcoal’ is 炭 (charcoal).

This student adopted some *imagery* strategy and created some kind of mental image while recalling her prior knowledge of the world. Even though the word ‘charcoal’ was not crucial in understanding the teacher’s input on the use of past participle, this student succeeded in deciphering this relatively more difficult word through the use of strategies.

Some students also tried to use some *relational* strategies and recalled the teacher’s usual teaching approach. The following mental actions were reported by a student when the teacher elicited from students, ‘Whenever we learn a new grammar item, we need to learn two things. What are they?’

(8) I thought over her words in my mind again – we need to learn two things when we learn a new grammar item. Then I remembered that every time she would talk about ‘form’ and ‘use’ when teaching grammar.

In excerpt (8), the student first used a *repetition* strategy, and then recalled the teacher’s usual approach in teaching grammar, helping him realise what the teacher was trying to talk about.

Taken together, these eight excerpts of students' stimulated recall interviews have provided a general picture of the more common strategies used by learners in different contexts when they were trying to understand the teacher's talk in the classroom. There was a range of strategies employed by learners, sometimes individually and sometimes in combination. By and large, these strategies fit into my taxonomy developed from the Likert-scale questionnaire rather well, and they represented most of the factor structures of the questionnaire. The only strategies and opportunities for strategic behaviour from my taxonomy not presented above were *evaluation*, *utilisation of personal resources*, *hide and seek*, and *direct help seeking from the teacher*. With the exception of the last one which did not come up in any of the interviews, the other three will show up as I present the data obtained from Cindy, one of the cases which I would delve into for a more in-depth analysis below.

In the next section, I shall provide a closer look at four cases and examine how these students with varying levels of linguistic knowledge employed various strategies when trying to understand the teacher's input.

6.2 Four cases of students

The four students came from two different classes and they were selected based on maximum variation sampling in terms of their LK and gender. The analysis starts with Adrian and Betty from class 1, followed by Cindy and David from class 2. Some background information on the classes is provided below in Table 71.

Table 71: Background information of the two classes

	Students' English proficiency	Class size	Lesson focus	Teaching aids and materials
Class 1	Low	36	Grammar – participles: distinguishing present and past participles	Worksheets, blackboard
Class 2	High	34	Grammar – conjunction: form and use of 'despite' and 'in spite of'	Worksheets, blackboard

The two classes belonged to the same school where students were streamed according to their English abilities. Class 2 was the elite class and included students with higher English proficiency. Certainly, however, there were still variations in terms of English LK within the classes as measured by the VLT and GJT, and the differences are reported in Table 72.

Table 72: Background information of the four students

Pseudonym	Class	Gender	VLT score	GJT score	Grouping according to the Likert-scale questionnaire cluster analysis
Adrian	1	M	83/150	34/45	LLK/LS
Betty	1	F	89/150	29/45	LLK/HS
Cindy	2	F	144/150	33/45	HLK/HS
David	2	M	138/150	39/45	HLK/LS

In the next section, how Adrian and Betty, the two learners with low LK, used strategies to understand the teacher's talk is discussed. The language used by the teacher is also presented to provide a context and situation at which strategies were employed by the two students.

6.2.1 Adrian and Betty

The stimulated recall interviews with Adrian and Betty were situated at a time when the teacher began to check the answers of an exercise on a worksheet. Students had just completed an exercise in using either a present or a past participle as an adjective. The teacher asked students to put up their left hand if they thought a present participle should be used, and their right hand if they thought a past participle should be used. Then came the question: 'The boys are cleaning up the beach under the (burnt/burning) sun'.

Class 1 Exchange 1

T: Burning or burnt?

Ss: (Putting up hands)

T: Ok. No problem, burning sun. You know, the sun is like a very big fireball which is burning all the time.

While the teacher was explaining the answer, Adrian and Betty reported the following:

Adrian: The teacher said the burning sun is like a very big ‘fireball’ – I didn’t know this word, but I heard the word ‘ball’ and I thought about it in Chinese and imagined in my mind a ball-shaped thing which kept burning. Since the fire continues to burn, it needs to be ‘burn’ plus ‘ing’.

Betty: I caught the teacher saying that the sun is burning and I thought that the sun won’t finish burning. I was imagining the situation as written on the worksheet that on the beach, the sun was shining on the people. I looked at my worksheet and compared the two options of ‘burnt’ and ‘burning’ and understood the teacher’s explanation because the sun keeps burning.

Here, Adrian was using *selective attention to difficult words, inferencing, translation, and imagery*. He first tried to focus his attention on the difficult word ‘fireball’, pick up the textual clues in the teacher’s language, translate it into Chinese, and make inferences on the meaning of the word. He also used some kind of mental image to represent the word ‘fireball’, and understood the teacher’s explanation of why ‘burning’ instead of ‘burnt’ had to be used in the sentence.

Betty, on the other hand, was also partly relying on the words the teacher had said – that the sun keeps burning. She also relied on some other resources she had – the sentence on the worksheet, to create a mental image of the sun shining on the people on the beach. She identified the overarching meaning of the teacher’s talk that the sun’s burning is ongoing in nature, and subsequently integrating it into her understanding of the two options of burnt and burning. To sum up, Betty used *imagery and summarisation / appropriation* strategies, as well as *utilisation of personal resources*.

The lesson then went on and the next question was ‘He gave the guest some cold (boiled/boiling) water’. The teacher said:

Class 1 Exchange 2

T: Present or past participle?

Ss: (Putting up hands)

T: Ok. Yes you are right. Cold boiled water. Cold boiled water. You can't have cold boiling water.

Betty paused the video and reported the following, whereas Adrian did not do so.

Betty: I caught the teacher saying that we 'can't have cold boiling water'. I thought about this over and over again in my mind and agreed that when we are boiling water it cannot be cold, so we cannot have water being boiling and cold at the same time. It seemed contradictory to have the two words together. So I understood the teacher's explanation that we need to use 'boiled' instead of 'boiling'.

Betty was using a *repetition* strategy and thought over the teacher's words again and again in her mind. She attended to two words: 'cold' and 'boiling', realised that they were contradictory based on her *prior knowledge* of the world about boiling water, and understood the teacher's explanation that the past participle 'boiled' should be used instead.

The lesson continued with the teacher asking students to answer the question 'The (cooked/cooking) food gave off a wonderful smell'.

Class 1 Exchange 3

T: Next.

Ss: (Putting up hands)

T: Ah! (Hesitating a little bit) Some of you put up both of your hands. You can put up both your hands at the same time. Ok. Right. I am happy that... For those of you who have put up both hands, perfect! You have done very well!

Ss: Yea! (Clapping hands)

T: Ok. Can anyone explain why we can both choices?

Ss: (No response)

T: Ok, so, the cooked food, that means the food is already on the dish or on the table... smell very good... they gave off very good smell. But sometimes even when the dinner or the meal is not ready, your mother is busy cooking in the kitchen. Can you smell the food?

Ss: Yea.

T: Yes! So at that time, alright, you'll find the cooking food smell very well as well. So here, both are grammatically correct, but of course the meaning is something different. It depends whether the food is done already, or not. For cooking food, that means the food is still being cooked by your mother or the chef; for cooked food, that means they are ready to be eaten. They are on the table, ok?

Targeting this teacher's explanation, Adrian and Betty reported the following:

Adrian: In the beginning, when the teacher hesitated, I thought why the teacher did not provide an answer after so long. She is sometimes like that when both answers are correct. And then it was easy to understand the main points of the teacher's explanation.

Betty: I thought about what the teacher said in Chinese and thought that in everyday life, both the food in the process of cooking and the food that has already been cooked could give a wonderful smell. The teacher's explanation was ok, not difficult.

Adrian tried to adopt a *relational* strategy and recalled the teacher's usual approach in teaching, allowing him to understand that both options of 'cooked' and 'cooking' were correct, thus easing his understanding of the teacher's explanation. Betty, on the other hand, used a *translation* strategy along with her *prior knowledge* of the world to help with her understanding.

The next question was 'The campers were awakened by the (risen/rising) sun' and the teacher began her explanation.

Class 1 Exchange 4

T: What do you think?

Ss: (Putting up hands)

T: Ok.. alright.. In this case, we usually say 'the rising sun'. We can't have both. Because when you say the sun... the sun... where is the sun? When you say look at the sun, where is it?

Ss: Sky.

T: It's already in the sky. You don't have to say...the risen sun. You don't... you don't have to explain that, right? Ok. So that's why it will be very strange to say the risen sun. When you look at the sun... that means the sun is already in the sky. So, in this case, sorry you can't have both answers correct. The only case would be in the morning, when the sun came out. So here, rising sun.

Adrian was experiencing some problems comprehending the teacher's talk, and as the researcher, I asked a general follow-up question. Adrian then reported that he forgot what else he did apart from seeking some help from his classmates, and I stopped there following the guidelines for stimulated recall as described in section 3.3.3.2.3. His words added some validity to the stimulated recall because he was very honest and did not make up something which he had forgotten.

Adrian: I caught some words – when we saw the sun, it's already in the sky. I thought about this and couldn't catch anything else. I remember I couldn't understand the explanation.

Researcher: So did you do anything else to help you understand at that time?

Adrian: I couldn't remember what else I did. I later on asked my classmates.

Adrian appeared to be adopting a rather bottom-up approach in understanding the teacher. He only *attended selectively to the simple words* which he understood and relied on these individual words or one sentence, which was not very helpful with his comprehension. He appeared to give up after a while and performed a *hide and seek* action and sought help from his classmates.

Betty also used some strategies in response to this part of the lesson.

Betty: I thought that in everyday life, the sun is usually already on the sky, and it can't be seen. So it won't be shining on people. In this context, it is the sun rising slowly to the sky that shines on people, waking people up. I based on this to understand the main points of the teacher's explanation.

Betty was trying to use her *prior knowledge* of the world to help her understand the main points of the teacher's explanation. In other words, she did not appear to be focusing on individual words, but simply using a *summarisation* strategy and think about the overarching meaning of the explanation.

Then came the final question of the exercise: 'The (retired/retiring) headmaster lives alone in the countryside'. The interaction between the teacher and the students went on in the following way:

Class 1 Exchange 5

T: Last one... retired or retiring?

Ss: (Putting up hands)

T: Ok... retired... the majority chose the 'retired'. Yes you are right. What is the meaning of 'retired'? That means that headmaster stopped working, ok? And maybe he has already saved enough money or too old to work, ok? Can we say 'retiring'? How could we 'retiring'? Ah yes, do you remember Mr Chan, our former principal?

Ss: Oh.

T: Oh... so you knew that ok... so he couldn't... this may not be a shocking piece of news to you. You knew that months before, ok? So when you knew that someone is going to retire very soon, not now, maybe two months later, so you may say retiring. That means he is... that person is going to retire. But usually... ok... we use the term 'retired' to talk about people who has already stopped working... who has already stopped working, ok? Most of the time we use 'retired' unless in a very special case that we know he is going to stop working soon. Alright? So you get the idea.

In response to this part of the teacher's explanation, Adrian reported some strategies being used to facilitate his understanding.

Adrian: I understood the explanation. The teacher used the former principal's example. I remembered the example of our previous principal when I was in Form one. I tried to think that in real lives, we cannot say 退休緊 (in the process of retiring), not in Chinese.

Adrian picked up what the teacher mentioned – the case of the former principal, and recalled his *prior knowledge* about his encounter with the principal. He also used a *translation* strategy and employed Chinese to think about the example and understood the teacher's explanation.

Betty also used some strategies to comprehend the teacher's explanation. However, her initial report did not reveal how she had arrived at an understanding, and so I asked a general follow-up question.

Betty: Based on the teacher's explanation, I understood that 'retiring' means going to retire, and 'retired' means somebody who has already retired for a long time.

Researcher: So how did you arrive at that? Anything that you did in your mind at that time?

Betty: Originally I was thinking in Chinese and thinking why can't somebody be in the process of 'retiring'? In Chinese we can say 享受退休生活(enjoying retired life) and it is something ongoing. However, later on I listened that the teacher said 'retiring' only means going to retire and I also thought about daily life experience and the example of the principal. I also referred to the question on the worksheet again and focused on the meaning expressed by the sentence.

Betty appeared to switch from a *translation* strategy focusing on the word 'retiring' to recalling *prior knowledge* about the world. She recalled the daily life example of how people retired, while *utilising her personal resources* – the worksheet – to assist her understanding of the teacher's explanation.

Having finished checking the answers of this exercise, the teacher went on to talk about present participle being active in meaning and past participle expressing passive in meaning, and started to give examples.

Class 1 Exchange 6

T: Now, then, we go on to second part: Part B active and passive. I think this one is easy to understand. Which participle do we use to talk about active actions? Present or past?

Ss: Present.

T: Present participles. OK. So we put active actions here. (writing on the blackboard)

T: And then, how about past participle?

Ss: Passive.

T: Passive actions. Examples. (writing on the blackboard)

T: Can you come up with some examples of passive...ok? How about... ok... (writing on the blackboard) 'an injured man'. So the man was hurt. Ok? Then we have to use the passive form to describe the man. Another example is a damaged... a damaged what? A damaged... Can you give me any example? A damaged...?

S: Tree.

T: Tree. Ok. A damaged tree. (writing on the blackboard) Maybe after a typhoon, ok... the tree was damaged, a damaged tree... a damaged car. Then you talk about the situation that has been damaged by others, alright... in passive voice, then we use the past participle.

Both Adrian and Betty reported their use of strategies in response to the above interaction:

Adrian: I understood these two. 'Past'... that one... seemed like passive voice... passive voice... if I use the 'past' one... then it is something 被(being done on) by something else. I basically compared my knowledge on passive voice with this one.

Betty: I remember previously I've learnt passive versus active. I remember the differences of the two. I also focused on the examples: injured man and damaged tree and analyse them. For example, damaged tree... it won't damage itself and must be damaged by somebody. I used my logic of how our real life works to help me understand.

Both students recalled their knowledge of active and passive voice and compared their *prior knowledge* with this new knowledge of using participles to express the meaning of active and passive actions. However, Betty also tried to focus on the example provided by the teacher and recalled her

prior knowledge of the world that the tree would not damage itself and there must be a doer of the action of damaging.

The lesson then went on with the students working on the exercise presented on the worksheets. After a while, the teacher started to check the answers with the students. Both Adrian and Betty reported their strategy use when the teacher was talking about the question ‘A burglar broke into my flat this morning (taking/taken) away all the valuables’. The teacher’s talk happened as follows:

Class 1 Exchange 7

T: And then, number four. Before you choose the answer, think about what is trying to describe.

Ss: (Silent)

T: Who took away all the valuables? You know valuables? Something... expensive. Ok? Who did it? The burglar. Yes, alright? You see the man in the picture. The burglar who broke into the flat and stole. That is the meaning of burglar.

Adrian: I did not understand ‘valuables’, but the teacher explained straightaway that it meant ‘something expensive’ and so I did not do anything else in my mind. I was only listening. And then I caught the teacher saying the man getting into the house. So I was thinking in Chinese and thought ‘burglar’ is somebody like a 小偷 (thief).

It was interesting that Adrian did not use any specific strategies to understand the unfamiliar word ‘valuables’ because the teacher provided the definition straightaway. Such a finding could indicate how pausing time or the time allowed for students to process the teacher’s talk might be related to their strategy use. Adrian then reported that he understood the teacher mentioning the man getting into the house was a ‘burglar’ and used *translation* to think in Chinese, arriving at the understanding that ‘burglar’ could mean ‘thief’.

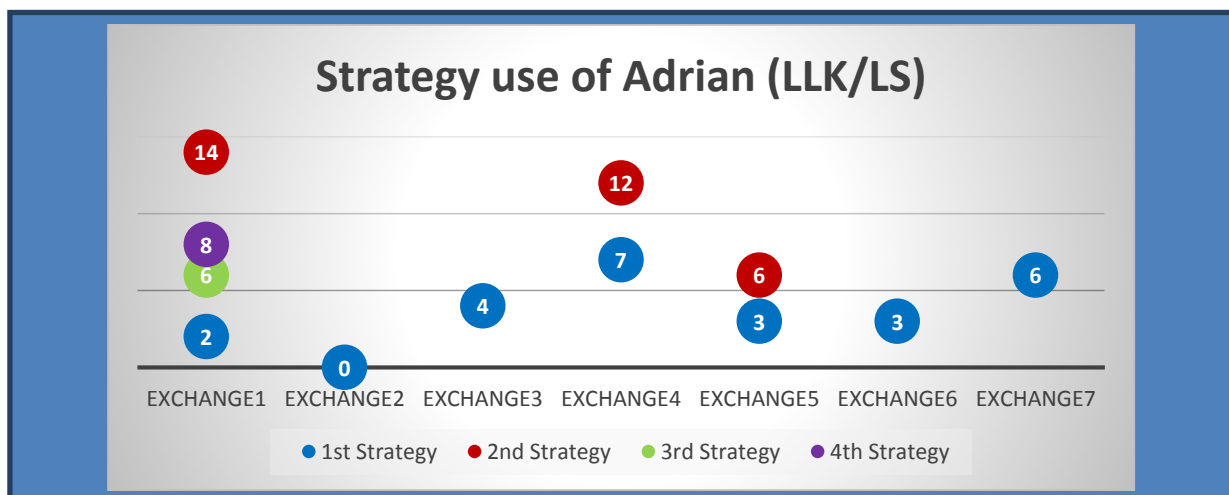
The use of strategies might also be related to the type of explanation that the teacher gave – whether it was a paraphrase, explanation using examples, or other types of explanation. Particularly, when explaining the word ‘burglar’, the teacher asked the students to look at the picture on the worksheet and this had helped Betty to understand the difficult word.

Betty: I thought about the overarching meaning of what the teacher said – that somebody was taking away something expensive. I didn't understand 'burglar'. We usually use 'thief' to denote someone stealing things. And then I used the picture on the worksheet to help me understand that the 'burglar' was indeed like a 'thief'.

Betty employed a *summarisation* strategy and identified the overarching meaning of the input and appropriating such information into her understanding of how 'burglar' is linked to 'thief'. She also used her *prior knowledge* of vocabulary to try to understand 'burglar', and then she followed the teacher's instruction to *utilise her personal resources* and look at the picture on the worksheet and related 'burglar' to a 'thief', hence arriving at an understanding.

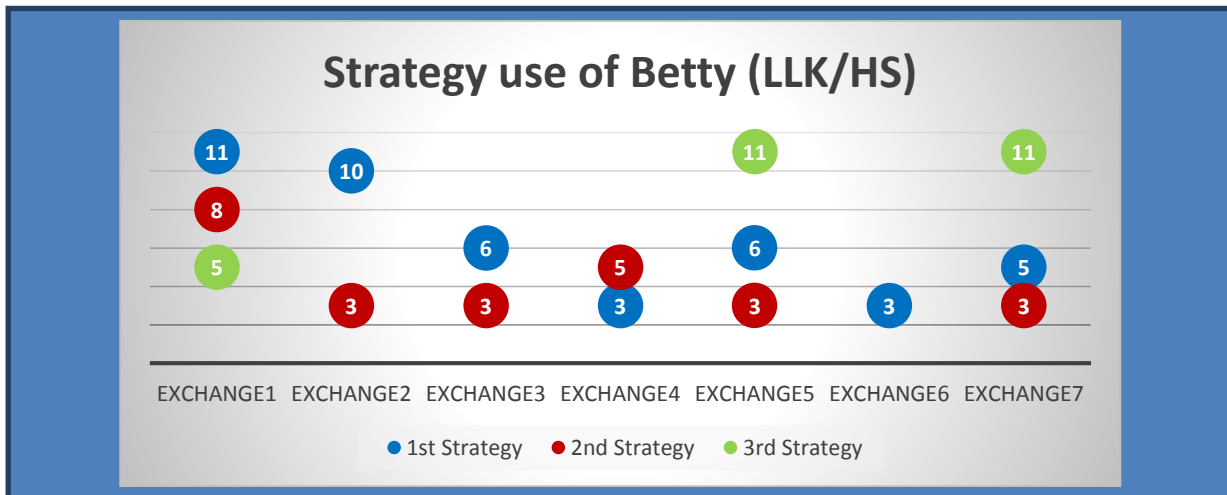
To sum up this sub-section, a scatter plot might be helpful to graphically represent how the two students with low LK used strategies (See figures 16 and 17 below). The labels of strategy followed by and large my taxonomy of the Likert-scale questionnaire, and they are provided below the figure. Furthermore, the colour of the circles represents the strategies arranged in chronological order of the time that the student reported their use. However, they were all used in reaction to the same exchange between the teacher and the whole class.

Figure 16: Strategy use of Adrian (LLK/LS)



Labels: (0) Doing nothing; (2) Selective attention on difficult words; (3) Recall of prior knowledge; (4) Relational; (6) Translation; (7) Selective attention on simple words; (8) Auditory representation and imagery; (12) Hide and seek; (14) Inferencing

Figure 17: Strategy use of Betty (LLK/HS)



Labels: (3) Recall of prior knowledge; (5) Summarisation; (6) Translation; (8) Auditory representation and imagery; (10) Repetition; (11) Utilisation of personal resources

The two students with low LK sometimes employed *translation* strategies, and recalled their *prior knowledge* of the language or that of the world to help them understand the teacher. They also frequently combined different strategies and what was interesting was that the combinations usually involved *translation* and/or *recall of prior knowledge*. Adrian and Betty, however, differed to some extent that in general, Betty, who belonged to the LLK/HS group of students, used a wider range of strategies such as *summarisation* to help her identify the overarching meaning of the teacher's talk. Betty also combined the use of strategies in six out of seven instances of the exchanges, whereas Adrian only did so at 2 times (the time at exchange 4 was a combination of one strategy – *selective attention on simple words* and an opportunity for strategic behaviour – *hide and seek*). However, neither of the students combined strategies very flexibly. In both of the two instances of combination, Adrian relied on *translation* as one strategy in the cluster. And in five out of six instances of combination by Betty, *recall of prior knowledge* was always one of the strategies.

Next, we shall examine the data from Cindy and David and understand how these two higher LK learners used strategies in the classroom.

6.2.2 Cindy and David

The stimulated recall interviews with Cindy and David were situated at the time when the teacher started to frame the lesson on the use of ‘despite’ and ‘in spite of’ to express an unexpected result. She elicited from students what the two important things were when learning a new grammar item.

Class 2 Exchange 1

T: Whenever we learn a new grammar item, we need to learn two things. What are they?

Ss: Form

T: Ok, alright, form. And then the other? The other is what?

Ss: Use.

T: Yes, the use of it. Alright?

In response to this part of the interaction, Cindy discussed with the researcher what she did in arriving at an understanding. When she paused the video, she only gave an account of her knowledge about what the teacher was asking. Therefore, I asked a general follow-up question.

Cindy: I had never thought about what two things have to be learnt.

Researcher: Ok, so was there anything that you did when you were listening to the teacher?

Cindy: I was just focusing and preparing to listen to her or my other very proficient classmates for the answer. I did not do anything special.

Here, Cindy appeared to be hiding her not understanding and waiting for a response. She understood the teacher’s question of eliciting what two things were important when learning grammar, but she stopped there and did not do anything special in her mind to get the meaning across. David, in contrast, was using some mental actions.

David: When trying to understand the teacher, I recalled that the teacher always emphasised the two things of ‘form’ and ‘use’ in the past when teaching grammar. It reminded me of what I learnt in the previous lessons on connectives.

David was using a *relational* strategy and recalling the teacher's usual approach in teaching and understood that she was trying to talk about the 'form' and 'use' of grammar items. He also tried to *contextualise the present lesson* by rethinking on the previous lessons on connectives. He appeared to be more prepared to learn the new connectives to be covered in this lesson.

The teacher then continued to talk about the forms or structures involved with the new grammar items that she was going to teach, and Cindy paused the video after the teacher's talk below.

Class 2 Exchange 2

T: And then, today, we are going to learn new grammar items. And actually, the form is what? Using noun phrases.

Cindy: At that time when the teacher said 'noun phrases', I didn't know what she was trying to say. I know 'noun' and together with the word 'phrases', it could be something like a combination of words involving 'nouns'. I was waiting for examples from the teacher to explain what 'noun phrases' are.

Cindy was selectively attending to the words she found difficult – 'noun phrases', and she was trying to ponder the meaning of it by combining the definition of 'noun' and 'phrases' and make inferences. She was not entirely sure but she was then more prepared to listen to the teacher's forthcoming input.

The lesson then went on with the teacher instructing the class to write down four connectives that they knew on their worksheets. Both Cindy and David reported their mental actions back then.

Class 2 Exchange 3

T: Ok, now, I would like you to put down at least four connectives that you have learnt. Put down four connectives, at least, that you can use to express a contrast, or an unexpected result. Ok?

Cindy: When the teacher said four 'connectives', I was thinking about 'connectives'. I didn't focus on 'unexpected' meaning and was only trying to list out some connectives I knew in my mind – 'moreover', 'nevertheless', and so on. And then later on I remembered that the teacher was also asking for 'connectives' expressing 'unexpected' meaning, and I thought about the

meaning of the ‘connectives’ in my mind, realising that ‘moreover’ isn’t something giving an ‘unexpected’ meaning. So, it shouldn’t be included.

David: She was asking us to name what connectives there are, and which of these showed a contrast. I thought about the connectives I knew which showed a contrast through recalling what I learnt in previous lessons and when I read articles in the past.

In response to the teacher’s instruction, while David simply drew on his *prior knowledge* of connectives, Cindy first focused on part of the teacher’s talk of four ‘connectives’ – a word which she was familiar with, and tried to recall in her mind some connectives which she knew. She then evaluated her understanding and repeated the teacher’s instruction in her mind again, realising that she was only required to recall some particular connectives which express an unexpected result. Subsequently, she concluded that ‘moreover’ was not a correct one.

The lesson continued with students writing down some connectives on their worksheets, and the teacher started to elicit from learners what they had got.

Class 2 Exchange 4

T: Alright, can anyone tell me now, orally, just shout out the answer, what are the connectives you have learnt?

S: Although.

T: Although, good. 'Although' shows a contrast. Any others?

S: But.

T: But, alright. Thank you.

S: However.

T: However, thank you.

S: Nevertheless.

T: Nevertheless.

S: Moreover.

T: Moreover (with a rising tone and stress)? You think so? (Pause for 2 seconds) No... Moreover is used to what? To add one other point. Ok? It is not used to show a contrast. Ok? Thank you for trying.

Cindy paused the video at this point and recounted that the teacher's input had confirmed her understanding.

Cindy: When she used that rising tone with 'moreover', I realised that it wasn't correct because she usually did that when expressing doubt. Then I read the question on the worksheet again and confirmed my previous understanding that 'moreover' wasn't correct.

Cindy was using some *auditory representation* and focused on the rising tone and intonation of the teacher's voice, and combined with a *relational* strategy of recalling the teacher's usual approach in teaching, she understood that the teacher was expressing a doubt on 'moreover'. And through *utilising her personal resources* – the worksheet, she further evaluated and confirmed her understanding that 'moreover' was not an appropriate answer because it is not a connective which showed a contrast.

The teacher then directed the students' attention onto the worksheet and asked a question:

Class 2 Exchange 5

T: Alright, now, have a look at the notes again... 'although' and 'but'... Can you tell me the part of speech of these two words? What are they? 'Although' and 'but' are what?

Cindy stopped the video again and reported her trying to get the meaning across.

Cindy: I repeated in my mind what the teacher said – 'although and but are what?' I knew that these two words were used together, but I didn't know the specific word to describe this type of vocabulary. It was something I hadn't learnt.

She used a *repetition* strategy and attempted to retrieve her *prior knowledge* about these two words of 'although' and 'but', but she could not do much. She evaluated that it could be her lack of metalinguistic knowledge which rendered her unsuccessful in arriving at the vocabulary that the teacher was trying to elicit.

The teacher then explained with examples that 'although' and 'but' are conjunctions, whereas 'however' and 'nevertheless' are adverbs. Subsequently, she moved on to introduce the two new connectives which students were to learn during that lesson.

Class 2 Exchange 6

T: Today I'm going to introduce two ok... prepositional expressions to you. One is 'despite'. Have a look at this, page one, at the bottom of it. And the other one is 'in spite of'.

Both Cindy and David reported that they were doing something in their mind at that time.

Cindy: When she said these two words and started writing them on the blackboard, I didn't know these two words. I didn't understand the meaning, but linking with what she had just been saying, i.e. talking about 'connectives', I was thinking that these two might be 'connectives' and might be used similarly with some other 'connectives' which I knew.

David: She was saying 'despite' and 'in spite of' and I was thinking that the meaning of these two 'connectives' should be linked to what she said just now. So, these two 'connectives' may have similar meaning with 'although' and 'but'.

Both Cindy and David focused their attention on the two new expressions which the teacher brought up. Both of them linked the old information just given by the teacher on the connectives expressing a contrast or an unexpected result, with the present new knowledge of ‘despite’ and ‘in spite of’. It was interesting to note that Cindy did not ponder ‘prepositional expressions’ at this moment, but she did so at a later moment, as we shall see in her response to the next part of the teacher’s talk.

Class 2 Exchange 7

T: Very often when we are talking about prepositions, you can give me a long list of examples – at, on, for, etc. But you’ll find it a little bit... ok... different... ok... Rather different from the prepositions you have learnt. Ok? This is also a preposition. ‘Despite’ is a preposition, ok? And ‘in spite of’, actually, the meaning is more or less the same, and we use it in the same way as well. And ‘in spite of’... it was a prepositional expression, alright?

Cindy stopped the video and discussed with me what she was thinking about at that time. As she was not reporting any particular mental actions, I tried to ask a follow-up question. With her not reporting any other strategies, I stopped at that point without probing further.

Cindy: I caught that she said ‘preposi...’ what... what... ‘expression’. I didn’t know what she said at all. I didn’t understand this.

Researcher: So did you try doing something else to help you understand?

Cindy: No, I was just waiting for more information from the teacher.

Even though ‘prepositional expressions’ appeared in the previous part of teacher talk as well, she only focused her attention on this unfamiliar phrase at this moment. This was the case possibly because earlier she directed her focus onto the keywords of ‘despite’ and ‘in spite of’. Now, the teacher talked a lot about prepositions and Cindy could not avoid this difficult word. She tried to adopt a bottom-up approach and repeat the unfamiliar phrase of ‘prepositional expressions’ in her mind but failed. Not being able to pick up the phrase, she did not do anything else but hid her not understanding, while waiting for more information from the teacher.

The teacher continued to talk about the structures, first with 'although' and 'but', and then with 'however' and 'nevertheless', and finally she turned to 'despite' and 'in spite of'.

Class 2 Exchange 8

T: How about 'despite' and 'in spite of'? How about the structure? Remember when you learn a new grammar item, you need to know the form and the use. You know that we can use all these to express an unexpected results... a contrast. But how about the form? The structure? That is what you need to learn today. After 'despite' and 'in spite of', what sentence structure... what...

S: Noun

T: Oh very good, why? Can I ask why? Ok. Do you remember the golden rule I mentioned in the past? After a preposition, very often, what do we use?

Ss: Noun.

T: A noun or a... a noun is just a single word... so sometimes you can't express the idea by using a single word. So you might need to use a group of words and what do we call it?

Ss: Noun phrase.

T: A noun phrase. Very good. Alright, and suppose that I don't know the noun, I just know the verb. How can I make a verb... ok... to make it like a noun. What can I do? What can I do? I can put 'ing' after the...?

Ss: Verb.

T: The verb, the basic form of the verb, and use it as a...?

Ss: Noun.

T: As a noun. And what do we call it?

Ss: Noun phrase.

T: This is not a noun phrase! Sorry!

S: Gerund.

T: Gerund. Ok.

In reaction to these exchanges, both Cindy and David reported their strategy use.

Cindy: She was trying to guide us students to think about this ‘form’. But I still didn’t know the structure of this... like how to put ‘despite’ and ‘in spite of’ in a sentence. I focused on the words ‘noun phrase’, but I still didn’t understand.

David: She said after a ‘preposition’, there should be a ‘noun’ or a ‘gerund’. I repeated this in my mind and revised what she said in the previous lessons. After she said something about adding ‘ing’, I thought about ‘participle’ based on my knowledge about the English language. Once the teacher said ‘gerund’, I recalled that she talked about this before, and reminded myself of what she taught about ‘gerund’ last time.

While Cindy understood that the teacher was explaining the structures that come with ‘despite’ and ‘in spite of’, she was only able to catch the familiar words ‘noun phrase’ and did not pick up any other useful information to help her understand. David, on the contrary, utilised a range of strategies to facilitate his understanding. He repeated what the teacher said in his mind, attended to some key information (such as adding ‘ing’ and ‘gerund’), and recalled his *prior knowledge* about the English language and drew on his metalinguistic knowledge or vocabulary in describing grammar (hence, thinking about ‘participle’). He also contextualised the present lesson by recalling what the teacher taught in the previous lessons, particularly with regard to the knowledge on ‘gerund’.

The lesson then turned to the teacher asking students to work on an exercise to change sentences into noun phrases. The teacher demonstrated using the first question: ‘He works hard’.

Class 2 Exchange 9

T: He works hard.

S: Working hard.

T: Working hard.

S: He is hardworking.

T: He is hardworking. How about... and you need a noun. What is the noun?

S: Hard work.

T: Hard work. His hard work (writing 'his hard work' on the blackboard)... ok... but if you use 'hard work', which is the noun?

Ss: Work... ah... hard...

T: Hard is the noun?

(Some students laughing)

Cindy paused the video and talked about what she did at this point.

Cindy: I was thinking whether 'hard' or 'work' is a 'noun', but both of them didn't seem to be a 'noun' based on my English knowledge. 'Hard-working' seemed to have 'hard' as the noun. So 'working' is a verb. I didn't know.

We can see that Cindy was very confused about what the teacher was trying to say. She probably still stayed at the line when the teacher repeated an answer elicited from learners of changing 'he works hard' into 'he is hardworking'. She thought the teacher was asking which one word was the noun in the latter sentence. In J. Field's (2008b) term, Cindy's confusion might be a result of perseveration effect. She even broke down the adjective 'hardworking' in her mind and reported that 'hard' was the noun and 'working' was the verb. She appeared to be totally lost and the only thing she could do at this point was to rely on the few familiar words of 'hard', 'work', and 'hardworking' that she picked up and tried to draw out her *prior knowledge* of the English language about these words. Cindy did not process what the exercise was about and the broad background of the teacher's input – to change a sentence into a noun phrase.

In fact, the teacher was simply trying to direct the students' attention to the problem that 'he is hardworking' was not a noun phrase. Rather, 'his hard work' was the target response that the teacher was looking for (and she wrote it on the blackboard).

The teacher continued to demonstrate this changing of a sentence into a noun phrase.

Class 2 Exchange 10

T: What is the noun? Now, he works hard. In this sentence, 'work' is a...?

S: Verb.

T: Verb. Ok. And hard is a...?

S: Noun.

(Some students laughing)

T: It is an...?

S: Adjective

T: Adjective, really (rising tone)?

Both Cindy and David reported something which they were thinking at this point.

Cindy: When the teacher expressed doubt by her rising tone on other students who said that hard was an 'adjective', I knew it wasn't true. I also remembered that usually adjective has 'ly' based on my knowledge.

David: When she asked which is the 'noun', I saw 'hard work' on the blackboard. I was thinking based on my knowledge why 'work' wasn't a noun but a verb. I was confused. And then I compared the two phrases in my mind – 'he works hard' and 'hard work', and realised that the teacher and I were thinking about different structures written on the blackboard and on the worksheet.

Both Cindy and David drew on their *prior knowledge* of the English language to help them understand the exchanges between the teacher and the students, although Cindy's knowledge was not entirely accurate. Cindy also focused on the rising tone of the teacher and realised that she was expressing a doubt. David evaluated the problems he experienced in understanding the teacher but

later on resolved the problems through summarising and comparing the different phrases in his mind. He also utilised the multimodal resources such as the blackboard and the worksheets.

Straight after the previous exchange, the students finally gave the correct answer that ‘hard’ is an adverb. The interaction went on:

Class 2 Exchange 11

Ss: Adverb.

T: Alright. Alright. He works hard, ok, this is a verb and an adverb, and we use it to describe a verb. But now we need to change it into a noun phrase. Alright? Ok... well, you can use ‘hard work’, but whose hard work?

Ss: His

T: Yes... ‘his hard work’.

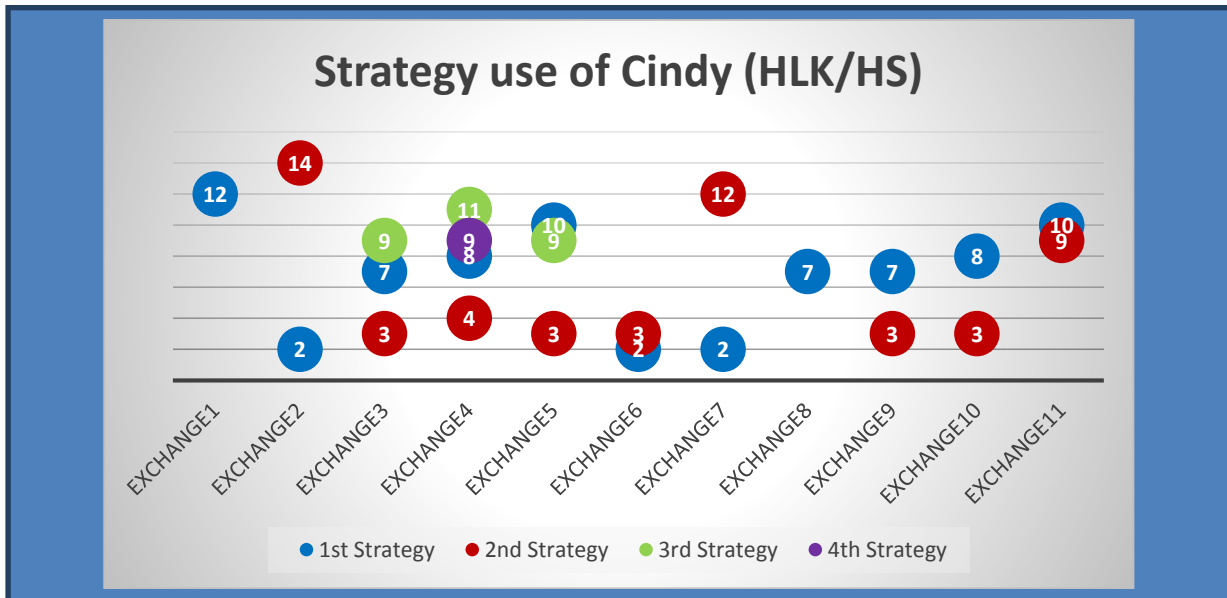
Cindy paused the video again and reported what she was trying to do.

Cindy: I repeated this sentence in my mind and thought that it was strange. Why can a sentence be ‘his hard work’? In the beginning it was ‘he works hard’, now it was changed to ‘his hard work’. I didn’t understand.

Cindy continued to repeat what the teacher said in her mind and compared the different structures, while evaluating her understanding. However, without recalling the broader picture of the overarching meaning of this exercise – that she was required to change a sentence into a noun phrase – she did not seem to be able to arrive at an understanding of the meaning that the teacher was trying to get across. The stimulated recall ended here because the lesson went on with the students working on the worksheet on their own.

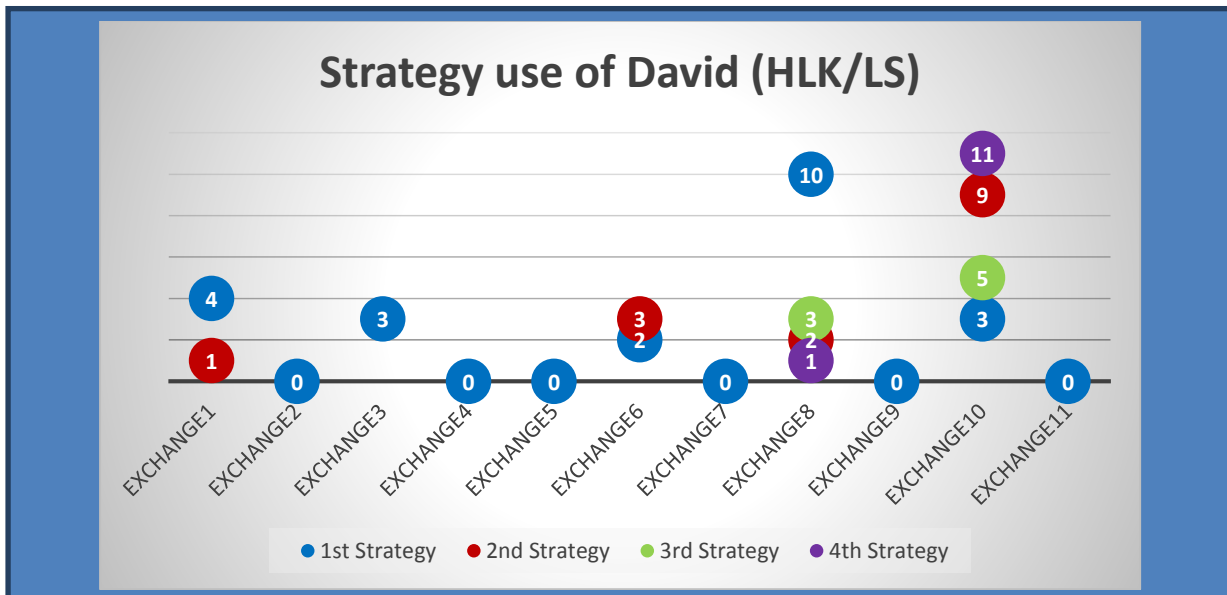
To conclude this sub-section, Figures 18 and 19 depict graphically the ongoing use of strategies by Cindy and David throughout the lesson.

Figure 18: Strategy use of Cindy (HLK/HS)



Labels: (2) Selective attention on difficult words; (3) Recall of prior knowledge; (4) Relational; (7) Selective attention on simple words; (8) Auditory representation and imagery; (9) Evaluation; (10) Repetition; (11) Utilisation of personal resources; (12) Hide and seek; (14) Inferencing

Figure 19: Strategy use of David (HLK/LS)



Labels: (0) Doing nothing; (1) Contextualisation for the present lesson; (2) Selective attention on difficult words; (3) Recall of prior knowledge; (4) Relational; (5) Summarisation; (9) Evaluation; (10) Repetition; (11) Utilisation of personal resources

It can be observed that the two students with higher LK adopted a range of strategies and did not rely on *translation* strategies as Adrian and Betty sometimes had to revert to. Furthermore, they used strategies more often in combination than individually – Cindy combined strategies in 8 out of 11

instances (one instance not taken into account was the use of selective attention on difficult words and hide and seek in exchange 7) of using strategies, and David 4 out of 5. It was also noteworthy that their combination of strategies appeared to be more flexible than Adrian. In other words, they combined different strategies at different times targeting to the different teacher's input. They appeared to attend to keywords or some more difficult words rather often, and sometimes related to the teacher's approach in teaching. At times, Cindy found difficulties in understanding and relied too much on some simple words which she comprehended, overlooking the broader picture of the overarching meaning of the teacher's talk. This problem was particularly obvious towards the end of the stimulated recall. In these instances (Exchanges 7, 8, 9, and 11 above), it appeared that she did not succeed in arriving at an understanding. Nevertheless, she did try to evaluate her understanding sometimes, and adopted more strategies than David in her understanding of the classroom interaction in general. While this finding did not necessarily suggest that using more strategies would lead learners to arrive at an understanding more easily, the data from Cindy herself did suggest that whenever she did not succeed in understanding the teacher, she only used one or at most two strategies, almost always focusing on some words. David, on the other hand, though belonging to the less strategic group (as reflected from the cluster analysis of the Likert-scale questionnaire), did not experience too many problems in understanding. One potential explanation was that David was better at grammar than Cindy (GJT score of 39 and 33 respectively) and given that this lesson was very much focused on grammar, David might have an advantage. This was plausible also because we saw David tried to contextualise the present lesson at two instances – focusing on what grammar items had been brought up in previous lessons and relating that information to the present lesson. Although it was not my intention in this study to explore the relationship between strategy use and the success of listening, this relationship certainly warrants further research, as will be discussed in Chapter 7. Table 73 provides a summary of some major findings from the four cases.

Table 73: Major findings of the four cases in stimulated recall interviews

	Group	Strategic behaviour
Adrian	LLK/LS	<ul style="list-style-type: none"> - Employed <i>translation</i> and <i>recall of prior knowledge</i> mostly - Infrequent combination of strategies (2 out of 6 instances of using some strategies) - Inflexible combination of strategies (always involving <i>translation</i>)
Betty	LLK/HS	<ul style="list-style-type: none"> - Employed <i>translation</i>, <i>recall of prior knowledge</i>, and <i>summarisation</i> mostly - Frequent combination of strategies (6 out of 7 instances of using some strategies) - Inflexible combination of strategies (often involving <i>recall of prior knowledge</i>)
Cindy	HLK/HS	<ul style="list-style-type: none"> - Widest range of strategies used compared to the others, including <i>evaluation</i>, <i>auditory representation</i> and so forth - Frequent combination of strategies (8 out of 11 instances of using some strategies) - Flexible combination of strategies - Did not use <i>summarisation</i> strategy.
David	HLK/LS	<ul style="list-style-type: none"> - Used <i>recall of prior knowledge</i> mostly, but also <i>contextualisation for the present lesson</i> and <i>selective attention on difficult words</i> - Frequent combination of strategies (4 out of 5 instances of using some strategies) - Mildly flexible combination of strategies

6.3 Chapter summary

This chapter has presented some qualitative data collected through stimulated recall interviews. In general, it was found that students used a range of strategies to understand the teacher's talk. This variety of strategies by and large fits into my taxonomy developed through the Likert-scale questionnaire. The chapter also discussed four cases of students from two different classes and with varying levels of LK and strategic behaviour in terms of how they employed strategies in context. The four cases of students, though difficult to argue for being generalisable, were revealing and the findings were important in substantiating what was found in the previous two chapters using different

strategy elicitation research instruments. Students' levels of LK appeared to be related to how flexibly they employed different strategies individually and in combination, notwithstanding some individual differences between students with similar levels of LK. In other words, while some low LK learners such as Betty can be rather strategic in terms of combining different strategies, the combination was sometimes rather inflexible.

The following chapter will try to summarise all the findings and discuss what all these results could inform us in relation to my research questions in this thesis.

Chapter 7 Discussion

This chapter will bring together all the findings from the previous chapters on the Likert-scale questionnaire, the computer programme, and the stimulated recall interviews, in order to answer the four RQs. The chapter will compare and contrast the findings with previous literature, before turning to discuss the limitations of this study. Finally, in concluding this thesis, I will outline the contributions of this study and suggest implications for further research as well as pedagogical implications.

7.1 Addressing the four RQs

The RQs of this study were:

- RQ1 What comprehension strategies do Secondary 3 students use when listening to the teacher's input in the ESL classroom?
- RQ2 How do students with different linguistic knowledge differ in the strategies used?
- RQ3 How do students' strategies vary according to the difficulty of the listening tasks?
- RQ4 How do students' strategies vary according to different task types?

7.1.1 RQ1: What comprehension strategies were used

The Likert-scale questionnaire and the stimulated recall interviews both shed light on answering RQ1. In order to foreground what new insights the present under-researched context of listening to the teacher has offered to the field, I would draw upon previous literature on comprehension strategies, which focused almost entirely on listening to audio-recording. Four major points are worth noting, which together form the answer to RQ1.

First, there were some common strategies that the present context of listening to the teacher in the classroom shared with previous research on listening to audio recording. From the findings of the Likert-scale questionnaire and the stimulated recall interviews, these strategies were: *selective attention, recall of prior knowledge, summarisation, translation, auditory representation and imagery, evaluation, and repetition*. By and large, these strategies covered most of the cognitive strategies and some of the metacognitive ones described by, for example, Vandergrift (2003) (see Table 1 in section 2.2.2). Such a finding is not surprising given that the change of context from listening to audio recording to listening to the teacher in the ESL classroom might not alter the use of some relatively basic and fundamental listening strategies. In fact, some of these strategies such as *translation* were also reported in studies in Communication Strategies (CSs), notwithstanding the use of different terms in referring to them (e.g. Nakatani (2006) classified *translation* strategies under a category of ‘less active listener’ strategy). Therefore, one could argue that there are some relatively basic strategies which can be used at different contexts – be it listening to audio recording, listening to the interlocutor during one-to-one communication, or listening to the teacher in the ESL classroom. Such an argument can also fit into Macaro’s (2006) theoretical framework because he holds that strategies can be task-specific but at the same time potentially transferrable, although when they are being transferred they have to be re-evaluated for their effectiveness.

However, the different cognitive demands required between comprehending audio recording and teacher talk (and hence in support of strategies as task-specific) might explain why some of the metacognitive strategies discovered in the former context were not being found in the present study. When researchers selected the audio recordings to elicit strategy use, they usually attempted to use texts which were intended to be difficult for learners (i.e. above their current level). For example, Graham et al. (2010) intended to have the audio recordings at a level ‘slightly more advanced than the participants in the project, on the grounds that tasks that can be completed easily and automatically by learners tend not to prompt strategy use’ (p. 6), citing Laviosa (2000). As for the context of listening to the teacher in the classroom, it is

arguable that teachers may pre-modify (see, e.g. Krashen, 1981) or interactionally-modify (see, e.g. Long, 1985) their inputs to facilitate learners' comprehension (as discussed in section 2.3.2), especially at times when learners do not seem to understand the input. Therefore, the differing cognitive demands could be an additional variable which differentiates listening to audio recording which cannot be modified, and listening to the teacher's talk which is possible to be modified (see also section 2.3.1 for the comparison between the two listening contexts). All these said, there are indeed some common strategies being identified as usable in both contexts of listening to audio recording and to the ESL teacher in the classroom.

A second and perhaps more interesting observation, however, is that even though some of these categories of strategies are similar to those documented in previous research on listening to audio recording, they are not identical and have to be understood under the new light of the classroom context. Take *selective attention* as an example: my Likert-scale questionnaire revealed that there were two main ways of selectively attending to segments or words – the more difficult and unfamiliar ones (Factor 2) as opposed to the simpler and familiar ones (Factor 7). The fact that these strategies loaded on two factors indicate that *selective attention* should not be taken as a whole and we need to be more precise in terms of what segments or words are being focused on. Some previous studies have revealed how learners could be using a strategy in a specific way. Graham et al. (2010), for instance, found that a learner attempted to predict and look out to selectively attend to a certain lexical item 'cent' (meaning one hundred in French), but was unable to recognise 'siècle' (meaning century – one hundred years in French) used in the listening text as a synonym. In light of the findings of my study, the student in Graham et al. (2010) was using *selective attention* by focusing on simpler and familiar words, rather than attending to the more unfamiliar ones and trying to decode and understand the difficult lexical items. Another example of how my findings shed some new lights on the specificity of listening strategy comes from the *summarisation / appropriation* strategy group. Previous research has identified *summarisation* – converting language items into ideas and making a mental summary – as a distinctive strategy, but my research has highlighted that apart

from summarising information, appropriating or personalising the information simultaneously might also be important. For instance, one of the questionnaire items (Q20) was ‘I rephrase what the teacher said into something I understand’. This *summarisation / appropriation* strategy was put to use by Betty as reported by her during stimulated recall interview: “I thought about the overarching meaning of what the teacher said – that somebody was taking away something expensive. I didn’t understand ‘burglar’. We usually use ‘thief’ to denote someone stealing things...” (p.225 of this thesis).

All these have once again provided some support to Macaro’s (2006) proposal on how different tasks might play a role in the use of strategies, if we indeed conceptualise listening to the teacher as a different task than listening to audio recording. Furthermore, researchers also need to examine strategies in a more careful and specific manner because existing listening strategy taxonomies (such as Vandergrift & Goh, 2012) only provide a general description of different strategies, without describing how these strategies are used by learners. For instance, there might be an important distinction in whether *selective attention* is used by learners to focus on simple or difficult segments.

Much previous LLS research did not appear to have undergone the meticulous methodological procedures that this study has gone through in identifying the range of strategies employed by learners (see section 3.3.3.2.1 for the development of the questionnaire), except Nakatani (2006) in developing his OCSI and Erler (2007) her reading strategy questionnaire. Even for Vandergrift, Goh, Mareschal and Tafaghodtari (2006) who underwent an EFA and a confirmatory factor analysis in their development of the Metacognitive Awareness Listening Questionnaire (MALQ), they were essentially coming from a top-down researcher-driven construction of questionnaire items. Such a way of questionnaire development might give rise to the problem of the lack of ‘member checking’ in Gu’s (2014) terminology when problematising the way coding is done with verbal reports. In other words, there were no steps undertaken to establish whether the strategies specified in the MALQ were indeed mental actions that learners

used and whether the items were understood in a similar way between the learners and the researchers.

In fact, questionnaire has not been a popular research method in listening strategy research, and previous research often employed verbal reports such as think-aloud as the sole research method with a small group of participants. Very often, researchers coded the data following pre-existing taxonomies [e.g., Vandergrift's (2003) coding was based on the taxonomy of Vandergrift (1997b), originated from O'Malley and Chamot (1990)]. While these taxonomies are very important in shedding light on listening strategy use in general, they might not be as sensitive as the Likert-scale questionnaire developed in the present study for the specific context of listening to the teacher. For example, the questionnaire distinguished different forms of *translation* possible, such as translating individual words or translating the entire teacher talk to learners' L1, which are reified as different items in the questionnaire.

Indeed, many previous listening strategy research has relied on verbal reports and a large-scale quantitative study is rarely seen. Referring back to Table 2 in section 2.1.2, O'Malley et al.'s (1989) study involved 11 participants, Vandergrift (1997b) 21, Vandergrift (2003) 36, Graham et al. (2011) 15 and Graham et al. (2010) 14 students. For the present study, in contrast, the use of the Likert-scale questionnaire has allowed a more representative sample of 867 participants to report their strategy use. Further research might attempt to use verbal reports in tandem with this Likert-scale questionnaire as a research instrument to enhance its external validity.

Third, there are some strategies which are not at all discussed in previous research on listening comprehension strategy and they are *contextualisation for the present lesson* and *relational – understanding through recalling teacher's approach* strategies. Such a finding is original but understandable given the context of classroom interaction. Indeed, it is quite typical, particularly in the HK context, that lessons are linked and organised in a series instead of unrelated separate lessons. Such interconnection between lessons is further enhanced by the use

of textbooks published by major textbook publishers. It is, therefore, understandable for students to use strategies to contextualise the lesson they are taking. In addition, as shown in section 2.3.1 in the literature review, one important variable that distinguishes listening to teacher input in the classroom setting from listening to audio recording is the relationship between the listener (the student) and the speaker (the teacher versus the voices in the recording). In an ESL classroom, students know their teacher in person but not the voices in the recording. Using *relational* strategies, students recall the teacher's teaching approach and his or her usual way of speaking to facilitate their understanding of the input.

Finally, the role of the teacher as well as that of other students is indeed of paramount importance in the classroom. With the group of opportunities for strategic behaviour in the Likert-scale questionnaire, the three factor structures show a varying degree of interpersonal relationship being considered by students. Factor 1 relates to students focusing on their personal physical resources without situating him- or herself within the classroom with other people, Factor 2 shows the awareness of both the teacher (students hiding their lack of understanding towards the teacher) and other students in the classroom as targets for help seeking, and Factor 3 indicates that the teacher is the target when students want to solicit help.

Taken together, this research has found that students used a number of strategies which they could also use in uni-directional listening contexts where they listened to audio recording, but some of these strategies could be defined differently or more specifically in the context of listening to the teacher in the ESL classroom. Moreover, there were some strategies which were uniquely identified. Especially central to such unique strategies and opportunities for strategic behaviour was the role of the teacher and the teacher-student relationship. All these appeared to situate well within Macaro's (2006) theory that strategies can both be task-specific and transferrable: hence, there were some similarities and differences between my present research context of listening to the teacher in the ESL classroom and that of listening to audio recording. Table 74 summarises the findings to answer RQ1.

Table 74: Answer to RQ1: What comprehension strategies do Secondary 3 students use when listening to the teacher’s input in the ESL classroom?

Answer	Justification
<ul style="list-style-type: none"> Some strategies were commonly documented by previous uni-directional listening research 	<i>Selective attention, recall of prior knowledge, summarisation, translation, auditory representation and imagery, evaluation, and repetition</i> were also used by students when listening to the teacher’s input
<ul style="list-style-type: none"> Some of the common strategies had to be understood in a new light and more specifically given the present classroom context 	<i>Selective attention</i> was realised in two strategy factors, depending on the target elements being focused on – simple or difficult; <i>appropriation</i> was also important when summarising information
<ul style="list-style-type: none"> Some unique strategies were identified only in the present classroom context 	<i>Contextualisation for the present lesson</i> and <i>relational strategies</i> were not shown (or not important) in previous research on listening to audio recording
<ul style="list-style-type: none"> Interpersonal relationship played an important role in the use of strategies in classroom 	Opportunities for strategic behaviour revealed the varying degree of interpersonal relationship considered by the student

7.1.2 RQ2: Strategies and the LK variable

All the three research instruments of Likert-scale questionnaire, computer programme, and stimulated recall interviews contributed to the answer of RQ2 on the effect of students’ LK on their strategy use. First, contrasting learners with low and high LK, a general picture revealed by the questionnaire was that learners with low LK appeared to use *translation* strategies more than those with high LK. This ‘more’ has to be defined carefully because the questionnaire adopted a ‘trueness’ scale. In other words, a higher rating for *translation* strategies in the questionnaire could indicate that learners with low LK tended to rely on *translation* more than some other strategies. This was important because the computer programme did not show learners with low LK to be using more *translation* strategies in terms of the number of times they clicked the button; and yet, they did rely on *translation* strategies significantly more than their high LK counterparts when we examined the proportion that *translation* strategies represented among all the strategies that the learners used, as shown in section 5.2.4. It was plausible that learners with low LK were forced to use *translation* strategies because deciphering the language of the teacher has already exerted a high level of cognitive demand on them. Given that strategies are

also believed to be situated in the Working Memory (WM) [see Macaro (2006) for the theoretical model and Takeuchi et al. (2012) for an empirical research], learners with low LK might not have sufficient cognitive space to deploy strategies other than *translation*.

A qualitative approach towards the computer programme also revealed how the three learners of low LK (in section 5.5.2 and 5.5.3) all preferred the use of *translation* to some extent. The stimulated recall interviews further substantiated this argument by revealing that *translation* was frequently employed by a learner of low LK (Adrian). Situating this finding in previous research, it was not entirely new given that Vandergrift (2003), among others, also found that *translation* was used predominantly by less proficient listeners. However, Vandergrift (2003) was more interested in the relationship between listening proficiency and strategy use whereas my research focused on that between LK and strategy use. While Vandergrift (2003) can at best claim that the less proficient listener Rose used more *translation* strategies which the more proficient listener Nina did not (or did not have to), the lack of control of LK did not allow him to conclude whether Rose had any choice at all in her deployment of strategies (see section 2.2.2.1 again for the discussion).

In my study, learners with lower LK, such as Adrian in the stimulated recall interview, still relied on *translation* even at times when they combined it with the use of other strategies. Such finding was further corroborated by the computer programme. To put it another way, learners of low LK sometimes combined different strategies to understand the teacher, but rather inflexibly and often involved *translation*, possibly because of their lack of LK. Learners with high LK, on the other hand, usually adopted a much more flexible approach in combining different strategies, as reflected by the computer programme results of two HLK/HS learners reported in section 5.5.4 as well as the case of Cindy in the stimulated recall protocol. On top of this flexible combination, they also used a range of other strategies much more than the students with low LK, such as *recall of prior knowledge*, *auditory representation and imagery*, *selective attention to more difficult words*, and *relational – understanding through teacher’s approach* strategies as shown by the Likert-scale questionnaire. The use of more *recall of prior knowledge* (or

elaboration) was further corroborated by the computer programme, which also revealed a larger proportion of *summarisation* strategies being represented in the strategic repertoire of learners with high LK.

One explanation for the flexible use of a range of strategies by learners with high LK and the heavy reliance on *translation* by learners with low LK could be due to the cognitive load required to make sense of the teacher. For learners with low LK, their weaker vocabulary and grammar knowledge could mean that they need to allocate more mental resources coping with the language of the teacher while deciphering the meaning of the teacher's input. In contrast, the high LK of other learners could free up the cognitive load required of understanding some of the vocabulary used by the teacher, and therefore, these learners could employ a range of other strategies to facilitate their understanding. Insights from previous literature on listening to audio recording also support such an argument to a certain extent. For example, Graham et al. (2010) found the lack of sufficient LK could limit the range of strategies employed by learners. They argued that a certain threshold of LK to recognise the vocabulary items in the listening text is required in order for non-linguistic knowledge such as prior knowledge to be of use. Although not researching into listening strategies, Nation (2006) also suggested that coverage of 98% of the lexical items present in a listening text was required for unassisted comprehension, further corroborating how LK is important in listening which will in turn affect the use of strategies. This suggestion by Nation (2006) would also be related to the difficulty of task which will be dealt with in the next section.

While all these results were revealing and in line with previous research on listening to audio recording, answering Macaro et al.'s (2007) suggestion on matching learners with similar LK in order to tease apart the variable of strategy *per se* revealed an even more interesting picture. According to the cluster analysis of the participants based on their reported use of strategy through the questionnaire, it was found that among the low LK learners there existed two sub-group of learners who were highly strategic (LLK/HS) and less strategic (LLK/LS). Similarly, the high LK learners could also be broken down into two groups of highly (HLK/HS)

and less strategic (HLK/LS). The LLK/HS learners were comparable to the HLK/HS group of learners in terms of their reported strategic behaviour across the whole range of strategies such as *recall of prior knowledge*, *summarisation / appropriation*, *evaluation*, and so forth. These two groups were more strategic than the other two groups including the HLK/LS group, indicating how some low LK learners were actually more strategic than some high LK learners. We then saw two groups of low LK learners. While both groups found that LK alone was insufficient to understand the teacher, the LLK/LS group used very few other strategies and relied almost exclusively on *translation* and stopped there, whereas the LLK/HS group attempted to employ a range of strategies in addition to *translation*, possibly trying to compensate for their inadequate LK. This said, the LLK/HS group still used more *translation* than the HLK/HS group, indicating that at times they still need to employ *translation* to facilitate their understanding, possibly attributed again to their low levels of LK. Situating such findings to the L2 listening model proposed by J. Field (2008b), learners need to first decode the utterance before building the meaning. For learners with low LK who might not be able to recognise some of the words in the utterances, it might be difficult for them to proceed to build the meaning using a range of strategies. Indeed, the LLK/HS student in the computer programme and the stimulated recall interview with Betty substantiated the findings by showing how Betty, who lacked sufficient LK, tried to adopt a range of strategies such as *recall of prior knowledge* and *summarisation* in addition to *translation* to arrive at an understanding. However, *translation* might not necessarily be considered a bad strategy, as N.J. Anderson (1991) in his reading strategy research also suggested that there might not be a distinction of good or bad strategies but one of whether strategies are applied in a good or bad way, essentially because both his more effective and less effective readers sometimes employed the same sets of strategies but with differing success. Taken together, my study has revealed that there were some learners with low LK who were less strategic and relied solely and heavily on *translation*, whereas their counterparts with similar levels of LK were more strategic and used a whole range of strategies in addition to *translation*.

There was, however, some evidence from my study which pointed to the limitation of how flexibly strategies might be combined by learners of low LK. From the LLK/HS learner in the computer programme and from Betty's interview data, they both combined strategies but there was some inflexibility in their combination. While the learner in the computer programme showed frequent combination of strategies, *translation* is often one of the strategies in the clusters. As for Betty, her combination usually involved *recall of prior knowledge*. Therefore, albeit speculative, the flexibility (and not the frequency) of combination of strategies might be related to levels of LK, and this might once again be related to the suggestion that weaker LK might short-circuit the use of some strategies. Citing N.J. Anderson (1991) on reading strategies again, it was suggested that despite the use of the same kinds of strategies with less effective readers, the more effective ones tended to orchestrate different strategies in a better way.

To conclude, the finding of the existence of a highly strategic low LK group of learners is important because it points to the argument that the interplay between the variables of strategic behaviour and LK is far more complicated than simply high LK students do one thing and low LK students do another (and indeed there also existed a group of high LK learners who were less strategic). In fact, it was one intention of this research to explore strategic behaviour more closely by taking into account LK, instead of what some previous research (as discussed in Chapter 2) did in using listening proficiency, which is arguably formed by both strategy use and LK, as a grouping variable. The problem of merely controlling for listening proficiency might give rise to the situation where two different learners – one being HLK/LS and the other being LLK/HS – to be grouped together and regarded as proficient listeners. In order to investigate strategic behaviour, LK is an important variable that needs to be taken into account. In fact, Graham et al. (2010), from their qualitative data, also revealed that there were some students with low LK who drew on their prior knowledge more than their counterparts with high LK who relied solely on their LK. On the other hand, high LK does not necessarily mean being strategic – in Graham et al. (2010) there was a student with high LK who was rather inflexible in her use of strategies and selectively attended to familiar words, and finally failed in arriving

at an accurate understanding. Borrowing research findings from writing strategies, the suggestion of the complicated relationship between LK and strategic behaviour is further supported. Macaro (2014) conducted a case study of two students' writing behaviour with comparable LK and discovered that they adopted strategies rather differently – one using more linear and fixed cluster of strategies while the other more dynamic and flexible combination of strategies. Further research, therefore, should continue to examine more closely how LK and strategic behaviour are at play in giving rise to success (or failure) of listening, and this will be brought up again in section 7.3. Table 75 below summarises the answer to RQ2.

Table 75: Answer to RQ2: How do students with different linguistic knowledge differ in the strategies used?

Answer	Justification
<ul style="list-style-type: none"> In general, learners with low LK relied more heavily on <i>translation</i> strategies. 	<ul style="list-style-type: none"> The questionnaire revealed significant differences between low and high LK learners in <i>translation</i>. The computer programme showed low LK learners used a higher proportion of <i>translation</i> than high LK learners. A qualitative exploration pointed to the same suggestion, and additionally revealed that whenever they combined strategy use, it almost always involved <i>translation</i>. A learner in stimulated recall interview revealed that <i>translation</i> was often used individually or in combination whenever he paused the video and reported his strategy use.
<ul style="list-style-type: none"> In general, learners with high LK used a range of other strategies significantly more and combined them more flexibly. 	<ul style="list-style-type: none"> The questionnaire revealed that high LK learners used more <i>recall of prior knowledge</i>, <i>auditory representation and imagery</i>, <i>selective attention to more difficult words</i>, and <i>relational – understanding through teacher's approach</i> strategies. The computer programme showed more <i>elaboration</i> and <i>summarisation</i> strategies being used by these learners. More flexible combination of different strategies was also revealed by the computer programme and stimulated recall interviews.
<ul style="list-style-type: none"> Some learners with low LK tried to use other strategies in addition to <i>translation</i>. 	<ul style="list-style-type: none"> The cluster analysis on the questionnaire data revealed a group of highly strategic low LK (LLK/HS) learners who were comparable with a highly strategic high LK (HLK/HS) group, and they used even more strategies than another high LK group who were less strategic (HLK/LS). The strategy use could be compensation for their low LK. The stimulated recall interviews revealed a more strategic low LK learner, Betty, who employed a range of strategies, individually and in combination, on top of <i>translation</i>.
<ul style="list-style-type: none"> Some of the low LK learners, despite rather strategic, might still combining strategies inflexibly. 	<ul style="list-style-type: none"> The computer programme revealed the LLK/HS learner involved <i>translation</i> in most of her combination of strategies. Betty almost always used <i>recall of prior knowledge</i> as one of the strategies in any combination of strategies that she employed.

7.1.3 RQ3: Strategies and task difficulty

Related to the LK variable in RQ2 is task difficulty. Whether a student's LK is sufficient or not in understanding the teacher depends on how difficult the input is. Previous research on reading strategies conducted by Oxford et al. (2004), for instance, has demonstrated an interaction effect between task difficulty and proficiency level with respect to the use of reading strategies. In this research, the difficulty of the task of understanding the teacher's input was dealt with by the computer programme. In general, it was found that *inferencing*, *summarisation* and *repetition* were used more often for difficult tasks than easy ones. One explanation for these findings is that when dealing with the higher cognitive loads associated with the more difficult tasks, learners need to rely more on contextual clues to make inferences on the meaning of individual difficult words and/or the overall meaning. They might also repeat the utterances in their mind to facilitate their understanding. Such an explanation is plausible because the presence of less frequent and hence arguably less familiar vocabulary items is one defining feature of the difficult tasks in the computer programme. In order to comprehend the teacher's talk, learners might need to use strategies to decipher the meaning of the difficult words before summarising the overarching meaning of the input. When dealing with easy tasks, however, these three strategies could be less important because learners could understand relatively more easily and might not need to attend to these specific contextual clues and make inferences.

Previous research investigating listening strategies has not adequately explored task difficulty; however, there has been some research on reading strategy which found similar results with the present study. As reported in the literature review, Ikeda and Takeuchi (2001) found that learners reading a more difficult text used more strategies than those who read an easier one. Another study by Takeuchi et al. (2012), cited earlier when discussing evidence-based support to Macaro's (2006) model, might also provide an explanation to the present results. One of their other research aims was to find out whether their 12 Japanese EFL adult learners when reading L1 and L2 texts activated their Working Memory (WM) differently – hence pointing to strategy use. It was found that when doing the L1 reading tasks, lower levels

of WM activation was found, suggesting that fewer strategies were required to complete the L1 reading task, as opposed to the L2 one. Takeuchi et al. (2012) argued that the cognitive load for reading in L1 was lower and hence the ease of such a reading task did not require as many strategies.

Another finding which contributed to answering RQ3 was that learners in general combined strategies more often when making sense of more difficult input. This finding could again be attributed to the suggestion that the higher cognitive load required learners to use a range of strategies to cope with the difficulty of understanding the teacher. Previous research has not dealt with the effect of task difficulty on the combination of strategies in a quantitative way; however, we do find some traces of suggestion that a more difficult task necessitates a cluster of strategies. As discussed in Chapter 2, O'Malley et al. (1989) found that some students used multiple strategies to facilitate their understanding when they encountered a difficult listening text where direct parsing in English failed. All these fit in rather well with the proposal by Macaro (2010) that students in general need to draw more on their strategies when facing a difficult task, defined as being above their LK level, compared to an easy one (see Chapter 2.2).

Given that an easy task may not require the use of many strategies, and that findings from Takeuchi et al. (2012) have pointed to the use of fewer strategies when dealing with an L1 task, one implication of this study would be related to the use of L1 in the classroom. Previous research has acknowledged the importance of the use of L1 in the classroom (see, e.g. Lee & Macaro, 2013; Littlewood & Yu, 2011; Macaro, 2009b; Meiring & Norman, 2002, among others), but the present findings would suggest that there might be trade-offs in terms of learners' strategy use. When the teacher uses L1 in the classroom, learners might understand straight away and hence do not need to draw on their strategic behaviour. At the same time, some learners might be able to deploy strategies to arrive at an understanding of the teacher's input even without teacher's use of the L1. It would, therefore, be important for further research to find out the relationship between the use of L1 by the teacher and the strategic behaviour of learners (see section 7.3.3 for this research implication).

When factoring in the variables of LK and task types (discussed below) into the analysis of the computer programme data, it was found that the use of more strategies only applied to learners with high LK and only in reaction to a range of task types. They used more *inferencing* for difficult ELICIT (asking questions) and INFORM (giving an explanation) when compared to the same task type which were easy. They also used more *summarisation* to deal with difficult CLUE (providing additional information for students to modify their answers) and INFORM. Moreover, they combined more strategies for difficult INFORM than easy INFORM.

First, the non-significance for low LK learners could point to their limited LK. It was possible that when the task was easy, they did not use many strategies and can comprehend the teacher's talk fairly easily; when the task was difficult, their limited LK could short-circuit their use of strategies, as Graham et al. (2010) and Razi and Grenfell (2012) would argue. However, I would like to concede that my study did not answer whether the tasks were too difficult for these learners with low LK or not. In other words, results could be different if we use tasks that were only slightly above the learners' LK level, compared to those they were way above their current level. Bringing in, once again, Nation's (2006) suggestion of 98% of vocabulary coverage for unassisted listening comprehension, vocabulary knowledge is of paramount importance in listening, and the quantity of unfamiliar vocabulary and hence how difficult the tasks were to the learners could be a determining variable.

As for learners with high LK, the more difficult tasks necessitated their use of more strategies. This was observed especially for a difficult INFORM task versus an easy one which gave rise to the use of more *inferencing* and *summarisation* strategies, as well as more combination of various strategies. A difficult INFORM might require more use of these strategies because an explanation usually contained new knowledge, which necessitated learners' use of *inferencing* and *summarisation* strategies to make sense of such a type of teacher's talk. Similarly, in the computer programme, the ELICIT tasks also usually included a difficult lexical item which learners might need to make inferences to help their understanding. One example was the word 'prevalent' in the question 'Do you think that such telephone deception crime is

prevalent in Hong Kong?’ presented in the computer programme as a difficult ELICIT task. On the other hand, a difficult CLUE required a *summarisation* strategy because learners might be trying to bring together the teacher’s question and the teacher’s CLUE in order to arrive at an understanding. After the ELICIT quoted a few lines above, no student responded and the teacher in the computer programme said ‘Well, prevalent means very common, taking place everywhere’. Learners might need to rely on *summarisation* for such a task which included a more difficult vocabulary item.

Taken together, the variable of task difficulty in general necessitated more strategy use individually and in combination. However, these differences appeared to be more relevant for learners with high LK for the present study, particularly evident in situations where they used more *inferencing* and *summarisation* strategies against the different task types of ELICIT, CLUE and INFORM when these tasks were difficult as opposed to easy. Table 76 below summarises the findings to RQ3.

Table 76: Answer to RQ3: How do students’ strategies vary according to the difficulty of the listening tasks?

Answer	Justification
<ul style="list-style-type: none"> In general, learners used more strategies when dealing with more difficult tasks. 	<ul style="list-style-type: none"> The computer programme showed that <i>inferencing</i>, <i>summarisation</i>, and <i>repetition</i> strategies were used significantly more when learners encountered difficult tasks.
<ul style="list-style-type: none"> In general, learners combined strategies more often when dealing with more difficult tasks. 	<ul style="list-style-type: none"> The computer programme revealed that learners combined strategies significantly more when encountering difficult tasks than easy tasks.
<ul style="list-style-type: none"> Matching learners’ levels of LK and task types, high LK learners used more strategies for some difficult tasks. 	<ul style="list-style-type: none"> The computer programme revealed that only the high LK learners used significantly more <i>inferencing</i> for difficult ELICIT than easy ELICIT, and difficult INFORM than easy INFORM. They also used more <i>summarisation</i> in difficult CLUE and difficult INFORM, as opposed to the easy ones.
<ul style="list-style-type: none"> Matching learners’ levels of LK and task types, high LK learners combined strategies more frequently for the difficult task INFORM. 	<ul style="list-style-type: none"> The computer programme indicated a significant difference for high LK learners combining strategies more often when facing difficult INFORM than easy ones.

7.1.4 RQ4: Strategies and task types

Similar to RQ3, RQ4 on the effect of task types on strategy use was mainly dealt with by the computer programme. Originally, it was hoped that the stimulated recall interviews might also shed some light on the use of strategies targeting different task types, such as ELICIT (teacher asking questions), INFORM (teacher explaining), and DIRECT (teacher giving an instruction). However, it was found that the different types of the teachers' input in the lessons were so intertwined and it was difficult, if not impossible, to isolate which strategies used by learners were targeted to a certain part of the input. However, the computer programme, as a carefully controlled research instrument, did provide some insight into how the variable of task type was related to strategy use.

Some general trends taking into account all learners and both easy and difficult tasks were revealed. First, it was found that *inferencing* was favoured when learners encountered teacher's INFORM and READ ALOUD (teaching reading aloud a passage and students listen). One possible explanation is that these tasks require more attention to be drawn to contextual information and individual words. Secondly, *summarisation* was preferred for INFORM and SHARING. Here, we see an interesting picture that while INFORM might require both attention to meaning of individual words and the overall meaning, READ ALOUD only necessitated a focus on the former and SHARING the latter. On the other hand, DICTATION might be considered a task which demands not much attention on meaning but a high level of focus on forms, thus revealing an exceptionally high frequency of *repetition* strategy being used and a low frequency of *demanding no strategy* (i.e. learners always doing something instead of doing nothing in their mind) when compared to other task types. Particularly, with DIRECT, students did nothing more often, possibly given its mechanical nature in an ESL classroom (such as 'Take out your English notebook and write down the following sentence'). One other finding was that *imagery* was used more frequently for READ ALOUD and SHARING. Although it is only speculative, this result could point to the additional variable of the richness of content of the task type which could have an effect on how learners chose to deploy different strategies. Finally, the combination of

strategies across different task types was also revealing. It was found that learners combined strategies significantly more often when understanding the teacher's INFORM, SHARING and DICTATION than ELICIT and DIRECT. Perhaps this could again be explained by the fundamental difference of the various task types in terms of the amount of information presented – that ELICIT and DIRECT usually come with shorter utterances with fewer idea units, whereas INFORM, SHARING and DICTATION could include more.

There has not been much research on how task types influence the use of listening strategies. The best evidence so far, as discussed in the literature review, was perhaps from A.C.-S. Chang (2008), who provided four different types of support to 22 university students before they completed listening tasks – (1) previewing the test questions beforehand, (2) having repeated input, (3) preparing for the topic of the listening text by reading two written texts on a similar topic, and (4) receiving vocabulary instruction. It was found that the different types of support had an effect on the choice of different strategies being used by learners. While my study was not examining listening support, A.C.-S. Chang's (2008) results did suggest different strategies might be used for tasks with different task demands.

The computer programme data was then analysed through matching learners' levels of LK and task difficulty in order to examine the variable of task types in greater depth (see Table 69 in section 5.4.6). Some of the aforementioned general findings were still true in many cases: learners of low LK used more *imagery* when facing easy READ ALOUD and SHARING than easy INFORM. Both learners of low and high LK also used more *imagery* for difficult READ ALOUD than difficult ELICIT. These, again, might be related to how *imagery* was used when learners faced task types which allowed more mental images to be constructed. Furthermore, *summarisation* strategies were favoured for both low and high LK learners for difficult INFORM, whereas *repetition* strategies were used more often when both groups of learners encountered an easy DICTATION. The high LK learners, in addition, also used more *repetition* strategies for a difficult DICTATION than a difficult DIRECT. The opposite trend was observed with their doing nothing more often when facing a difficult DIRECT than a difficult DICTATION. This finding

might indicate that when learners of high LK faced a difficult DICTATION task which demanded a lot of attention on the forms, they almost always did something. For learners of low LK, on the other hand, they did nothing more often when facing a range of easy tasks such as ELICIT, INFORM, and DIRECT than easy DICTATION.

Taking together the findings of the matched differences of learners of low and high LK against the same difficulty of tasks, task types did have an effect on their strategy use in some ways. For learners with low LK, different task types exerted an effect mostly on the easy tasks, whereas for learners with high LK, different task types had an effect mostly on the difficult tasks. One potential explanation was that learners' levels of LK and task difficulty were interacting with how they deployed different strategies against different task types. I will illustrate this with the DICTATION task as an example. Learners with low LK used more *repetition* for an easy DICTATION than an easy SHARING and COMMENT (both of which required no response). However, no contrast was revealed for a difficult DICTATION task, suggesting that learners with low LK preferred *repetition* strategies similarly for a difficult DICTATION task and other difficult tasks. Perhaps given the difficulty of the tasks, learners did not deploy strategies effectively and overlooked the specificity of the DICTATION task which focused on forms very heavily. Learners with high LK, on the other hand, also used more *repetition* strategies for a difficult DICTATION than a difficult DIRECT. They appeared to understand the task demands very well that the former required focus on forms and the latter on meaning. All these could suggest that the variable of task types might be related to the variable of task difficulty and levels of LK in learners' deployment of strategies, although more research need to be done to further understand the intricacies of the relationship between the variables.

Finally, the findings of my study with respect to the effect of task types could provide some evidence to support the theoretical framework proposed by Macaro (2006), who suggested that different strategies or strategy clusters might be adopted by learners when encountering different task types. Taking together the findings of the computer programme, it appears that strategy use at least depends on (1) whether the teacher's input requires students to focus on

meaning or focus on forms, of individual words or the entire input, and (2) the richness of information presented in the types of the teacher’s input. The answer to RQ4 is shown in Table 77. All these, however, should be treated with caution because only the data from the computer programme was drawn on when answering this RQ, as will be discussed in section 7.2 as one limitation of this study.

Table 77: Answer to RQ4: How do students’ strategies vary according to different task types?

Answer	Justification
<ul style="list-style-type: none"> In general, learners used more <i>inferencing</i> strategies for task types which required attention to the form and meaning of individual words, <i>summarisation</i> strategies for those which required attention to the overarching meaning, and <i>repetition</i> strategies for those which required attention to the forms of the entire teacher’s input. 	<ul style="list-style-type: none"> The computer programme showed that <i>inferencing</i> was more important for INFORM and READ ALOUD, <i>summarisation</i> for INFORM and SHARING, and <i>repetition</i> for DICTATION.
<ul style="list-style-type: none"> In general, learners used more <i>imagery</i> strategies and combined strategies more often when encountering tasks which contained richer contents. 	<ul style="list-style-type: none"> The computer programme revealed that learners used more <i>imagery</i> for READ ALOUD and SHARING; and they combined strategies more significantly when encountering INFORM, SHARING, and DICTATION tasks
<ul style="list-style-type: none"> Taking into account the variables of LK and task difficulty, the general findings still held to some extent. However, most of the contrasts between different task types which still held true for learners with low LK were easy tasks, and for learners with high LK, difficult ones. 	<ul style="list-style-type: none"> <i>Imagery</i> was favoured by learners of low LK when facing both easy and difficult READ ALOUD than some other task types of the same difficulty, and only the latter finding was true for high LK learners <i>Summarisation</i> strategies were favoured for both groups of learners with respect to difficult INFORM <i>Repetition</i> was used more often when both groups of learners faced an easy DICTATION than some other task types of the same level of ease, but only learners of high LK also used more <i>repetition</i> for a difficult DICTATION than a difficult DIRECT. Learners of high LK often did at least something in their mind in reaction to difficult DICTATION, whereas learners of low LK often did at least something in reaction to easy DICTATION.

7.2 Limitations

There are two major limitations to my study. First, as hinted at the end of section 7.1.4, only the computer programme contributed to answering RQ3 on the effect of task difficulty and RQ4 on

the effect of task types on strategy use, making the conclusions somewhat weak. The data gathered by other research instruments were not useful in understanding how the variables of task difficulty and task types have a role to play in students' strategic behaviour. However, perhaps after all, it is difficult to isolate these two variables in an authentic classroom setting because the different types of teacher input are so interwoven with each other. For example, when trying to explain a grammar point, the teacher can elicit from learners their thoughts and then provide feedback in form of a comment, thereafter continue explaining the use of the grammar item and instructing students to compose a sentence. While explaining the grammar item, the teacher can also refer back to a previous occasion when s/he was asking question. It may be impractical to try to explore how learners understand each one of the teacher's utterances in isolation because while the macro-function of these utterances is an explanation, there are many micro-functions such as questioning and directing.

Another major limitation is the absence of an outcome variable of comprehension of oral input which could provide evidence for the effectiveness of strategy use. This study did not explore whether there were any differences in how students used the same (or different) strategies, and whether the use of these strategies rendered success in understanding the teacher. There were some indications from the stimulated recall interviews that sometimes learners shifted from one strategy to another to help their understanding, suggesting their use of the first strategy was not so successful. In fact, one of the participants (Cindy) failed in understanding in several instances when she did not try to use *summarisation* strategies and retrieve a broader picture of what the teacher was talking about. However, the limited scope of this research could not provide sufficient data to find out how strategies were used effectively and flexibly by learners in order to achieve success in understanding the teacher. And indeed, it was not my intention to examine the outcomes of the use of strategies given that this is one seminal exploratory research into strategy use in the context of listening to the teacher in the classroom. More importantly, it is very difficult to measure listening success in a concurrent ESL lesson. While I have tried to use the computer programme to measure strategy use relatively

concurrently, it might be cognitively too demanding if students were instructed to report their strategy use and their understanding of the teacher simultaneously through the computer programme. The best possibility of measuring listening success was perhaps asking students to do a recall protocol immediately after the virtual lesson of the computer programme or after the authentic lessons through stimulated recall interviews. Unfortunately, these were not feasible given the practical constraints of my data collection.

Nevertheless, this research can be considered one of the first steps in exploring what is going on in the learner's mind when listening to the teacher's input, and has made various contributions to the field illustrated in section 7.3.1 and 7.3.2 below. Further research (discussed below in section 7.3.3) can attempt to address the limitations of this study and examine the effectiveness of strategy use in bringing about success in comprehending the teacher's input.

7.3 Conclusions

Having discussed the findings in relation to the four RQs I attempted to answer, as well as the limitations of my study, I now conclude with the contributions of my study and suggest implications for further research.

7.3.1 Major contributions

7.3.1.1 Novel research context of listening to the teacher in the ESL classroom

First, my study has both theoretical and practical value in advancing our understanding in listening strategies in this ubiquitous and yet hitherto unexplored ESL classroom context. While it might be understandable for previous research to focus almost exclusively on listening to audio recording because it is a classroom activity parallel to, for example, reading a text or writing an essay, listening to the teacher can be regarded as a distinctive type of listening

activity in the classroom which warrants equal attention from research (see section 2.3.1 again on how listening to the teacher is different from listening to audio recording). Importantly, listening to the teacher in the classroom represents the very context where learning takes place according to input and interaction theorists such as Krashen (1981, 1982) and Long (1985), as discussed in section 2.3.2. However, these theories have focused primarily on how pre-modified or interactionally-modified input might bring about learning in the ESL classroom without taking into account what actually goes on in the learner's mind while engaging in these inputs. Particularly, my Likert-scale questionnaire (and all the preceding stages of developing the questionnaire) has revealed an extensive range of different strategies – some of which being uniquely identified as being used exclusively in the classroom setting – going on in the learner's mind while listening to the teacher. It would seem to oversimplify the classroom learning context if we only focus on the question of 'what' input is a predictive factor for learning, instead of 'how' different learners process the input. The stimulated recall interviews and the computer programme further corroborated that many strategies or mental actions were being performed by learners while listening to the teacher. My research has, therefore, attempted to bridge the gap of listening strategy research and bring together the two distinctive research fields of LLS and L2 classroom input, even though it was not my intention to delve further into classroom interaction in this exploratory research.

Having identified the strategies used by learners when listening to the teacher in the ESL classroom, this study informs education practitioners that learners are indeed doing many things in their mind to facilitate their understanding of the teacher in the ESL classroom. This may allow teachers to become more confident in promoting an English-predominant ESL classroom, although the use of L1 has been acknowledged to be important resources in the classroom as well. What is important is that further research has to investigate the relationship between the use of L1 and the target language in terms of learners' strategic behaviour (as mentioned above and reiterated below in section 7.3.3 on the implications for further research). Furthermore, researchers can start to examine classroom-based strategy instruction which might benefit

learners in becoming better listeners in understanding the teacher, ultimately promoting teaching and learning.

7.3.1.2 Contributions to the claims in listening strategy theories

My second contribution is related to the exploration of different variables with reference to strategic behaviour, which has advanced the claims in listening strategy research. Considering the variable of LK, my research agrees partly with previous research on listening to audio recording that learners with low LK employed *translation* strategies predominantly, although previous research usually examined the independent variable of listening proficiency instead. However, while low LK learners relied on *translation* strategies, it does not necessarily mean that *translation* is a bad strategy and should be avoided because it might be the very nature of their low LK that these students had to rely on particular strategies to decode the teacher's input. More importantly, there existed a group of learners with low LK who were actually more strategic than some of their counterparts with high LK. These learners with low LK used a range of strategies (including *translation*) often in combination (as shown in the computer programme and the stimulated recall interviews), probably to make up for their insufficient LK in comprehending the teacher's input, pointing to the importance for further research to control for LK more closely in order to find out how a strategic learner behaves. Such a direction of research goes back to answer the original enquiry by Rubin (1975) on what exactly a good language learner is and in this case, what a good listener is.

The exploration of two other variables, the types and difficulty of tasks (i.e understanding the different types of teacher's input such as INFORM and ELICIT with varying levels of difficulty), through the computer programme was also revealing. The differences in strategy use in response to different task types with varying levels of difficulty have provided some evidence for the specificity of strategy use when learners deal with different tasks. This finding is in line with Macaro's (2006) theoretical model. At the same time, this study is the first study that

attempts to establish more quantitatively how the difficulty of the listening task has an effect on the use of strategies in combination. The more frequent use of strategies in combination towards more difficult tasks could suggest that learners have to draw more on their strategic behaviour when LK alone is insufficient to arrive at an understanding of the teacher's input.

7.3.1.3 Advancement in methodology in listening strategy research

My research has created some carefully constructed research instruments which could be useful for further research. Particularly, the construction of the Likert-scale questionnaire underwent a relatively 'grounded' approach where all the strategy items originated from learners' self-report of what they did when trying to understand the teacher in the classroom. A number of pilot studies were also carried out in the hope of bridging the potential gaps in understanding the Likert-scale questionnaire items between me as the researcher and the students as participants (see section 3.3.3.2.1 for the development of the questionnaire). Hence, the questionnaire yields construct validity at least in the Hong Kong ESL classroom context, and has the potential to be adapted in other research contexts.

Another research instrument developed by this study is the computer programme, which was invented to answer the need to collect relatively concurrent strategy data in the classroom context through an unobstructed manner. The computer programme has demonstrated its potential in providing a carefully controlled environment for data collection where variables such as task types and task difficulty can be manipulated. In addition, it may also be of use in other aspects of classroom research, such as research into motivation during and throughout a lesson, particularly given that motivation is a dynamic process (see, e.g. Dörnyei, 2005 for a model, and Yanguas, 2011 for an empirical study).

7.3.2 Other contributions

Apart from the major contributions discussed above, this study may also offer some insight into the relationship between listening strategy and L2 listening models. Even though this study did not intend to directly situate listening strategies in the L2 listening models as discussed in section 2.2.1, some of the findings did suggest the close relationship between the two.

Particularly for Cindy's stimulated recall data, it was found that in 10 out of 11 exchanges at which she paused the video to report her strategy use, she first tried to selectively attend to some words or segments of the teacher's input or repeat what the teacher had said in her mind. This focusing of attention appeared to correspond to the first stage of 'perceptual processing' in J.R. Anderson's (1983, 1985) model, as well as J. Field's (2008a) first step in decoding (see section 2.2.1 again for the theoretical models). Having attended to these words or segments, Cindy then used a range of strategies such as *recall of prior knowledge*, *inferencing*, and *relational – understanding through recalling teacher's approach* to facilitate her understanding. These strategies might be situated in the 'parsing' and 'utilisation' stages in J.R. Anderson's (1983, 1985) model. In Cindy's report of strategy use, *evaluation* was always the last of the strategies she used (as shown in exchanges 3, 4, 5, and 11 in Figure 18 in section 6.2.2), and such finding could further support the use of strategies in the final stage of 'meaning building' in J. Field's (2008a) model. Similarly, another student David often deployed *contextualisation for the present lesson*, *recall of prior knowledge*, *evaluation*, and *summarisation* out of his repertoire of strategies at a later stage of his listening process.

It appears, therefore, that at least some learners used strategies conforming to the stages proposed by the listening models reviewed in section 2.2.1. This study may also be considered one step further than O'Malley et al.'s (1989) study, because they analysed strategy use corresponding to the three phases of J.R. Anderson's (1983, 1985) model separately, without treating the data longitudinally and exploring the use of strategies in sequence or in combination (the importance of which was, again, discussed in section 2.2.1). Nevertheless, given the small

sample in my stimulated recall interviews, the link between listening strategy and listening models demands further research, which will be presented in the following section.

7.3.3 Implications for further research

There are four major implications for further research, corresponding to each of the three major contributions and the additional contribution just discussed. First, strategy instruction is an important way forward in listening strategy research. My study has opened up the research direction of learners' strategy use when listening to the teacher's input in the classroom. Having revealed that learners did use mental actions or strategies when listening to the teacher, further research can try to delve into strategy instruction to examine whether learners can be taught strategies in understanding various types of teacher input, and whether strategy instruction would allow learners to become better listeners in the ESL classroom setting. Furthermore, given that my research has identified some strategies unique to listening to the teacher, further research can also examine the task-specificity and transferability of listening strategies in this ESL classroom context. It would be interesting to find out the relationship between listening to audio recording and listening to the teacher, and to investigate if strategy instruction in one mode of listening might be transferrable to another. At the same time, given that learners are indeed processing the teacher's input using strategies, it would be interesting to evaluate how an English-dominant classroom is contrasted with a code-switched one (with the use of L1) in terms of learners' strategic behaviour. Ultimately, we may be able to arrive at an evidence-based, principled or judicious use of L1 in the ESL and perhaps also EMI classroom.

Second, it would be beneficial to examine the 'task' and LK variables more carefully so that we might begin to understand how individual strategies or combinations of strategies facilitate learners' understanding of the teacher in different circumstances. Further research can tease apart the variable of task types more carefully to find out how different tasks (i.e. different teacher input) exert varying levels of cognitive demands on learners. Some of these task types

might be dominating in an ESL classroom and some others might be more typical in an EMI classroom. It would be interesting to conduct similar research in an EMI classroom and investigate learners' use of strategies when engaging in different types of teacher input in different classroom contexts. As for the task difficulty variable, further research can examine this variable more carefully because of its potential interplay with learners' levels of LK. It is arguable that the varying levels of LK may influence learners' perception of task difficulty. If we conceptualise task difficulty as a continuum, a task of medium difficulty might be considered difficult for a learner of low LK and yet easy for one of high LK, and a task of immense difficulty might be considered very difficult by a learner of low LK and quite difficult by one with high LK. Therefore, for further research, one possible way to address this problem is to measure the students' current level of LK, and vary the level of difficulty of the teacher's input during some episodes or throughout an entire lesson. One might adopt Nation's (2006) suggestion of incorporating different percentages of difficult or unfamiliar vocabulary in the lesson. In such a way, perhaps the variable of task difficulty can be investigated in a more nuanced way.

Also related to the control of different variables is listening success. This study did not measure listening success (as depicted in section 7.2 as one limitation of this study) and further research can attempt to examine the relationship between LK, strategic behaviour, the 'task', and listening success. For instance, we can investigate whether the use of more strategies by LLK/HS students leads to success more than LLK/LS students in understanding different types of teacher input.

Third, further research can employ my questionnaire and computer programme – which are both novel research instruments – as data collection methods. Given that previous listening strategy research has often employed some forms of verbal reports, it would be beneficial to use different research methods to tap into learners' strategy use in order to achieve triangulation of research findings. At the same time, researchers can evaluate the methodological efficacy of

these new research instruments, which have the potential to collect data in a larger scale, allowing researchers to establish better external validity.

Finally, the relationship between listening strategy use and listening models warrants more research. It would be important to situate strategy research in theoretical models so as to answer some of the critiques of LLS relating to the lack of theoretical support. While not being my research aim, I have demonstrated one way of presenting stimulated recall interview data using scatter plots to reveal the longitudinal nature of strategy use in listening. Further research can try to capture this ongoing nature of listening by examining learners' strategy use across time and, ultimately, to situate listening strategy into listening models in a more rigorous manner.

7.3.4 Pedagogical implications

Apart from the directions for further research detailed above, my research also suggests some pedagogical implications relevant to teachers and teacher trainers. First, contingent on further research dedicated to finding out the effectiveness of strategy instruction in bringing about more sophisticated use of strategies and more successful comprehension of the teacher in the classroom, teachers can still attempt to teach students the use of listening strategies. Raising learners' awareness of and competence in using listening strategies can potentially enhance the effectiveness of teaching and learning. Such a suggestion can be supported by previous research on the effectiveness in listening strategy instruction as well as my finding that some listening strategies are transferrable. In other words, there are some strategies which are used in both settings of listening to audio recording and listening to the teacher. Therefore, strategy instruction might benefit students in these different contexts of listening. At the same time, given that teacher talk can also be considered a distinctive discourse, actively training students to make a distinction between the strategies involved in listening to recording and those in listening to the teacher might also be beneficial.

Second, teachers should themselves be more aware of the possibility that learners could be using a range of strategies when trying to comprehend the input in the ESL classroom, as revealed by my study. Even at times when students do not make their lack of understanding known to the teacher, they might still be using some mental actions to facilitate their comprehension of the teacher's input. It is an unfortunate assumption made by some teachers, and particularly those in Hong Kong, that the low LK of learners is associated with their not trying hard enough in their studies. My findings have revealed, however, that some learners with low LK could still be highly strategic. Therefore, teachers can at least recognise that learners, including those with low LK, might be trying hard in their mind to understand the input in the ESL classroom.

Instead of attributing learners' low LK to their not trying hard, teachers can also reflect on the types and difficulty of input that they offer students in the classroom. My study has revealed that different types of input might exert different task demands, and hence different strategies might be deployed by students. Furthermore, the difficulty of the input might also be an important variable. If the teacher's input is always an easy INFORM (e.g. explanation of a language item), learners might be deprived of the opportunities to use a range of listening strategies targeting the input. On the other hand, if the types of input are of a great variety and if they are tuned at an appropriate level of difficulty (i.e. not too easy), students may be able to practice using listening strategies. Given that strategies have the potential to be transferred to different listening contexts, learners who are developing strategic competence in listening to the teacher might at the same time be enhancing their strategic competence in other forms of listening such as that when engaged in communication.

Having acknowledged that students could be performing some mental actions when they are comprehending the ESL classroom input, teachers can also pay attention to the importance of waiting time for students to process their input. There was an instance from Adrian's stimulated recall where he did not use any strategies to understand the unfamiliar word 'valuables' because the teacher explained the word immediately. While not trying to discount

the value of rhetorical questions or hypophora, teachers can at least pay more attention to how much waiting time they are giving to their students if they are genuinely trying to elicit from the students.

As with many other studies, my research has attempted to fill in some gaps in the field of listening comprehension strategies, but has left more questions unresolved. However, I believe that as more research contributes to understanding learners' mental actions in the classroom, we can come up with well-tested and effective ways of improving learners' ability in comprehending teacher input, ultimately nurturing good language learners.

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Appendices

Appendix A: 24-category system in analysing teacher talk

T: Teacher / Ss: Students; *Italics* denotes new categories developed for the present research

Teacher-initiate

1. Elicit
 - 1.1 Display question
 - 1.2 Genuine question
 - 1.2.1 Opinion seeking
 - 1.2.2 Information seeking
 - 1.3 *Rhetorical question*
2. Direct
 - 2.1 *Inside-plane shift commands*
 - 2.2 *Outside-plane shift commands*
3. Nominate
 - 3.1 *Calls on*
 - 3.2 *Permission to speak*
4. Inform
 - 4.1 Language
 - 4.2 Housekeeping issues
5. Recapitulate
6. Frame
7. Starter
8. Check (*Comprehension check*)
9. Read aloud
 - 9.1 *T reads aloud, Ss repeat*
 - 9.2 *T reads aloud, Ss listen*
10. Translate
11. Reprimand / applaud
12. *Sharing*
13. *Dictation*

Teacher-respond

14. Evaluate
 - 14.1 Encouraging / positive
 - 14.2 Negative
15. Accept
16. *Decline*
17. Comment
18. Clue
19. Answering questions
20. Pardon
21. *Clarification request*
22. *Confirmation check*
23. *Repeat*
24. *Recast*

Teacher-initiate

1. **Elicit** (Asking questions - specific information is elicited from Ss)
 - 1.1 **Display question** (Teacher knows the answer)
T : What is the answer for question 1?
 - 1.2 **Genuine questions** (Teacher doesn't know the answer)
 - 1.2.1 **Opinion seeking**
T : What do you think of the recent protest?
 - 1.2.2 **Information seeking**
T : What did you do last weekend?
 - 1.3 **Rhetorical question** (Teacher answers by him / herself)
T : Do you know the answer?
T : The answer is A.
2. **Direct** (Giving commands for students to do something)
 - 2.1 **Inside-plane shift commands** (In-class commands)
T : Take out your textbook and turn to page 12. / Close the windows please.
 - 2.2 **Outside-plane shift commands** (Commands extending to outside the classroom)
T : As your homework, you will need to finish the worksheet.
3. **Nominate** (Calling students' name)
 - 3.1 **Calls on**
T : What's the answer to A, Stephen?
 - 3.2 **Permission to speak**
T : What's the answer to A?
S : (Looking at teacher / raising hands)
T : Stephen?
4. **Inform** (Giving explanations)
 - 4.1 **Language**
T : The present tense is used to describe...
 - 4.2 **Housekeeping issues**
T : I am now giving you the statistics of your examination performance: 59%... /
The library is closed today.
5. **Recapitulate** (Providing a recap for the previous lessons)
T : Remember last week we talked about
6. **Frame** (Framing / structuring the lesson, lesson objects, etc.)
T : Today, we are going to look at past tense.

7. **Starter** (Directing pupils' attention to the following elicit)
T : First of all / The next one
8. **Check (Comprehension check)** (Developed from communication strategies, confirming students' understanding)
T : Do you follow? / Do you understand? / Everything clear?
9. **Read aloud** (Reading aloud)
- 9.1 **Teacher reads aloud, students repeat**
T : Once upon a time, there was a beautiful princess...
Ss : Once upon a time, there was a beautiful princess...
- 9.2 **Teacher reads aloud, Students listen**
T : (reading out a paragraph, e.g. on the textbook) Once upon a time, there was a princess...
10. **Translate** (Providing a translation for the English words in the L1)
T : The Chinese for 'verb' is 動詞
11. **Reprimand / Applaud** (Telling off / praising students)
T : You must not come to class late!
12. **Sharing** (Teacher sharing with students his / her views)
T : I think the recent flooding in different regions could be prevented.
13. **Dictation** (Teacher speaking aloud for students to write down what s/he says)
T : Once upon a time (pause) COMMA there was a princess (pause) ...
(Ss writes)

Teacher-respond

The feedback component of the IRF sequence, or a response to a student-initiate

14. **Evaluate** (Evaluating students' answer positively or negatively)
- 14.1 **Encouraging / positive**
T : Good try / Well done!
- 14.2 **Negative**
T : That isn't good enough. That's a bad answer.
15. **Accept** (Accepting students' answer)
S : The answer is A.
T : Yes / right.

16. **Decline** (Declining students' answer)
 S : The answer is A.
 T : No / Wrong!
17. **Comment** (Expanding or developing students' answer)
 S : The answer is A.
 T : Yes. A should be the best answer, because A is a verb.
18. **Clue** (Providing additional information for students to modify their answers)
 T : What is a verb?
 S : I don't know.
 T : Right, for example, 'run' is a verb, 'eat' is a verb...
19. **Answering questions** (Answering students' questions)
 S : What is the answer for question 1?
 T : The answer is A.
20. **Pardon** (Asking students to repeat what they have said)
 T : Sorry, can you repeat?
21. **Clarification request** (Developed from communication strategies, asking students for an explanation or elaboration)
 S : I think the answer to question 1 is A.
 T : Why do you think it is A?
22. **Confirmation check** (Developed from communication strategies, teacher checking if s/he understands the students correctly)
 T : Did you mean you don't understand why the answer is A?
23. **Repeat** (Repeating what the students just said)
 S : The answer is A
 T : (usually louder) The answer is A.
24. **Recast** (Repeating what the students said but with the erroneous parts corrected)
 S : He go to school everyday.
 T : He goes to school everyday.

Appendix B: Reflection on pilot study 1

The pilot study has proved to be a fruitful learning experience in many aspects, in terms of understanding the validity of the research instruments as well as the practical concerns associated with different methods of data collection. This reflective paper is comprised of 3 sections: a general description and background information of the pilot study, the data collection phase, and the results of the study and the way forward.

1. Description and background information of the pilot study

The pilot study was conducted in two secondary schools in Hong Kong (HK) lasting for 2 weeks, from 8 April 2013 to 19 April 2013. I spent approximately one week in each of the schools. The two schools were selected because of the connection I had with them. Such a convenient sampling method was adopted due to time constraints.

The purpose of conducting the pilot study was two-fold: testing the validity of the research instruments and practicing using the data elicitation methods. In particular, I administered all the research instruments which I planned to use in my main study: a standardised listening test, an open-ended questionnaire, and a computer tracking programme. I also practiced conducting lesson observation, focus groups and stimulated recall interviews.

1.1 The two participating schools

In HK, schools are divided into three bandings according to the average English proficiency of students. Band one schools consist of students who are on average more proficient in English than those in band two schools, and most band one schools use English as the medium of instruction (EMI) for subjects other than the Chinese language.

Both school 1 and school 2 are band one EMI schools. This said, within each school, there is still huge variability in terms of students' English language proficiency, as evident that some students achieved the best grade in English in public exams (representing the top 5% in HK) and some failed in them (representing the bottom 30% in HK). School 1 is a boys' school and school 2 a girls' school.

Each of the schools provided me with two classes of Secondary 3 (equivalent to Year 9 in the UK) students who were 13-14 years old. All the classes contained students of mixed abilities. In other words, they were neither elite nor remedial classes. The total number of students participating was 114 (50 male, 64 female).

1.2 Soliciting approval before the actual data collection

I first got in touch with the principals of the two schools in February through emails, explaining the purpose and importance of my study and inviting the schools to participate in my research. After getting an initial approval, I went to the schools in person and had a meeting with the principals and teachers involved, in March. I explained to them what exactly my research entailed – the procedure of data collection and the tasks which I would administer to the students. Having them confirm that I was allowed to conduct my research, we created a data collection timetable together, detailing every step such as when to send out parents' consent forms, when to get into classrooms to distribute questionnaires, and when to videotape and observe a lesson. With the time-frame set up and agreed upon, I proceeded to the data collection stage (see Section 2 below).

1.3 Problems encountered and things learnt before data collection

Given that I had connections with the schools, I did not encounter major problems at this preliminary stage. Perhaps the biggest issue was that the schools held some reservation towards the scale of my research – in terms of the number of participants to be provided and the time required. For example, I was asked to minimise the number of classes involved. In the beginning I was only offered one class but through negotiation I eventually got two with each of the schools. Another example was that one school requested that less class time be spent on the questionnaire. All these said, the schools in general were very cooperative and supportive; and through negotiation and explanation of my research design, issues like these were resolved without difficulty.

Nonetheless, such an experience would mean that in my main study, I will need to beware of the potential problem of gaining access. Without any connections, schools might not consider allowing me to conduct a research; and even if they do, they might impose various constraints on me and they might not be as cooperative.

2. Data collection

During the pilot study, I tried out all the research instruments and the methods which I originally planned to use in my main study.

2.1 The materials and the methods

2.1.1 Baseline listening test

The baseline listening test was included as a measure of learners' listening proficiency. I used the Territory-wide System Assessment (TSA), a standardised test developed by the Hong Kong Examinations and Assessment Authority (HKEAA). The TSA is administered to Secondary 3 students in HK every year and so it might be of use in my research. Prior to using the test, I have already sought advice from government officials in the HKEAA to confirm that I could use their past question papers which were published on the Internet.

The listening test consisted of 27 multiple-choice questions in total. With a few exceptions, most of the questions tested bottom-up processing. In these questions, students could simply listen for specific words and they could get the answer because the same words appeared as one of the choices in the questions.

2.1.2 Open-ended questionnaire

The open-ended questionnaire was used to elicit learners' general strategy use in teacher-student interaction in classroom. The questionnaire was in both English and Chinese. It consisted of 12 typical scenarios which students would encounter in an ordinary classroom in HK, for instance, 'the teacher is asking questions' and 'the teacher is explaining the English language'. Beside each scenario was some space for students to report what they normally do in their mind when engaged in such scenarios. It was anticipated that students would report their strategy use. As I would like to keep it as open-ended as possible so that all the strategies would come from students, I did not give any examples.

2.1.3 Focus group

The focus group, conducted primarily in Chinese, was used to elicit LLSs from 4 groups of 4 learners⁸ in a more qualitative and in-depth way, compared to the questionnaire. Each group consisted of two more proficient learners and two less proficient learners. Initially, I would like to randomly select the learners based on the listening test results and a list of students which the teachers recommended as highly or less proficient in English. However, given the ceiling effect observed in the TSA listening test (discussed in section 3 below), I could only rely on teachers' judgement to select the students.

⁸ In one of the groups, only 3 learners showed up because the fourth learner was punished by a teacher and detained to finish his homework.

During the focus group interview, I presented to students 24 little cards with a scenario on each of them. Each round, students took turns to read aloud the scenario and the other three students would have to report how they would react to that in their mind. The student who read aloud could also give her comments. I would not interfere with their discussion unless they went off-topic. The focus group interview was audio-taped.

2.1.4 Lesson observation

The main purpose of doing lesson observations was to find out the teachers' teaching style, what happened in the classroom when they taught the lesson, and to note down interesting episodes of teacher-student interaction in the classroom. During the pilot study, I observed two lessons, one from each school. Each lesson lasted for around 40 minutes. When observing the lessons, I sat at the back of the classroom as an attempt to minimise the effect of my presence on the naturalistic setting. This was important to reduce the stress that I might induce particularly onto the teacher, even though I pointed out clearly that I was not evaluating their teaching. Because of the same reason, even though I took out pen and paper to take notes, I tried to keep the notes precise and concise and spent more time observing the students than writing notes. The lesson was also video-taped for use in the subsequent stimulated recall interview.

2.1.5 Stimulated recall interview

Stimulated recall interview was conducted to tap into learners' mind and elicit the LLSs they used during the lesson, by showing them the video of the lesson as the prompt. 8 students participated in the individual interviews. I asked learners to use Chinese, but some of them insisted that they wanted to use English during the interview. The interviews were scheduled either on the same day or the next day after the lesson occurred, so that the students had fresh memory on the lesson and what they did back then.

In the beginning of every stimulated recall, I gave students the instruction that I would like them to think back to the lesson and report what they were doing in their mind in order to understand the teacher. I asked them to pause the video whenever they had some mental actions going on; but if I noticed that they did not pause the video for some time, I would do it myself. Given time limitations, I only interviewed each student for around 30 minutes. Therefore, the 40-minute video of each lesson was split into two parts for use in the stimulated recall interview.

2.1.6 Computer tracking

The idea of administering the computer tracking programme was to simulate a classroom situation and allow learners to report their strategy use concurrently. It has the potential to collect data in huge quantity. The programme contained a video of an English language lesson

and along the right hand side of the video was 7 buttons, on which 7 different listening strategies were presented: inferencing, elaboration, imagery, summarisation, repetition, translation, and avoidance. These strategies were taken and developed from Vandergrift (2003). Students were provided with an information sheet with explanation of each of these strategies and I made sure that they understood the explanation before carrying out the computer tracking programme. Students were to indicate their strategy use by clicking the 7 buttons while they were watching the video. The video can be paused at any time if they wish. All the instances of the clicking of the buttons and the time they clicked them were recorded automatically by the programme.

There were two videos used in the computer tracking programme in the pilot study. The first one was a 1-minute short clip extracted from a movie on education, used in the practice round for learners to get familiar with how the programme worked. The second video was a made-up classroom teaching video with no student, and I used all the 24 classroom interaction types. In this pilot study, only 8 students were asked to try out the task.

2.2 The procedure

From the outset, opt-in consent forms and information sheets were distributed to teachers, students and their parents. The documents for students and parents were written in both English and Chinese. Upon obtaining their consent, I proceeded to data collection, which could be summarised in Table B1.

Table B1: Procedure of pilot study

Two classes, one from each school	Two classes, one from each school
TSA listening test (n=55)	Focus group (n=4, n=4)
Questionnaire (n=54)	TSA listening test (n=47)
Focus group (n=3, n=4)	Questionnaire (n=47)
Lesson observation	
Stimulated Recall Interview (n=8)	
Computer tracking (n=8)	

The TSA listening test and questionnaire were both conducted during class time, which took 30 minutes and 20-30 minutes respectively. The focus group was administered after class. The order of questionnaire and focus group was counter-balanced. I then observed two lessons,

one in each school, and conducted stimulated recall interviews. Finally, computer tracking was administered. There are some missing data because some students were absent on the day of data collection.

2.3 Problems encountered and things learnt during the data collection

When administering the listening test, some students appeared quite bored probably because the test was too easy for them. In fact, there were ceiling effects observed (see Section 3). Therefore, this listening test might not be an appropriate one.

With regard to the questionnaire, some students asked for clarification on what I wanted them to write. I was rather cautious at that time not to give them any examples of strategies because I wanted to maintain the open-endedness of the questionnaire. What I did was merely reiterating that I would like them to reflect on what they did in their mind in order to understand the teacher in the given scenarios. I also stressed that it was not an easy task in hope of motivating them to think deeper. While some students seriously thought about their strategy use, others appeared to be off-task and were chatting and playing with their friends. Perhaps with students aged 13-14, there are bound to be some who would not follow instructions and feel unmotivated in classroom activities.

Concerning the focus group, one problem which occurred was that in one of the groups, a student failed to show up, rendering only 3 students in that focus group. However, I would argue that no major effect would be induced on the data collected. Given that the purpose of conducting the focus group is to elicit from learners their use of LLSs in order to pull out useful strategies and put into the Likert-scale questionnaire to be developed, I am not comparing the performance of different focus groups. Another issue which came up was that some students reported non-strategy actions. For example, some only mentioned that they would listen and think about what the teacher said, without going deeper into what they actually did in their mind. Being aware of such a problem, I learnt the crucial importance of intervening and following up on what they said. For instance, I would ask them whether they would focus on specific words of what the teacher said or the idea of what the teacher tried to convey or something else.

In fact, the failure to report some real strategies was also an issue in the stimulated recall interview. On top of this, some students tried to relate the event to the teacher's normal practice when reporting their strategy use. It could be the strategy of using prior knowledge about the teacher to make sense of and imagine what the teacher was trying to achieve. However, the student could go on reporting what s/he ordinarily did in response to the teacher-student

interaction. I have learnt to become more sensitive as to whether the interviewees were recounting previous experience and their response, or reporting what they actually did during that moment in the lesson.

With the intention to eliminate the possibility of students reporting their ordinary practice instead of something they actually did during the lesson (which would violate the purpose of the stimulated recall), I asked students to pause the video by themselves. However, it became an issue when some students did not stop the video for some time. Through the pilot study, I have learnt that there should not be a fixed amount of time which I could allow the students not to pause the video. The reason for this is that sometimes there was not any teacher-student interaction going on: for instance, when the students were doing a task by themselves for a duration of 1-2 minutes. It would be illogical if I were to pause the video, say, every 10 seconds, during this period of time. Also, I have learnt that I could skip part of the video if there was a prolonged period of time with no teacher-student interaction. It would not yield anything of interest to the present research if the teacher is not saying anything during that period. Therefore, the notes which I took during lesson observation would be of particular importance. Reading the notes, I could identify the interesting moments in the lesson which students possibly need to use LLSs to understand the teacher. For instance, moments when communication breakdowns occurred or when the teacher questioned the students.

3. Results of the study and the way forward

This section reports the results of the study according to the different research instruments and research methods. Also included is reflection of what I have learnt from these results and what impact the pilot study bears on my DPhil research.

3.1 Results and things learnt after the pilot study

3.1.1 Baseline listening test

The score of the TSA listening test was tabulated below (see Table B2). Every class showed some ceiling effects. The mean was very high and there were many students who achieved the maximum score. Therefore, the TSA listening test, even though designed to be used with Secondary 3 students in HK, might not be an appropriate baseline listening test for the present study.

Table B2: Descriptive statistics of TSA listening test scores

	School 1, class 1 (n=28)	School 1, class 2 (n=20)	School 2, class 3 (n=27)	School 2, class 4 (n=27)
Mean	24.61	23.95	25.44	25.56
Range	14-27	18-27	22-27	22-27
S.D.	3.06	2.35	1.31	1.31
Number of learners obtaining the maximum score of 27	10	2	7	8

3.1.2 Open-ended questionnaire

Examining the results from the questionnaire, some strategies reported were:

- repeat what the teacher just said in my mind
- listen for keywords
- think about the similar and opposite word, the part of speech of the word
- search in the mind whether I have learnt the word before
- seek help from teachers and classmates
- reflect on previously made mistakes in language use
- think about previous language learning experiences and relate to the present situation
- compare the answer I have in mind and the answer provided by the teacher
- try to think about the Chinese meaning

However, it was found that more learners did not report what I would term as a strategy. For instance, some learners wrote that they 'plan for an answer for questions'. Such a 'strategy' could easily be broken down into various small strategies, for example,

- (1) search for an appropriate answer from what I already know
- (2) search for an appropriate answer based on the clue given by the teacher
- (3) construct a full sentence in answering the question

(4) check if it sounds right

(5) think if I can polish the answer by using different vocabulary items, especially newly learnt ones

(6) check if I have made some systematic mistakes previously and whether the present answer bears those mistakes.

Even worse, some students only wrote very superficial actions such as 'listen' and 'think', and there were also students off-task and wrote nothing or something irrelevant. Taken together, even though some learners could report some real strategies in understanding the teacher in teacher-student interactions, more could not. Therefore, the questionnaire has to be modified in order to elicit more strategies from learners. I will have to balance its open-endedness while providing more prompts to learners on what I wanted from them. In the revised version of the questionnaire, I will give one example of how a very broad and general 'strategy' could be broken down into many smaller strategies, such as the one presented above. However, I will need to make it clear beforehand that that is simply an example and I will encourage learners to think about what they truly do in their mind.

3.1.3 Focus group

Compared to the questionnaire, the focus group yielded more in-depth data on strategy use because I could ask follow up questions when the learners did not provide me a clear idea of what strategies they use. Here are some examples of what they reported.

- I think about where I've seen the word before.
- I try to deduce what the teacher means by what she previously said and my logic.
- When the teacher asks for repetition, I will repeat in my mind the answer I just said and try to find out what was wrong in that sentence I gave.
- When I can't understand the vocabulary, I will ask immediately.
- When engaged in dictations, I will try to focus on the pronunciation of the word, particularly the 's' and the 'ed' sound, and I will try to use phonics to help.
- I will try to understand the whole thing without paying attention to any individual words.
- When the teacher explains grammar, I will think whether I have used that before and how to use it better.

- When being given negative evaluation, I will think what I could do to improve and prevent the same mistakes again.

- I will imagine what I am going to do.

From the focus group, I learnt that the presentation of different scenarios to learners appeared to be useful in eliciting different strategies. However, in one of the groups, there was a very active student who almost always was the first to make a response. It could deprive the others of the opportunity to give their opinions and should be prevented.

3.1.4 Lesson observation

The two lessons observed were very different, as summarised in Table B3 below. It is noteworthy that it was not a systematic observation given that the purpose was to note down interesting episodes of teacher-students interaction.

Table B3: Description of the observed lessons

	Lesson in School 1	Lesson in School 2
Focus	Writing skills – structure of argumentative essay	Speaking skills – debating skills
Teacher-student interactions	Lots of interactions, mostly teacher-centred, interactions mostly initiated by teacher	Lots of interactions, mostly teacher-centred, interactions mostly initiated by teacher
Activities which students were involved in	Some writing exercises	Some speaking exercises, lots of demonstration of debating skills required of students
Teaching aids	Powerpoint slides, whiteboard	Powerpoint slides
Students engagement	Less (the class was more quiet, some learners went off-task)	More (much laughter, lots of students involvement)

By observing lessons, I could understand more about teacher style and the relationship between the teacher and the students. The former is important because the types of interaction preferred by a teacher could influence both the quantity and quality of the types of strategy used by learners. For instance, a teacher who often answers the questions posed by himself might render fewer strategy use by learners compared to a teacher who often waits for answers from students. The relationship between the teacher and the students was also of importance. If it is a

poor relationship, it is plausible for some students not to follow the teacher's instructions and they might not even pay attention at all.

All these said, I am aware of the possible observer effect. In other words, some teachers and students might have behaved differently because I was observing them. Such an observer effect might be eradicated if I were to stay at one school and observe tens of lessons so that the teachers and students would get used to my presence in the classroom. However, this would be impossible given time constraints. It might also be difficult for me to gain access to a school which would allow me to stay for such a long period of time.

3.1.5 Stimulated recall interview

The stimulated recall interview targeted to find out the LLSs used by the learners during the lesson. Here are some examples (S: Student, R: Researcher).

Context: The teacher was about to nominate somebody to do a task.

S: I was thinking who normally would be good at doing the task. I was trying to think who in our class was braver based on what I knew about them. I was planning to nominate somebody so that I will not be chosen.

T: Can you elaborate more on what you mean by 'thinking'?

S: I was trying to imagine what would happen if a certain classmate does the task.

When the teacher spoke to the whole class that she would like somebody to do a task, the student did not understand thoroughly what was supposed to do and adopted an avoidance strategy. She was trying to avoid being chosen by planning to nominate the others to answer the question, based on her knowledge on and imagination of who would be able to take up the task.

Context: The teacher said she wanted learners to do a task.

S: I was thinking what the teacher would ask us to write, and guess what she would ask us to do, so that I can prepare of what to do even if she chooses me to do the task.

R: What do you mean by preparation?

S: I will guess and imagine what will happen.

The student again used the strategy of visualising in her mind what might happen in a later stage. I could have, however, followed up also on what she did to 'guess' and what clues she relied on to guess what would happen.

Context: The teacher was explaining that the person in the powerpoint slide was in a suit.

S: At that time I couldn't remember what the meaning of 'suit' was. A vocabulary which I don't know... I was trying to guess the meaning based on the photo shown on the powerpoint slide and suddenly the one sitting in front of me said 'wearing' and so I understand it's that cloth.

R: Okay, but you did not ask for her help directly.

S: I was about to ask for her help.

This example shows that the learner was trying to use contextual clues to understand the word 'suit' spoken by the teacher. She also planned to seek help from her classmate but her classmate was probably explaining the word to someone else. Getting the additional clue 'wearing', she could understand the meaning of the word 'suit'.

Context: The teacher asked students to write several lines as part of a debating speech. She said students could write something nonsense because the activity was to train their speaking skills.

S: I have been wondering what the teacher was asking us to do. And as she said the word 'creative', I picked up that it must be to write something unreal.

Here, the student was picking up individual keywords to understand what the teacher wanted the class to do.

The results suggested also many socio-affective strategies. For example, when a classmate was asked to do a task, some interviewees reported that they were imagining what they would feel or do if they were that classmate. They also consistently reported their emotions – for instance, fear of being chosen to answer a question and how they dealt with it. In the main study, I might need to concentrate more on eliciting cognitive strategies, which are the focus of my DPhil research.

3.1.6 Computer tracking

Results of computer tracking were shown in Table B4.

Table B4: Results of computer tracking

Participant	Inferencing	Elaboration	Imagery	Summarisation	Translation	Repetition	Avoidance	Total
1	10	7	17	9	10	7	8	68
2	1	0	0	0	0	0	0	1
3	1	0	2	0	0	0	3	6
4	0	1	0	0	0	0	0	1
5	2	1	8	0	2	1	2	16
6	2	6	13	1	14	7	3	46
7	5	9	8	5	2	1	2	32
8	8	10	16	2	2	2	3	43

Huge variability was observed among learners. There were two who used only 1 strategy, in contrast with half of them who used more than 30 tokens of strategies. After conducting the computer tracking, I confirmed with them that they knew what they were doing. The computer tracking programme certainly has the potential to collect more quantitative data in a larger scale.

3.2 The way forward

Building upon the results of the pilot study, I need to (1) explore the possibility of using another listening test, possibly a recall protocol listening test, and (2) modify the questionnaire. When I engage in the actual study, I would also need to pay attention to my role in prompting learners in stimulated recall interview and focus group interview.

All in all, although the pilot study did not yield ideal results and I might have to pilot a new listening test and a revised questionnaire again, I gained a lot in terms of understanding the potentials of the research instruments and the practical considerations of using the various research methods. Without the pilot study, I would not have developed skills in conducting interviews and found out potential problems in data collection.

Appendix C: Open-ended questionnaire

Original version

Open-ended questionnaire 開放式問卷

Name of student 學生姓名: _____

Date 日期: _____

Please indicate what you would **do in your mind** when you are engaged in the following scenarios in English lessons. You are not limited to write only one thing in each blank. If you do several things in your mind in different situations, write them all down.

請指出你在英語課堂中遇到下列情景時大腦會進行的行為。在每一個空格中你可以填寫多個行為。如果在這些情況中有幾個行為在你的頭腦中同時進行，請把它們都寫下來。

	Scenarios 情景	What do I do in my mind, or what do I pay attention to in the teacher's language? 有甚麼行為正在我的大腦中進行，或者我在留意老師說話中的甚麼或甚麼部份？
1.	The teacher is asking us questions 老師在問我們問題	
2.	The teacher is commanding us to do a class exercise or a task 老師在指令我們去做一個課堂練習或一個任務	
3.	The teacher is explaining about the task we need to do later 老師在解釋我們一會兒要做的練習或任務	
4.	The teacher is explaining the English language (e.g. grammar, vocabulary) 老師在解釋英文（例如文法、詞彙）	
5.	The teacher is doing a recap about the previous class 老師在回顧我們上一節課所學習的東西	
6.	The teacher is asking if we follow what s/he said 老師在問我們是否明白他/她剛說的事情	
7.	The teacher is reading aloud an English passage 老師在朗讀一篇英文文章	
8.	The teacher is scolding us 老師在責罵我們	
9.	The teacher is doing some sharing (e.g. about his/her views on current issues) 老師在分享（例如他/她對時事的看法）	

10.	The teacher is answering a question asked by my classmate 老師在回覆同學提問的問題	
11.	After my classmate answered the teacher's question, the teacher is providing positive feedback / comments 我的同學回答了老師的問題後，老師正在給予正面的回應/意見	
12.	After my classmate answered the teacher's question, the teacher is providing negative feedback / comments 我的同學回答了老師的問題後，老師正在給予負面的回應/意見	

Revised questionnaire version 1

Open-ended questionnaire 開放式問卷

Name of student 學生姓名: _____

Date 日期: _____

Please indicate what you would **do in your mind** when you are engaged in the following scenarios in English lessons. You are not limited to write only one thing in each blank. If you do several things in your mind in different situations, write them all down.

請指出你在英語課堂中遇到下列情景時大腦會進行的行為。在每一個空格中你可以填寫多個行為。如果在這些情況中有幾個行為在你的頭腦中同時進行，請把它們都寫下來。

	Scenarios 情景	What do I do in my mind, or what do I pay attention to in the teacher's language? 有甚麼行為正在我的大腦中進行，或者我在留意老師說話中的甚麼或甚麼部份？
1.	The teacher is asking us questions and I find some difficulties in understanding 老師在問我們問題，我覺得有點理解上的困難	
2.	The teacher is commanding us to do a class exercise or a task and I find some difficulties in understanding 老師在指令我們去做一個課堂練習或一個任務，我覺得有點理解上的困難	
3.	The teacher is explaining what this lesson is about and I find some difficulties in understanding 老師在解釋這一節課的內容，我覺得有點理解上的困難	
4.	The teacher is explaining the English language (e.g. grammar, vocabulary) and I find some difficulties in understanding 老師在解釋英文（例如文法、詞彙），我覺得有點理解上的困難	
5.	The teacher is doing a recap about the previous class and I find some difficulties in understanding 老師在回顧我們上一節課所學習的東西，我覺得有點理解上的困難	
6.	The teacher is asking if we follow what s/he said and I find some difficulties in understanding 老師在問我們是否明白他/她剛說的事情，我覺得有點理解上的困難	
7.	The teacher is reading aloud an English passage and I find some difficulties in understanding 老師在朗讀一篇英文文章，我覺得有點理解上的困難	

8.	The teacher is doing some sharing (e.g. about his/her views on current issues) and I find some difficulties in understanding 老師在分享（例如他/她對時事的看法），我覺得有點理解上的困難	
9.	The teacher is answering a question asked by my classmate and I find some difficulties in understanding 老師在回覆同學提問的問題，我覺得有點理解上的困難	
10.	After my classmate answered the teacher's question, the teacher is providing positive feedback / comments and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予正面的回應/意見，我覺得有點理解上的困難	
11.	After my classmate answered the teacher's question, the teacher is providing negative feedback / comments and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予負面的回應/意見，我覺得有點理解上的困難	
12.	After my classmate answered the teacher's question, the teacher is providing some clues for us to think of a better answer, and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予一些提示讓我們想一個更好的答案，我覺得有點理解上的困難	

Revised questionnaire version 2

Open-ended questionnaire 開放式問卷

Name of student 學生姓名: _____

Date 日期: _____

Please indicate what you would **do in your mind** when you are engaged in the following scenarios in English lessons. You are not limited to write only one thing in each blank. If you do several things in your mind in different situations, write them all down.

Please try to be as precise as possible in your writing. For example, when the teacher is asking the whole class question, you may focus on one of the difficult words which the teacher said and try to spell the word out in your mind and think if you have encountered this word before.

請指出你在英語課堂中遇到下列情景時大腦會進行的行為。在每一個空格中你可以填寫多個行為。如果在這些情況中有幾個行為在你的頭腦中同時進行，請把它們都寫下來。

請盡量精確的回答。例如，當老師在問全班問題時，你可能會集中留意老師說話中的一個困難的詞彙，並嘗試在你的大腦中把生字串出來和想想有沒有曾經遇到過這個詞語。

	Scenarios 情景	What do I do in my mind, or what do I pay attention to in the teacher's language? 有甚麼行為正在我的大腦中進行，或者我在留意老師說話中的甚麼或甚麼部份？
1.	The teacher is asking us questions and I find some difficulties in understanding 老師在問我們問題，我覺得有點理解上的困難	
2.	The teacher is commanding us to do a class exercise or a task and I find some difficulties in understanding 老師在指令我們去做一個課堂練習或一個任務，我覺得有點理解上的困難	
3.	The teacher is explaining what this lesson is about and I find some difficulties in understanding 老師在解釋這一節課的內容，我覺得有點理解上的困難	
4.	The teacher is explaining the English language (e.g. grammar, vocabulary) and I find some difficulties in understanding 老師在解釋英文（例如文法、詞彙），我覺得有點理解上的困難	
5.	The teacher is doing a recap about the previous class and I find some difficulties in understanding 老師在回顧我們上一節課所學習的東西，我覺得有點理解上的困難	
6.	The teacher is asking if we follow what s/he said and I find some difficulties in understanding 老師在問我們是否明白他/她剛說的事情，我覺得有點理解上的困難	

7.	The teacher is reading aloud an English passage and I find some difficulties in understanding 老師在朗讀一篇英文文章，我覺得有點理解上的困難	
8.	The teacher is doing some sharing (e.g. about his/her views on current issues) and I find some difficulties in understanding 老師在分享（例如他/她對時事的看法），我覺得有點理解上的困難	
9.	The teacher is answering a question asked by my classmate and I find some difficulties in understanding 老師在回覆同學提問的問題，我覺得有點理解上的困難	
10.	After my classmate answered the teacher's question, the teacher is providing positive feedback / comments and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予正面的回應/意見，我覺得有點理解上的困難	
11.	After my classmate answered the teacher's question, the teacher is providing negative feedback / comments and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予負面的回應/意見，我覺得有點理解上的困難	
12.	After my classmate answered the teacher's question, the teacher is providing some clues for us to think of a better answer, and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予一些提示讓我們想一個更好的答案，我覺得有點理解上的困難	

Language Learner Strategy questionnaire

語言學習策略問卷

Name of student 學生姓名: _____ Date 日期: _____

Class and class number 班別及學號: _____

Please indicate what you would **do in your mind** when you are engaged in the following scenarios in **English lessons**. You can write more than one thing in each blank, if you do several things.

Try to be as **precise** as possible (so do **NOT** write 'try to think' or 'try to understand'), and **only report the things you do when trying to understand the teacher** (so do **NOT** write how you avoid understanding the teacher). Below are some examples of **what to write** ☑ and **what NOT to write** ☒.

請指出你在英語課堂中遇到下列情景時大腦會進行的行為。在每一個空格中你可以填寫多個行為，如果有幾個行為在你的頭腦中同時進行。

請盡量精確的回答（所以不要只寫下「嘗試去想」或「嘗試理解」），並只寫出你用作理解老師說話所作的行為（所以不要寫下你怎樣無心理會老師的講話）。以下是一些例子，說明甚麼是此問卷接受的答案 ☑ 和 不接受的答案 ☒。

	Scenarios 情景	What do I do in my mind, or what do I pay attention to in the teacher's language? 有甚麼行為正在我的大腦中進行，或者我在留意老師說話中的甚麼或甚麼部份？
Eg.	The teacher is asking us questions and I find some difficulties in understanding 老師在問我們問題，我覺得有點理解上的困難	<p>Examples of what to write ☑ <u>接受的答案的例子</u></p> <p>☑ focus on one of the difficult words which the teacher said 嘗試集中去留意老師說話中的一個困難詞彙</p> <p>☑ try to spell the word out in my mind 嘗試在我的大腦中把詞彙串出來</p> <p>☑ think if I have learnt or encountered this word before 想想我有沒有曾經學過或遇到過這個詞語</p> <p>Examples of what NOT to write ☒ <u>不接受的答案的例子</u></p> <p>☒ try to understand 嘗試理解</p> <p>☒ try to think 嘗試去想</p> <p>☒ not pay attention 不留心</p> <p>☒ ignore the teacher 不理會老師所說的話</p> <p>☒ give up 放棄理解老師的說話</p>

Questions 題目

	Scenarios 情景	What do I do in my mind, or what do I pay attention to in the teacher's language? 有甚麼行為正在我的大腦中進行，或者我在留意老師說話中的甚麼或甚麼部份？
1.	The teacher is asking us questions and I find some difficulties in understanding 老師在問我們問題，我覺得有點理解上的困難	

2.	The teacher is commanding us to do a class exercise or a task and I find some difficulties in understanding 老師在指令我們去做一個課堂練習或一個任務，我覺得有點理解上的困難	
3.	The teacher is explaining what this lesson is about and I find some difficulties in understanding 老師在解釋這一節課的內容，我覺得有點理解上的困難	
4.	The teacher is explaining English grammar and I find some difficulties in understanding 老師在解釋英文文法，我覺得有點理解上的困難	
5.	The teacher is explaining vocabulary in English and I find some difficulties in understanding 老師在解釋英文詞彙，我覺得有點理解上的困難	
6.	The teacher is doing a recap about the previous class and I find some difficulties in understanding 老師在回顧我們上一節課所學習的東西，我覺得有點理解上的困難	
7.	The teacher is reading aloud an English passage and I find some difficulties in understanding 老師在朗讀一篇英文文章，我覺得有點理解上的困難	
8.	The teacher is doing some sharing (e.g. about his/her views on current issues) and I find some difficulties in understanding 老師在分享（例如他/她對時事的看法），我覺得有點理解上的困難	
9.	The teacher is answering a question asked by my classmate and I find some difficulties in understanding 老師在回覆同學提問的問題，我覺得有點理解上的困難	
10.	After my classmate answered the teacher's question, the teacher is providing positive feedback / comments and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予正面的回應/意見，我覺得有點理解上的困難	
11.	After my classmate answered the teacher's question, the teacher is providing negative feedback/comments and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予負面的回應/意見，我覺得有點理解上的困難	
12.	After my classmate answered the teacher's question, the teacher is providing some clues for us to think of a better answer, and I find some difficulties in understanding 我的同學回答了老師的問題後，老師正在給予一些提示讓我們想一個更好的答案，我覺得有點理解上的困難	

Appendix D: Likert-scale questionnaire

Language Learner Strategy questionnaire 語言學習策略問卷

Name of student 學生姓名: _____

Date 日期: _____

Class and class number 班別及學號: _____

Instruction 說明 What do you normally do, particularly in your mind, to understand the teacher **when you are listening to the teacher speaking to the whole class during English lessons**? 當你聆聽老師在英語課堂對全班說話時，你的大腦通常會進行甚麼行為來幫助你理解老師的說話？

Please read the following strategies, and respond by rating 1 to 5 according to the description below. 請閱讀下列策略，並根據句子中的描述，以 1-5 表示你日常所採用的策略。

1. Never or almost never true of me 完全不正確
2. Generally not true of me 部份不正確
3. Somewhat true of me 部份正確/不正確
4. Generally true of me 部份正確
5. Always or almost always true of me 完全正確

Number 題目	Strategies 策略	Rating 評分
1	I focus attention on every word in the teacher's talk. 我集中留意老師說話中的每一個字詞。	
2	I repeat fully what the teacher just said in my mind. 我在大腦中重覆老師說的全句說話。	
3	I follow the physical actions that my classmates do. 同學做甚麼，我就跟着做。	
4	I simplify what the teacher said into something I understand. 我簡化老師的說話，使之成為我能理解的字句。	
5	I focus attention on the examples which the teacher gave in explaining vocabulary/grammar. 我集中留意老師在解釋詞彙或文法時所給予的例子。	
6	I observe what the teacher does later to help me understand the present teacher's talk. 我觀察老師一會兒做的事情來幫助我理解老師現在說的話。	
7	I visualise in my mind what the teacher is asking me to do. 我在大腦中想像老師要我做的事情。	
8	I translate the entire teacher's talk into Chinese. 我把老師的說話全翻譯成中文。	
9	I recall my knowledge about similar English grammar with that being taught right now. 我回想跟現在老師正在教授的相類似的英文文法的已有知識。	
10	I recall what I read during my preparation for the lesson. 我回想預習課堂時所看過的內容。	
11	I evaluate how much attention I am giving to the teacher. 我評估自己有多集中於老師的說話。	
12	I anticipate the key vocabulary of the topic of this lesson. 我預測一下這一節課題的重點詞彙。	
13	I guess the intention of the teacher in saying something. 我猜想老師說話背後的目的。	
14	I list out in my mind step by step what the teacher is asking me to do. 我在大腦中一步一步的列出老師要我做的事情。	
15	I list out in my mind what I learnt in the previous lesson. 我在大腦中列出我上一節課所學到的東西。	
16	I identify the overarching meaning of the teacher's talk. 我嘗試找出老師說話中的大致意思。	
17	I integrate everything I understand within the teacher's talk. 我把老師說話中我所理解的所有部份綜合起來。	
18	I visualise in my mind a picture to represent the new vocabulary being taught. 我在大腦中以圖像去表示老師正在教的新詞彙。	
19	I review my notes. 我溫習筆記。	
20	I rephrase what the teacher said into something I understand. 我重新組合老師的說話，使之成為我能理解的字句。	

21	I recall what I have learnt in the previous lesson to help me understand the present teacher's talk. 我回想我上一節課所學到的來幫助我理解老師現在說的話。	
22	I evaluate my understanding and find out how much I understand. 我評估自己對老師說話的理解程度。	
23	I look up the difficult words in a dictionary. 我翻查字典，找困難字詞的意思。	
24	I focus attention on the keywords of the teacher's talk. 我集中留意老師說話的重點字詞。	
25	I ask my classmates what the teacher means. 我問我的同學老師的說是甚麼意思。	
26	I recall recent events happening around the world. 我回想最近世界上發生的事情。	
27	I recall the key contents of this English lesson. 我回想這一節英文課堂的重點。	
28	I use my knowledge on English pronunciation to help me understand. 我用我的英文發音知識幫助我理解。	
29	I ask the teacher what s/he means. 我問老師他/她說的話是甚麼意思。	
30	I recall all knowledge about English grammar. 我回想所有有關英文文法的知識。	
31	I focus attention on what the teacher has corrected me, when s/he repeats what I said. 當老師重覆我的說話時，我集中留意老師改正了甚麼。	
32	I recall my previous experiences in doing English exercises. 我回想從前做英文練習時的經驗。	
33	I anticipate what the teacher is going to say later. 我預測一下老師一會兒會說甚麼。	
34	I recall the key contents of the previous lesson. 我回想上一節課的重點。	
35	I compare what the teacher said with my own opinion. 我比較老師所說的話和我自己的意見。	
36	I spell out the English words in my mind. 我在大腦中把英文字詞串出來。	
37	I translate the keywords in the teacher's talk into Chinese. 我把老師說話中的重要字詞翻譯成中文。	
38	I recall previous life experiences which are related to the teacher's talk. 我回想跟老師說話有關聯的生活經驗。	
39	I prepare to listen to what the teacher says later to help me understand the present teacher's talk. 我準備聆聽老師一會兒說的話來幫助我理解老師現在說的話。	
40	I search in my mind to find out if I have learnt about the topic of this lesson before. 我在大腦中搜尋有沒有學過這一節課的課題。	
41	I visualise in my mind the picture of my learning in the previous lesson. 我在大腦中重現我上一節課學習時的情形的圖像。	
42	I establish links between what the teacher is saying and what I have been learning in the lessons. 我把老師正在說的話和最近課堂所學習到的東西串連起來。	
43	I focus attention on all the difficult words in the teacher's talk. 我集中留意老師說話中所有困難的字詞。	
44	I remind myself of the common classroom learning mode. 我提醒自己慣常的課室學習模式。	
45	I link up the meaning of the words appearing before and after the vocabulary to understand that vocabulary. 我把我想要理解那詞彙的前後字詞之意思串連起來。	
46	I refer to my textbook or worksheets to remind myself the key contents of this lesson. 我翻開課本或工作紙來提醒自己這一節課的重點。	
47	I identify the differences between my prior knowledge and the new knowledge. 我識別我固有的知識和新知識的分別。	
48	I ask the teacher to repeat. 我要求老師重覆一遍他/她說的話。	
49	I repeat partially what the teacher just said in my mind. 我在大腦中重覆部份老師的說話。	
50	I focus attention on one of the difficult words in the teacher's talk. 我集中留意老師說話中一個困難的字詞。	
51	I focus attention on the sounds of the difficult words. 我集中留意困難詞彙的音節。	
52	I focus attention on the words emphasised by the teacher. 我集中留意老師強調的字詞。	

53	I recall the positive feedbacks I received in the past.我回想從前獲得過的正面回應。	
54	I signal to the teacher that I don't understand. 我向老師示意我不明白。	
55	I find clues on the blackboard to help me understand the teacher. 我在黑板上尋找提示來幫助我理解老師的說話。	
56	I observe what my classmates do to help me understand the present teacher's talk. 我觀察其他同學做的事情來幫助我理解老師現在說的話。	
57	I focus attention on the unfamiliar words in the teacher's talk. 我集中留意老師說話中我不熟悉的字詞。	
58	I translate all the familiar words in the teacher's talk into Chinese. 我把老師說話中我所熟悉的字詞翻譯成中文。	
59	I write down what the teacher said. 我寫下老師的說話。	
60	I focus attention on the content words in the teacher's talk. 我集中留意老師說話中有實意和有內容的字詞。	
61	I identify my own problems in understanding the teacher's talk. 我嘗試找出自己理解老師說話時遇到的問題。	
62	I look up the difficult words in my textbook. 我翻查課本，找困難字詞的意思。	
63	I anticipate what the teacher is going to ask me to do later. 我預測一下老師一會兒會叫我做甚麼。	
64	I recall the mistakes I made in the past. 我回想從前犯過的錯誤。	
65	I search in my mind to find out if I have learnt about this vocabulary before. 我在大腦中搜尋有沒有學過這詞彙。	
66	I remind myself of the teacher's usual way of saying things. 我提醒自己老師平時說話的方式。	
67	I recall the vocabulary which I know. 我回想我認識的詞彙。	
68	I link up all the words I know within the teacher's talk to arrive at the meaning. 我把老師說話中我所認識的所有字詞串連起來以理解老師的意思。	
69	I break the teacher's talk into smaller segments to ease my understanding. 我把老師的說話分成小份來幫助我理解。	
70	I recall my knowledge about the particular English grammar being taught right now. 我回想老師正在教授的英文文法的已有知識。	
71	I hold the sounds of the difficult words in my mind. 我在大腦中記下困難詞彙的音節。	
72	I focus attention on the simple words in the teacher's talk. 我集中留意老師說話中簡單的字詞。	
73	I search in my mind to find out if I have learnt similar words before. 我在大腦中搜尋有沒有學過類似的詞彙。	
74	I pretend that I understand (e.g. nod my head). 我假裝明白（例如點頭示意）。	
75	I recall what I read in my English textbook. 我回想我在英文課本看過的內容。	
76	I focus attention on the familiar words in the teacher's talk. 我集中留意老師說話中我熟悉的字詞。	
77	I refer to my textbook or worksheets to remind myself the key contents of the previous lesson. 我翻開課本或工作紙來提醒自己上一節課的重點。	
78	I summarise what the teacher said into a short sentence. 我把老師的說話總結為一句簡短的句子。	
79	I identify the important points of the teacher's talk. 我嘗試找出老師說話中的重點。	
80	I recall what my classmates said previously to help me understand the present teacher's talk. 我回想同學剛剛說過的話來幫助我理解老師正在說的話。	
81	I integrate my old knowledge and the new content which I don't understand. 我把我固有的知識和我理解的新內容綜合起來。	
82	I recall what the teacher said previously to help me understand the present teacher's talk. 我回想老師之前說的話來幫助我理解老師正在說的話。	

Background information 背景資料

Age 年齡: _____

Gender 性別: M / F

1. Do you speak or use English at the following contexts outside classroom? 在課室以外，你有沒有在下列情況下使用英語？

At home 在家	<input type="checkbox"/> Always 經常	<input type="checkbox"/> Most of the time 大部份時間	<input type="checkbox"/> About half the time 大約一半時間
	<input type="checkbox"/> Rarely 很少	<input type="checkbox"/> Almost never 幾乎從來沒有	
At school 在學校	<input type="checkbox"/> Always 經常	<input type="checkbox"/> Most of the time 大部份時間	<input type="checkbox"/> About half the time 大約一半時間
	<input type="checkbox"/> Rarely 很少	<input type="checkbox"/> Almost never 幾乎從來沒有	
At social gatherings 社交場合	<input type="checkbox"/> Always 經常	<input type="checkbox"/> Most of the time 大部份時間	<input type="checkbox"/> About half the time 大約一半時間
	<input type="checkbox"/> Rarely 很少	<input type="checkbox"/> Almost never 幾乎從來沒有	
Watching television 看電視	<input type="checkbox"/> Always 經常	<input type="checkbox"/> Most of the time 大部份時間	<input type="checkbox"/> About half the time 大約一半時間
	<input type="checkbox"/> Rarely 很少	<input type="checkbox"/> Almost never 幾乎從來沒有	
Listening to radio 聽收音機	<input type="checkbox"/> Always 經常	<input type="checkbox"/> Most of the time 大部份時間	<input type="checkbox"/> About half the time 大約一半時間
	<input type="checkbox"/> Rarely 很少	<input type="checkbox"/> Almost never 幾乎從來沒有	
Reading 閱讀	<input type="checkbox"/> Always 經常	<input type="checkbox"/> Most of the time 大部份時間	<input type="checkbox"/> About half the time 大約一半時間
	<input type="checkbox"/> Rarely 很少	<input type="checkbox"/> Almost never 幾乎從來沒有	
Listening to music 聽音樂	<input type="checkbox"/> Always 經常	<input type="checkbox"/> Most of the time 大部份時間	<input type="checkbox"/> About half the time 大約一半時間
	<input type="checkbox"/> Rarely 很少	<input type="checkbox"/> Almost never 幾乎從來沒有	

2. Do you take part in any tutoring on English after school? 你有沒有參與課後的英文補習班？

- Tutorial school 補習社
- Private tutoring 私人補習
- After-school lessons organised by your school 學校安排的課後補習班
- No 沒有

3. Apart from English and Cantonese, do you speak other languages? 除了英文和廣東話，你會說其他語言嗎？

- Yes 會: Language 語言: _____ Proficiency 程度: _____
Language 語言: _____ Proficiency 程度: _____
- No 不會

4. Have you been to any countries where English is spoken as the native language? If so, for what purpose and for how long? 你有去過以英語為母語的國家嗎？如有的話，為甚麼會去和去了多久？

- Yes 有: Country 國家 _____ Purpose 目的 _____ Duration 去了多久 _____
Country 國家 _____ Purpose 目的 _____ Duration 去了多久 _____
- No 沒有

5. Do you receive any forms of Government subsidy (such as CSSA, transport subsidy or school textbook assistance)? 你有接受任何形式的政府資助（例如綜援、交通津貼、或書簿津貼）嗎？

- Yes 有: _____
- No 沒有

Many thanks for your participation! 多謝您的參與！

Appendix E: Computer programme teacher input example

The video of the simulated lesson surrounded the broad theme of learning English through social issues. This lesson talked about telephone deception as a crime in the society. The types of teacher's input differ in three dimensions:

- (1) whether it is a teacher-initiate or teacher-response
- (2) whether it requires a verbal response or a non-verbal response or no response
- (3) the difficulty of the input

Task type (I) = Teacher-initiate; (R) = Teacher-respond	Require response or not (+V = require verbal response) (+NV = require non-verbal response) (-R = require no response)	Difficulty	Example
(I) <i>Elicit</i>	+V	Easy	Can anyone name any social issues which are common in Hong Kong?
	+V	Difficult	Do you think that such telephone deception crime is prevalent in Hong Kong?
(I) <i>Inform</i>	-R	Easy	[Context: the teacher is explaining a vocabulary item] Social issues are things happening in our society.
	-R	Difficult	[Context: the teacher is explaining a vocabulary item] It's called a conman or a con artist.
(I) <i>Direct</i>	+V	Easy	Everyone, repeat the word after me so that you know how to pronounce it.
	+NV	Difficult	Listen to me while I'm imitating what happened between two persons on a telephone dialogue.
(I) <i>Read aloud</i>	-R	Easy	[Context: the teacher is reading aloud a telephone dialogue] Oh yes, of course. How's it going? I've changed my phone number and so it's totally understandable that you didn't recognise me! I'm travelling to Hong Kong soon. Let's see if we can meet up.
	-R	Difficult	[Context: the teacher is reading aloud a telephone dialogue] Hello. This is John. You need to help me out! I have been arrested on the mainland and I need 2,000 yuan to be released on bail. Can you transfer the sum of money to my account? I'm desperate. I will return you the money when we have our rendezvous in Hong Kong.

(I) <i>Sharing</i>	-R	Easy	[Context: the teacher is sharing his own experience] I can tell you my experience. When I was at your age in Secondary 3, I played an online game till late at night every day. My exam results got worse and my parents were very angry.
	-R	Difficult	[Context: the teacher is sharing his own experience] I sensed that I should abstain from being an Internet addict or else I would suffer in the public exams and could not even continue my study. So that's my thought of the day for you that playing games to relax a bit from time to time is okay, but don't overdo it.
(I) <i>Dictation</i>	+NV	Easy	[Context: the teacher is asking students to write down a sentence in their notebook] A victim is a person who has been hurt or has suffered because of the actions of someone or something else.
	+NV	Difficult	[Context: the teacher is asking students to write down a sentence in their notebook] Outreach social workers try to resolve the problem of night drifting and they go out every night to chat with the night drifters who linger on the streets.
(R) <i>Comment</i>	-R	Easy	[Context: the teacher is giving comments to a student after s/he answered his question] I think many students are like you. They play online games. But please don't spend too much time on them and forget about your homework.
	-R	Difficult	[Context: the teacher is giving comments to a student after 'Rachel' answered his question] I buy your point, Rachel, that the Internet can be very informative in raising our awareness on everything happening around the world such as the Crimean crisis.
(R) <i>Clue</i>	+V	Easy	[Context: the teacher is giving a clue to students to modify their answer to his question] It isn't just an ordinary telephone conversation. There's something else going on.
	+V	Difficult	[Context: the teacher is giving a clue to students to try to answer his question on what 'night drifting' is] So night drifting has the word 'night', and it appears logical to guess that it is related to something happening at night.

Appendix F: Computer programme lesson transcript

	Recapitulate	Remember that during the previous lesson we said we are going to talk about some social issues today.
1	Rhetorical question	You know social issues?
	Inform - language	Social issues are things happening in our society.
2	Starter	So,
	Elicit	can anyone name any social issues which are common in Hong Kong?
	Nominate	Stephen?
	(Student-respond)	Night drifting.
	Positive evaluate	Good.
	Repeat	Night drifting.
3	Elicit	Apart from Stephen, who can tell me what night drifting means?
4	Clue	So night drifting has the word 'night', and it appears logical to guess that it is related to something happening at night.
5	Starter	Okay
	Inform – language	Night drifting refers to the social issue of youngsters staying / lingering on the streets late at night and these night driftERS are sometimes there from dusk till dawn.
6	Direct	Everyone, repeat the word after me so that you know how to pronounce it.
	Read aloud (+V) (Part of Direct)	Night drifting.
7	Sharing (opinion)	I think night drifting is a serious issue in Hong Kong. You can sometimes read from the news that many night drifters are also people who are involved in crimes.

8	Direct	Now, take out your English notebook and write down the following sentence to help you remember the word.
---	---------------	--

9	Dictation	(Slowly) Outreach social workers try to resolve the problem of night drifting and they go out every night to chat with the night drifters who linger on the streets.
---	------------------	--

10	Starter	Alright,
	Elicit	apart from this, what other social issues are there in Hong Kong?

	(Student-respond)	Internet addiction.
	Pardon	Sorry, louder please?
	(Student-respond)	Internet addiction.
	Evaluate - positive	Good,
	Repeat	Internet addiction.

11	Inform - Language	Internet addiction refers to the phenomenon that a person is addicted to the Internet and cannot control himself or herself on using it. It is like addicted to drugs or smoking that you cannot stop it.
----	--------------------------	---

12	Elicit	Who can tell me his or her experience of using the Internet?
----	---------------	--

13	Clue	For example, what do you do with the Internet?
----	-------------	--

14	(Student-respond)	I play online games.
	Evaluate - positive	Thanks for your sharing, Jimmy
	Comment	I think many students are like you. They play online games. But please don't spend too much time on them and forget about your homework.

15	Sharing	I can tell you my experience. When I was at your age in Secondary 3, I played an online game till late at night every day. My exam results got worse and my parents were very angry.
----	----------------	--

16	Sharing	I sensed that I should abstain from being an Internet addict or else I would suffer in the public exams and could not even continue my study. So that's my thought of the day for you that playing games to relax a bit from time to time is okay, but don't overdo it.
----	----------------	---

17	Inform	Internet does not equal playing online games though, and there are other uses.
----	---------------	--

18	Elicit	Is there anyone who surfs the Internet reading news on a daily basis? Do you think the Internet helps you keep abreast of what's happening around the world?
----	---------------	--

19	(Student-respond)	I think the Internet can raise my awareness on world events.
	Comment	I buy your point, Rachel, that the Internet can be very informative in raising our awareness on everything happening around the world such as the Crimean crisis.

20	Inform	By the way, 'raising our awareness' is a good phrase to learn.
----	---------------	--

21	Direct	Now, write another sentence in your notebook.
22	Dictation	The internet can help raise our awareness towards issues happening around the world.

	Starter	Alright,
	Frame	back to our lesson today: we are not looking at Internet addiction nor night drifting, but another social issue.

23	Starter	First of all,
	Direct	listen to me while I'm imitating what happened between two persons on a telephone dialogue.

24	Read aloud	A: Hello it's me. B: Sorry but who are you? A: I am your relative residing in the mainland. Don't you remember me, mate? B: Oh... are you John?
----	-------------------	--

25	Read aloud	A: Oh yes, of course. How's it going? I've changed my phone number and so it's totally understandable that you didn't recognise me! I'm travelling to Hong Kong soon. Let's see if we can meet up.
----	-------------------	--

26	Read aloud	[A few days later] A: Hello. This is John. You need to help me out! I have been arrested on the mainland and I need 2,000 yuan to be released on bail. Can you transfer the sum of money to my account? I'm desperate. I will return you the money when we have our rendezvous in Hong Kong.
----	-------------------	--

27	Read aloud	[The person transferred the money as instructed and 'John' got back in touch again for several times, requesting for more money under various circumstances.]
----	-------------------	--

28	Elicit	Does it sound familiar to you? So what happens here? Can anyone tell me what kind of social issue this is?
----	---------------	--

29	(Student-respond)	Conversation.
	Decline	Not really.
	Clue	It isn't just an ordinary telephone conversation. There's something else going on.

30	(Student-respond)	Somebody lying.
	Evaluate – positive	Good try.
	Repeat	Somebody lying.
	Comment	It involves somebody lying to the others because the so-called 'John' asked for money again and again. And in fact, there is an additional layer of lying because that person may not necessarily be 'John' either.

31	Direct	Let's look at this conversation more closely and meticulously as I project the conversation on the screen.
----	---------------	--

[Showing on screen powerpoint slide with the conversation.]

32	Direct	Everyone look at the fourth and fifth line and tell me what you can find out.
----	---------------	---

33	Rhetorical question	You agree that that person might not be 'John'?
	Inform	You can see that the so-called 'John' did not say his name until the person said 'Oh.. are you John'
	Check	Do you follow?

34	Inform	So perhaps this is a case of telephone deception rather than one as simple as somebody lying. Telephone deception is a kind of crime which very often involves someone trying to deceive money from another person.
----	---------------	---

35	Elicit	Anyone knows which word you can use to refer to the person who deceives the others in this telephone deception incident?
----	---------------	--

36	Inform	It's called a conman or a con artist.
----	---------------	---------------------------------------

[showing on screen the word]

37	Direct	Take out your English notebook and write down the following sentence.
----	---------------	---

38	Dictation	A conman is a person who deceives other people by making them believe something false or making them give money away.
----	------------------	---

39	Elicit	What about the person being deceived? Can any of you think of a word which you can use to describe that person?
	Nominate	Tim?

	(Student-respond)	Victim.
	Accept	That's right.
	Repeat	He is the victim. [show on screen the word]

40	Direct	Everyone write down another sentence in your English notebook.
41	Dictation	A victim is a person who has been hurt or has suffered because of the actions of someone else.
42	Elicit	Do you think that such telephone deception crime is prevalent in Hong Kong?
43	Clue	Well, prevalent means very common, taking place everywhere.
44	Comment	I can see that many of you are signalling that you agree and perhaps you based on what you hear from your friends.
45	Sharing	Let me tell you the experience of a friend of mine. She received a phone call last week exactly like this conversation – that the suspected conman did not mention who he was and kept on saying something like ‘don’t you remember me’. My friend didn’t fall into the trap and the suspected conman suddenly hung up. And this is not the only incident I have heard so far.
46	Sharing	Another friend of mine received a similar call, and tricked the person in return by saying something like, ‘Oh yes, are you John? Are you calling to return me the money I lent you last time?’
47	Sharing	Of course, I’m not asking you to trick the others but to keep your guards up so that you won’t fall prey to the conman.
	Starter	Right,
	Frame	Today, we are going to talk about telephone deception and other common crimes in our society.

Appendix G: Lesson observation form

School: _____

Date: _____

Teacher: _____

Time: _____

Class: _____

Number of students: _____

Background

Lesson objectives / focus (Language focus, skills focus)

Level of students

Lesson Flow

Time

Content / Interaction

<u>Moments of interest</u>		
<u>Time</u>	<u>Incident</u>	<u>With specific student / whole class (S/Ss)</u>

Appendix H: C-test

Student version

Fill in the gaps

Name of student: _____

Date: _____

Class and class number: _____

Instruction: You will find five short texts that contain gaps. The gaps are parts of words which have been deleted. Please try to fill in all the gaps. In some cases, there is no single solution.

Text 1

The work of a local professional photographer, Henry Chan, well-known for taking sports photos, is going on display. He h_____ won ma_____ prizes bo_____ in Hong Kong a_____ overseas. O_____ of h_____ sports pho_____ was cho_____ as t_____ 'Best Photo of the Year' in London la_____ year. A la_____ collection, incl_____ his award-winning photos, will b_____ in a_____ exhibition ne_____ month a_____ City Hall, Central, from 1 April t_____ 20 April, 10 a.m. to 8 p.m. This i_____ Henry Chan's first exhib_____ in Hong Kong. H_____ will be present every morning to give advice about taking good sports photos.

Text 2

Today, the environment is a hot topic in the media – newspapers, television and the Internet. Without a hea_____ environment, li_____ on o_____ planet wi_____ become ve_____ different. W_____ need to sa_____ the environment. How_____, people a_____ cutting do_____ too many tr_____. Animals, li_____ Indian Elephants, are in dan_____ too bec_____ people ha_____ hunted th_____ or ta_____ away th_____ homes. Global warming is al_____ a problem. Th_____ is where temperatures around the world go up.

Text 3

Yesterday, when I was on my way home, a window suddenly fell down and the glass smashed into pieces. I felt like a mo_____ in fr_____ of a b_____ cat. Luc_____, the window lan_____ before m_____ or I mi_____ have been kil_____.! People mu_____ keep their win_____ in go_____ condition. Th_____ must also clean their windows wi_____ care. Othe_____, the windows may fa_____ onto the str_____. More sho_____ be done to rem_____ residents to ch_____ their windows from ti_____ to time.

Text 4

My students always ask me how to prepare for exams. I ask them – D_____ you rev_____ regularly? Do y_____ study un_____ you fall asleep at yo_____ desk? Ma_____ you even ch_____ by loo_____ at the answers o_____ the students next to you o_____ by wri_____ the answers o_____ your hand! Th_____ are many ways to de_____ with exams. So_____ students wo_____ hard whi_____ others ta_____ the easy w_____ out. List_____ carefully to your teacher is important. Following the study guide or the revising guidelines will also help you.

Text 5

Riding in country parks is allowed if you have a permit. You must wear a hel_____, colourful clot_____ like a yellow ve_____ and shoes th_____ make you vis_____ to hikers. Your bic_____ must have a horn or be_____. The brakes must be i_____ excellent cond_____ as there are many hi_____ and steep cli_____. Cycling is a gr_____ way to enjoy the count_____ of Hong Kong. As we_____ as enjo_____ the natural bea_____ you will also become f_____ and healthy. Besides the hea_____ benefits and f_____ cycling c_____ help reduce pollution and clean the air.

Original texts in C-test

Original text 1

The work of a local professional photographer, Henry Chan, well-known for taking sports photos, is going on display. He has won many prizes both in Hong Kong and overseas. One of his sports photos was chosen as the 'Best Photo of the Year' in London last year. A large collection, including his award-winning photos, will be in an exhibition next month at City Hall, Central, from 1 April to 20 April, 10 a.m. to 8 p.m. This is Henry Chan's first exhibition in Hong Kong. He will be present every morning to give advice about taking good sports photos

Original text 2

Today, the environment is a hot topic in the media – newspapers, television and the Internet. Without a healthy environment, life on our planet will become very difficult. We need to save the environment. However, people are cutting down too many trees. Animals, like Indian Elephants, are in danger too because people have hunted them or taken away their homes. Global warming is also a problem. This is where temperatures around the world go up.

Original text 3

Yesterday, when I was on my way home, a window suddenly fell down and the glass smashed into pieces. I felt like a mouse in front of a big cat. Luckily, the window landed before me or I might have been killed! People must keep their windows in good condition. They must also clean their windows with care. Otherwise, the windows may fall onto the street. More should be done to remind residents to check their windows from time to time.

Original Text 4

My students always ask me how to prepare for exams. I ask them - Do you revise regularly? Do you study until you fall asleep at your desk? Maybe you even cheat by looking at the answers of the students next to you or by writing the answers on your hand! There are many ways to deal with exams. Some students work hard while others take the easy way out. Listening carefully to your teachers is important. Following the study guide or the revision guidelines will also help you.

Original Text 5

Riding in country parks is allowed if you have a permit. You must wear a helmet, colourful clothing like a yellow vest and shoes that make you visible to hikers. Your bicycle must have a horn or bell. The brakes must be in excellent condition as there are many hills and steep climbs. Cycling is a great way to enjoy the countryside of Hong Kong. As well as enjoying the natural beauty you will also become fit and healthy. Besides the health benefits and fun, cycling can help reduce pollution and clean the air.

Appendix I: Vocabulary test (Receptive VLT)

Vocabulary test

Name of student: _____
Class and class number: _____

Date: _____

Instruction: This is a vocabulary test. You must choose the right word to go with each meaning. Write the number of that word next to its meaning. Here is an example.

- | | | | |
|---|----------|-------|---------|
| 1 | business | | |
| 2 | clock | _____ | 屋的一部份 |
| 3 | horse | _____ | 有四隻腳的動物 |
| 4 | pencil | _____ | 用作寫作的東西 |
| 5 | shoe | | |
| 6 | wall | | |

You answer it in the following way.

- | | | | |
|---|----------|----------|---------|
| 1 | business | | |
| 2 | clock | <u>6</u> | 屋的一部份 |
| 3 | horse | <u>3</u> | 有四隻腳的動物 |
| 4 | pencil | <u>4</u> | 用作寫作的東西 |
| 5 | shoe | | |
| 6 | wall | | |

Some words are in the test to make it more difficult. You do not have to find a meaning for these words. In the example above, these words are business, clock, shoe.

Try to do every part of the test.

1 could
2 during
3 this
4 piece
5 of
6 in order to

_____ 可以
_____ 在_____期間
_____ 為了

1 spring
2 danger
3 stone
4 product
5 sister
6 subject

_____ 姐妹
_____ 危險
_____ 石頭

1 indeed
2 what
3 along
4 my
5 some
6 away

_____ 我的
_____ 的確
_____ 一些

1 example
2 breadth
3 fear
4 desert
5 bit
6 hall

_____ 寬度
_____ 恐懼
_____ 禮堂

1 church
2 scene
3 hour
4 trouble
5 fact
6 car

_____ 小汽車
_____ 麻煩
_____ 事實

1 surround
2 shoot
3 paint
4 fit
5 command
6 warn

_____ 合適
_____ 警告
_____ 射擊

1 meet
2 leave
3 put
4 give
5 use
6 begin

_____ 放
_____ 給
_____ 用

1 coffee
2 disease
3 justice
4 skirt
5 stage
6 wage

_____ 工資
_____ 裙子
_____ 正義

1 wind
2 room
3 line
4 enemy
5 night
6 man

_____ 男人
_____ 線
_____ 夜晚

1 choice
2 crop
3 flesh
4 salary
5 secret
6 temperature

_____ 溫度
_____ 肉
_____ 薪水

1 kill
2 reply
3 advance
4 appoint
5 divide
6 receive

_____ 前進
_____ 回答
_____ 殺死

1 cap
2 education
3 journey
4 parent
5 scale
6 trick

_____ 教育
_____ 尺度
_____ 旅行

1 moment
2 separate
3 worse
4 free
5 heavy
6 yellow

_____ 自由的
_____ 時刻
_____ 黃色

1 attack
2 charm
3 lack
4 pen
5 shadow
6 treasure

_____ 財寶
_____ 魅力
_____ 缺乏

1 cream
2 factory _____ 奶油
3 nail _____ 財富
4 pupil _____ 學生
5 sacrifice
6 wealth

1 acid
2 bishop _____ 寒冷
3 chill _____ 牛
4 ox _____ 結構
5 ridge
6 structure

1 adopt
2 climb _____ 爬
3 examine _____ 檢查
4 pour _____ 包圍
5 satisfy
6 surround

1 bench
2 charity _____ 長櫓
3 jar _____ 慈善團體
4 mate _____ 省份
5 mirror
6 province

1 bake
2 connect _____ 連接
3 inquire _____ 徘徊
4 limit _____ 限制
5 recognize
6 wander

1 boot
2 device _____ 中尉
3 lieutenant _____ 大理石
4 marble _____ 靜脈
5 phrase
6 vein

1 burst
2 concern _____ 破裂
3 deliver _____ 改善
4 fold _____ 遞送
5 improve
6 urge

1 apartment
2 candle _____ 公寓
3 draft _____ 前景
4 horror _____ 草稿
5 prospect
6 timber

1 original
2 private _____ 最初的
3 royal _____ 私人的
4 slow _____ 總的
5 sorry
6 total

1 betray
2 dispose _____ 驚怕
3 embrace _____ 宣佈
4 injure _____ 傷害
5 proclaim
6 scare

1 ancient
2 curious _____ 困難的
3 difficult _____ 古代的
4 entire _____ 神聖的
5 holy
6 social

1 encounter
2 illustrate _____ 遇到
3 inspire _____ 請求
4 plead _____ 密封
5 seal
6 shift

1 belt
2 climate _____ 概念
3 executive _____ 手掌
4 notion _____ 皮帶
5 palm
6 victim

1 assist
2 bother _____ 相助
3 condemn _____ 修剪
4 erect _____ 旋轉
5 trim
6 whirl

1 annual
2 concealed _____ 兇猛的
3 definite _____ 明確的
4 mental _____ 一年一度的
5 previous
6 savage

1 dim
2 junior _____ 奇怪的
3 magnificent _____ 宏偉的
4 maternal _____ 陰暗的
5 odd
6 weary

1 balloon
2 federation _____ 桶子
3 novelty _____ 新奇的事物
4 pail _____ 氣球
5 veteran
6 ward

1 alcohol
2 apron _____ 階段
3 hip _____ 凌亂的狀態
4 lure _____ 圍裙
5 mess
6 phase

1 apparatus
2 compliment _____ 讚美的說話
3 ledge _____ 設備或器械
4 revenue _____ 政府的稅收
5 scrap
6 tile

1 bulb
2 document _____ 雌性的馬
3 legion _____ 龐大的軍團
4 mare _____ 文件
5 pulse
6 tub

1 concrete
2 era _____ 環形
3 fibre _____ 山頂
4 loop _____ 時代
5 plank
6 summit

1 blend
2 devise _____ 混合
3 hug _____ 設計或發明
4 lease _____ 緊緊的擁抱
5 plague
6 reject

1 abolish
2 drip _____ 正式地廢除
3 insert _____ 預測
4 predict _____ 撫慰
5 soothe
6 thrive

1 bleed
2 collapse _____ 先於__發生
3 precede _____ 突然倒下
4 reject _____ 蹦跳着走
5 skip
6 tease

1 casual
2 desolate _____ 芳香的
3 fragrant _____ 獨一無二的
4 radical _____ 對健康有益的
5 unique
6 wholesome

1 gloomy
2 gross _____ 空置的
3 infinite _____ 陰暗或令人沮
喪的
4 limp _____ 無窮無盡的
5 slim
6 vacant

1 benefit
2 labour _____ 工作
3 percent _____ 百份之一
4 principle _____ 基本原則
5 source
6 survey

1 element
2 fund _____ 基金
3 layer _____ 技巧
4 philosophy _____ 哲學
5 proportion
6 technique

1 consent
2 enforcement _____ 總和
3 investigation _____ 贊同或許可
4 parameter _____ 調查
5 sum
6 trend

1 alternative
2 ambiguous _____ 最終或首要的
3 empirical _____ 另可供選擇的事物
4 ethnic _____ 跟某種族有關的
5 mutual
6 ultimate

1 decade
2 fee _____ 十年
3 file _____ 討論的題目
4 incidence _____ 服務的費用
5 perspective
6 topic

1 colleague
2 erosion _____ 違反法律
3 format _____ 逐步的侵蝕
4 inclination _____ 格式
5 panel
6 violation

1 achieve
2 conceive _____ 修改
3 grant _____ 聯繫
4 link _____ 成功獲得
5 modify
6 offset

1 convert
2 design _____ 把__排除在外
3 exclude _____ 存活下來
4 facilitate _____ 轉化
5 indicate
6 survive

1 anticipate
2 compile _____ 熟練地控制
3 convince _____ 預料
4 denote _____ 出版
5 manipulate
6 publish

1 equivalent
2 financial _____ 首要的
3 forthcoming _____ 跟視覺有關的
4 primary _____ 跟財政有關的
5 random
6 visual

Appendix J: Grammaticality Judgement Task

Grammaticality Judgement Task

Name of student: _____

Date: _____

Class and class number: _____

Instruction: In the following sentences, some contain one grammatical error and some do not contain any. If the sentence contains a grammatical error, circle the word(s) that you think is incorrect, or put this sign ^ at the space where something is missing. If the sentence is grammatical, put a tick ✓ at the end of it.

1. If you had come earlier, you would have met my parents.
2. Eva was very good at Mathematics when she was young.
3. If I had a lot of money, I would buy a house for my family.
4. The painting that is hanging on the wall costs a thousand dollars.
5. This letter is written by Benjamin.
6. If I am Li Ka Shing, I would give most of my money to the poor.
7. Ken has gone to America last September.
8. If this train was too crowded, we will get on the next one.
9. My mother like cats very much.
10. Michael play the piano every day.
11. Rose is very good at singing and dancing.
12. Miss Wong is the teacher often gives us homework.
13. Bill is the student who always breaks the school regulations.
14. Jessica spent so much more since June.
15. The book cannot found in the library.
16. Why they go to school every day?
17. Henry often plays football after school.
18. They have written a composition several days ago.
19. If he has worked harder, he would have scored 100.
20. The book is read by Mary.
21. The man sits there is my class teacher.
22. He has been a fire-fighter for three years.
23. Andy finally found his wallet on Tuesday.
24. When do they want to come to our house?
25. What you want to eat for dinner tonight?
26. If it rains tomorrow, we will postpone the football match.
27. Chris and I have known each other since childhood.
28. The poster has made to advertise the event.
29. Why do you call me every day?
30. Mark studied Chinese in Taiwan since last summer.

Appendix K: CUREC application and approval

12/03/2013

Dear Daniel Fung

Application Approval

Title: “Language learner strategies in teacher-student interaction”

The above application has been considered on behalf of the Departmental Research Ethics Committee (DREC) in accordance with the procedures laid down by the University for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to DREC, the proposed research has been judged as meeting appropriate ethical standards, and accordingly, approval has been granted.

If your research involves participants whose ability to give free and informed consent is in question (this includes those under 18 and vulnerable adults), then it is advisable to read the following NSPCC professional reporting requirements for cases of suspected abuse
http://www.nspcc.org.uk/Inform/research/questions/reporting_child_abuse_wda74908.html

Should there be any subsequent changes to the project which raise ethical issues not covered in the original application you should submit details to research.office@education.ox.ac.uk for consideration.

Good luck with your research study.

Yours sincerely,

Justina Kurkova

Research Office Assistant



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University of Oxford
CENTRAL UNIVERSITY RESEARCH ETHICS COMMITTEE (CUREC)
CUREC/1A Checklist for the Social Sciences and Humanities

The University of Oxford places a high value on the knowledge, expertise, and integrity of its members and their ability to conduct research to high standards of scholarship and ethics. The research ethics clearance procedures have been established to ensure that the University is meeting its obligations as a responsible institution. They start from the presumption that all members of the University will take their responsibilities and obligations seriously and will ensure that their research on human subjects is conducted according to the established principles and good practice in their fields and in accordance, where appropriate, with legal requirements. Since the requirements of research ethics review will vary from field to field and from project to project, the University accepts that different guidelines and procedures will be appropriate. Please check the CUREC website to ensure that you have the correct form for your project.

This form does not cover research governance, satisfactory methodology, compliance with the requirements of publishers when administering their tests or questionnaires, or the health and safety of employees and students. As principal investigator, it is your responsibility to ensure that requirements in these areas are met. Please carry out a risk assessment of the project, in consultation with all researchers involved, using the checklist and CUREC's other documentation.

The use of an asterisk in this form indicates a phrase defined in the glossary. The glossary and further information on the University's research ethics procedures are available from the CUREC website:

www.admin.ox.ac.uk/curec

This form is designed largely for research that falls within the Divisions of Social Sciences and Humanities and which does not involve a high level of risk to the subjects. Elite interviews, field work and oral history are included in the CUREC process. Please take a moment to read through it and if you have any questions or doubts as to whether it is the appropriate form, please review Section A or consult the CUREC website.

Note on anonymised data and audit: you do not need to obtain ethical approval for your study if:

- you are using previously collected **anonymised data** about people which neither you nor anyone else involved in your study can trace back to the individuals who provided them (e.g. census data, administrative data, secondary analysis). Please refer to the definition of *personal data in the glossary and FAQ A4 for further guidance; or
- you are conducting research on behalf of or at the request of a service provider that matches the definition of *audit in the glossary.

If your research is audit or uses prior-anonymised data, please check this box:

You do not need to seek ethical approval from CUREC, and you do not need to complete any more of this form. However, please check with your department's requirements, as some departments require you to lodge this form with them.

Office use only: IDREC Ref. No. _____

Date of confirmation that checklist accepted on behalf of IDREC: // //

SECTION A	Yes	No
1) Are you using research methodologies commonly used in biomedical or behavioural laboratory sciences?		✓
2) Is there a significant risk that the research will induce anxiety, stress or other harmful psychological states in participants that might persist beyond the duration of any test or interview in which they are participating?		✓
3) Will the research involve human participants recruited by means of their status as present or past NHS patients or their relatives or carers?		✓
4) Does the research involve *human participants aged 16 and over who do not have *capacity to consent for themselves? See the Mental Capacity Act 2005		✓
5) Is the study to be funded by the US National Institutes of Health or another US federal funding agency?		✓

If you answered 'yes', please **stop** work on this checklist and

- for questions 1 and 2, complete CUREC/1 instead (available from www.admin.ox.ac.uk/curec/);
- for questions 3 and 4, submit your proposal to the appropriate NHS ethics committee (see www.nres.npsa.nhs.uk and www.admin.ox.ac.uk/researchsupport/ctrq for further information);
- for question 5, or if you answered 'yes' to questions 1, 2 or 4 and your research will take place outside the EU and is a biomedical study, submit your proposal to **OXTREC**, which uses separate documentation. **Applications to OXTREC using this form will not be accepted.** If your research is not a biomedical study and does not have US funding, but will take place outside the EU, you may use this form to submit your application for approval to the Social Sciences and Humanities IDREC.

If you have answered 'no' to all questions in Section A, please complete Sections B-E. This form and any supporting materials should be typewritten.

SECTION B

*Principal investigator/ supervisor/student researcher (title and name):	Mr King Tat Daniel FUNG
Name of supervisor (STUDENT RESEARCH PROJECTS ONLY):	Prof. Ernesto Macaro
Degree programme, e.g. DPhil, MPhil, MSc (STUDENT RESEARCH PROJECTS ONLY):	DPhil in Education
Department or institute:	Department of Education
Address for correspondence (if different):	
Email and phone contact:	Email: oxdktfung@gmail.com Phone: 07435388960
Title of research project:	Language learner strategies in teacher-student interaction

Brief description of research methods and goals plus description of the nature of participants (including the criteria for inclusion/exclusion, method of recruitment), explanation of how professional guidelines and/or CUREC protocol(s) will be applied (if relevant) and expected use to which the results/data will be put. Please describe how you will obtain informed consent. Approx 400 words.

This research aims at finding out the language learner strategies (LLSs) used by students in trying to understand the teacher in teacher to whole class interaction. To this end, grade 9 learners (aged 14) of English as a Second Language (ESL) studying in Hong Kong will be recruited as participants. Secondary schools which fall into the following criteria will be sent an invitation to participate in the research: (1) Medium to high banding: School banding in Hong Kong reflects learners' English proficiency: band 1 is the best and band 3 is the worst. This research will focus on learners in band 1 and band 2 schools who have sufficient knowledge on English. (2) Mainstream schools: This research focuses on mainstream schools with ESL learners instead of international schools with many native English speakers. These schools will be sent an invitation to participate in the research (see Appendix A). With approval granted by the schools, information sheets (see Appendix B) and opt-in consent forms (see Appendix C) will be distributed to the relevant classes of students, parents and teachers. This is to follow the BERA Ethical guidelines and MSD/IDREC/2005/P.2.1 Protocol – that when participants are too young to make a voluntary consent, approval from parents or their care-takers have to be sought. Should any parents or learners or teachers have queries about the research, the researcher will make the best efforts in answering them and further explaining what the research entails. Only with those who granted their approval will the researcher approach for data collection. And with those who disagreed only to being video-taped, they will only be asked to complete an open-ended questionnaire, described below.

The research adopts mixed methods. Learners will be asked to complete an open-ended questionnaire (see Appendix D for sample questions) on their strategy use in teacher to whole class interaction. The answers to this questionnaire will be compiled as a list of LLSs in order to develop a subsequent questionnaire. The new LLS questionnaire will be distributed to learners and they will be asked to rate their frequency of use. The responses will undergo an exploratory factor analysis and a confirmatory factor analysis in order to establish an inventory of strategies in teacher-whole class interaction. This inventory of strategies will be used as a research tool to elicit from students their use of LLSs. Further, classes will be observed and video-taped for stimulated recall interview after class. Only the classes with all students giving their consent for being video-taped will be recorded on the video. Some learners will undergo a computer tracking procedure through which they will watch a video created by the researcher simulating a classroom event and respond by indicating their use of strategies using the keyboard or the mouse of the computer.

Results of this study will be analysed and presented in the DPhil thesis. No individuals will be identifiable at any stage of the research. In the case of the need to report findings from the stimulated recall interview of individual students, pseudonyms will be used. The data will be stored in an external hard drive. With regard to how long they will be stored, the video will only be stored up till the end of the DPhil project and after relevant publications in academic journals. The data file consisting of transcribed data, in form of SPSS file and NVivo document, will be kept permanently. However, all the data will always remain anonymous and will only be accessible by my supervisor and I.

List actual or probable location(s) where project will be conducted, if known:	Secondary schools in Hong Kong
Anticipated duration of project:	12 months
Anticipated start date:	31 / 3 / 2013
Anticipated end date:	31 / 3 / 2014
Name and status (e.g. 3rd year undergraduate; post-doctoral research assistant) of others taking part in the project:	

Please indicate what training on research ethics the researchers involved with this study have received, e.g. the title of the online or in-person course, and date completed (online training available at www.admin.ox.ac.uk/researchsupport/integrity/human/):	Research Ethics course run by Dr David Mills from the Department of Education
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SECTION C

Methods to be used in the study (**tick** as many as apply: this information will help the committee understand the nature of your research and may be used for audit).

	Please tick
Interview	✓
Questionnaire	✓
Analysis of existing records	
Participant performs verbal/paper and pencil/computer based task	
Measurement/recording of motor behaviour	✓
Audio recording of participant	
Video recording or photography of participant	✓
Physiological recording from participant	
Participant observation	✓
Covert observation	
Systematic observation	
Observation of specific organisational practices	
Other (please specify)	

SECTION D

Have you read one or more of the following professional guidelines and do you undertake to use the principles listed there as a guide for your own work? Please note that this is not intended to be an exhaustive list. Links to the guidelines listed below are included on the CUREC website.

	Please tick
British Society of Criminology: Code of Ethics for Researchers in the Field of Criminology [www.britsoccrim.org/codeofethics.htm]	
British Educational Research Association Ethical Guidelines for Educational Research [www.bera.ac.uk/guidelines]	✓
Academy of Management's Code of Ethics [www.aomonline.org/aom.asp?ID=&page_ID=242]	
Association of American Geographers Statement on Professional Ethics [www.aag.org/cs/resolutions/ethics]	
Oral History Society of the UK Ethical Guidelines [www.oralhistory.org.uk/ethics/index.php]	
American Political Science Association (APSA) Guide to Professional Ethics in Political Science (Section H) [www.apsanet.org/content_9350.cfm]	

Political Studies Association Guide to Good Professional Conduct (see section on "Research") [www.psa.ac.uk/Pubs]	
British Psychological Society Code of Ethics and Conduct [www.bps.org.uk/what-we-do/ethics-standards/ethics-standards]	
Ethics Guidelines of the Association of Social Anthropologists of the UK and Commonwealth [www.theasa.org/ethics/guidelines.shtml]	
Social Research Association: Ethical Guidelines [www.the-sra.org.uk/guidelines.htm]	
Statement of Principles of Ethical Research Practice from the Socio-Legal Studies Association [www.slsa.ac.uk/content/view/247/270/]	
Statement of Ethical Practice for the British Sociological Association [www.britisoc.co.uk/about/equality/statement-of-ethical-practice.aspx]	
Other professional guidelines (please specify):	

SECTION E

Please put a tick in the yes/no column as appropriate to indicate your response.

1) Will you obtain informed consent according to good practice in your discipline before participation?	Yes	No
	✓	
2) Will you ensure that *personal data collected directly from participants or via a *third party is held and processed in accordance with the provisions of the Data Protection Act?	Yes	No
	✓	
3) Does the research involve as participants *people whose ability to give free and informed consent is in question? (This includes those under 18 and vulnerable adults.)	Yes	No
	✓	
4) As a consequence of taking part in the research, will participants be at serious risk of rendering themselves liable to criminal prosecution (e.g. by providing information on drug abuse or child abuse)?	Yes	No
		✓
5) Does the research involve the *deception of participants, as part of the investigation/experiment?	Yes	No
		✓
If any of your answers above are in a shaded box, please indicate whether those aspects of your project are fully covered by the following.		
6) Research protocol(s) which has/ve received IDREC/CUREC approval? <i>If yes, please give protocol number(s): MSD/IDREC/2005/P2.1</i>	Yes	No
	✓	
7) Professional guidelines that you will be following, as noted under Section D?	Yes	No
	✓	

If any of your answers in Section E are in a shaded box and are not covered by a protocol or by professional guidelines, please complete CUREC/2, available to download from the CUREC website. Then submit both this form (you need not complete section F) and the CUREC/2 to the Social Sciences and Humanities IDREC.

If all your answers in Section E are in the unshaded boxes or your answers in shaded boxes are covered by a protocol or professional guidelines, complete Section F and submit this form and any accompanying documents to the Social Sciences and Humanities IDREC or to the relevant officer/committee at departmental level (see notes and address below).

FINAL CHECK

Please check each of the following before submitting the checklist. **If the appropriate supporting documentation is not included with your application, you will then be asked to provide this separately. This may well delay the ethical review process, and thus the start of your research.**

Have you completed Sections A-E?

Have you defined all technical terms and abbreviations used?

If you have produced any documentation in support of your application (which might include questionnaires, participant information, consent forms/form or note of procedure for recording oral consent, advertisements and surveys), have you attached a copy of these?

Are all pages (including appendices and attachments) numbered?

SECTION F

You can submit this checklist by email and/or as a signed hard copy; if it is being sent by email only, the checklist, and any email from the head of department or nominee separately endorsing its submission, must be sent from a University of Oxford email address (i.e. as a minimum, the checklist and supporting documents must be submitted by the head of department or nominee indicating his/her approval from a University of Oxford email account).

Complete this section only if you do not need to submit form CUREC/2.

I understand my responsibilities as principal researcher/supervisor/student researcher as outlined in the CUREC glossary and guidance on the CUREC website.

I declare that the answers above accurately describe my research as presently designed and that I will submit a new checklist should the design of my research change in a way which would alter any of the above responses so as to require completion of CUREC/2 (involving full scrutiny by an IDREC). I will inform the relevant IDREC if I cease to be the principal researcher on this project and supply the name and contact details of my successor if appropriate.

Signed by principal researcher/supervisor/student researcher:.....Daniel.....

Date:...28 Jan 2013.....

Print name (block capitals)...KING TAT DANIEL FUNG.....

Signed by supervisor:.....(for student projects)

Date:.....

Print name (block capitals).....

I understand the questions and answers that have been entered above describing the research, and I will ensure that my practice in this research complies with these answers, subject to any modifications made by the principal researcher properly authorised by the CUREC system.

Signed by associate/other researcher:

Print name (block capitals).....

Date

I have read the research project application named above. On the basis of the information available to me, I:

- (i) consider the principal researcher/supervisor/student researcher to be aware of her/his ethical responsibilities in regard to this research;
- (ii) consider that any ethical issues raised have been satisfactorily resolved or are covered by relevant professional guidelines and/or CUREC approved protocols, and that it is appropriate for the research to proceed without further formal ethical scrutiny at this stage (noting the principal researcher's obligation to report should the design of the research change in a way which would alter any of the above responses so as to require completion of a CUREC/2 full application);
- (iii) am satisfied that the proposed project has been/will be subject to appropriate *peer review and is likely to contribute something useful to existing knowledge and/or to the education and training of the researcher(s) and that it is in the *public interest.
- (iv) [FOR DEPARTMENTS/FACULTIES WITH A DEPARTMENTAL RESEARCH ETHICS COMMITTEE (DREC) OR EQUIVALENT BODY - PLEASE DELETE IF NOT APPLICABLE] confirm that this checklist (and associated research outline) has been reviewed by the Department's Research Ethics Committee (DREC)/equivalent body, and attach the associated report from that body.

Signed:.....

(Head of department or nominee e.g Chair of DREC, Director of Graduate Studies for postgraduate student projects)

Print name (block capitals).....

Date:.....

If your research involves participants recruited by means of their status as current or former NHS staff, or the research will, in whole or in part, be carried out on NHS premises, use NHS facilities or assess NHS facilities or services, please see FAQ B3 (www.admin.ox.ac.uk/curec/faqs/).

Please check with your department about its procedures for the approval of CUREC forms. If your department indicates that the checklist should be submitted directly to the IDREC, please send it, together with any supporting documentation, to the following address(es), keeping a copy for yourself:
Secretary of the Social Sciences and Humanities IDREC Email: ethics@socsci.ox.ac.uk
University of Oxford Social Sciences Division
Hayes House, George Street
Oxford, OX1 2BQ

IDRECs and/or CUREC will review a sample of completed checklists and may ask for further details of any project.

Revised September 2012

Appendix L: Information sheet for parents and children

UNIVERSITY OF OXFORD DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY
Tel: +44(0)1865 274024 Fax: +44(0)1865 274027
general.enquiries@education.ox.ac.uk www.education.ox.ac.uk
Director Professor Ernesto Macaro



Language Learner Strategies in Teacher-student Interaction

教師學生互動中的語言學習策略

Information for Participants 給參與者的資料

Invitation 邀請參與

Your child is invited to take part in a research study, conducted by Mr King Tat Daniel Fung, a doctoral student in the Department of Education. This study has received ethics clearance by the University of Oxford. Before you decide to let your child participate, it is important to understand more about the purpose of this research and what your participation entails. Please take time to read the following information carefully. If there is anything that is written unclear to you, please feel free to ask for clarification. Your participation is entirely voluntary.

您的孩子獲邀請參與一項由教育學系博士生馮景達先生的研究。本研究獲得了牛津大學的倫理審查。在您決定讓孩子參加本研究之前，您需要明白本研究的目的是所涉及的事項。請細閱以下的資料。如果有任何資料不夠清晰，請聯絡研究人員以作澄清。您的參與純屬自願性質。

Purpose of the study 研究目的

The study investigates the language learner strategies used by learners of English as a Second Language (ESL) in trying to understand the teacher in teacher-to-whole-class interaction. It is of interest to understand these strategies in order to promote effective language learning and ultimately allow learners to become better learners of English.

本研究旨在找出英語作為第二語言的學生在課堂中用以明白老師教學的語言學習策略。透過了解這些語言學習策略，我們可以找出提升語言學習成效和教導學生成為更好的英語學習者的方法。

What the study entails 研究所涉及的事項

To collect the data required, every participant will complete an open-ended questionnaire about their strategy use. The duration of finishing the questionnaire is anticipated to be within 30 minutes. Some learners will be included in a focus group and talk with the researcher about their strategy use. Further, a lesson will be videotaped and some students will be asked to volunteer to take part in a 30-minute interview session during while they will watch the video and indicate their strategy use. Some students will also be asked to take part in a computer tracking procedure through which they will watch a video and respond by clicking mouse buttons or pressing keyboard keys. The duration will again be within 30 minutes.

為了搜集研究資料，每一位參加者需要填寫一份有關語言學習策略的問卷。問卷所需要的時間一般不會超過30分鐘。一些學生會參與一個焦點小組並跟研究人員對話，講論他們的語言學習策略。另外，一節課堂會被錄影下來，其中一些學生會自願地參加一個30分鐘的與研究人員的面談環節。他們會觀看那節錄下來的課堂並解釋他們應用的語言學習策略。一些學生還會自願地參加一個電腦模擬程式的環節。他們會看一齣影片並用滑鼠和鍵盤作出反應。這個環節一般也會在30分鐘內完成。

Reasons of your child being invited 您的孩子獲邀請參加的原因

This study attempts to examine strategy use by Secondary 3 ESL learners in mainstream schools in Hong Kong. As your school has kindly agreed to allow me to conduct the research, Secondary 3 students are sent an invitation to take part in this study.

本研究希望可以找出在主流中學讀中三的學生學習英語的語言學習策略。由於您孩子所在的學校答應可以讓我進行研究，在學校就讀的中三學生獲邀請參與這項研究。

Benefits and risks of taking part 參與的利益與風險

There are no known risks to taking part. As mentioned, your participation is entirely voluntary. You and your child can withdraw from the study at any time without any consequences simply by informing the researcher, and any collected data will be destroyed. Your child does not need to answer questions that he does not wish to. Every effort will be made to preserve confidentiality and only my supervisor and I will have access to your data. The data will remain anonymous and in the case of the need to report data from individuals, a pseudonym will be used.

The benefits would be helping education practitioners to understand more about effective language learning and how to become better language learners. You will also be provided with a report of the results of this study should you wish to have it.

參與本研究並沒有任何風險。承如上述，您的參與純屬自願性質。您和您的孩子只需要告訴研究人員，就可以在沒有後果的前題下，隨時退出本研究，一切相關的資料也會銷毀。如果有任何題目您的孩子不想作答的話，他可以選擇不回答。我會盡一切可能把資料保密，並且只有我和我的導師可以接觸資料。所有資料會以匿名的方式記錄，而當有需要報告個別學生的資料時，會用上一個創作出來的名字。

研究的利益就是讓從事教育的人員了解有效的語言學習方法和怎樣成為一個更好的語言學習者。如果您願意，您也可以獲得一份關於本研究結果的報告。

Results of the study 研究結果

The results of the study will form the basis of an Oxford Doctor of Philosophy dissertation. Some results may be published in related academic journals. The data will be stored in an external hard drive. With regard to how long they will be stored, the video will only be stored up till the end of the DPhil project and after relevant publications in academic journals. The data file consisting of transcribed data will be kept permanently. However, all the data will always remain anonymous and will only be accessible by my supervisor and I.

研究結果會成為一份牛津大學哲學博士的論文。部份結果或會在相關的學術期刊刊登。所有資料會保存在一個外置的硬盤。相關的錄影帶會於博士論文和相關期刊出版後銷毀，而分析過的研究資料會被保存。所有資料一直都會以匿名的方式記錄，而且只有我的導師和我可以看到資料。

Contact for further information or follow-up 聯絡資料

Should you have any further questions about the research, please feel free to contact me: Mr King Tat Daniel Fung (king.fung@education.ox.ac.uk) or my research supervisor Prof. Ernesto Macaro (ernesto.macaro@education.ox.ac.uk). Your inquiries are most welcome.

如果您對本研究有任何問題，請聯絡本人：馮景達先生 (king.fung@education.ox.ac.uk) 或我的導師 Ernesto Macaro 教授 (ernesto.macaro@education.ox.ac.uk)。我們很歡迎您的查詢。

Appendix M: Parents' consent form

UNIVERSITY OF OXFORD DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY
Tel: +44(0)1865 274024 Fax: +44(0)1865 274027
general.enquiries@education.ox.ac.uk www.education.ox.ac.uk
Director Professor Ernesto Macaro



Parents and children consent form Language Learner Strategies in Teacher-student Interaction 教師學生互動中的語言學習策略

- Your child's school has agreed to take part in a study conducted by Oxford University looking at English learning in the classroom. 您孩子就讀的學校答應參加一個牛津大學關於教室英語學習的研究。
- If your child takes part, the researcher will come to the classroom and ask the students to complete a questionnaire. Some students will also be selected to take part in a focus group and talk with the researcher. 如果您的孩子參加這研究，研究人員會到班房並讓學生填寫一份問卷。一些學生也會參與一個焦點小組，並跟研究人員對話。
- A lesson will be videotaped and some students will then watch that lesson in the video and talk with the researcher. Some other students will watch another video using a computer programme and respond by clicking mouse buttons or pressing keyboard keys. 研究人員會錄影一節課堂，一些學生會看那課堂的錄影片並和研究人員對話。另一些學生會觀看另一齣錄影片並以滑鼠和鍵盤作回應。
- If you are happy for your child to take part, please fill in the form below and ask your child to bring it back to the class teacher. 如果您樂意孩子參加，請填寫下面的回條並讓孩子帶回學校給班主任。
- If you want to know more about the project, please read the attached information sheet or contact Mr King Tat Daniel Fung (doctoral student) at king.fung@education.ox.ac.uk. 如果您想更加了解這個研究，請參閱附上的研究資料或聯絡馮景達先生（博士研究生）。

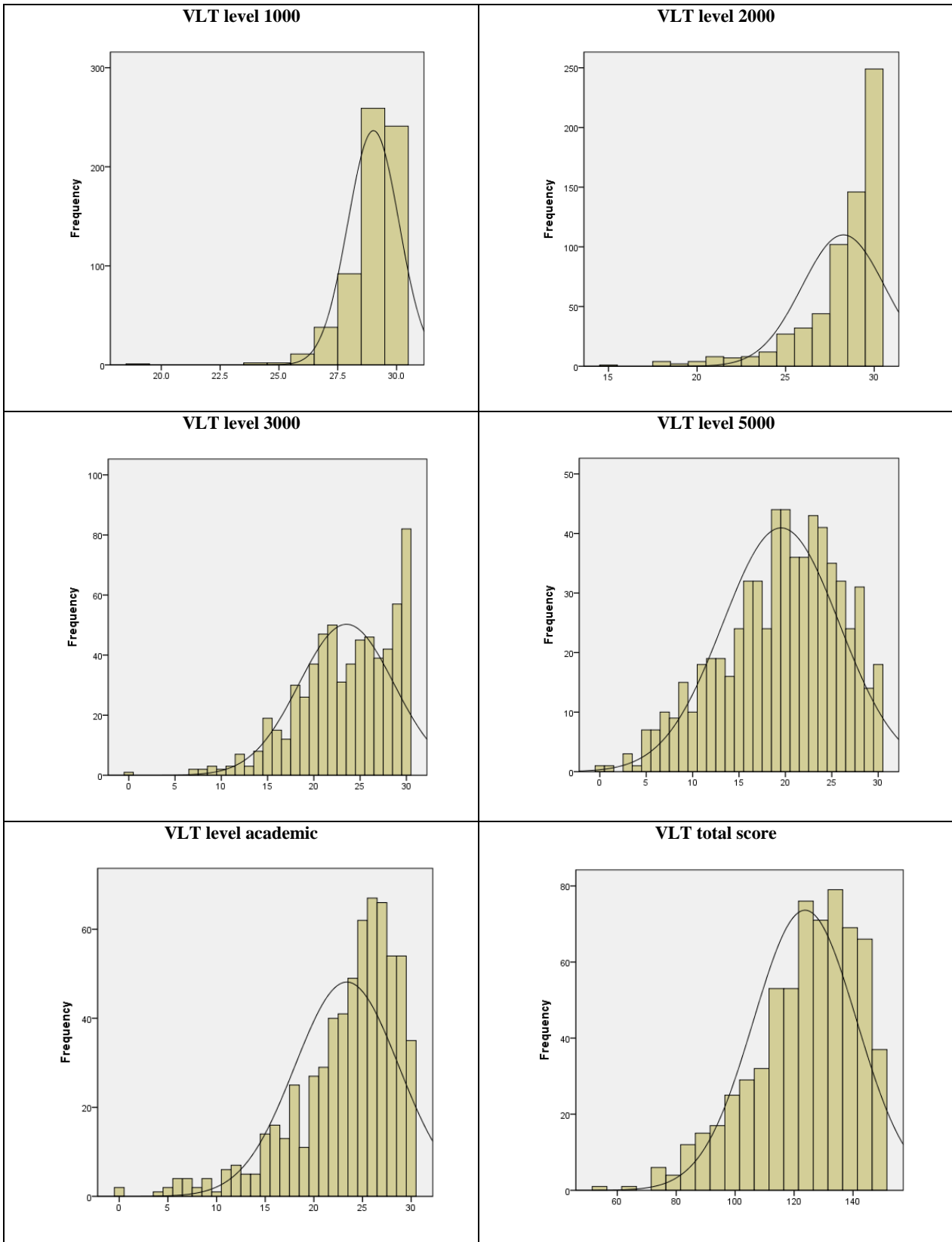
Research Consent Form 參加研究同意書

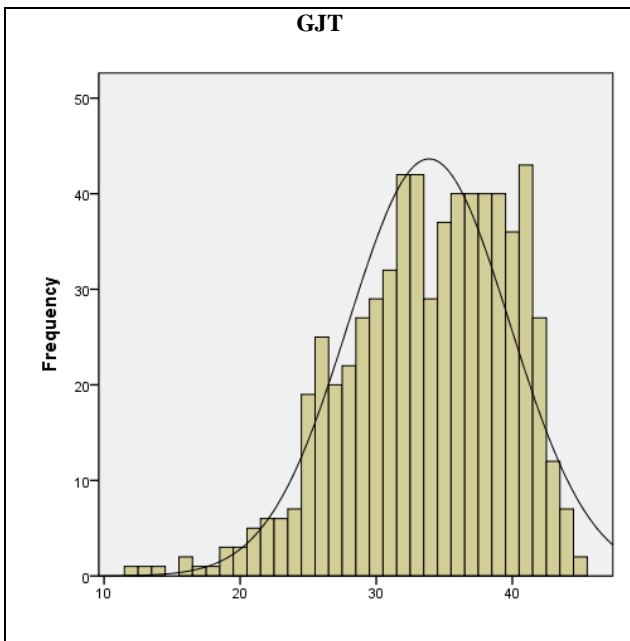
I have read the participant information sheet and have had the opportunity to ask questions about the study and receive satisfactory answers to questions. I understand that I can withdraw from the study without consequence at any time simply by informing the researcher of my decision, and any data already recorded will be discarded. I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee. I understand that my personal data will be treated in total confidence, and what will happen to the data at the end of the project. I understand that a lesson of the class will be videotaped and the video will only be reviewed by the researcher and his supervisor. I understand that I will have the opportunity to review and comment on any analysis before publication, if I ask for it. I understand how to raise a concern and make a complaint, and agree to participate in this study.

我已經看過本研究的資料，並且有機會提問相關問題，對所獲得的答案也感滿意。我明白我只需要通知研究人員，就可以在沒有後果的前提下，隨時退出本研究。而我在參與研究期間所提供的資料也會被銷毀。我明白本研究已經獲得牛津大學的研究倫理委員會確認並通過倫理審查。我明白我的資料會完全保密，並且了解資料在本研究結束後的處理。我明白一節課堂會被錄影，而有關影片只會供研究人員和他的導師觀看。我明白若我主動提出，我可以在研究發表前閱讀分析結果，並表達己見。我清楚提問及投訴的方法，並同意參加本研究。

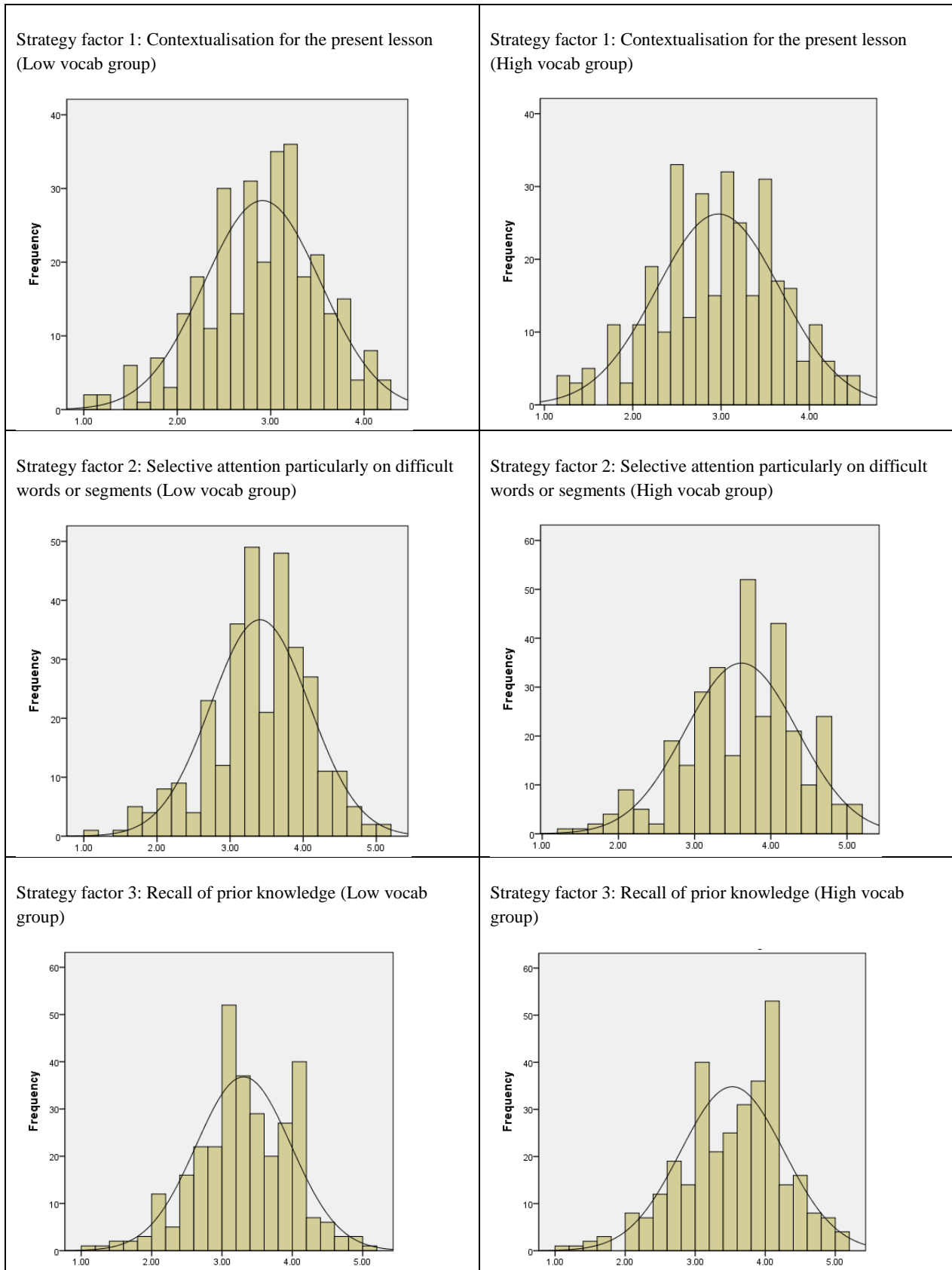
- | |
|--|
| <input type="checkbox"/> My child and I agree to voluntarily take part in this research. 我和我的兒子都自願參與本研究。 |
| <input type="checkbox"/> My child and I confirm that we have read the associated information sheet and understand the intent and purpose of this research. 我和我的兒子確認我們看過關於研究的資料並了解本研究之目的。 |
| <input type="checkbox"/> My child and I agree to have my child videotaped. 我和我的兒子都同意可以錄影課堂。 |
| Name of child 兒子姓名: _____ |
| Name of parent/guardian 家長/監護人姓名: _____ |
| Signature of parent/guardian 家長/監護人簽署: _____ |
| Name of researcher 研究人員姓名: _____ |
| Signature of researcher 研究人員簽署: _____ |
| Date 日期: _____ |
| Date 日期: _____ |

Appendix N: Histograms of VLT and GJT

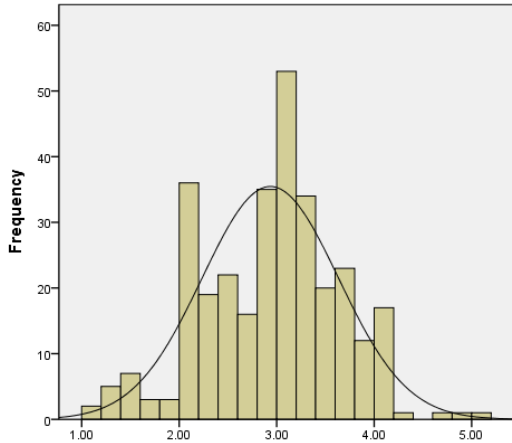




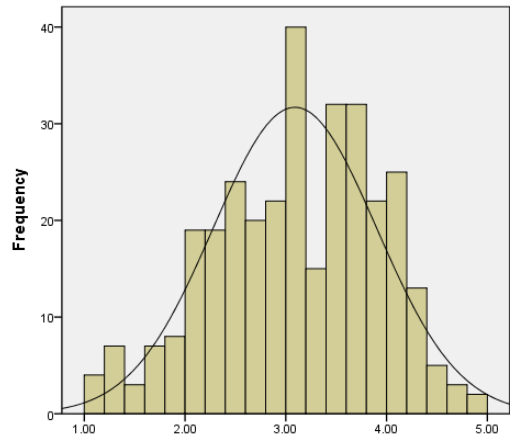
Appendix O: Histograms of strategy and opportunities for strategic behaviour factor structures for vocabulary-only analysis



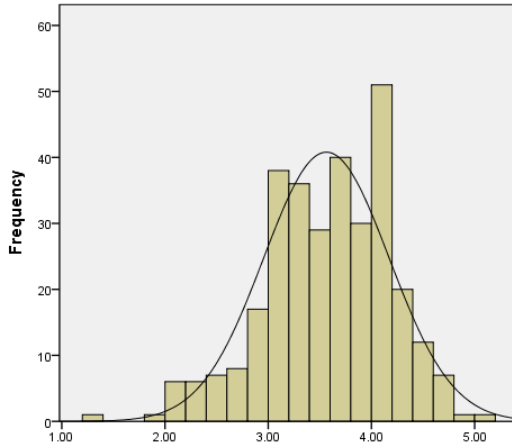
Strategy factor 4: Relational – understanding through recalling teacher’s approach (Low vocab group)



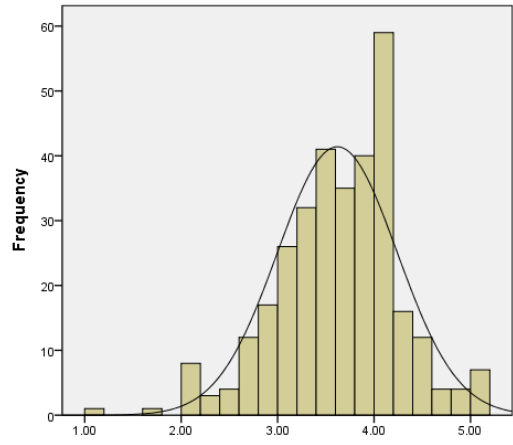
Strategy factor 4: Relational – understanding through recalling teacher’s approach (High vocab group)



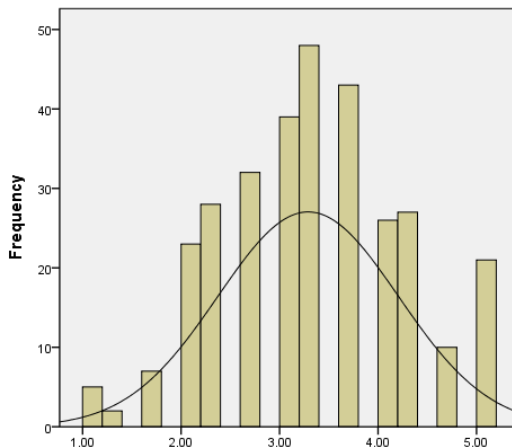
Strategy factor 5: Summarisation / Appropriation (Low vocab group)



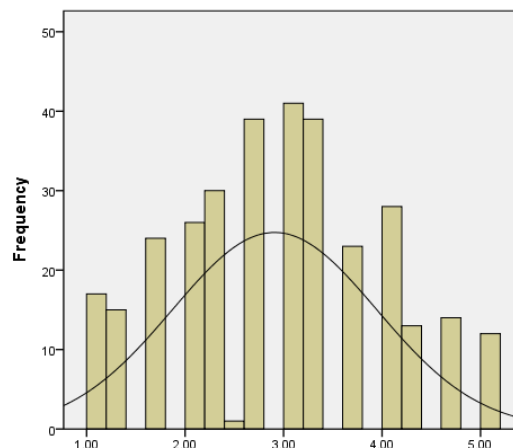
Strategy factor 5: Summarisation / Appropriation (High vocab group)



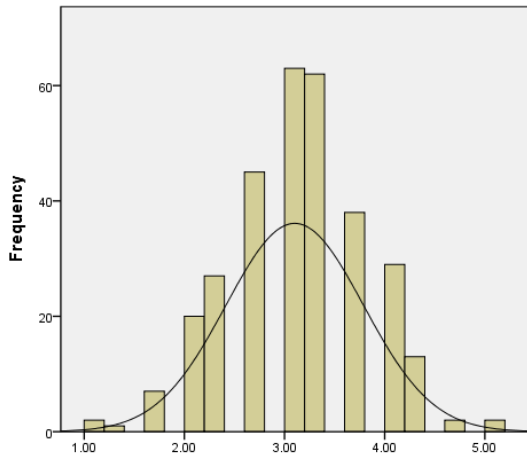
Strategy factor 6: Translation (Low vocab group)



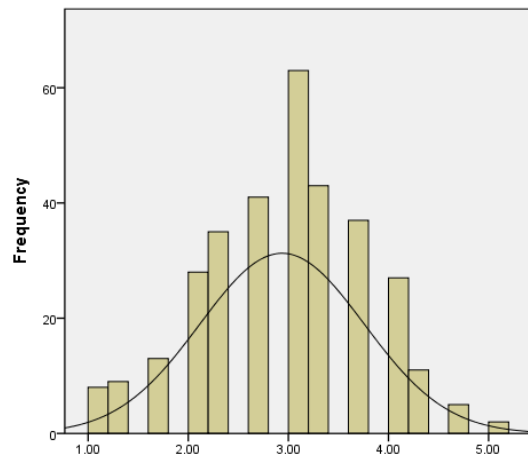
Strategy factor 6: Translation (High vocab group)



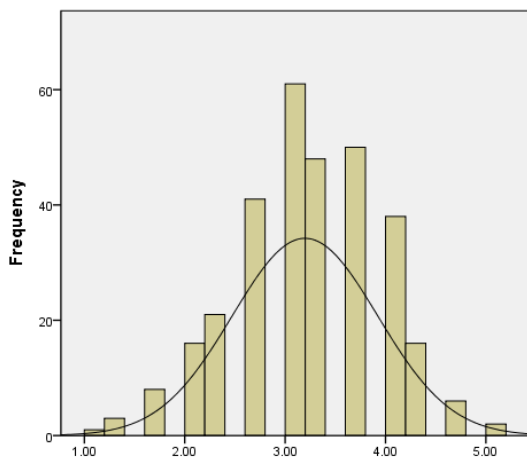
Strategy factor 7: Selective attention on simple words or segments (Low vocab group)



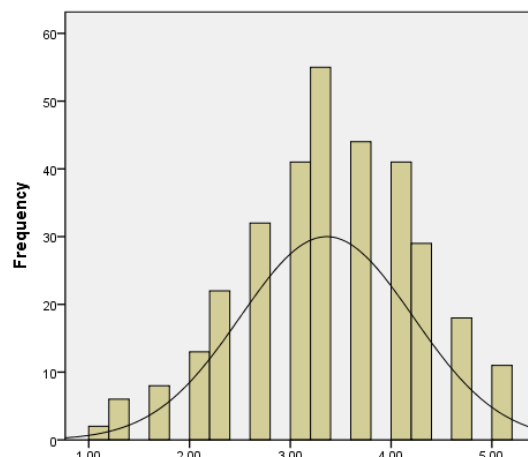
Strategy factor 7: Selective attention on simple words or segments (High vocab group)



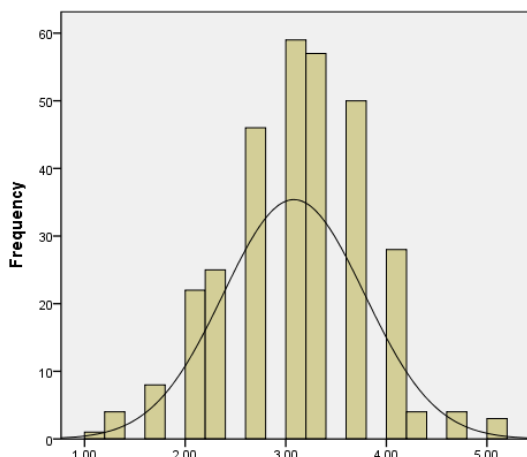
Strategy factor 8: Auditory representation and imagery (Low vocab group)



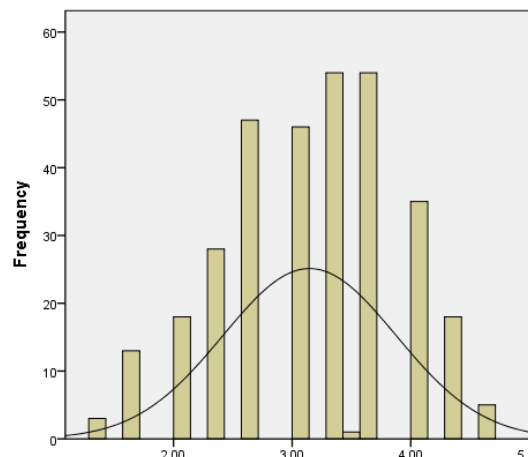
Strategy factor 8: Auditory representation and imagery (High vocab group)



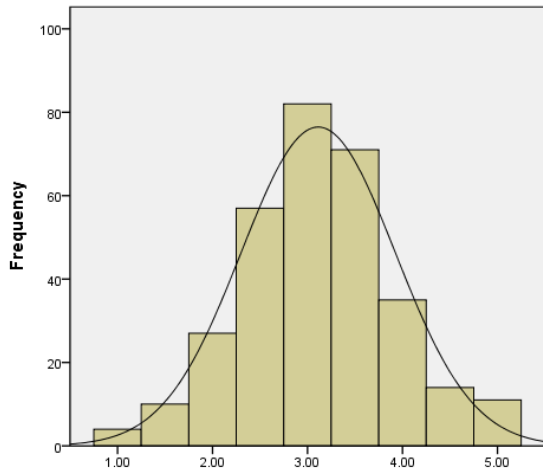
Strategy factor 9: Evaluation (Low vocab group)



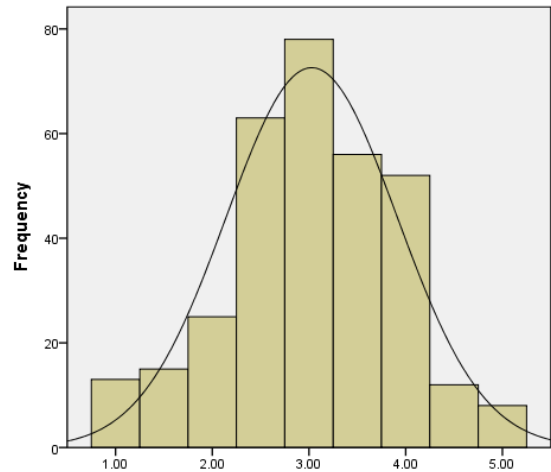
Strategy factor 9: Evaluation (High vocab group)



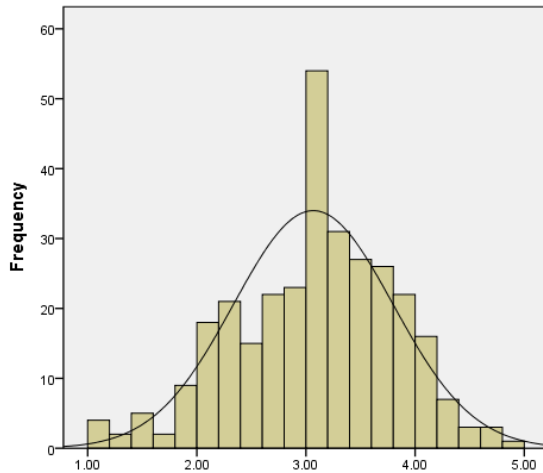
Strategy factor 10: Repetition (Low vocab group)



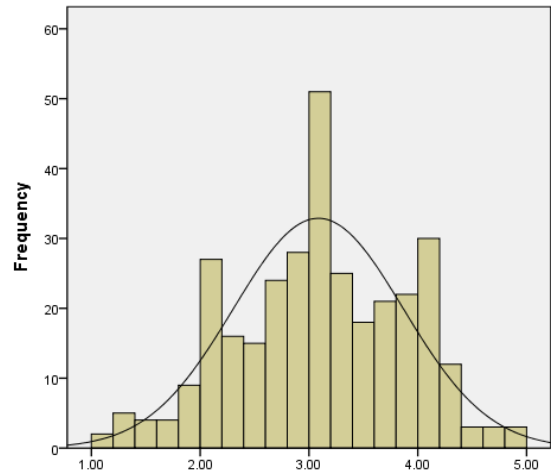
Strategy factor 10: Repetition (High vocab group)



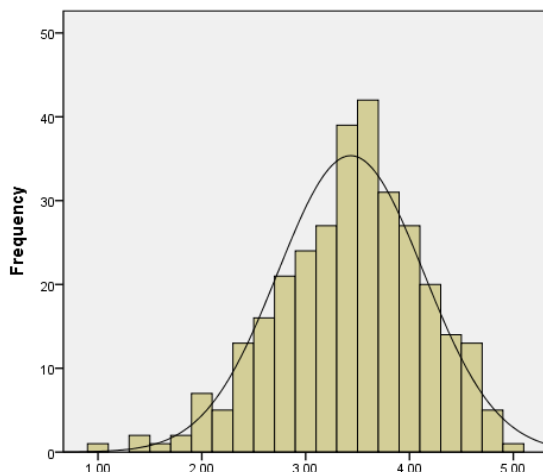
Opportunities factor 1: Utilisation of personal physical resources (Low vocab group)



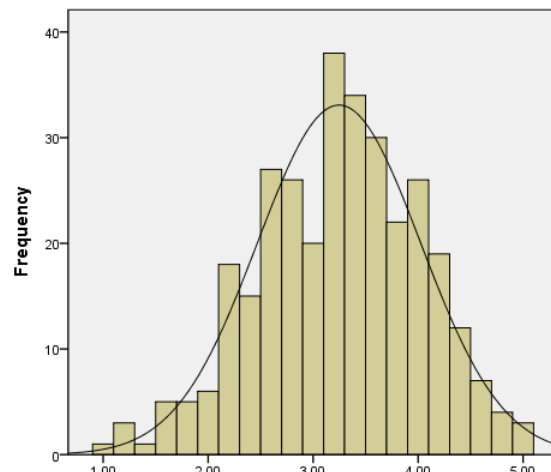
Opportunities factor 1: Utilisation of personal physical resources (High vocab group)



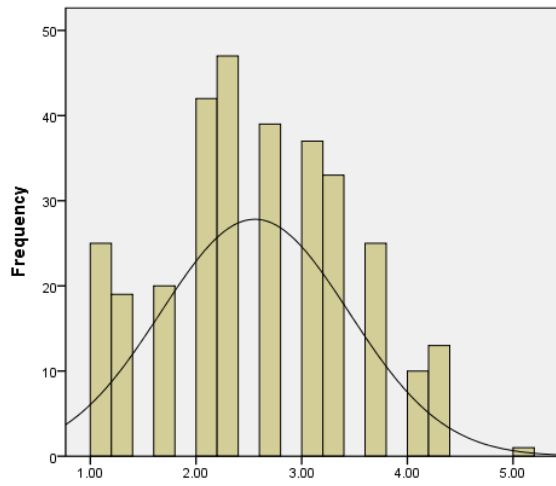
Opportunities factor 2: Hide and seek (Low vocab group)



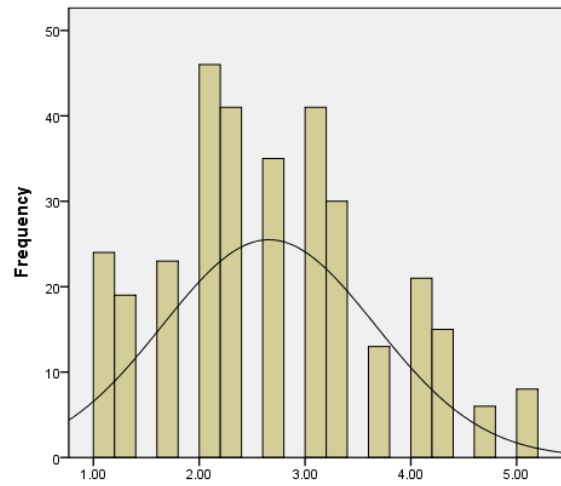
Opportunities factor 2: Hide and seek (High vocab group)



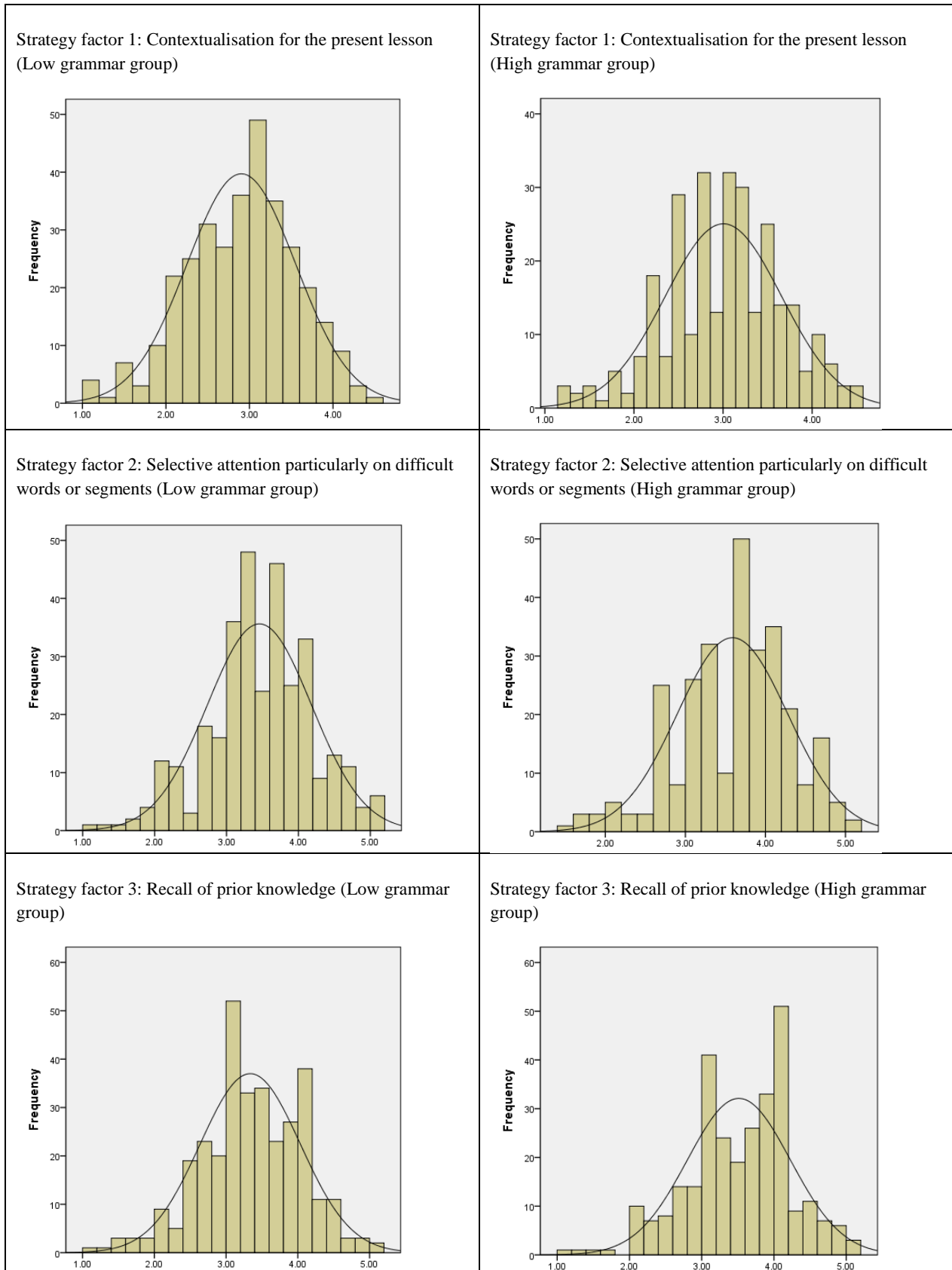
Opportunities factor 3: Direct help seeking from the teacher
(Low vocab group)



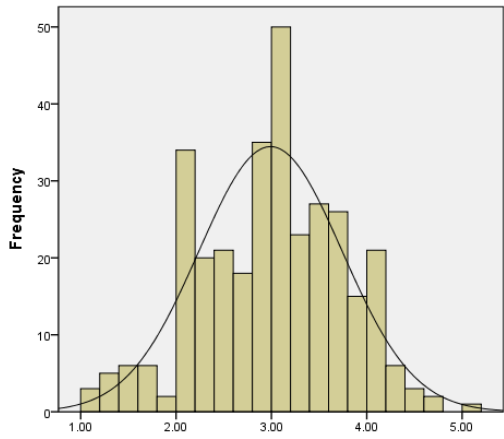
Opportunities factor 3: Direct help seeking from the teacher
(High vocab group)



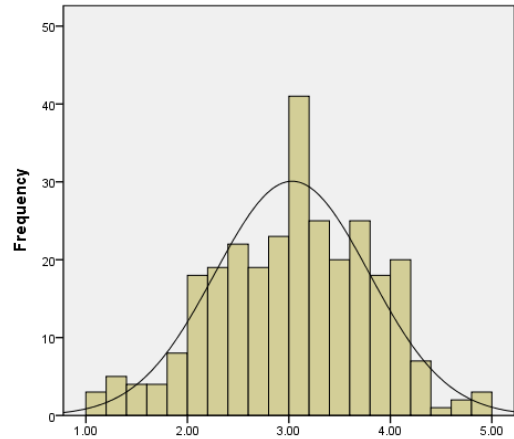
Appendix P: Histograms of strategy and opportunities for strategic behaviour factor structures for grammar-only analysis



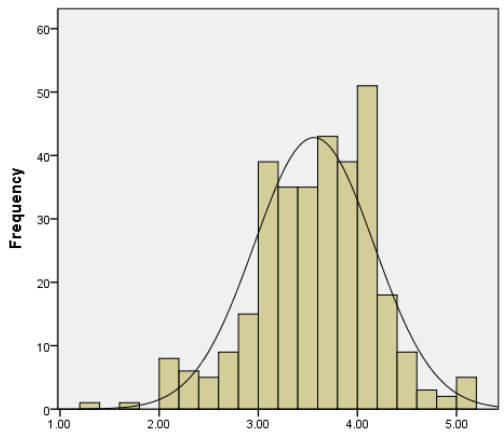
Strategy factor 4: Relational – understanding through recalling teacher’s approach (Low grammar group)



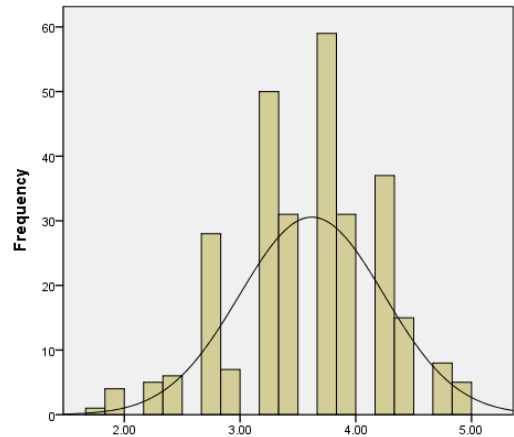
Strategy factor 4: Relational – understanding through recalling teacher’s approach (High grammar group)



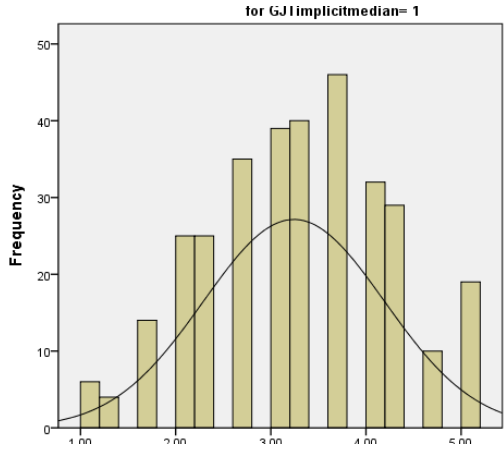
Strategy factor 5: Summarisation / Appropriation (Low grammar group)



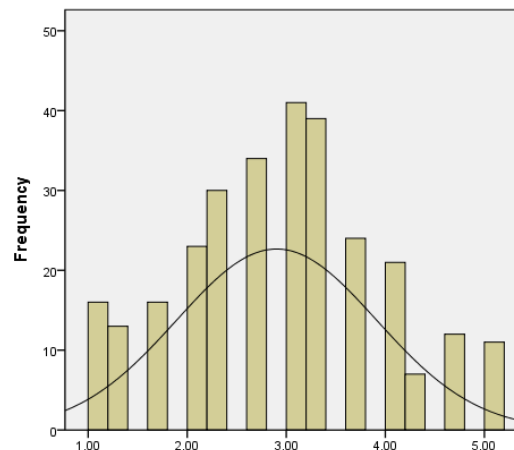
Strategy factor 5: Summarisation / Appropriation (High grammar group)



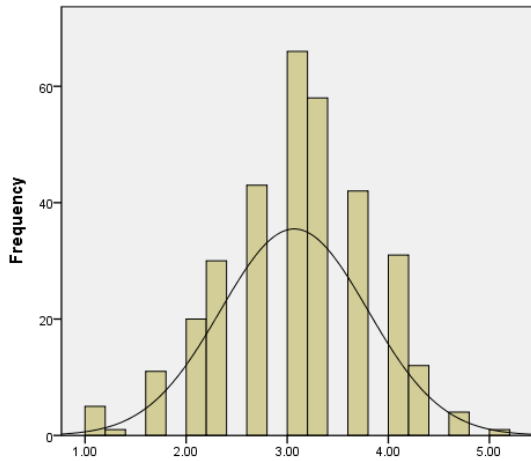
Strategy factor 6: Translation (Low grammar group)



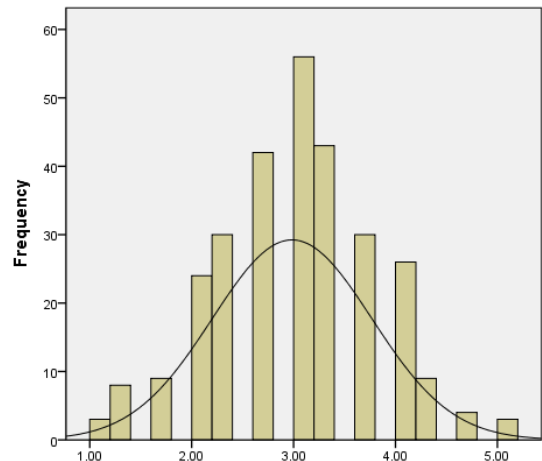
Strategy factor 6: Translation (High grammar group)



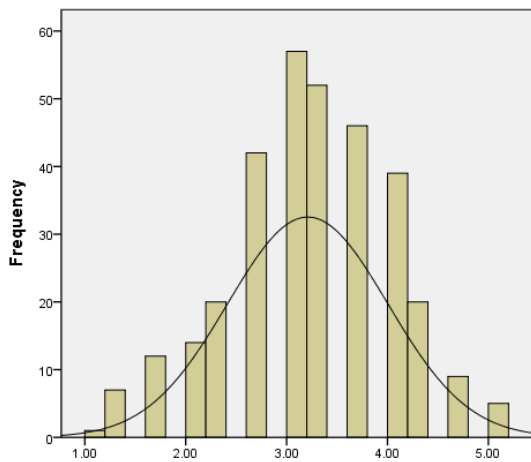
Strategy factor 7: Selective attention on simple words or segments (Low grammar group)



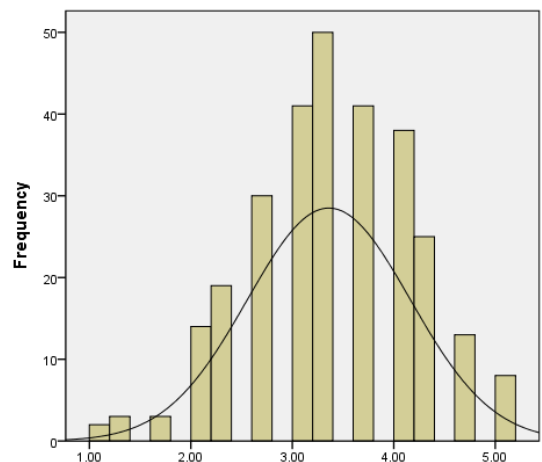
Strategy factor 7: Selective attention on simple words or segments (High grammar group)



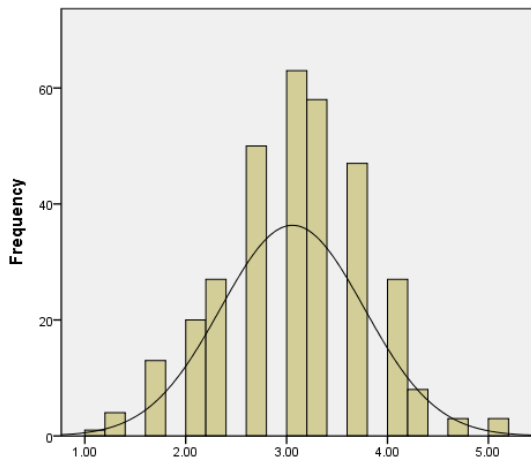
Strategy factor 8: Auditory representation and imagery (Low grammar group)



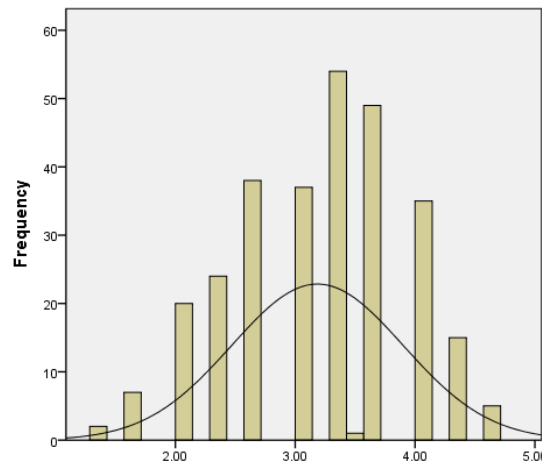
Strategy factor 8: Auditory representation and imagery (High grammar group)



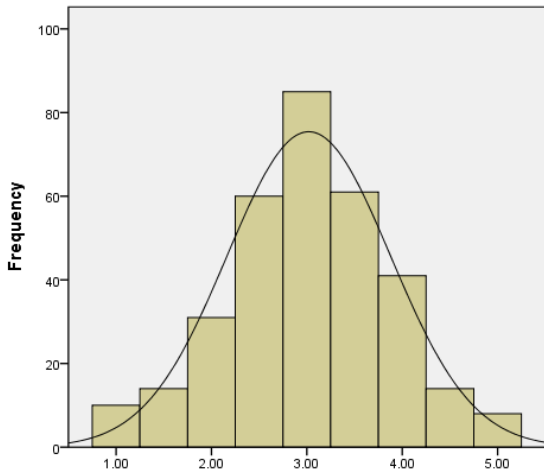
Strategy factor 9: Evaluation (Low grammar group)



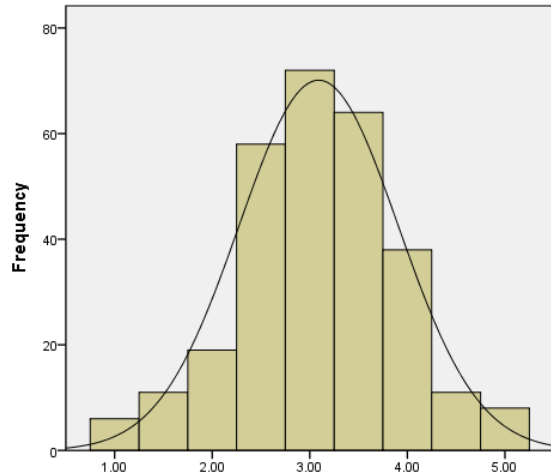
Strategy factor 9: Evaluation (High grammar group)



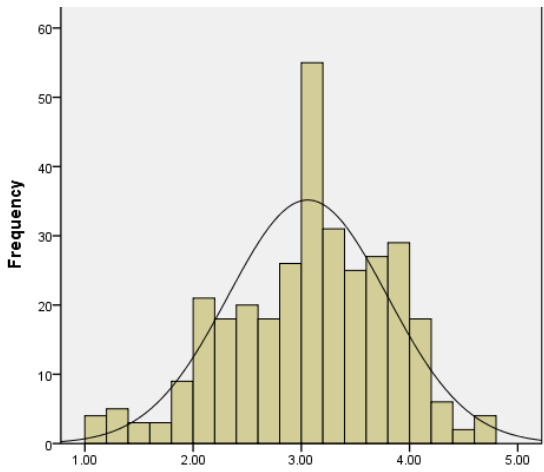
Strategy factor 10: Repetition (Low grammar group)



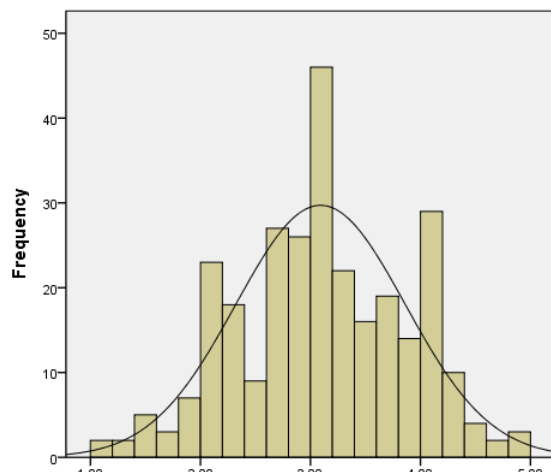
Strategy factor 10: Repetition (High grammar group)



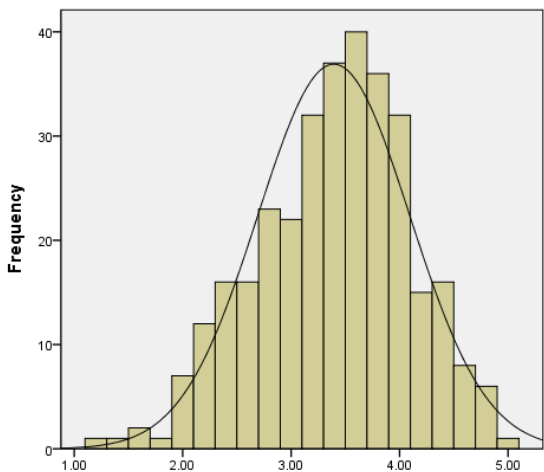
Opportunities factor 1: Utilisation of personal physical resources (Low grammar group)



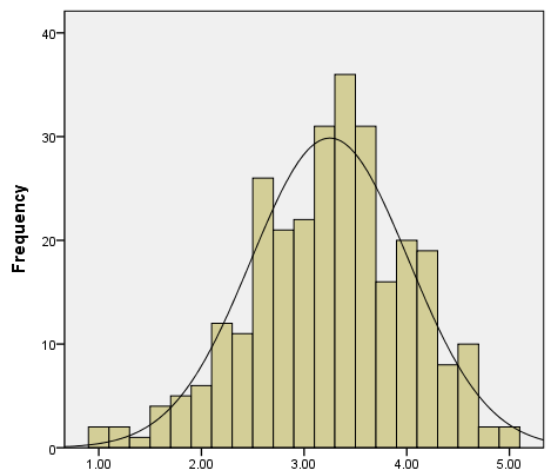
Opportunities factor 1: Utilisation of personal physical resources (High grammar group)



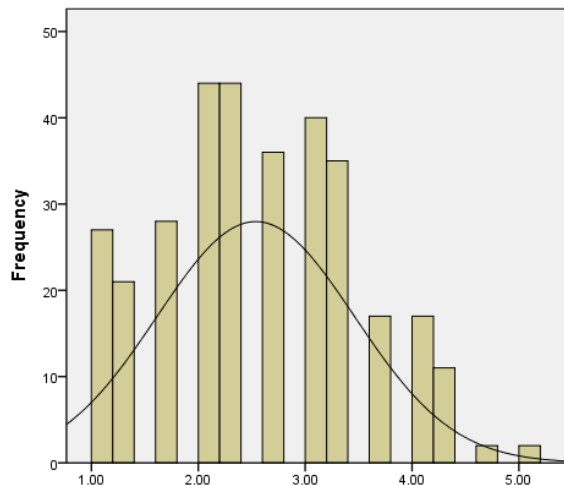
Opportunities factor 2: Hide and seek (Low grammar group)



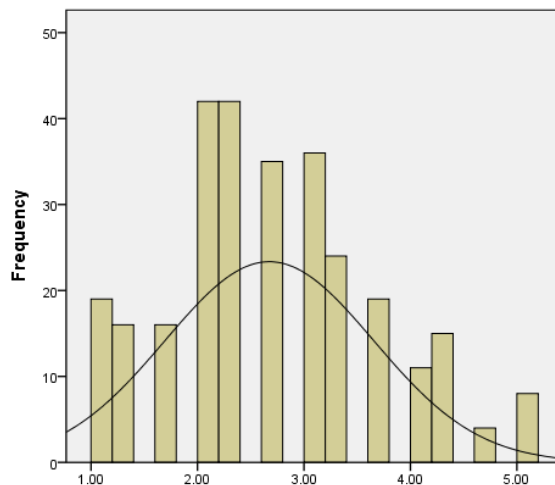
Opportunities factor 2: Hide and seek (High grammar group)



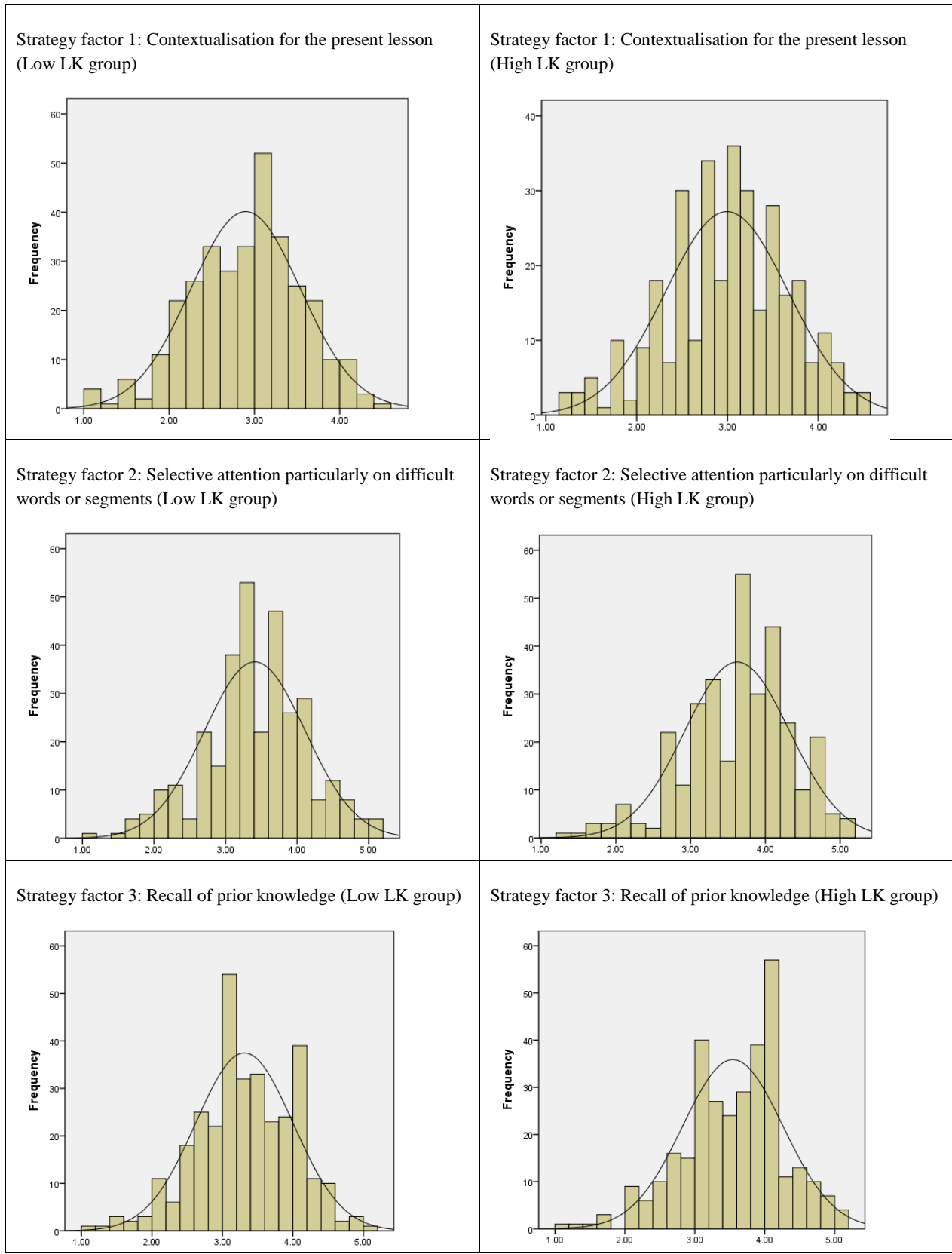
Opportunities factor 3: Direct help seeking from the teacher
(Low grammar group)



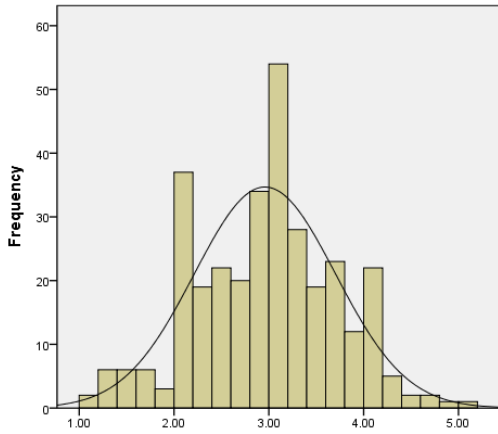
Opportunities factor 3: Direct help seeking from the teacher
(High grammar group)



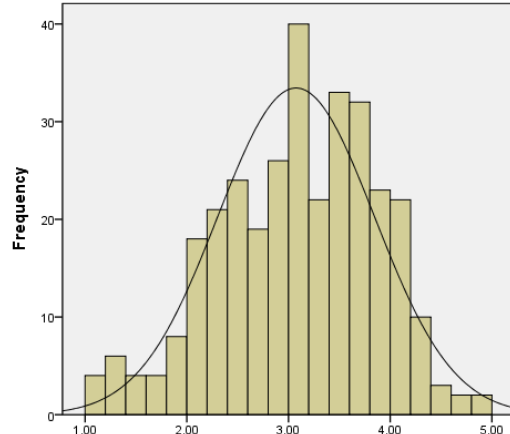
Appendix Q: Histograms of strategy and opportunities for strategic behaviour
factor structures for vocabulary-and-grammar-combined analysis



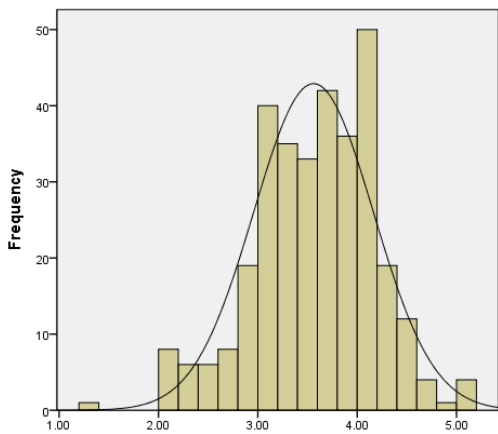
Strategy factor 4: Relational – understanding through recalling teacher’s approach (Low LK group)



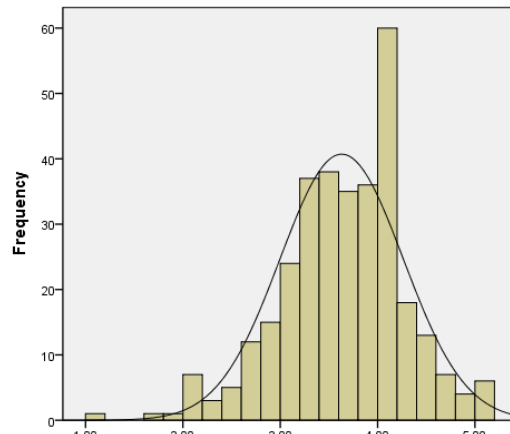
Strategy factor 4: Relational – understanding through recalling teacher’s approach (High LK group)



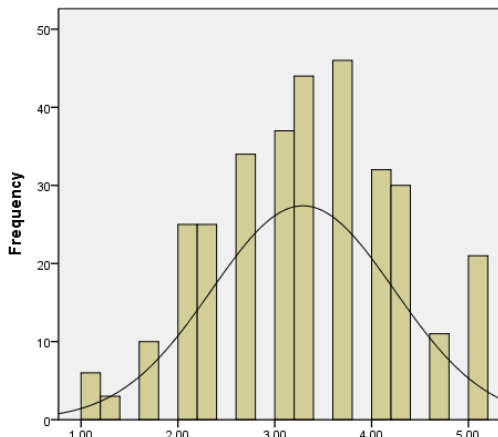
Strategy factor 5: Summarisation / Appropriation (Low LK group)



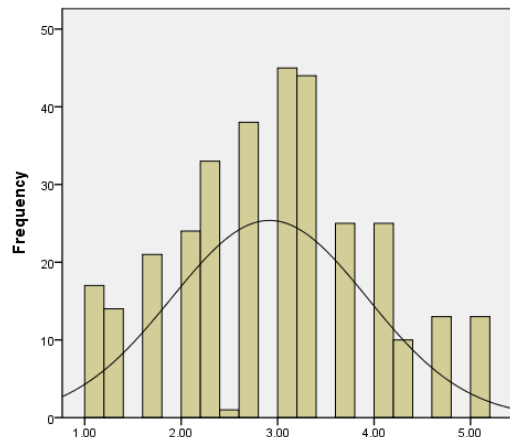
Strategy factor 5: Summarisation / Appropriation (High LK group)



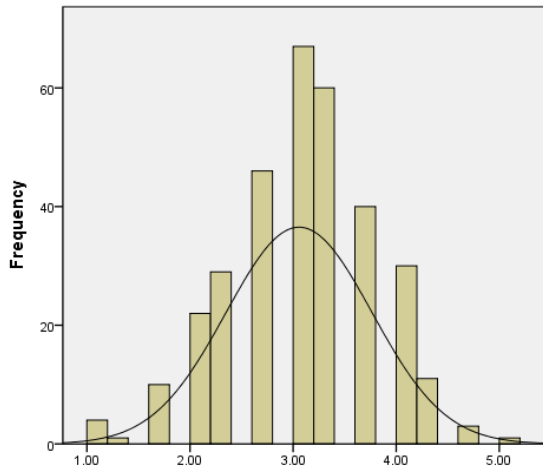
Strategy factor 6: Translation (Low LK group)



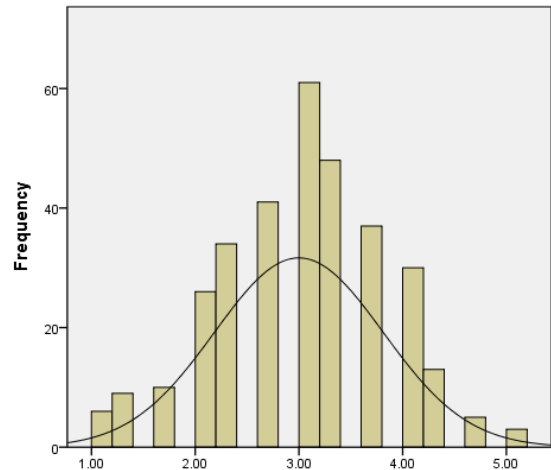
Strategy factor 6: Translation (High LK group)



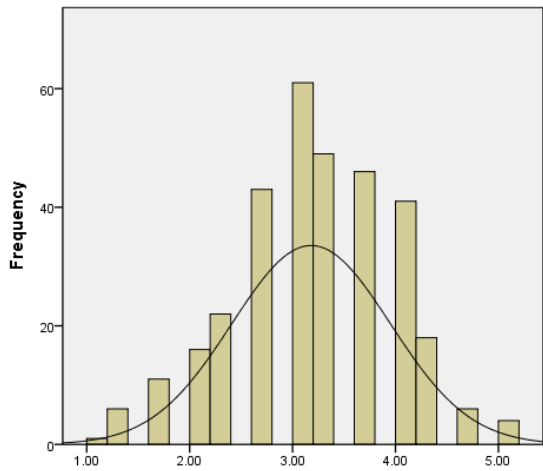
Strategy factor 7: Selective attention on simple words or segments (Low LK group)



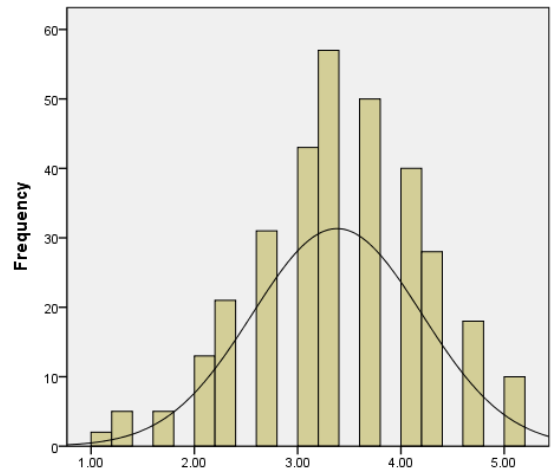
Strategy factor 7: Selective attention on simple words or segments (High LK group)



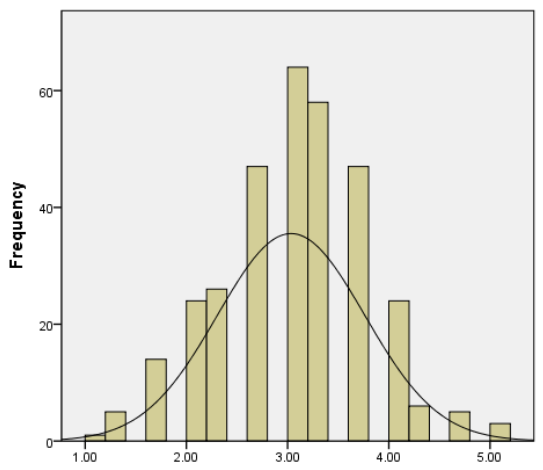
Strategy factor 8: Auditory representation and imagery (Low LK group)



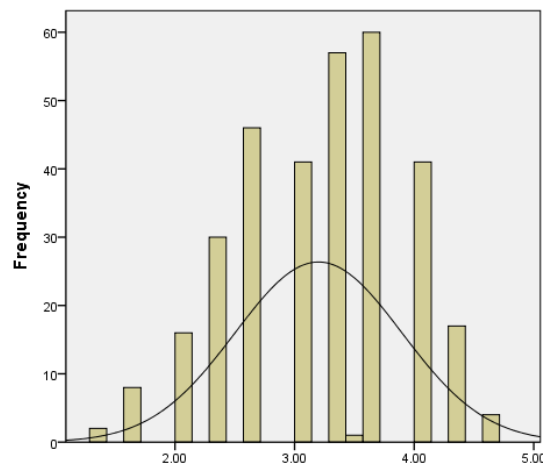
Strategy factor 8: Auditory representation and imagery (High LK group)



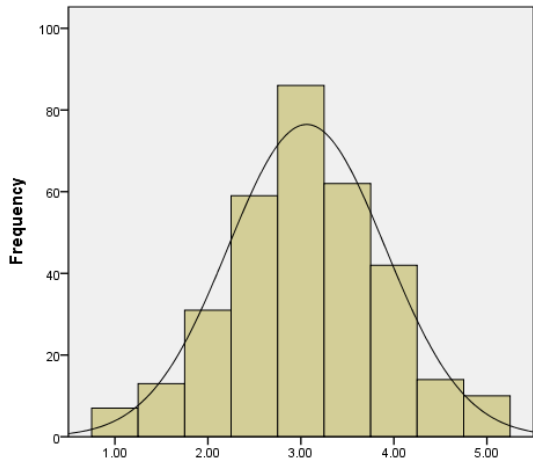
Strategy factor 9: Evaluation (Low LK group)



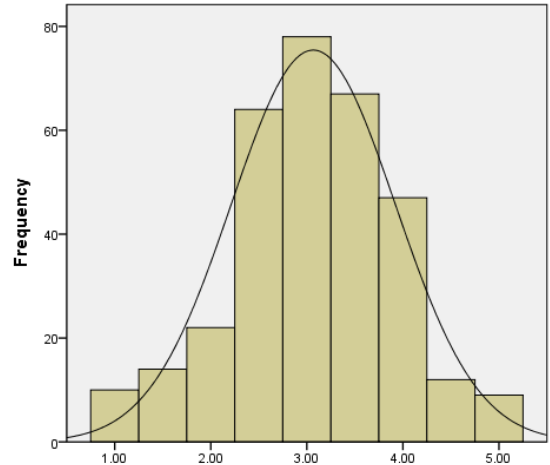
Strategy factor 9: Evaluation (High LK group)



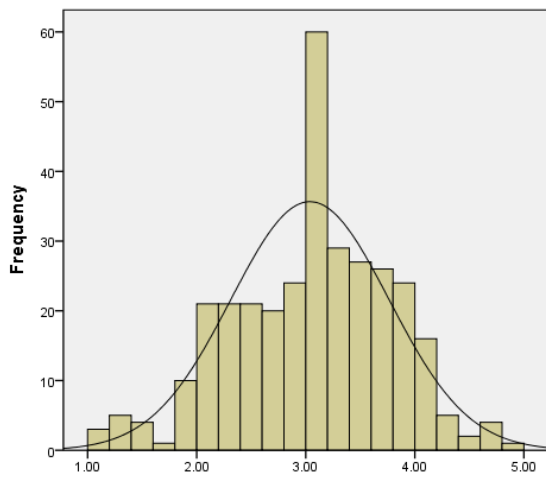
Strategy factor 10: Repetition (Low LK group)



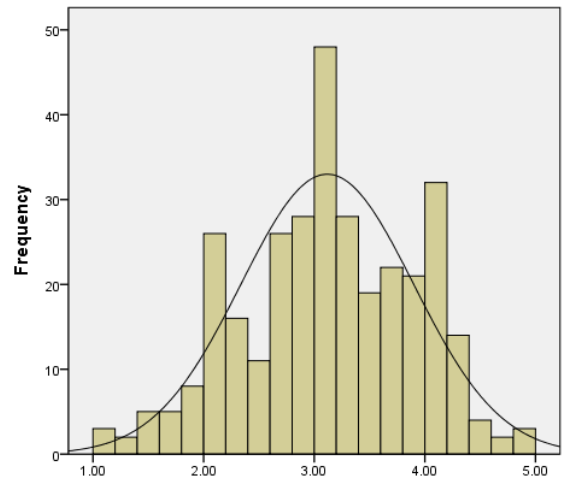
Strategy factor 10: Repetition (High LK group)



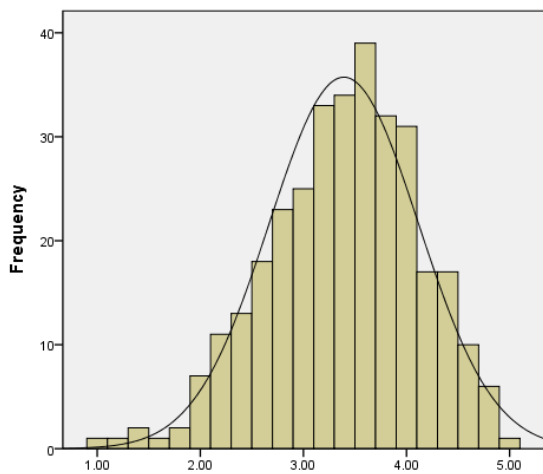
Opportunities factor 1: Utilisation of personal physical resources (Low LK group)



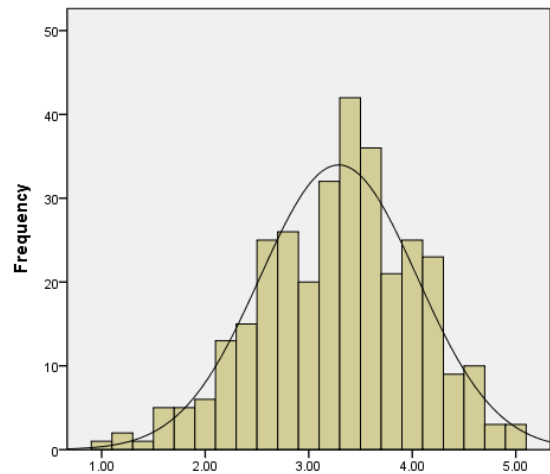
Opportunities factor 1: Utilisation of personal physical resources (High LK group)



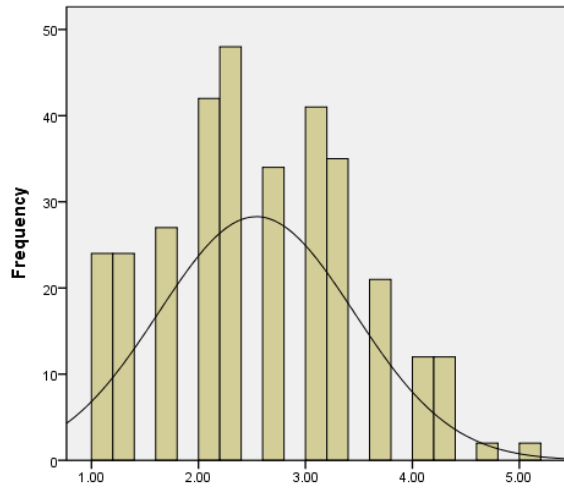
Opportunities factor 2: Hide and seek (Low LK group)



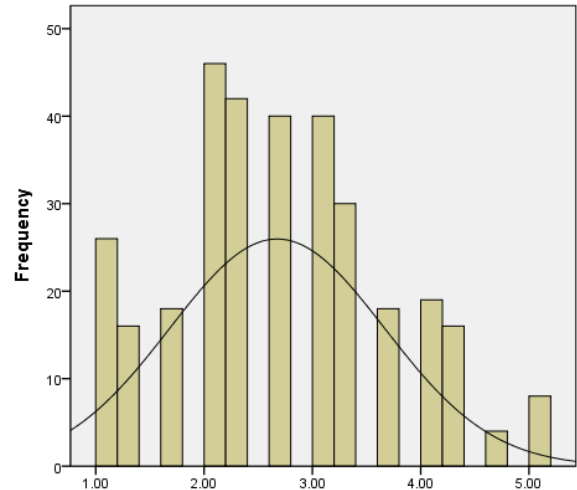
Opportunities factor 2: Hide and seek (High LK group)



Opportunities factor 3: Direct help seeking from the teacher
(Low LK group)



Opportunities factor 3: Direct help seeking from the teacher
(High LK group)



Appendix R: Descriptive statistics of strategy use per easy and difficult task by learners of low and high LK in the computer programme

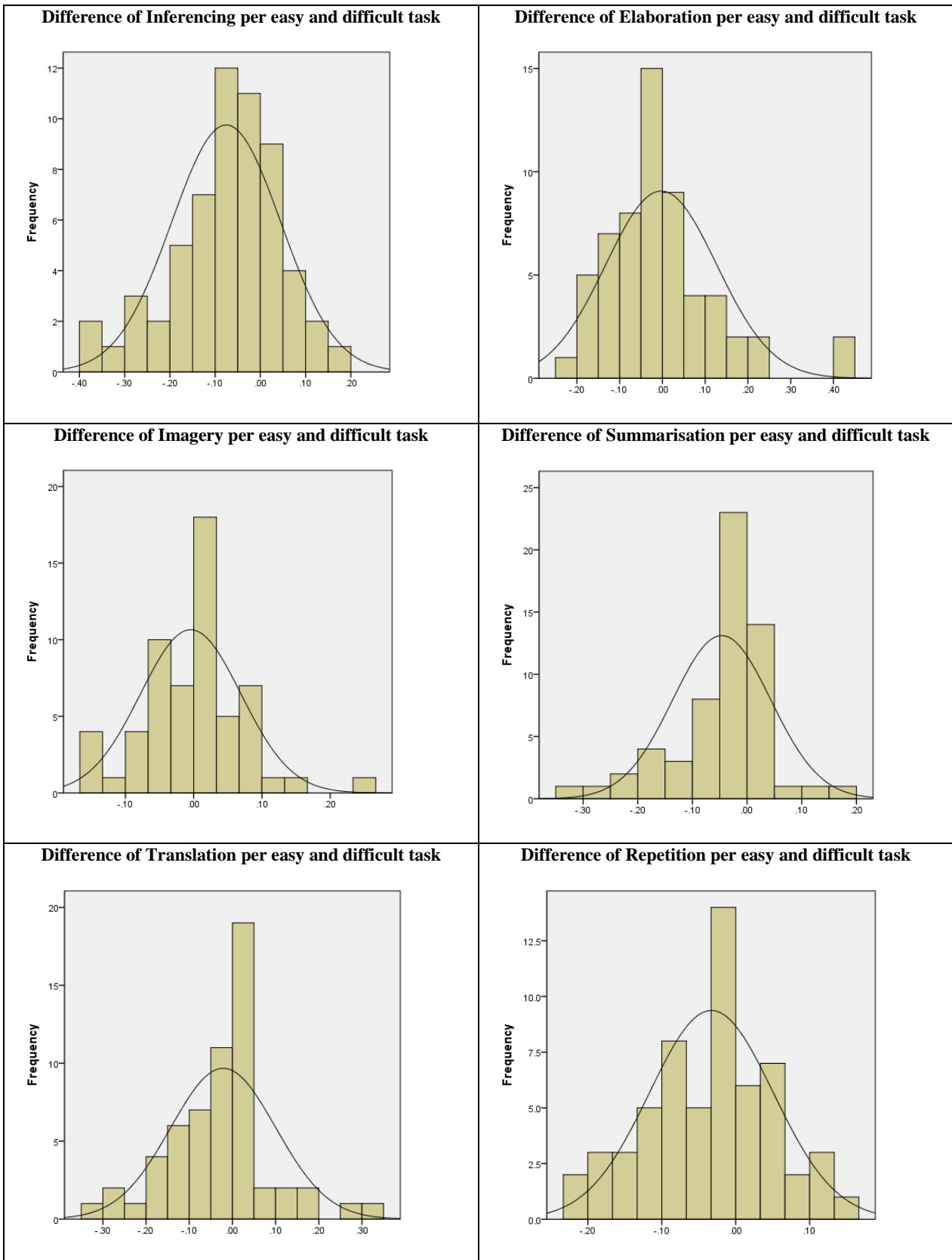
Note: The following figures are strategy use per task. To illustrate, the mean of 0 for *inferencing* strategy per easy ELICIT for high LK learners suggests that no student in the group used this strategy in any of the easy ELICIT tasks. The mean of .1250 for *elaboration* strategy per easy ELICIT for low LK learners suggests that on average a low LK learner used one *elaboration* strategy out of eight easy ELICIT task (12.5%)

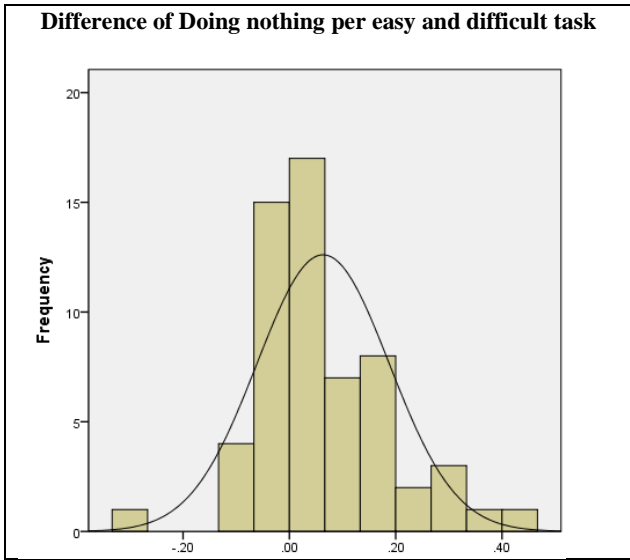
Table R1: Descriptive statistics of strategy use per task by groups of low and high LK in the computer programme

	LK groups	Low LK (n=38)		High LK (n=21)	
	Task difficulty	Easy	Difficult	Easy	Difficult
		Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
(1) Strategy per elicit	Inferencing	.0592 (.1585)	.0947 (.1593)	0	.1333 (.1932)
	Elaboration	.1250 (.2232)	.1000 (.1208)	.3095 (.2948)	.3524 (.2600)
	Imagery	.0461 (.1141)	.0158 (.0547)	.1071 (.1866)	.0952 (.1627)
	Summarisation	.0461 (.1141)	.0263 (.0685)	.1071 (.1494)	.0762 (.1841)
	Translation	.1382 (.2445)	.1632 (.2072)	.1190 (.1699)	.1429 (.2111)
	Repetition	.1184 (.1814)	.1842 (.2388)	.1190 (.2182)	.1333 (.2129)
	Doing nothing	.1908 (.2627)	.1421 (.1734)	.2857 (.2771)	.1905 (.2644)
(2) Strategy per inform	Inferencing	.1118 (.1613)	.1382 (.2071)	.0952 (.1474)	.2738 (.2223)
	Elaboration	.0921 (.1687)	.1711 (.2022)	.2619 (.3008)	.2857 (.2536)
	Imagery	.0263 (.0778)	.0724 (.1413)	.1071 (.2175)	.1190 (.2576)
	Summarisation	.0329 (.1035)	.1250 (.1815)	.0833 (.1208)	.2857 (.2276)
	Translation	.1513 (.2634)	.1053 (.1606)	.1310 (.1699)	.1667 (.1990)
	Repetition	.0987 (.1596)	.1382 (.1714)	.1310 (.2695)	.1786 (.2113)
	Doing nothing	.2105 (.2290)	.1513 (.1975)	.2381 (.2559)	.1071 (.1690)
(3) Strategy per direct	Inferencing	.0439 (.1002)	.0658 (.1713)	.0397 (.0727)	.0952 (.2559)
	Elaboration	.1404 (.2727)	.0658 (.1713)	.1270 (.2522)	.2143 (.3381)
	Imagery	.0526 (.1232)	.0789 (.1848)	.0714 (.1244)	.1905 (.2948)
	Summarisation	.0263 (.0616)	.0263 (.1132)	.0714 (.1351)	.1667 (.2887)
	Translation	.1447 (.2546)	.1447 (.3055)	.1032 (.1115)	.1190 (.2182)
	Repetition	.1053 (.1663)	.1579 (.2627)	.2063 (.2167)	.0952 (.2012)
	Doing nothing	.1886 (.2546)	.1842 (.2707)	.3254 (.2385)	.2857 (.2988)

(4) Strategy per read aloud	Inferencing	.1579 (.2627)	.1316 (.2516)	.1190 (.2182)	.1429 (.2803)
	Elaboration	.0789 (.2183)	.1184 (.2154)	.3810 (.4155)	.2857 (.4053)
	Imagery	.2105 (.2994)	.2237 (.3620)	.4048 (.4364)	.4286 (.3964)
	Summarisation	.0526 (.1555)	.0658 (.1713)	.0476 (.1504)	.0714 (.1793)
	Translation	.1974 (.3397)	.2105 (.3415)	.2143 (.3381)	.2619 (.3748)
	Repetition	.1053 (.2066)	.0921 (.2283)	.0952 (.3008)	.1429 (.2803)
	Doing nothing	.1579 (.2627)	.1053 (.2640)	.1429 (.2803)	.0714 (.2391)
(5) sharing	Inferencing	.0614 (.1310)	.0702 (.1580)	.0635 (.1341)	.1905 (.2488)
	Elaboration	.1579 (.2655)	.1404 (.2527)	.2222 (.3043)	.2857 (.3541)
	Imagery	.1491 (.2413)	.0614 (.1522)	.2857 (.3034)	.2063 (.3069)
	Summarisation	.0439 (.1142)	.0789 (.1807)	.1905 (.2702)	.3492 (.3412)
	Translation	.1579 (.2418)	.2193 (.3221)	.2857 (.2845)	.1587 (.2005)
	Repetition	.0614 (.1310)	.1316 (.2128)	.1746 (.2499)	.1429 (.2488)
	Doing nothing	.1579 (.2655)	.1140 (.2360)	.1270 (.1965)	.0635 (.1341)
(6) Strategy per dictation	Inferencing	.0789 (.1848)	.2105 (.2994)	.0952 (.2559)	.2857 (.3381)
	Elaboration	.1579 (.2355)	.1316 (.2516)	.3333 (.4282)	.2857 (.3381)
	Imagery	.0658 (.2070)	.1842 (.3167)	.0714 (.1793)	.0952 (.2012)
	Summarisation	.1053 (.2640)	.0921 (.2562)	.2381 (.3748)	.2143 (.3732)
	Translation	.1711 (.2912)	.1711 (.3136)	.3095 (.4024)	.2857 (.3732)
	Repetition	.3158 (.3753)	.2368 (.3233)	.5000 (.3873)	.4762 (.4024)
	Doing nothing	.0263 (.1132)	.0658 (.1713)	.0952 (.2559)	0
(7) Strategy per comment	Inferencing	.0526 (.1555)	.1711 (.2912)	.0238 (.1091)	.1667 (.2887)
	Elaboration	.1184 (.2154)	.1053 (.2066)	.2857 (.3381)	.2857 (.4053)
	Imagery	.0658 (.1713)	.0658 (.1713)	.0952 (.2012)	.1190 (.2695)
	Summarisation	.0263 (.1132)	.0526 (.1555)	.2381 (.3008)	.2857 (.3381)
	Translation	.1579 (.3099)	.1184 (.2448)	.1190 (.2695)	.3333 (.4282)
	Repetition	.1053 (.2066)	.2105 (.2994)	.1190 (.3124)	.1667 (.2887)
	Doing nothing	.2237 (.3008)	.1842 (.2707)	.1905 (.3345)	.0476 (.1504)
(8) Strategy per clue	Inferencing	.0658 (.2070)	.1184 (.2154)	.0952 (.2559)	.2143 (.2536)
	Elaboration	.1184 (.2448)	.0789 (.1848)	.4048 (.3398)	.1429 (.2315)
	Imagery	.0526 (.1555)	.0263 (.1132)	.1905 (.3345)	.0476 (.1504)
	Summarisation	.0526 (.1942)	.0526 (.1555)	.0476 (.1504)	.2381 (.3008)
	Translation	.1579 (.3508)	.2763 (.3428)	.1190 (.3124)	.1905 (.3345)
	Repetition	.1579 (.2872)	.1842 (.3167)	.0476 (.1504)	.2619 (.3748)
	Doing nothing	.1447 (.2298)	.0921 (.1964)	.1429 (.2803)	.0952 (.2012)

Appendix S: Histograms of the differences of strategy use per easy and difficult task in the computer programme





Appendix T: Descriptive statistics of strategy use per task type in the computer programme

Table T1: Descriptive statistics of strategy use per various task types in the computer programme

		N	Minimum	Maximum	Mean	S.D.	Skewness	Std. Error	Kurtosis	Std. Error
(1) Strategy per elicit	Inferencing	59	0	.56	.0772	.1259	2.107	.311	4.435	.613
	Elaboration	59	0	.89	.1902	.2074	1.194	.311	1.159	.613
	Imagery	59	0	.44	.0546	.1099	2.293	.311	4.846	.613
	Summarisation	59	0	.44	.0546	.0884	2.046	.311	5.443	.613
	Translation	59	0	.78	.1450	.1871	1.785	.311	2.882	.613
	Repetition	59	0	.78	.1450	.1742	1.417	.311	2.104	.613
	Doing nothing	59	0	.67	.1883	.1790	.826	.311	-.244	.613
(2) Strategy per inform	Inferencing	59	0	.63	.1462	.1357	.824	.311	1.060	.613
	Elaboration	59	0	.75	.1822	.1919	1.282	.311	1.273	.613
	Imagery	59	0	.88	.0720	.1453	3.556	.311	16.356	.613
	Summarisation	59	0	.50	.1165	.1247	.786	.311	.009	.613
	Translation	59	0	.63	.1356	.1772	1.574	.311	1.963	.613
	Repetition	59	0	.75	.1314	.1648	1.772	.311	3.550	.613
	Doing nothing	59	0	.63	.1780	.1628	.803	.311	.031	.613
(3) Strategy per direct	Inferencing	59	0	.38	.0508	.0841	1.760	.311	3.146	.613
	Elaboration	59	0	1.00	.1314	.2303	2.218	.311	4.667	.613
	Imagery	59	0	.63	.0742	.1295	2.343	.311	6.304	.613
	Summarisation	59	0	.38	.0508	.0960	1.977	.311	3.348	.613
	Translation	59	0	1.00	.1314	.2016	2.442	.311	6.732	.613
	Repetition	59	0	.75	.1398	.1626	1.572	.311	2.997	.613
	Doing nothing	59	0	.75	.2331	.2315	.610	.311	-.808	.613
(4) Strategy per read aloud	Inferencing	59	0	1.00	.1398	.2141	1.684	.311	3.190	.613
	Elaboration	59	0	1.00	.1822	.2619	1.598	.311	2.096	.613
	Imagery	59	0	1.00	.2881	.3342	.877	.311	-.461	.613
	Summarisation	59	0	.50	.0593	.1341	2.238	.311	4.197	.613
	Translation	59	0	1.00	.2161	.3130	1.247	.311	.296	.613
	Repetition	59	0	1.00	.1059	.1869	2.449	.311	8.172	.613
	Doing nothing	59	0	1.00	.1229	.2292	2.458	.311	6.483	.613

(5) sharing	Inferencing	59	0	.50	.0876	.1252	1.301	.311	1.011	.613
	Elaboration	59	0	1.00	.1864	.2535	1.436	.311	1.259	.613
	Imagery	59	0	1.00	.1554	.2250	1.867	.311	3.634	.613
	Summarisation	59	0	.83	.1356	.2041	1.770	.311	2.680	.613
	Translation	59	0	.83	.2006	.2291	1.187	.311	.655	.613
	Repetition	59	0	.67	.1186	.1580	1.372	.311	1.627	.613
	Doing nothing	59	0	.83	.1215	.1904	1.853	.311	3.290	.613
(6) Strategy per dictation	Inferencing	59	0	.75	.1610	.2064	1.138	.311	.588	.613
	Elaboration	59	0	1.00	.2034	.2343	1.168	.311	1.261	.613
	Imagery	59	0	.75	.1102	.1929	1.603	.311	1.515	.613
	Summarisation	59	0	1.00	.1441	.2635	1.942	.311	3.034	.613
	Translation	59	0	1.00	.2161	.2879	1.256	.311	.576	.613
	Repetition	59	0	1.00	.3517	.3153	.351	.311	-1.040	.613
	Doing nothing	59	0	.50	.0466	.1181	2.601	.311	6.337	.613
(7) Strategy per comment	Inferencing	59	0	.50	.1059	.1750	1.375	.311	.485	.613
	Elaboration	59	0	1.00	.1737	.2424	1.480	.311	1.802	.613
	Imagery	59	0	.75	.0805	.1500	2.219	.311	6.099	.613
	Summarisation	59	0	1.00	.1186	.2145	2.115	.311	4.776	.613
	Translation	59	0	1.00	.1695	.2724	1.593	.311	1.723	.613
	Repetition	59	0	1.00	.1525	.2077	1.597	.311	3.386	.613
	Doing nothing	59	0	1.00	.1737	.2333	1.447	.311	1.975	.613
(8) Strategy per clue	Inferencing	59	0	.75	.1144	.1817	1.825	.311	3.552	.613
	Elaboration	59	0	.75	.1610	.2011	1.362	.311	1.776	.613
	Imagery	59	0	.75	.0678	.1528	2.596	.311	7.272	.613
	Summarisation	59	0	.75	.0847	.1582	2.120	.311	5.000	.613
	Translation	59	0	1.00	.1949	.2826	1.416	.311	1.055	.613
	Repetition	59	0	.75	.1653	.2158	1.228	.311	.813	.613
	Doing nothing	59	0	.75	.1186	.1878	1.480	.311	1.415	.613