



Implementing Learner Corpora in EAP Materials Design: Chinese L1 Students' Understanding of the Use of Epistemic Lexical Verbs in Academic Written English

by

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Abstract

Since the mid-1980s, language corpora have served a key role in the field of second language teaching and learning. The corpus wave has reached the field of English for academic purposes (EAP) and the convergence between pedagogy and corpora has provided an impetus to harness new insights in the production of EAP materials. However, the previous instructional EAP materials and the literature indicate that educators and materials developers have depended mainly on native corpora, while the application of learner corpora as well as the findings of learner corpus research in this field still remain relatively peripheral. It is undeniable nowadays that native corpora are indeed helpful in second language teaching/learning; nonetheless, they cannot reveal what interlanguage or problematic uses language learners have. Nesselhuaf (2004) has highlighted the importance of knowing what typical language use difficulties L2 learners have. The present study brings together learner corpus analysis with the development of EAP writing materials that focus on epistemic lexical verbs (ELVs) as a specific language difficulty for Chinese L1 students, aiming to explore the value of learner corpora in the production of EAP instructional learning materials.

The present study involves two stages. Firstly, two corpora (an English L1 and a Chinese L1 corpus) were compiled, consisting of MA academic assignments in the fields of TESOL, Education and Applied Linguistics. They were used to compare and identify the similarities and differences in the use of ELVs between Chinese L1 and English L1 writers. Both corpora and the results of the learner corpus research were then used to develop two different types of learning materials: the first type was informed by the English L1 corpus with additional examples from the BAWE corpus produced by English L1 writers; the second added examples from the Chinese L1 corpus and drew on the learner corpus findings obtained. These two

learning materials were given to two groups of Chinese L1 MA students in an online pedagogical environment (using Qualtrics software), referred to as the experimental group (EG) and the control group (CG) respectively. Both groups' learning performance was evaluated and compared in the pre-, post-, and delayed post-tests; their English proficiency level and processing speed across each test and on each exercise within these three tests were used to test their relative effects on students' learning performance. The findings were then triangulated with qualitative data gathered via questionnaire and interview to evaluate the effects of learning ELVs with support from learner corpus data and learner corpus research findings.

The results showed that both groups achieved better performance in the post- and delayed post-tests after the treatment (engagement with the designed ELV learning materials). There was no significant difference in performance overall between the two groups at these two testing points; however, the EG demonstrated a higher knowledge improvement of grammatical patterns than the CG. This suggests that the value of learner corpora lies in tackling issues that are closely related to language forms. The qualitative data from the questionnaire and interview also revealed that the majority of students show a positive attitude towards the incorporation of learner corpora into the learning materials, as they believe it increases their awareness of and helps them to avoid making the same kinds of errors in their future writing. In addition, a positive correlation between English proficiency level and overall learning performance on three tests was observed. In contrast, processing time has a negative correlation with learning performance in both post- and delayed post-tests. The results seem to prove the findings of SLA studies that less processing time and a higher English proficiency level tend to lead to better learning performance.

The present study attested to the usefulness of the learner corpora in the development of EAP materials for assisting students with their problematic use of ELVs in academic written texts in an online environment. The findings contribute to our understanding that insights from learner corpora appear to be more effective in learning language forms, while the value of using learner corpora in improving students' semantic and pragmatic competency is relatively limited. Also, examining the influence of English proficiency level and processing speed on learning performance brings together the study of learner corpus-based instructional materials with SLA research.

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Chapter 1 Introduction

1.1 Learner corpora and EAP materials

Since the mid-1980s, the rise of technology on computer and the development of English language corpora have influenced our views on language and how language can be taught. The merging of corpus investigation and language pedagogy has resulted in a fundamental change in how we approach the development of second language teaching/learning materials, teaching methodology, and curriculum design (Cotos, 2014). Within a decade, the influence of electronic corpora spread to the English for Academic Purposes (EAP) field, where EAP materials researchers and writers showed their increasing interest in integrating the results of native corpus-based research into EAP teaching. Considering the many new insights into language description provided by the analysis of native speaker (NS) corpora, many argue that EAP materials should be routinely informed by native corpus studies (e.g. McCarthy & McCarten, 2012; McEnery & Xiao, 2011; O’Keeffe & Farr, 2003; Reppen, 2010; Tomlinson, 2012).

The reason why NS corpora have been attractive to material developers and language educators is that they offer learners relevant and meaningful data, such as the frequency distributions of vocabulary and their recurrent grammar patterns, as used in an authentic context. This gives learners access to authentic language data, rather than being dependent on the intuitions of teachers and textbook writers. Due to the prevalence of pedagogically constructed texts over authentic texts, English teaching/learning resources have for a long time featured fictional examples of language usage. Many studies have attempted to use corpus findings to critically examine English language teaching materials, especially textbooks (Holmes, 1988; Hyland, 1994; Römer, 2004). They compared English textbooks to general

corpora in order to investigate whether these instructional materials accurately reflect actual language usage (e.g. grammatical patterns and lexical choices) as evidenced by the corpora. The majority of research revealed considerable disparities in how language features are presented in textbooks and corpora. Some textbooks give more emphasis to the elements that are less commonly seen in real-world language use while downplaying the items that are more frequently employed. Therefore, researchers propose that corpora should be incorporated into teaching materials and textbooks to provide students with authentic language use. An increasing number of studies followed, which explored and confirmed the value of NS corpora in the English as a Foreign Language (EFL) field. Consequently, few applied linguists would now question whether NS corpora are indeed beneficial for language learning/teaching. EFL educators and professionals have also shown a preference for using authentic materials, providing language features from natural NS texts rather than made-up examples (e.g. Reppen, 2010; Tomlinson, 2012), as they believe such an advantage could result in better-informed materials and more principled activities in language teaching/learning (Gilquin et al., 2007). These affordances have likewise inspired researchers and educators in the EAP teaching field to utilise NS corpora.

NS corpora, as resources that provide both ready-made authentic and natural language use, have shown great potential in textbook and material development. Their strength is quite apparent when contrasted with traditional teaching materials mostly based on intuitive and inauthentic language usage. Consequently, it makes sense that the creation and implementation of English L1 corpora in language teaching and materials development will continue and will go on to make a valuable contribution to the successful future development of EAP teaching practice.

Learner corpora are still relatively young, in comparison to NS corpora, particularly in the field of language teaching and learning. Learner corpora, as defined by Nesselhauf (2004), refer to systematically organised electronic collections of texts generated by language learners. Here, 'language learners', we adopt Nesselhauf's (2004, p.128) definition of referring to "either somebody learning a foreign language or to foreigner learning the language in a country where it is spoken natively". 'Systematic' indicates that the data were collected based on certain strict criteria, such as learners' L1 background and learners' language proficiency level. The definition of 'texts' in learner corpora differs from that pertaining to NS corpora, as it does not specifically refer to texts that occur in a natural setting. This is owing to the fact that it is difficult to find naturally occurring texts in a foreign language environment. Therefore, either electronically collected oral interviews or the free compositions written for a particular course can all be considered learner corpora.

Today, more than a hundred learner corpora have been compiled (Ishikawa, 2011) and there is a growing interest among educators in using them, especially in the EAP field (e.g. Coxhead, 2010; Flowerdew, 2014b; Gilquin, Granger & Paquot, 2007). The findings from contrastive interlanguage analyses of learner corpora have revealed EFL learners' distinct language characteristics in terms of, for example, lexical choices, grammatical patterns, and pragmatic and semantic features. While, as argued above, there is now no question that applying NS corpora to EAP materials is beneficial, these findings raise the question of whether this is indeed sufficient, as NS corpora "give no indication of what is difficult for learners" (Granger et al., 2007, p. 253). What EFL learners may want from EAP materials is not only to see what the native language is like, but also to address the specific language difficulties they encounter as language learners. By demonstrating the errors learners make in context, as well as the linguistic devices they frequently under-, over-and misuse in comparison with the native

language, learner corpora might provide learners with a better understanding of the differences between their own production and the relevant native language feature.

Nessulhauf (2004) suggests two ways that NS corpora can be applied in the language teaching field. The first one is called the 'Birmingham' approach; it involves using the findings of corpus analysis of native speakers' language, such as frequency information, to inform pedagogic materials (e.g. textbooks, dictionaries and computer-assisted language learning programmes) and especially reference materials. The second one is data-driven learning. On this approach, students analyse corpus examples, either by accessing the corpus themselves using the relevant software, or in the form of concordance lines extracted from the corpus and prepared by the teacher. Learner corpora can also be employed in instructional materials in these two ways, but both involving combining learner corpora with NS corpora. The more direct way is to extract examples of usage typical of a certain group of second language learners and highlight them in the teaching materials to help learners focus on these disparities between their own linguistic production and that of NS students. The other, more indirect, way is to derive insights from learner corpus analysis, allowing these to influence the materials and explicitly teaching the generalisation.

Despite the many useful observations gleaned from learner corpus analysis, for the most part, claims as to the value of learner corpora for language learning/teaching have not been widely put into practice. A careful examination of the major EAP materials finds that most corpus-informed materials mostly rely on NS corpora exclusively (e.g. Coxhead, 2000; Thurstun & Candlin, 1997) and that learner corpora still play a relatively modest role in EAP materials design. There are several explanations for this phenomenon. Although the quantity of learner corpora has increased rapidly over the past a few decades, at least for the English language,

there are still many gaps; for instance, English produced by speakers of many different L1 backgrounds is not yet depicted in corpora. Where such corpora exist, they are often limited to one or a few genres, text types and English proficiency levels. In addition, most well-designed learner corpora are not available and/or free to the public, as their compilers are not incentivised to give away for free what cost them huge amounts of effort and perhaps money. Therefore, teachers and material developers, sometimes create their own learner corpora to suit their own learners' needs and meet the relevant teaching objectives. Nevertheless, corpus construction, let alone corpus annotation, is a time-consuming operation. Leech (1998, xvii) said that "the compilation of a corpus (with proper attention to quality, design criteria and so on) always takes twice as long as one thought, and sometimes ten times as much effort". Furthermore, the compilation and annotation of learner corpora requires expertise; the process may be considered difficult for most educators and materials developers.

Given the lack of public learner corpora resources and a need for more research showing whether and how learner corpora could usefully inform pedagogical materials, it is not surprising that learner corpus studies do not seem to have yielded an outstanding impact on the development of EAP materials (Nesselhauf, 2004, p. 137). One of two exceptions is learner dictionaries, where learner corpus research findings have been used to compile and/or improve them, e.g. *Longman Language Activator* (1993), *Cambridge International Dictionary of English* (1995) and *Longman Essential Activator* (1997). Another noteworthy field is that of computer-assisted language learning (CALL) programs. *WordPilot* created by Milton (1998) is one of the examples that brought learner corpus research together with pedagogy in the field of EAP. Based on the known challenges encountered by Hong Kong learners, *WordPilot* includes tools and activities, such as proofreading exercises and lists of words commonly

underused by English language learners, to help learners address their language usage issues.

We have seen then that previous studies suggest that learner corpus findings can be usefully integrated into the development of EAP materials. Despite this being a growing field, it is still under researched, and we need more studies that show exactly where and how learner corpora can be most usefully, and practically, applied. In this thesis, I will be examining the application of learner corpora to the development of EAP writing materials, focusing on the learning of epistemic lexical verbs (ELVs).

1.2 Epistemic lexical verbs in academic writing

The competency to deliver an appropriate level of assurance and probability in a proposition is critical to producing good quality academic writing. To be effective, writers are required to make statements, distinguish opinions from facts and also evaluate the level of assurance and modesty delivered. These characteristics of the linguistic feature are together referred to as epistemic (Hyland & Milton, 1997). Such epistemic comment enables writers to modify the strength or force of their statements in an attempt to persuade their readers, forestall potential criticism and eventually win recognition for their points of view. Among all the epistemic forms used to fulfil this function, ELVs compared with other epistemic devices (such as epistemic modal verbs, adjectives, adverbs, and nouns), provide a more precise and transparent means of indicating writers' confidence in their statements (Hyland & Milton, 1997). Such a characteristic grants ELVs an important place in academic discourse to deliver different degrees of commitment to the propositions. Hyland (1998), on the basis of Palmer's (1986) study, classified ELVs into four categories, according to what type of evidence the writer relies on to give the claim: the speculative category (e.g. *believe*, *speculate*) indicates the conjecture about the truth of commitments; the deductive type of ELVs (e.g. *conclude*,

suppose) concerns presenting conclusions or inferences based on reason or theory; the quotative category of ELVs (e.g. *suggest, show*) involves both acknowledging previous findings or literature and indicating either speculative or deductive judgements, and finally the sensory class (e.g. *appear, seem*) refers to the sensory evidence which writers rely on to support claims.

While ELVs have been shown to be of great importance to academic writing, they are generally considered to be difficult and challenging for EFL students to learn (e.g. Aijmer, 2002; Holmes, 1988; Hyland & Milton, 1997; Vass, 2017; Wu & Paltridge, 2021). There are several explanations to account for this phenomenon. The main difficulty is the fact that the words are polysemous, that is, they can convey a range of different meanings. Therefore, it is difficult to interpret the specific functions or meanings via only a single word. For example, we can see that *argue* can be used as an ELV to show support for a proposition (Example 1a) but can also indicate disagreement with others (Example 1b). Therefore, determining how an ELV should be employed requires a pragmatic interpretation of the actual context.

Example 1.1:

- a) Lancaster has **argued** that children do provide some economic profit, as they can be a way of claiming higher benefits and gaining access to housing, (1965, cited in Andorka, 1978, p364). (British Academic Written English (BAWE) corpus¹)
- b) He **argues** with Creon because he wants justice for Antigone: 'I see my father offending justice- wrong.' (Sophocles, Antigone, l.833) (BAWE corpus)

¹ BAWE (British Academic Written English) corpus, established at the turn of the 21st century, is compiled of 3000 proficient university-level student writing across four broad disciplinary areas (Social Science, Life Sciences, Physical Sciences and Arts and Humanities), see details in Nesi's (2011) study.

Also, a further complication is that the strength of epistemic tones can vary with different sentence constructions and in combination with ELVs indicating different degrees of commitment (see Example 1a-b). Taking the following two sentences as an example, *assume* indicates a more tentative meaning than *argue*, while the first-singular person pronoun, in contrast to the sentence construction of concealing the writer's presence, strengthens the force of the commitment.

Example 1.2:

- a) I **assume** Archer agrees with my view that thoughts are expressed in behaviour
(BAWE corpus)
- b) It is **argued** that badgers are the main spreaders of the disease. (BAWE corpus)

In addition to these complications, students' L1 languages and cultural backgrounds have often been considered as additional factors that account for certain characteristics of non-English L1 students' writing (e.g. Chen, 2010; Hu & Li, 2015; Oh, 2007, Yang, 2013). Such an influence may lead EFL students to express an epistemic tone which is considered either too authoritative or diffident (Hyland & Milton, 1997).

To have a more precise picture of these difficulties, a number of researchers have compared the use of ELVs between NS and non-English L1 writers in different genres of academic writing. For example, Salazar & Verdaguer (2009) showed that Filipino and Spanish L1 students in argumentative writing employed a restricted range of English ELVs and had incomplete mastery of the epistemic meaning of certain lexical verbs as well as difficulty in using the depersonalised expressions of ELVs to relate the writers' viewpoints to another. The findings are supported by a study conducted by Kim & Suh (2014) who compared the use of epistemic lexical items in essays written by Korean and British counterparts. The first

influential investigation of ELVs in Chinese EFL students' writings was conducted by Hyland & Milton (1997) who found that their Hong Kong higher school students relied on a limited range of ELVs in their composition and tended to make stronger assertions. In recent decades, with an increasing number of Chinese students studying academic written English, a small body of studies have emerged that focus on academic texts written by Chinese EFL learners, such as argumentative essays (e.g. Chen, 2012; Hu & L1, 2015; Meng, 2012; Yang & Zeng, 2021) and Master and PhD thesis (e.g. Gabrielatos & McNery, 2005; Geng & Wharton, 2016). These studies have together shown that Chinese L1 students differ from English L1 students in using ELVs; for instance, they tend to rely on different range of ELVs as well as make strong assertions compared to English L1 writers.

As an English instructor in China, my experience led me to observe and encounter issues relating to the problematic usage of ELVs by Chinese EFL students. I observed that Chinese L1 writers tend to regard ELVs as synonyms and arbitrarily use them to express statements without considering the subtle differences of epistemic modality they indicate. This tallies with conversations I have had with Chinese MA students studying in UK universities; they noted that examiners often point out in their assignment feedback that the tone of statements is a bit stronger than it should be and that they should be more cautious of using these certainty markers. In addition to the complexities of English ELVs mentioned above, learners' difficulties may be compounded by an important fact that ELVs have often been misrepresented or ignored in EAP materials. In the published EAP textbooks and teaching materials, there is a wide disparity in the treatment of ELVs. Hyland (1994) in his research chose 14 generally-popular commercial EAP textbooks on the market and found that the coverage of ELVs inside was patchy and most of them exposed learners to a narrow range of the most frequently occurring devices. Of these 14, only *Approaches to Academic Reading*

and Writing (Arnaudet & Barrett, 1984) introduces the ELVs with a reading example as well as discussing whether they express certainty, neutrality or uncertainty in the context. Following the instruction, the textbook also provides an exercise where students are required to select an appropriate ELV based on the context provided.

Similarly, in the domestic Chinese market of English textbooks, it seems that despite the rising trend of learning EAP due to the internationalisation and economic globalisation of college education, the supply of textbooks and teaching materials covering ELVs is also far from satisfactory. Among the published materials, most give ELVs less focus – simply listing items, without giving adequate explanations of their discourse functions and differences in regard to the epistemic tones expressed by each device. In this sense, EAP materials construction involving ELVs, no matter whether this is worldwide or in the China market in particular, is underdeveloped. However, due to the clear difficulty EFL students have in acquiring ELVs as well as their centrality to academic writing, it appears that greater and more accurate information about this topic should be a priority.

1.3 Research questions

Acknowledging Chinese EFL learners' difficulty in manipulating ELVs, as well as their patchy coverage in published resources on the market, led me to consider how we can construct EAP materials that provide more detailed information about ELVs in order to assist Chinese students in gaining more control over this area of academic writing. As noted in Section 1.1, materials development has benefited from corpus-based work, especially from NS corpora, as they can provide enriched authentic description of the target language produced by native speakers. Nevertheless, the extent to which learner corpus data and research findings might be useful in the learning and teaching of specific and problematic aspects of EAP is less clear.

I therefore, would like to investigate the potential of incorporating learner corpus in the development of EAP materials construction.

The study unfolds in two stages. Firstly, an English L1 corpus and a Chinese L1 learner corpus of English, comprised of MA academic assignments in the field of TESOL, Education and Applied Linguistics were compiled and explored to identify the similarities and differences in the usage of ELVs. Both corpora and the comparative corpus findings were then fed into two different types of learning materials: the first includes example sentences from the English L1 corpus and BAWE corpus along with insights into the usage of ELVs by NSs, the second adds both L1 Chinese students' example sentences from the corpus and the comparative findings about the different usage of ELVs among the two different groups obtained from the preceding corpus analysis. The two types of instructional materials were transferred to the online software *Qualtrics* (see discussion in Section 6.4.4 in Chapter 6) and allocated to two groups of MA Chinese L1 students, with the control group (CG) receiving the first type of materials and the experimental group (EG) receiving the second type. Students' performance was assessed in the pre-, post-, and delayed post-tests; their processing time on each test and on exercises within each test, as well as their IELTS overall score were used as dependent variables to test their relative effects on students' learning outcomes. The quantitative findings were then triangulated with qualitative data collected via questionnaire and semi-structured interview, which explored students' attitudes towards the incorporation of learner corpus data into materials development. The following research questions are proposed in the present study:

- 1) Will there be any development of knowledge in the use of ELVs in both the experimental group (EG) and the control group (CG) after learning the materials? If so,

are the improvements retained after a certain period of time?

- 2) Does the experimental group (EG)'s knowledge of ELVs improve more than the control group (CG)? If so, in what aspect and to what extent does it develop more?
- 3) What factors contribute to differences in learning performance? How to these factors map onto students' learning performance?
- 4) What are learners' attitudes towards the materials? Do learners value the examination of Chinese L1 students' data as part of their learning materials?

As can be seen from the above questions, in addition to exploring the potential of incorporating learner corpus data into the development of EAP writing materials focusing on the specific language difficulty of ELVs, the present study also attempts to examine whether the learning behaviour (i.e. processing time) and the English proficiency level could potentially influence students' performance. In the studies of second language acquisition (SLA), the use of processing time (or also called processing speed or reaction/response time) to investigate the language information-processing abilities of EFL learners has been widespread over the past few decades. It can provide useful insight into various processing patterns, such as syntactic and lexical processing, manifested by EFL learners (e.g. Chen, 1990; Friederici & Mecklinger, 1996; Vafaei, & Suzuki, 2020; Yap & Seow, 2014), as well as measure its relationship with the performance of L2 learners in the learning experiment (e.g. Benati, 2022; Sonbul & Schmitt, 2013). Likewise, SLA research has explored the relationship between English proficiency level and learning performance in different areas, such as whether English proficiency affects pragmatic comprehension (Taguchi, 2005; Xiao, 2015).

While, as mentioned above, the whole learning experiment was carried out on Qualtrics, an online language learning (OLL) environment, the present study is not OLL-based in the sense,

as it does not investigate whether OLL has an effect on the development of students' knowledge compared with traditional classroom learning environment. Qualtrics was mainly used as a medium to deliver the treatment and facilitate further data analysis, and it also allowed the researcher to record learners' processing time on the tasks when they were dealing with input. Hulstijn (2000) highlights that online software has the potential to provide researchers with a more comprehensive understanding of the SLA process. Until now, there have been currently a paucity of research that uses computational technologies to record learners' learning behaviours when they deal, in particular, with corpus-informed input in a self-accessed OLL environment. This is thus one of the objectives of the current investigation. As English proficiency level is considered one of important measurements in the learning experiment in the field of SLA, this was also included in the present study, together with processing time, to explore their relative effectiveness in contributing to the learners' performance.

1.4 Outline of the thesis

The thesis is organised into ten chapters. The following Chapter 2 is the first literature review chapter. It begins with a discussion of the principles of the compilation of both NS and learner corpora. This is followed by a detailed discussion of the considerations and approaches involved when incorporating either NS or both types of corpora in the development of EAP materials, as well as a systematic review of the previous studies that have attempted to develop corpus-informed teaching/learning materials. The final section emphasises the framework that the learning materials in the present study followed as well as the SLA theories addressed by the developed materials.

Chapter 3 is the second section literature review which firstly introduces the taxonomy of

epistemic modality as well as ELVs. The section following is a discussion of the different levels of epistemic commitment reflected by both individual ELV and sentence constructions. The chapter concludes with a reflection on EFL learners' different and problematic usage of ELVs, indicated in the literature as well as the deficiencies of EAP textbooks in introducing ELVs.

Chapter 4 outlines the methodological approach of the corpus study. It begins with stating the approach to compiling the corpora as well as the data processing, including data cleaning, data annotation and the issues of reliability and validity of the annotation.

Chapter 5 is the first data analysis chapter of the corpus study, focusing on the comparison between English L1 and Chinese L1 students' usage of ELVs from the following five aspects: overall frequency, semantic distribution, epistemic commitment, sentence constructions as well as the grammatical patterns. Section 5.7 also compares the results obtained from two different stages of the corpus-based analysis by employing different analytic approaches. The Chapter finishes by highlighting the implications of the corpus findings for the production of associated learning materials.

Chapter 6 discusses the methodology adopted in the learning experiment. It starts with an introduction to the research questions that will be addressed, followed by an explanation of the rationale and organisation of the learning materials. After that, the chapter introduces the instruments utilised in the study to evaluate the performance of the learners, as well as the pilot study and data analysis methods for each instrument. In the end, the ethical considerations during the experiment are described.

Chapter 7 and Chapter 8 present the data analysis results of the learning experiment. Chapter 7 discusses students' performance in the tests from both quantitative and qualitative perspectives. Chapter 8, on the other hand, focuses on students' attitudes towards the

materials revealed in the questionnaire and interview.

Chapter 9 is the discussion chapter that reviews all my findings from the learning experiment. The main objective is to address the four research questions proposed in the study. The chapter also connects the findings obtained from the data analysis in Chapter 7 and Chapter 8 with the previous literature discussed in Chapter 2.

Chapter 10 is the final conclusion chapter. It is divided into four sections. The chapter summarises the whole thesis before pointing out its significance and limitations. The chapter concludes with my recommendations for future studies.

Chapter 2 Literature Review Part 1: Corpora and EAP Materials Development

2.1 Introduction

This chapter provides a detailed review of theoretical principles of corpus compilation and the development of corpus-informed English for Academic Purposes (EAP) materials, especially learner corpus-informed EAP teaching/learning materials. The chapter is organised as follows: Section 2.2 details the principles of the compilation of native speaker (NS) corpora and learner corpora separately. In Section 2.3, I discuss the underlying theoretical principles of incorporating NS corpora into materials development and consider how to combine both NS corpora and learner corpora to inform teaching/learning materials. Then, the theoretical basis of incorporating data from learner corpora into EAP writing materials development will be introduced in Section 2.4 from the following two perspectives: materials development principles on the basis of SLA theories and the inner characteristics of the corpora themselves. In the end, Section 2.5 will give a brief summary of this whole chapter.

2.2 Principles of English L1 corpus and learner corpus compilation

2.2.1 Principles of English L1 corpus compilation

Since the late 1980s, corpus linguistics has been a well-established subject of study, driven by the advent of computer science. Several researchers have tried to give their own definition of what a corpus refers to; for example, according to Renouf (cited in Sinclair, 1987), a corpus is a collection of spoken or written texts that are stored in a computer for linguistic research purposes. Sinclair (2004) built on this definition and proposed that 'A corpus is a collection of pieces of language text in electronic form, selected according to external criteria to represent, as far as possible, a language or language variety as a source of data for linguistic research'.

Considering the above definitions, we can draw a conclusion that a corpus is a collection of spoken/written data that is selected by certain criteria, processed in the computer and used for analysing certain linguistic features.

Successful corpus compilation involves adherence to specific guidelines and criteria. A general corpus usually comprises text samples covering a wide variety of genres and topics in order to reflect the general usage of a certain language. In contrast, specialised corpora are composed of texts specifically collected from a particular domain, discipline, genre, etc., depending on the research objectives.

Whether constructing a general or a specialised corpus, the concept of “genre” holds a crucial position and various researchers have emphasised the importance of identifying the genres of texts during the corpus compilation process (e.g. Flowerdew, 2004; Reppen & Simpson-Vlach, 2019; Nesi, 2001; Zeldes, 2017). In the field of corpus linguistics, the concept of “genre” has received increasing attention over the past three decades both within the realm of corpus-based analysis and in its application to language teaching and learning. According to Swales (1990), genre can be understood as “a class of communicative events” (p. 45); these “communicative events” encompass “not only the discourse itself and its participants, but also the role of discourse and the environment of its production and reception, including its historical and cultural associations” (p. 46). Hyland (2008, p. 544), however, broadly defined genre as “a term for grouping texts together, representing how writers typically use language to respond to recurring situations”. Later, Nesi & Gardner (2012) defined the concept of genre specifically within the realm of academic writing. They acknowledged that genre is an abstract concept, pointing out that “they [genres] are not the written texts themselves, but conventional ways of doing things, realized through the written texts” (p.24). Nesi & Gardener

(2012) also emphasise, in a similar way to Swales (1990), that genre is not only a linguistic concept, but also a social and cultural concept, which involves considering the purpose of the communication, the role of the audience and the writer, and the overall context. These factors play a significant role in shaping the patterns of language use (lexico-grammar) within various genres of academic writing (pp. 24-25). Hence, genre awareness is required in corpus building. It helps the compiler to gain a better understanding of the texts included in the corpus and to evaluate their level of homogeneity, ensuring the reliability and validity of the results of following corpus-based studies.

In addition to genre awareness, another key point is whether a more specialised corpus can represent real NS' language usage in the certain domain or area, as the corpus frequency data is often limited. Sinclair (1991) in his ten fundamental principles of constructing a corpus mentioned that corpus compilers should aim to make the corpus as representative of the target language as possible. However, Cook (1998) counters that even the biggest corpora can only reflect a portion of actual language use, and specialised corpora can never truly be representative of a particular group even if the corpus compiler tries to achieve demographic and generic balance. In response, McCarten & McCarthy (2010) state that educators and material developers should not prioritise frequency data over pedagogical convenience. Hunston (2002) also agrees that frequency is not always the most important factor in English language teaching, as some aspects of English that are not frequent still carry a lot of information that is also useful to learners. McCarthy gives a summary for material developers who are trying to use corpus data (2010, p. 29):

Not least [of the challenges] are the questions of the size and type of corpus needed, and the relationship between the types of data collected in the corpus and the needs

and aspirations of the end-users of the course.

2.2.2 Principles of Learner corpora compilation

In the past four decades, corpus-based studies have primarily concentrated on the NS language. Not until the late 1980s and 1990s did scholars and linguists begin to investigate the language features of second/foreign language learners. The corpora composed of the data collected from language learners are referred to as learner corpora. Hunston (2002, p.15) gives a detailed definition of a learner corpus:

A collection of texts-essays, for example-produced by learners of a language. The purpose of this corpus is to identify in what respects learners differ from each other and from the language of native speakers, for which a comparable corpus of native-speaker texts is required.

As can be seen from Hunston's definition, learner corpora, compared with corpora built on NS' language, can reveal the differences between learners' interlanguage and the target native language, which may give a different perspective on how to improve English language teaching and learning. However, the learners' data utilised in language teaching and learning has traditionally been rather small, as it requires tremendous effort and time in data collection and analysis. This was especially true before computational progress made it possible to collect and store a great amount of data and analyse it conveniently with available corpus tools and analytical software. While learner corpora can be broadly characterised as a collection of language data produced by language learners, such a broad definition does not capture the fact that corpus compilers would typically exclude examples of learner' language data deemed less useful for English language teaching/learning. Granger (2002, p.7) provided a more specific definition of learner corpora, which focuses on how a particular learner corpus

should be constructed:

Computer learner corpora are electronic collections of authentic FL/SL textual data assembled according to explicit design criteria for a particular SLA/FLT purpose. They are encoded in a standardized and homogeneous way and documented as to their origin and provenance.

Granger's explanation indicates three basic principles for the compilation of learner corpora. The first criterion is that the learner corpora should present "authenticity", which means, all the data collected should be naturally occurring language as opposed to language generated under artificial or experimental conditions. Nonetheless, she further pointed out that this idea of authenticity is problematic in the case of learner corpora if they still adhere to the same standards as NS corpora. This is due to the fact that English language learning mostly happens in English as a foreign language (EFL) classroom, and students' language data inevitably involves some levels of artificiality and control. Granger therefore suggests that the term "authentic" should cover different degrees of authenticity in relation to the learner, and that the language use of learners generated in classroom activities, such as essay writing and text-reading, should also be considered authentic written and spoken data respectively. Secondly, learner corpora should be "homogeneous". The compilation of learner corpora should adhere to strict design criteria, with some of these criteria being shared with those used for native speaker corpora, such as discipline and genre. However, in addition, other important criteria such as L1 background, level of language proficiency, learning context should also be taken into consideration to ensure homogeneity (Granger, 2002, p. 9), as these factors play a vital role in ensuring the comparability between and among corpora, thereby increasing the validity of the research findings. The third criterion is that the learner corpora should be

designed specifically for SLA and Foreign Language Teaching (FLT) purposes. Unlike NS corpora which can fulfil multi-exploration functions, such as how language evolves with time and how language is used in different contexts, learner corpora mainly aim at investigating Second Language (SL)/Foreign Language (FL) learning mechanisms, improving or taking a closer look at SLA theories, or contributing to SL/FL teaching approaches and tools.

A further important consideration when discussing learner corpora is how we define the “learner”. Research examining the various terminology and definitions that have been particularly applied to English language learners (ELL) aims to identify the current terms and definitions that are truly representative and that are established in the best interest of the learners themselves. Díaz-Negrillo & Thompson (2013) in their discussion, observed that the “learner” of learner corpora typically refers to university or school students. However, they did not explicitly note the significance of English proficiency level in shaping the definition of ELL. As defined by the policy of the U.S Department of Education (2004), ELL is not a demographic group, but rather a subgroup that includes diverse students learning English as a second or additional language for academic improvement. This classification is based on one single trait: English language proficiency. Similarly, there is a body of literature that defines ELL as language learners in the early stages of English language development, compared to same-graded peers, specifically for academic purposes within the educational setting (e.g. Baker, 2006; Perez & Holmes, 2010). ELL learners have also been referred to by a variety of other terms in the literature, most commonly as EFL and ESL learners. Shu (1994) distinguishes between these two terms according to language input, language environment and affective factors, with EFL referring to learners learning English in a non-English-speaking countries (as a foreign language), while ESL indicates that English holds an equal or even more significant status as the learners’ mother tongue (as their second language). Iwai (2011)

concurred with Shu's definition of EFL and added further detail to the definition of ESL as relating to learners in countries where English is utilised as a means for communication and is officially spoken. However, it can be debated whether ESL should be considered as ELL; Gilquin (2015) suggests that ESL speakers producing these indigenised varieties of English (e.g. Singaporeans) should be seen as English language users rather than learners in the strict sense, as the language they produce is distinct from the varieties used in the countries where English is not official or semi-official communication language. Given these distinctions, Chinese L1 students in the present study can be regarded as EFL, as they are studying English in China where English is not the first/official language of the country.

To conclude, it can be seen that the compilation of a learner corpus is a complicated and laborious task, which requires more careful considerations from the researchers than the construction of an NS corpus. Consequently, there are very limited available learner corpora resources for research and material development. In the following Section 2.3.2, I will give a detailed discussion of the reasons behind this situation as well as an overview of the current progress of learner corpora and how they may benefit the development of EAP materials.

2.3 Corpora and EAP materials development

2.3.1 Application of NS corpora in EAP materials development

EAP textbooks and teaching materials should be the product of collaborative efforts between theorists and practitioners (Richards, 1993). Traditional textbooks, however, have been criticised for relying too much on folk ideas and intuition when trying to describe academic discourse features and failing to reveal the usage of English that native speakers typically adopt. Lockett (1999, p. 50) in his study, indicates the issues of EAP textbooks in detail, especially in the field of writing:

Standards of writing teaching on EAP courses have sometimes suffered from being misinformed by somewhat facile notions and received pseudo-wisdoms concerning the nature of academic writing. The tendency towards reliance on superficial, intuitive or impressionistic notions, which gloss the real nature of academic writing has, it must be said, to some extent been purveyed by the very textbooks/writing handbooks which purport to give students useful guidelines and insights into the writing process.

From this perspective, EAP writing materials need to be informed by studies in order to authentically reflect native English language usage. A few studies (e.g. Hyland, 1994; Moreno, 2003; Wood, 2003) comparing traditional EAP materials with written corpora also discovered differences in published teaching materials from what authentic language actually is. This has prompted some educators to consider and implement corpora in the construction of EAP materials. Hyland (1994) created a corpus of 14 EAP and 8 English for Specific Purposes (ESP) writing textbooks from post-beginner to advanced level and compared them to the JDEST corpus of science and technology and the Brown and LOB corpora in order to discover if the presentation of the following five categories of hedges (modal verbs, lexical verbs, modal adverbs, adjectives and nouns) was fully covered and accurate as well. He found that, among all 14 EAP textbooks, only the book *Assignment Writing: Developing Communication Skills* (McEverdy & Wyatt, 1990) covered all five categories; most of the books missed covering at least one or two categories of hedging devices. The books, such as Kennedy & Smith (1986)'s *Academic Writing* and Cohen & O'Day (1991) did not even cover a single category. Similarly, Moreno (2003) compared the texts extracted from 11 recent EAP writing textbooks to a corpus composed of 30 pieces of essays, examining the actual expression of 283 cause-effect relationships. The findings suggest that the textbooks provide a very narrow view of how to express causal

Example 2.1

(BAWE corpus)

24

A less quantitative approach is taken by Jou (2017) who in the study interviewed eight graduate students about their opinions of the genre-oriented tasks in the EAP writing book- *Academic Writing for Graduate Students* (Swales & Feak, 2004). The results show that students' feedback was generally positive, but they also revealed some challenges; for example, some students reported that there was a lack of contextual information in the tasks involving the learning of reporting verbs. The task asked students to identify which reporting verbs were more objective and which were more evaluative. However, as the idea of being objective and evaluative was new to most of the students and there was insufficient information introducing this idea, they found themselves confused while learning the function of this linguistic feature.

The findings of the above studies seem to show that many EAP writing textbooks are not completely effective in dealing with different perspectives of EAP language usage. They tend to be either less likely to be authentic or lack sufficient explanations regarding certain linguistic features. Therefore, materials developers and educators need to pay more attention to the vital and key features of EAP writing language and show students how these features are used by proficient English language speakers with sufficient and accurate explanations and introductions. In the past two decades, corpus-based research has been proposed for pedagogical purposes in EAP materials development. Johansson (2009) suggests that corpora can be used to develop teaching materials and textbooks. Römer (2011) also emphasises the indirect benefits of native/expert language corpus applications, such as the development of teaching materials and syllabus design, which could give a more accurate and adequate picture of how the language is actually used in natural language production and practice. Similar thoughts are worded in Furniss's study (2013), which claims that corpus-based EAP textbooks or materials can better serve language learners, as the language provided is

authentic and contextualised. Therefore, an increasing number of educators and materials designers have started incorporating corpora, especially native/expert speaker corpora into EAP materials since the 1990s.

Leech (1997) in his book proposed that there were two different ways of applying corpora in instruction: indirect use and direct use (see Figure 1). Direct uses are those where students are required to examine the original corpus data, either by being presented with concordance lines extracted from the corpus or doing hands-on tasks using a corpus tool to examine concordance lines. This suggests that both instructors and students may be actively involved in the language learning and teaching process by working together with corpora. Often, the data-driven learning (DDL) approach, which was coined by Johns (1991), is the best representation of direct applications, referring to “the use in the classroom of computer-generated concordances to get students to explore the regularities of patterning in the target language, and the development of activities and exercises based on concordance output” (Johns & King, 1991, p. iii). In contrast, indirect use refers to drawing on corpus-based analysis results to inform the production of textbooks and the content of courses. Only the course developers or the instructors necessarily need to access the corpus data and the users may not even be aware of the information was informed by the corpus data. This means that the indirect application of the corpora can help the teacher and the material developers decide what to teach and when.

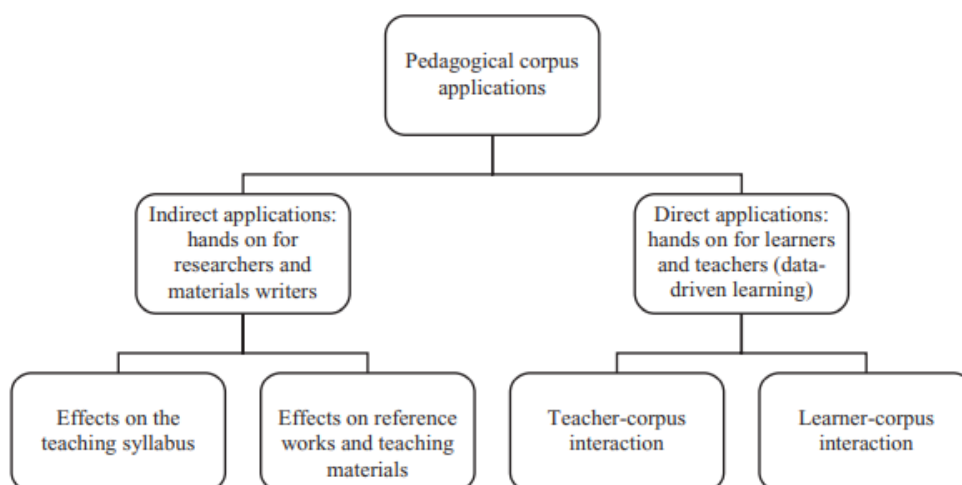


Figure 2.1 Application of NS corpora in second language teaching and learning (Römer, 2011, p. 207)

As just mentioned, the direct approach enables both teachers and learners to get hands-on with concordance tools and corpora to identify language patterns, helping learners to produce native-like language in an autonomous way. Chambers (2010) contends that the DDL approach of using concordance tools in the classroom is therefore a highly experiential and motivating activity for language learners. A number of researchers have carried out studies by adopting the DDL approach to explore the effectiveness of direct pedagogical NS corpus applications. Aston (1997) proposed that the concordance activities could be used for self-access work and he suggested that a limited number of concordances can be provided in the worksheets so that students are able to give definite answers (e.g. grammatical patterns they are able to identify) by examining the concordance lines. Further examples of DDL approaches in the classroom can be found in Aston's later study (2009), which focused on using XML edition and XAIRA software (BNC, 2007) to help language learners identify certain linguistic features, such as the colligation of *begin* and *start*. Stevens (1995) and Flowerdew (1996) developed concordance-informed EAP materials by employing NS and expert corpora. These

materials are either based on what researchers consider to be the most important linguistic features in EAP writing, or on the weaknesses of language learners.

Thurstun & Candlin (1997) in their EAP book, *Exploring Academic English*, firstly incorporated the concordance lines of lexical words to help EFL learners increase their awareness of how to use these devices to perform rhetorical functions in EAP writing, e.g. refer to the literature, report others' studies, express standpoints tentatively. As the concordance lines were already extracted from the corpus, the teachers and learners did not need to access the corpus data with concordance tools by themselves. Similarly, Charles (2011) used hands-on concordance in the classroom to teach the rhetorical functions of EAP writing to international graduates and evaluated students' attitudes towards this learning approach. The results indicate that attitudes towards using corpora in learning rhetorical functions were generally positive and a relatively high percentage of students agreed that working with concordance lines helped them better understand how to use rhetorical functions. Cobb, Horst & Nicolae (2005) applied concordance lines in the vocabulary learning of a reading course. They too received a generally positive result: students who engaged in the concordance-based activity demonstrated better performance than those who did not. Further examples of applying the DDL approach to EAP teaching and learning are described in studies such as Anthony (2019), Cotos, Link & Huffman (2017), Lessard-Clouston, & Chang (2014), O'Keeffe, McCarthy & Carter (2007). However, Thompson (2001) criticises that although corpora enable the learners to access authentic language examples, each unit can only focus on three or four lexical items, as each lexical device is presented with several lines of concordances; therefore, the number of words that students learn related to the time that they invest in learning is quite low.

Regarding the indirect application of corpora to the EAP field, Barlow (1996) pointed out that,

“[t]he results of a corpus-based investigation can serve as a firm basis for both linguistic description and, on the applied side, as input for language learning” (p. 32), which indicates that findings from corpus research can have a great influence on teaching materials and syllabus design. Carter, Hughes & McCarthy (2000) in their book, *Exploring Grammar in Context*, based on the corpus finding, demonstrated how grammar functions beyond the boundaries of a single sentence by employing authentic NS written examples. Parrott’s (2000)’s book *Grammar for English Teachers*, was also based on the corpus investigation and used extensive authentic NS data, but Parrott included some learners’ data too, such as in the exercise of error correction to increase students’ awareness of certain erroneous grammatical sentences they may produce.

Another trend of indirectly using NS corpora is to inform the teaching syllabus, emphasising the usage of certain linguistic features. Grabowski & Mindt (1995) used the Brown and LOB corpora to investigate irregular verb forms and produced a corpus-based frequency learning list. Römer (2004) provided a specific illustration of the indirect use of corpora in English language instruction by comparing the modal auxiliaries in EFL textbooks with spoken British English corpus data. She found that there were a number of discrepancies between the usage presented in the textbooks and the corpus data; she suggested that corpus findings can be indirectly applied in teaching materials to enable both teachers and learners to have a clearer idea of actual language use. The use of Coxhead’s (2000) *Academic Word List* (AWL) and *Academic Formulas List* (AFL) (Simpson-Vlash & Ellis, 2010) is another example of showing how NS corpora can be applied in EAP syllabus design. Based on the corpus findings of academic writing, Coxhead’s (2000) AWL covers the lexical devices that are most important and relevant for EAP language learners. In 2010, Simpson-Vlash & Ellis, based on Coxhead’s idea, produced an AFL containing word collocations that are most frequently used in

academic as opposed to other non-academic written and spoken genres. Both the AWL and the AFL contribute to the improvement of the EAP syllabus by adopting an indirect approach of applying corpora into language teaching. The Collins COBUILD series, based on authentic native English language use, informs a variety of teaching materials, such as English usage guides and grammars. These provide more reliable information about the usage of the English language than traditional teaching materials, which are not authentic native-corpus-based (see Goodale, 1995; Sinclair, 2001, 2001).

Nevertheless, there is an ongoing debate about whether corpora of expert writing should serve as a norm EAP teaching practice. Ädel (2006, pp. 206-207) argues that expert writing “represents the norm that advanced foreign learner writers try to reach and their teachers try to promote”; in contrast, non-expert writing, such as native L1 student writing, is viewed as problematic. For example, native English L1 students have been found to tend to have more dangling participles than English learners (see Granger, 1997). However, a group of researchers question about the appropriacy of entirely relying on expert writing to develop language teaching materials (e.g. Ivanic, 1998; Harwood, 2005b), particularly taking into account the impact of genre differences on language use, as Nesi (2016, p. 208) indicates:

“the writing of proficient L1 students may constitute a more realistic model because it is at a comparable educational level. It should be borne in mind that in many contexts students are not expected to write in the same way as established writers,...the findings of research article corpora seem most relevant in cases where EAP is taught to graduates preparing for research careers; at lower levels the writing normally expected of students may have a different communicative purpose, and evidence from corpora of research articles needs to be applied with caution.”

Native speaker/expert corpora have exerted a huge influence on the EAP field and have led a new direction in syllabus design, teaching materials and textbooks via their direct and indirect application. However, Römer (2011) in her discussion suggests that for the direct use of corpora in EAP teaching and learning, especially when adopting the DDL approach, more available and easy-access corpora and concordance tools should be provided for both teachers and learners online to encourage them to get involved; also, some basic training on how to use corpus tools should also be provided to create a more DDL-friendly environment for both teachers and learners. Regarding the indirect use of corpora in EAP settings, more work should be conducted to evaluate its effectiveness and more large and specialised corpora are expected to be compiled and used for different groups of English language learners.

2.3.2 Application of learner corpora in EAP materials development

There is no doubt that NS corpora have greatly informed EAP materials development and provided a new perspective on the design of EAP textbooks and teaching materials. While many researchers have recognised the value of NS corpora in EAP materials design (e.g., Boulton, 2017; Boulton & Pérez-Paredes, 2014; Cotos, 2014; Flowerdew, 2014a; Römer, 2011; Vyatkina & Boulton, 2017), learner corpora still remain in a marginal position in this field. However, the potential of learner corpora to play a more significant role in language teaching has begun to be recognised since the end of the last century (e.g. Aston, 2000; Cotos, 2014; Granger, 2009; Meunier, 2010; Nesselhauf, 2004; Tribble, 2001; Seidlhofer, 2002). Nesselhauf (2004) argues that, for language learning and teaching, it is not only important to know what native-like language use is, but also essential to know the typical issues that learners of certain L1 backgrounds have encountered.

Interest in learner corpora is developing rapidly, and some relevant studies have been published that show the potential for the EAP field. A good deal of EAP literature has called for the need to integrate learner corpora into EAP materials design (e.g., Coxhead, 2011; Flowerdew, 2001; Gilquin, Granger & Paquot, 2007; Krishnamurthy & Kosem, 2007; Stoller, 2016). In their corpus research conducted in 1993, Milton and Tsang collected 2000 assignments produced by first-year undergraduates in Hong Kong to compile a corpus, composed of the composition section of the Hong Kong Examinations Authority's A level Use of English. They recommended the use of learner corpora together with NS corpora to develop teaching materials targeting learners' most frequent language usage problems. In the same vein, Flowerdew (2001) argues for the necessity of including both the insights gained from learner corpora and NS corpora in the development of materials and the syllabus. Paquot (2007, p.127) states the significance of learner corpora in EAP materials development:

Descriptions of EAP words should then be refined on the basis of a careful analysis of learner corpus data that will highlight learners' attested 'difficulties' in using these words (cf. Flowerdew 1998; Granger 2004a). Learner corpora are the only type of data that can reveal learners' typical 'difficulties' in terms of underuse, overuse, misuse and idiosyncratic use of EAP words or multi-word sequences.

A similar standpoint was also proposed by Gilquin et al. (2007) who suggest that *Characterising the Learner* show great potential to present a precise picture of how SL/FL learners use English in an academic setting, which in turn, can assist practitioners in developing EAP materials. Mark (1998) in the following framework (see Figure 2.2), detailed how the *Learner Language* can illuminate the following three pedagogical aspects: task, syllabus and curriculum.

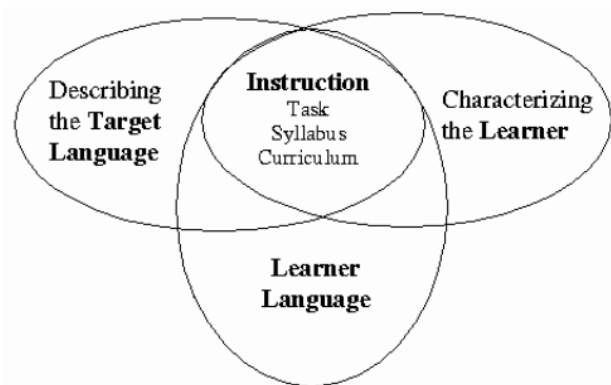


Figure 2.2 Focus on learner output (Mark, 1998, p.78)

Although, as noted above, a number of researchers have already acknowledged the importance of learner corpora in EAP teaching materials design, its application in the development of materials remains marginal. Flowerdew (2001) in her study explained the reasons for this: as there are limited learner corpora available in the public domain that can be used by teachers, teachers have to compile their own corpora by collecting their own students' works, which is a time-consuming and expertise-required process. Granger (2002) shares the same opinion, indicating that data collection and analysis require significant efforts and time commitment from the researcher. Gilquin, Granger & Paquot (2007) also point out that one of the reasons that restricts the incorporation of learner corpora into EAP materials development is that the difficulty of using the English language is mostly L1-oriented. Due to the influence of the L1, learners with different L1 backgrounds are more likely to generate different rhetorical infelicities (e.g. DeKeyser, 2005; Luk & Shirai, 2009; Pulido & Dussias, 2020; Thyab, 2016). However, from the standpoint of materials publishers, they prefer to develop materials that can be applied to more general students all around the world rather than just focusing on a specific L1 group due to commercial reasons. Therefore, there are very

limited materials on the market that can reveal L1-specific language difficulty. In addition, Granger (2009) emphasises that whether or not the characteristics of learner language revealed by the corpus research should be covered in the teaching/learning materials depends on a variety of factors, such as teachability, learning objectives and students' learning needs, as some of the learners' language usage errors may be more important for beginners than advanced learners. All of these factors combined have made the incorporation of learner corpora into the development of EAP materials more difficult and complex.

To date, over a hundred learner corpora have been compiled with the development of computer technology (Cotos, 2014). The largest and most influential learner corpus is the *International Corpus of Learner English* (ICLE, Granger, et al., 2009), including data from 25 different L1 backgrounds, amounting to over 5.5 million words in total. Also, several written corpora focusing exclusively on Chinese Mandarin speakers of English have been compiled recently for contrastive interlanguage analysis of Chinese L1 students' writing with English L1 writers. For example, the *Ten-thousand English Compositions of Chinese Learners* (TECCL) corpus (Xue, 2015) includes 1,817,335 words of L1 Chinese English learners' writing samples. *iWriteBaby* corpus (Xu, 2019) includes 8 million words of written data from English learners with L1 Chinese background. These developments in learner corpora have made it possible to present what types of misuse, underuse and overuse non-native speakers tend to make, and specifically Chinese L1 speakers. Today's educators and materials designers are thus better equipped to develop learner corpus-informed EAP teaching resources to meet learners' needs and address their problems with academic language.

The most commonly used approaches to applying corpora to language teaching, as introduced in Section 2.3.1 include both direct (presenting original corpus concordance lines

to students) and indirect (applying NS corpus research findings to improve pedagogical materials) approaches. These two methods can also be used for learner corpora. Nesselhauf (2004) explained the connection between learner corpora and NS corpora and how they can be applied in language teaching jointly (see Figure 2.3). In a more direct way, a learner corpus can be used to identify students' particular problems by comparing it with the NS corpus and more emphasis can be put on these areas. Regarding a more indirect approach, insights and findings can be derived from learner corpus research and then applied in language teaching, such as materials development and syllabus design.

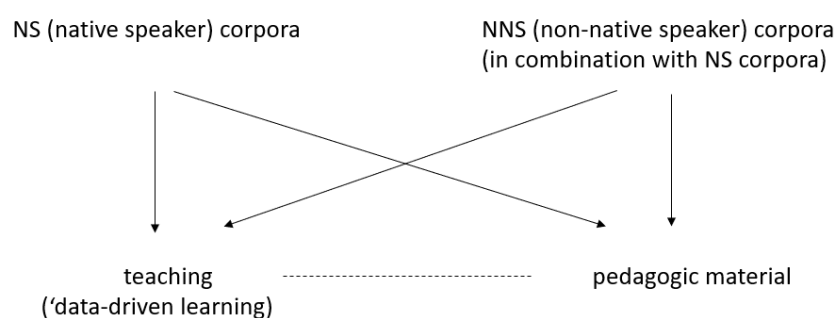


Figure 2.3 Application of corpora in the language teaching (Nesselhauf, 2004, p. 126)

Until now, the more direct approach just mentioned above has been gradually applied in the language teaching classrooms. Tribble (1990, 1991), as one of the first researchers, gave a detailed example of the application of a learner corpus in the language teaching classroom. He extracted a small learner corpus from the *Longman Corpus of Learner English* and investigated the usage of 'said' in comparison with its use in the *English Historical Review Corpus*. He found out that English language learners tended to overuse 'said' and some inappropriate usage had also been identified. Therefore, he gave an example including several concordance lines extracted from the learner corpus and suggested that the teachers can ask students to work on these concordances by rewording the sentences listed in order to

broaden their choices of vocabulary (see Figure 2.4).

PROF-AL	s to local places of interest as it is said the advs. brochure,
PROF-AL	say lack of freedom. But in my opion I say nuclear is the greatest
PROF-AL	even though they starve. At last, I'll say about the difference
PROF-AL	ht. You are definitely wright when you say the sea to be just
PROF-AL	riends house, I heard an opinion which says our Japanese are not

Figure 2.4 Concordances lines from Tribble (1991)

In a similar way to using the concordance lines of a learner corpus, Granger & Tribble (1998) compared the subset of French L1 students from the ICLE corpus with The British National Corpus (BNC) (2001) and observed that learners overrelied on the adjectives in their written texts, such as '*important*'. They used the concordance lines of French L1 students, and deleted the word '*important*' in designing the following exercises (see Figure 2.5)

Task 1 Extend you vocabulary by deciding which of the words in the list below would make the best replacement for '*important*' in following contexts given here – in some instances it would be better to continue to use '*important*'.

Task 2 Using the corpus data you have been studying and other reference works, make a list of the nouns which collocate strongly with each of the adjectives given in the list.

Alternative word list: critical / crucial / major / serious / significant / vital			
1.	nd imagine. This is the first and most	.....	advantage of science and tech
2.	nimal and human lives. One of the most	.....	consequence of pollution is the
3.	shown that they could work hard, take	.....	decisions, and become involved
4.	ties seem to ignore completely another	.....	factor people are slaves to:
5.	efficiency seem to be some of the all	.....	factors in our hypersophistica
6.	television set. This has of course a(n)	.....	impact on our mind: we are, ev
7.	e cause of women." This raises an	.....	issue: according to me people
8.	g the environment. Air-pollution is a(n)	.....	kind of pollution. Without be
9.	e in a world where television plays a(n)	.....	part and it is highly probable
10.	ir reintegration in society. This is a(n)	.....	point because in a sane and c
11.	itely answer this question. A third	.....	problem is the polution due to
12.	the choice of the programmes, the most	.....	question seems to be: Does te
13.	s in so critical a situation. The most	.....	reason is pollution. Gas from
14.	concerned, it is the object of a very	.....	requirement in the world of ad
15.	he influence of the media also plays a(n)	.....	role. According to the amoun

Figure 2.5 Concordance-based exercise (Granger & Tribble, 1998, pp.10-11).

In the same year, Milton (1998) produced *WordPilot* which is one of a few EAP teaching

resources resulting from both corpora of native and learner writing. He firstly identified difficulties in the language usage of Hong-Kong learners and created a series of activities and tasks via *WordPilot*, such as a list of words that are commonly underused by learners and proofreading exercises. Later, Cotos (2014) designed two types of concordance-derived teaching materials on linking adverbials, one of which relied solely on a native-speaker corpus comprised of research articles, and another added learners' data from the local learner corpus which is an electronic collection of students' argumentative essays as part of the coursework. Participants were divided into two groups and accessed to one set of materials. To test the effectiveness of adding learner corpus data into instructional materials, students' performance data on linking adverbials was collected from their writing samples in pre-, post- and delayed post-tests as well as a questionnaire. The findings suggest that both types of teaching materials increased learners' awareness of the observed linguistic feature, but that students who were exposed to learner corpora-informed materials showed better performance than those students who were provided with materials only based on native language.

Given this review of the application of learner corpora to the EAP field, the use of learner corpus concordance lines in EAP instruction has steadily increased throughout the last several decades. However, there are comparatively few learner corpus studies generating a remarkable influence on the indirect application of learner corpora to this area, except for learner dictionaries. The *Longman Learners' Corpus* (LLC), consisting of 10 million written English words of students, was used for compiling learner corpus-informed dictionaries, such as *Longman Language Activator* (1993), the *Longman Dictionary of Contemporary English* (1995) and *Longman Essential Activator* (1997); The *Longman Essential Activator Dictionary* (1997), for instance, includes 'help boxes' (see Figure 2.6) to encourage students to pay closer

attention to the errors identified in the *Longman Learners Corpus*. Also, Turton & Heaton (1996) compiled the *Longman Dictionary of Common Errors* which focuses entirely on the errors of learners.

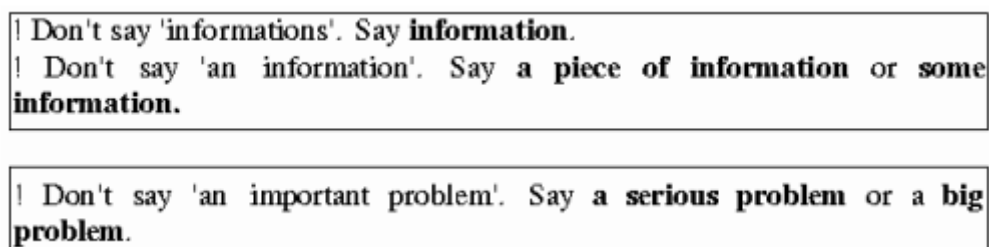


Figure 2.6 Help boxes in the Longman Essential Activator Dictionary

Most learner dictionaries target all learners, whatever their L1 backgrounds are. However, a number of researchers (e.g. Granger, 2002; Granger, 2014; Luk & Shirai, 2009; Shatz, 2017; Thyab, 2016) have found that certain errors made by learners have a close relationship with their L1 backgrounds. Given the lack of big learner corpora with different L1-specific backgrounds in the public domain, there is a major limitation in this area now and very few learner dictionaries contain L1-specific error notes. One exception is the *Cambridge Learner's Dictionary- English-Turkish* (2009). It contains fifty error notes from Turkish L1 learners based on the corpus analysis of the Turkish component of the *Cambridge Learner corpus*. Also, the *Louvain English Academic Purposes Dictionary* (LEAD) (2010), a web-based dictionary, includes both L1-specific and generic error notes. One of the big advantages of the dictionary is that it can be adapted based on learners' needs in terms of their subjects and L1 backgrounds, which allows learners to focus on the errors that are specifically relevant to their own situations.

The computed-assisted language learning (CALL) programme and the *TeleNex* (1996) project constitute another promising trend of incorporating learner research findings into teaching.

The CALL programme is software designed specifically for Hong Kong EFL learners targeting the writing area. It includes different types of error recognition exercises which aim to increase learners' awareness of the common errors that Hong Kong learners tend to make. Also, it allows learners to access a NS corpus, which presents the opportunity for learners to compare the native speakers' usage with Hong Kong learners' own production. *TeleNex*, a web-based programme, was designed for Hong Kong EFL teachers. It has a range of tools, such as '*students' problems*' showing the students' difficulties and '*teaching implications*' providing suggestions for teachers on how to help students avoid making these mistakes. All students' problems identified are based on the learner corpus *TELEC Student Corpus* (1998), and have been compile into *TeleGram*, a grammar database that covers issues such as uncountable nouns and passive construction.

With an increasing number of learner corpus studies, researchers are gradually realising that the application of learner corpora extends beyond the analysis of learners' interlanguage and mistakes. The learner corpora can also play an important role in language teaching, including in the EAP field. They can be used for revealing learners' typical errors by extracting concordance lines from the learner corpus and the teachers can ask students to autonomously discover patterns by comparing them with NS usage via the DDL approach. Also, learner corpora can help to improve pedagogical materials in a more indirect way; for example, by applying learner corpus findings to teaching materials to emphasise specific language usage, or by providing negative evidence to improve students' awareness of, and thus avoid, common mistakes. Overall, the application of learner corpora to pedagogical material development is gradually attracting the interest of researchers and educators. To advance it, more studies need to focus on pedagogical applications to evaluate the contribution of learner corpora to the language teaching field.

2.4 Theoretical basis of learner-corpus informed EAP materials development

As previously noted in Section 2.3.2, learner corpora have shown great promise in the construction of EAP teaching materials and syllabi that stress learners' academic English proficiency. Flowerdew (2001) also suggests that the insights from the comparative studies could also benefit the EAP materials development. It must be noted that the introduction of learner corpora to EAP materials development should be informed by the theories of Second Language Acquisition (SLA). Throughout this section, I will illustrate how learner corpus-based findings can be fruitfully applied in the development of EAP material that is aligned with and grounded in the principles of SLA.

2.4.1 Principles of EAP materials development and SLA theories

Materials development, as Azarnoosh, Zeraatpishe, Faravani & Kargozari (2016, p.2) define, refers to a process “involving production, evaluation, adaptation and exploitation of materials intended to facilitate language acquisition and development”. EAP materials development, therefore, specifically focuses on English language development for an academic purpose. Although there are a group of researchers attempting to teach languages with free approaches (e.g. Thornbury & Meddings, 2001), it is commonly acknowledged that language teaching is still mostly based on teaching materials and textbooks. Richards (2001) argues that these teaching materials serve as the foundation for delivering language input and practice opportunities to students in the classroom.

There have been a number of materials developers in the literature who describe the process of their materials construction as spontaneous and as mostly relying on their own intuitions; for example, the UK-based materials writers of the British Council Specialist Course in Prowse's (1998) study reflected that they wrote their materials heavily relying on their

intuitions while developing the materials, and see materials writing in the same manner as writing fiction. However, most material developers agree that materials development should follow certain frameworks or outlines. Richards (1995, p.105) argues that material development should be based on 10% inspiration and 90% effort. Also, Richards proposed a framework in which the language teaching materials should focus on what learners are likely to do rather than considering SLA. In contrast and in the same year, Rozul (1995, p.213) proposed that materials development should cover the following five components: starters, input, general information, language focus and tasks, which emphasise the importance of input in the language teaching process. Since then, researchers have gradually begun to take SLA principles into account when proposing the principles of language teaching materials development. Hall (cited in Hidalgo et al., 1995, p.8) suggests that:

Before planning or writing materials for language teaching, there is one crucial question we need to ask ourselves. The question should be the first item on the agenda at the first planning meeting. The question is this: How do we think people learn language.

Tomlinson (1998), on the basis of SLA and theory, proposed 15 principles for language teaching materials development (pp.5-22). In a later publication, he developed his original principles (Tomlinson 2010, p.83), and proposed that English language teaching materials should follow six principles (see Figure 2.7):

1. Expose the learners to language in authentic use.
2. Help learners to pay attention to features of authentic input.
3. Provide the learners with opportunities to use the target language to achieve

communicative purpose.

4. Provide opportunities for outcome feedback.
5. Achieve impact in the sense that they arouse and sustain the learners' curiosity and attention.
6. Stimulate intellectual, aesthetic, and emotional involvement.

Figure 2.7 Tomlinson's principles of the development of the language teaching materials (Tomlinson, 2010, p.83)

As can be seen from Figure 2.7 above, both Principles 1 and 2 are closely concerned with language input and its authentic nature. Tomlinson (2010, p.88) argues that the input provided in the materials should be authentic which can represent how the language is typically and genuinely used. He states further that the materials should contain extensive texts and plentiful examples which will be more likely to help students' comprehension of the input. Corpora, with a range of authentic language data and examples produced by speakers/writers, thus seem to be one of the most appropriate sources for material developers. Again, talking about authentic input, Principle 2 indicates that learners are more likely to develop their awareness of a specific linguistic characteristic if they are able to recognise the target language item and how it is utilised (Bolitho et al. 2003). Helping learners to 'notice' the language features involves two different approaches to draw their attention: providing implicit or explicit instruction in the materials. These two approaches will be discussed in detail in the following Section 2.4.1.1. In addition to the input, Tomlinson also emphasises the importance of the output in Principles 3 and 4, which suggest that the materials should provide enough practice opportunities for students to achieve the intended outcomes. In Principle 4 Tomlinson suggests that feedback for responses and explanations of the answers are expected to be provided and built upon the output tasks in order to help

students enhance their understanding of the language usage. The discussion of both input and output in the field of SLA will be presented in Section 2.4.1.3.

The final Principles 5 and 6 focus on learners' emotional involvement during the learning process. In relation to Principle 5, Tomlinson argues that the texts selected, and the tasks designed should be relevant and interesting, which can exert a positive influence on learners' learning experiences. Similarly, Principle 6 emphasises the significance of cognitive engagement and positive feeling respectively in helping students achieve the target outcomes. Also, adding some visual stimuli (e.g. arts or pictures) can achieve an aesthetic outcome, which helps to create a more positive and comfortable learning environment for learners.

SLA theories and language teaching materials development have always had a close relationship. The framework of materials development should not be merely based on the intuitions of the developers but should take SLA principles into account. In this section, I have presented Tomlinson's framework of EFL teaching materials development. In my study, exploring the value of incorporating learner corpora into EAP writing materials development, the materials I have designed will mainly follow the framework proposed by Tomlinson. In the following sections (2.4.1.1-2.4.1.3), I will give a detailed discussion of the relevant SLA theories mentioned in the above framework.

2.4.1.1 Implicit and explicit instructions

Implicit learning and explicit learning have always been a heated topic at the heart of SLA research, since Krashen (1981), who distinguished between learning (of explicit learning) and acquisition (of implicit knowledge). Implicit learning refers to knowledge that is not acquired intentionally, but acquired naturally without conscious operations, which is often closely

associated with the DDL approach. Explicit learning, in contrast to implicit learning, refers to the processing of input that learners can be aware of and with conscious awareness. In other words, it is an operation where language learners work out particular aspects of the language intentionally by themselves, or they are directly provided with the generalisations of the language rules. There has been a constant discussion about which approach may produce the most effective learning outcome. Krashen (1981) claimed that the only route to fluent language performance is to acquire it through implicit learning, e.g. inductive learning in communicative situations. Such an opinion has been refined in the following decades through the interactional approach, Task-based language teaching (TBLT) and input processing (VanPatten, 1996), but the central principle is still to avoid directing the teaching of language rules. However, Ellis (2002) discussed the necessity of explicit learning in L2 acquisition, emphasising that relying only on implicit instructions limits the potential for L2 acquisition:

“To the extent that language processing is based on frequency and probabilistic knowledge, language learning is implicit learning. This does not deny the importance of noticing [...] Nor does it deny a role for explicit instruction. Language acquisition can be speeded by explicit instruction. [...] focused L2 instructions results in large target-oriented gains, that explicit types of instructions are more effective than implicit types, and that the effectiveness of L2 instruction is durable.” (Ellis 2002, p.145).

A large number of studies have directly compared explicit instruction and implicit instruction in English language learning and the findings suggest that the former seems to be more effective (e.g. Fordyce, 2013; Takahashi, 2001). Regarding L2 pragmatic instruction, Takahashi (2001)’s findings on Japanese EFL learners suggest that explicit instruction is more effective than implicit instruction in developing L2 pragmatic competency. Similarly, Fordyce’s (2013)

study of teaching epistemic modality revealed that explicit intervention seems to be more effective than implicit treatment in both the short and long-term for developing the pragmatic competency of targeted epistemic modality devices. The same conclusion was reached by Jeon & Kaya (2006), Mirzaee & Esmaeili (2013), Rajabia, Azizifara & Gowhary (2015). In terms of grammar learning, extensive empirical SLA research since the 1990s has also demonstrated that explicitly drawing students' attention to the form of the language leads to a better learning outcome than implicit instruction. Scott (1990), as one of the pioneers in comparing the effects of these two instructions on grammar acquisition, showed that the acquisition of the French relative pronouns by receiving explicit instruction was easier than for those who received implicit instruction. Similarly, Nazari's (2013) study of comparing the implicit and explicit grammar instruction on female adult Iranian learners learning the grammatical structure of the present perfect of English revealed that learners exposed to explicit instruction outperformed those who received the implicit instruction of grammar structure. Other studies that demonstrated the value of explicit instruction in grammar learning include e.g. Housen, Pierrard, & Van Daele, 2005, Norris & Ortega, 2000, Spada, 1997.

A great deal of evidence emerged from studies have clearly demonstrated the value of explicit instruction in SLA, but the validation of implicit instruction has just seen a growing development. Two studies are of particular relevance here. De Jong (2005) examined the effects of implicit instruction in improving the productive and receptive knowledge of noun-adjective gender agreement in L2 Spanish. In the study, L2 Spanish were divided into two groups, with one only receiving receptive training and the other receiving both productive and receptive training. De Jong (2005) found out that nearly all participants who only received implicit training (i.e. receptive training) were able to identify the target structure and more than half of them induced at least part of the rule knowledge. Another study conducted by

Andringa, De Glopper & Haquebord (2011) compared the effects of explicit and implicit instruction on learning L2 Dutch grammar. Their performance after receiving the instruction was testing at three points by means of an untimed grammatical judgement task and a free written task. The findings revealed that explicit and implicit training led to a comparable degree of progress on the free-writing task.

To conclude, the majority of the SLA studies suggest explicit instructions give a better L2 learning outcome than implicit instruction. Ellis (2015), however, in a later discussion, argues that language learning should involve both implicit and explicit instruction to attend to both the meaning and forms of the language, as explicit instruction can guide and direct implicit learning, and implicit learning can reinforce and consolidate explicit learning. Therefore, implicit and explicit learning seem to be more of two sides of the same coin when it comes to L2 acquisition. In this sense, we should view the two approaches as complementary and not consider which one is superior or inferior.

2.4.1.2 Focus on form and Focus on meaning

How the English language is best taught and acquired by learners has always been a major issue in SLA research. Studies and discussions on it have recently focused on the following two options: form-focused and meaning-focused instruction (Ellis, 2005). In form-focused instruction, students are mainly asked to practise discrete linguistic rules in a non-communicative language task. Meaning-focused instruction, on the other hand, refuses any explicit instructions, and puts forward that the L2 vocabulary should be naturally acquired through adequate and comprehensible input (see the detailed discussion of input in Section 2.4.1.3).

Focus-on-form is based on Schmidt's (1990) Noticing Hypothesis which states that learners

are required to pay conscious attention to specific linguistic aspects for language acquisition to occur. Schmidt & Frota (1986) proposed three different terms of noticing: notice the language forms, notice the language rules, and notice the gap between the target language form and learners' own production. Schmidt (1990) argues that 'noticing' is one of the necessary conditions that enables the input to convert to the intake. In contrast to form-focused instruction, focus-on-meaning was informed by Krashen & Terrell's (1983) Natural Approach to SLA, indicating that explicit knowledge is unnecessary and may interfere with the natural acquisition process when learners are deducing the rules from the language input.

However, both approaches separately have received criticism. Form-focused instruction has been called into question as it does not allow meaningful interaction and communication (Long, 2000). In contrast, meaning-focused instruction has been criticised for paying no explicit attention to error correction. In this sense, it appears that both implicit and explicit learning should be coupled to enable language learners to gain mastery in both form and meaning of the language. As a result, a group of scholars has attempted to reconcile form with meaning in vocabulary learning. Ellis (2010) pointed out that SLA also sheds light on the development of vocabulary teaching materials. He proposed 'consciousness-raising tasks' which are primarily based on explicit learning, with the intention of promoting learners' awareness at the level of comprehending the grammar rather than just 'noticing' the grammatical patterns. The rationale for the consciousness-raising tasks is that they involve both explicit and implicit knowledge, but explicit information facilitates the acquisition of implicit knowledge, which helps the learners not only notice the target linguistic features, but also realise the gap between their own production and the target features. Also, consciousness-raising tasks cater to discovery learning according to the general learning principles that learners are more likely to remember better if they find out the answers by

themselves than if they are directly told.

Nation (2003) pointed out that a balanced English language course or materials development regarding vocabulary learning should consist of not only comprehensible form-focused instruction, but also meaning-focused input. To conclude, both types of input, therefore, are different but indispensable for English language learning, especially vocabulary learning.

2.4.1.3 Input and output

Tomlinson (2010) in his principles (see Figure 2.7 above) pointed out the necessity of including input and output in EFL materials development. Before giving a more detailed discussion of the role and importance of both input and output in materials design, it is important to define what input and output are and what they mean in the field of SLA. Input, as defined by Ellis (1997, p.5) is the “sample of language to which a learner is exposed”. In contrast, output refers to the language that learners produce. As Tomlinson discussed in his principles (see Section 2.4.1 above), EFL teaching materials should include sufficient input to help students comprehend the targeted linguistic features. However, there is a long-lasting debate over the amount and type of input that should be supplied to learners. Among all the hypotheses in the field of SLA and language teaching, the ‘Comprehensible Input’ proposed by Krashen (1985, 1994) has been in a leading position and he argues that the input of the language should take a dominant and central role in the language acquisition. Krashen also claims that as long as the level of the input is specifically, slightly more advanced than the learners’ current language level ($i+1$)³, the input is enough for language acquisition to take place. It is important to point out that Krashen’ hypothesis only focuses on one-way input. Other

³ Krashen proposed Input Hypothesis and termed as “ $i+1$ ”, where “ i ” represents the learners’ current language level, and “ $+1$ ” represents the language is slightly more advanced than learners’ current language level.

researchers, e.g. Pica (1994), emphasised the significance of two-way communication. Although the input takes a dominant role in this model, learners are able to acquire the second language via both interaction and observation of the certain characteristics of the input. In the same vein, VanPatten in his Input Processing theory assumes that input plays a fundamental role, and it should be modified by materials designers/language teachers according to certain principles to enable learners to process the target structures maximally (VanPatten & Cadierno, 1993; VanPatten & Oikkenon, 1996). In response to Pica's view of the role of two-way communication in acquisition, VanPatten (1996) noted that although such communication is essential to making form-meaning connections, input should still need to be modified by means of the learning materials to increase the likelihood of forming this connection and ultimately assist learners in transferring the input into their intake.

While input clearly holds a significant role in SLA, a great number of researchers (e.g. Izumi, 2002; Swain, 1995) believe that having input alone is inadequate for SLA to take place, output is also an essential element as it provides language learners with opportunities to produce targeted linguistic features. Swain (1985) in her Output Hypothesis suggests that "the trigger that forces the learner to pay attention to the means of expression is needed in order to successfully convey his or her own intended meaning" (p. 249). In other words, output can serve as a trigger that assists learners in focusing more on the target linguistic feature when they are trying to use it to construct a successful meaning. To achieve this purpose, Swain (1995) pointed out that output can take the form of an exercise and the aim of it is to provide learners with opportunities to use the previously acquired target language features, which can encourage learners to produce target language structure and achieve the targeted learning outcome. Some research findings indicate that practice, taking the form of mechanical but meaningful drills, tends to improve language performance (e.g. Lightbown,

2019; Sander, 2005).

As can be seen, both input and output play a fundamental role in L2 acquisition based on the previous discussion. Izumi (2002) suggests that these two approaches share a similar characteristic in that the aim of both is to direct learners' attention to the problematic aspects of the language in the input and encourage learners to produce target-like language structures. However, these two approaches differ in how learners' attention is induced. In the case of input, attention is guided by external means. For instance, the targeted forms or structures will be highlighted in the materials. In terms of output enhancement, the attention is induced by learners' internal needs in the production process. In other words, learners' needs arise from their learning process when they are experiencing difficulty producing the target language accurately.

To conclude, both approaches complement one another in facilitating learners' second language acquisition. Sharing the same learning objective as conventional EAP materials, corpus-informed materials, therefore, should also provide both sufficient input and output opportunities for learners to practise target language features to help learners maximise the effectiveness of learning.

2.4.2 Principles of corpus-informed materials development

To be effective, learner corpus-informed EAP materials are required to not only follow general principles of EAP teaching materials design and SLA theories, but also pay attention to the specific characteristics possessed by corpus linguistic analysis. In the following sections, I will outline how to incorporate learner corpora into EAP materials development.

2.4.2.1 'Authenticity' of Language

In Tomlinson's (2010) framework of EFL materials development (see Section 2.4.1), he emphasises the necessity and significance of offering language learners authentic input. The problem of using 'authentic language' in the field of English language teaching has been discussed for many years in a great number of articles and books (e.g. Taylor, 1994; Widdowson, 1998) and the debate has resurfaced in the work of Stubbs (2004) and Ahmed (2017) who discussed what authenticity really refers to in English language instruction and materials design and whether it is appropriate to teach real authentic English to students in the classroom. In essence, the discussion centres around the question of whether the English language generated in natural communicative contexts should serve as the basis for our teaching, or whether our course materials should use invented examples or texts. It may therefore be interesting to observe what and how authentic language really is and what type of language should be presented in the development of teaching/learning materials.

Widdowson (1978) distinguished 'genuineness' and 'authenticity'; he claims that genuineness refers to the characteristic of the passage itself, while authenticity means the real communicative context. He also further pointed out that, language learners often feel difficult to relate themselves to the authentic texts produced by other students, as they do not come from the same community or belong to the same context. Therefore, they find it difficult to relate to the texts and take part in the discourse process (Widdowson, 1998). Sripicharn (2004) in his study, asked both learners and native speakers to work on the same concordance materials, finding out that native speakers of the language are able to contextualise the concordance lines; they are more likely to identify the text type and the setting of the concordance lines. In contrast, learners demonstrated a less proficient capacity in this aspect.

To address the problem identified by language learners regarding authenticity, several different solutions have been proposed in the literature. Aston (2002) suggests that the materials which learners are working with can be compiled by their own data. Chambers (2005) also pointed out that teachers can adopt the corpus collected with the data from up-to-date contents and also relevant to students. However, both of these two approaches have obvious limitations: the first approach requires the teacher to be able to complete the data collection, data analysis, as well as materials preparation within a short period of time so that the same groups of learners are able to make the most use of their own data to improve language usage; for the second approach, it might be difficult to find the available corpus, including the most updated and relevant contents up-to-date new items, as the corpus compilation is often time-consuming. The other approach that seems most applicable is proposed by Tribble (2001), suggesting that small specialised corpora drawn from the genre and setting relevant to learners' own needs and interests may help learners relate themselves to the context and benefit their language learning. A similar standpoint has also been proposed by Granger (2009, p.20) that learner corpora can be used for delayed pedagogical use, that is, learner corpus-informed learning/teaching materials can be used for language learners who are the same type of students (e.g. having the same profile) as those who produced the data.

In addition, there is a long-term debate about whether authentic texts or edited corpus data should be used in language teaching/learning materials development. Richards (2006) put forward the idea that authentic examples should be exploited in material design, as they are the naturally occurring language usage. Similarly, Sinclair (1997) agrees that language teaching should only present real examples. Granger & Tribble (2014) disputes that when employing concordance lines in the materials or activities, they need to be carefully edited so

that learners can be more likely to focus on the relevant features. In other words, if a vast quantity of information is presented to learners without editing, they may feel confused and frustrated about the language focus. Lorenz (2000) shared a similar standpoint, stating that sometimes authentic data can be messy and corpus findings may not be pedagogically applicable in the teaching/learning process, the data should be carefully edited.

The corpus has a great advantage of bringing more authentic examples of language usage into the development of the English language teaching/learning materials. However, the teachers and the material developers also need to remember that, in order to facilitate learners' comprehension and attract their attention to the targeted linguistic features, some editing of the corpus data and concordances seems necessary and appropriate.

2.4.2.2 Integration of vocabulary and grammar

It goes without saying that in EAP writing discourse, a successful piece of writing is more than just the combination of individual words. As Wible & Tsao (2011) put it, the number of words is only considered valuable when they represent the patterns of word behaviour. In other words, both the individual words and the grammatical patterns together constitute successful written academic discourse. The linking of grammar and vocabulary is coined as *lexico-grammar*, which focuses on the most frequently used combinations of words, such as collocations and colligation (Conrad, 2000). While collocation is a well-known linguistic phenomenon, less attention has been given to colligation which refers to the grammatical company that the word keeps, regarding the grammatical rules or tendencies. In contrast, collocation refers to the words that are commonly used together based on the semantic rules of the language. Coxhead et al., 's (2007) corpus-based analysis of the lemma *require* found that it shows a distinct colligational preference for the following three grammatical patterns:

required + infinitive, *required* + 'that' clause and *required* + noun phrase. He suggests that these corpus findings could be a valuable resource for EAP syllabi construction. In the same vein, Biber & Conrad (2010, p.4) provided an example from the corpus study of the relationship between vocabulary and grammar: '*seem*' verbs followed by the 'to infinitive' such as *appear/seem/tend to be*.

One of the basic tenets of the corpus approach to language description is that the grammar and vocabulary are closely interconnected rather than separate (Halliday, 1992). Sinclair & Renouf (1988) argue that an emphasis on the commonly used words in writing, will automatically bring the most frequently used structures into consideration. The lexical-grammar combination, focusing on both vocabulary input and grammatical structures, is of great importance to EAP students when they are working on their writing skills, as well as to EAP teachers and materials developers. However, it is interesting to find out that Stranks (2003) in his study of analysing coursebooks, bemoans that there seems to be less focus on presenting lexis linked with the most commonly used grammatical structure. In the same vein, Tan (2003, p.2) has pointed out 'the persistence of coursebook designers and even teachers in viewing grammar and vocabulary as separate areas of language teaching'. Given the lexico-grammatical aspect of the corpus approach, corpus-informed materials would be considered beneficial to academic writing by offering EFL learners a rich experience of real language usage and targeted combinations of both vocabulary and grammatical patterns simultaneously.

2.5 Conclusion

This chapter firstly reviewed principles for the compilation of both English L1 corpora and learner corpora. Then, the approaches of how to apply both corpora into EAP materials

development, together with a detailed reflection of the previous studies regarding the application of both English L1 and learner corpora into EAP materials were presented. Later, the chapter introduced the theoretical foundation of incorporating both learner corpora and NS corpora into materials design from the perspectives of SLA and the characteristics of the corpora. In conclusion, the production of corpus-informed learning materials, either NS-informed materials or learner corpus-informed teaching materials, should adhere to the principles of corpus compilation and the SLA theoretical foundation in order to enhance the language learning process of students. Learning materials informed by both learner and NS corpus data should especially follow stricter rules of corpus compilation, for example, achieving genre compatibility between NS and learner corpus. Due to this type of complexity, only a small number of such EFL learning materials have been developed and made available to the public, and even fewer such learning materials appear in the specific EAP field.

In the next Chapter 3, I will give a detailed discussion of the semantic and pragmatic functions of epistemic lexical verbs (ELVs) in the EAP field and review the relevant comparative corpus-based analysis of ELVs between English L1 writers and non-native English groups.

Chapter 3 Literature Review Part 2: Epistemic Lexical Verbs in EAP Writing

3.1 Introduction

As described in Chapter 1, the present study focuses on Chinese L1 learners' usage of epistemic lexical verbs (ELVs) to deliver statements in the texts of academic written English. This chapter provides a detailed introduction to the function of ELVs in academic writing, previous corpus-based studies comparing the usage of ELVs between English L1 and non-English L1 writers, as well as relevant research that explores the coverage of ELVs in textbooks. The chapter is organised as follows: Section 3.2 details the relationship between epistemic modality and ELVs, as well as discusses the taxonomy of ELVs. Section 3.3 introduces ELVs and their epistemic force from the following two perspectives: level of certainty scales related to individual ELVs, and epistemic force indicated by three different classifications of sentence structures. In the final section 3.4, I turn to the problematic usage of ELVs by non-native English writers revealed through previous studies and discuss the issues concerning the presentation of ELVs in EAP textbooks.

3.2 Epistemic modality and epistemic lexical verbs

3.2.1 Epistemic modality and taxonomy

To create a piece of successful academic writing or publication in English, in addition to mastering grammar and lexis, writers are also required to achieve pragmatic appropriacy. One of the central conventions is to be able to express certainty and doubt appropriately when the writer is making claims. Thus, the notion of epistemic modality is key. Lyons (1977, p. 797) defines epistemic modality as:

“any utterance in which the speaker explicitly qualifies his commitment to the truth

of the proposition expressed by the sentence he utters, whether this qualification is made explicit in the verbal component [...], or in the prosodic or paralinguistic component, is an epistemically modal, or modalized utterance.”

Later, Coates (1987) claims that epistemic modality is concerned with the speaker's evaluation of the level of certainty and indicates the speaker's degree of commitment to the truth of the statement. In the same vein, Palmer (1986, 2001) agrees that epistemic modality should not just refer to the modal systems that involve the ideas of necessity and possibility, other modal systems that indicate the level of certainty of the commitment should also be considered. In particular, Palmer proposed that epistemic modality can be categorised into four different types, called speculative, deductive, quotative, and sensory (1986, p. 51) (see Section 3.2.2 for further details). Most commentators, therefore, describe epistemic modality as indicating the extent of the speakers' conviction in their claims, ranging from uncertainty to assurance. What is noteworthy is Hyland's (1988) discussion, pointing out that hedging is also a part of epistemic modality, as it suggests that speakers lack confidence in making a liable and definite commitment to the truth of propositions. The concept of hedging was first discussed in the field of linguistics by Lakoff (1972, p. 195) who described “words whose job is to make things more or less fuzzy”. Afterwards, the term of hedging was utilised in Brown & Levinson's (1987) *Politeness Theory*, and is widely acknowledged as a politeness strategy. Hyland (1998, p. 1) specified that:

“Hedging refers to any linguistic means used to indicate either a) a lack of complete commitment to the truth value of an accompanying proposition, or b) a desire not to express that commitment categorically”.

The concepts of hedging and epistemic modality are interwoven to some degree and are often

referred to as overlapping notions in the literature. Therefore, this thesis will focus on the notion of epistemic modality as well as taking hedges into consideration.

Traditionally, epistemic modality has been primarily discussed in terms of epistemic modal auxiliaries, e.g. *could, may, might, should*, (Coates, 1983; Palmer, 1979). Other items, however, are commonly used to express epistemic modality, such as epistemic lexical verbs (*believe, suggest*), epistemic adjectives (*possible, probable*), epistemic adverbs (*possibly, probably*), epistemic nouns (possibility, probability), as well as hedging numerical data and non-lexical hedges. In what follows, I introduce each of these devices in turn.

- **Modal auxiliaries**

Modal auxiliaries function as one of the most important groups of items to help writers present their statements with a subtle gradation of confidence (Butler, 1990). They are often adopted to indicate different levels of certainty regarding the truth-value of the writer/speaker's proposition, and also invite readers to be part of the construction of knowledge. Although modal auxiliaries are one of the most frequently used linguistic devices in academic writing, research findings have shown that the distribution of modal auxiliaries varies across genres in academic written texts (e.g. Bal-Gezegin & Baş, 2020; Hyland, 2000).

Modal auxiliaries, however, are complex for both native speakers of English (NS) and non-native speakers of English (NNS), as they are polysemous, that is, they can deliver a range of different functions; *can*, for instance, can express possibility, permission and ability as well (Palmer, 2014). In addition, certain modal auxiliaries can only be understood as epistemic modal devices by attending to the contexts in which they occur. Still taking *can* as an example, it can only indicate the epistemic function when employed in the context to express the possibility. Determining whether and how a modal auxiliary serves as an epistemic modal,

thus requires a more accurate pragmatic interpretation in the specific text (see Example 3.1).

Example 3.1:

(a) *could*-used for permission

Magic **could** not be used to steal the property of another. (BAWE corpus)

(b) *could*-used for epistemic modality

This **could** be due to a number of reasons, including exercise prior to the experiment.

(BAWE corpus)

- **Epistemic lexical verbs**

Among all forms of epistemic modality, epistemic lexical verbs (ELVs) are also one of the most commonly used devices to offer a subjective assessment in academic discourse, helping the writer to manipulate the degree of probability of the statement (Dontcheva-Navratilova, 2018, p. 156) and forestall potential criticism or win the reader's agreement towards the statements (Szczygłowska, 2021). Pérez-Llantada (2010) concurs that ELVs are one of the most important techniques for writers to express epistemic stance as well as crucial rhetorical strategies that serve to hedge the commitment and attain pragmatic politeness. Hyland (1998) emphasised that ELVs:

represent the most transparent means of coding the subjectivity of the epistemic sources and are generally used to hedge either commitment or assertiveness. Their numerical significance thus reflects their rhetorical versatility in contexts where categorical assertions rarely represent the most effect means of expression (pp.119-120).

Palmer (1986, p. 51) classified ELVs into four categories based on their function: speculative, deductive, quotative and sensory. They may indicate that propositions are a) from a subjective viewpoint, b) the product of a deductive conclusion, c) sourced from the findings or theories of others, or d) based on sensory evidence. On the basis of Palmer's framework, Hyland (1998) categorises speculative and deductive ELVs into epistemic judgement verbs; this reflects the fact that the level of confidence in the statement is predicated on human's own evaluation. In contrast, the quotative and sensory verbs are classified as epistemic evidential verbs, concerning the nature of the evidence that writers need to support a statement, either from previous research findings or sensory information. In Section 3.2.2, the detailed discussion of these two categories and their relationship to speculative, deductive, quotative and sensory verbs will be presented.

Epistemic adjectives

The category of epistemic adjectives comprises adjectives such as *likely*, *possible*, *probable*. They are mainly found in the impersonal constructions (*it is possible...*) and with inanimate subjects (the results are likely to...). These epistemic adjectives serve to mitigate the writer/speaker's commitment to the statement.

- **Epistemic adverbs**

Epistemic adverbs are another type of epistemic modality that are also frequently used in scientific writing (Hyland, 1998b), including items such as *probably*, *possibly*. They are semantically equivalent to epistemic adjectives (such as *probable*, *possible*) but differ from them in sentence structures as these devices are "peripheral in clause structure" (Quirk et al., 1972, p. 421). In other words, epistemic adverbs are not syntactically integrated in the clause, and they can be used in a number of positions in the sentence to modify the epistemic

strength of the statement (see Example 3.2). The high frequency of using adverbs in academic written discourse may be due to this feature of distributional mobility; this provides a more precise and convenient approach for the writer to convey various degrees of certainty towards the statement.

Example 3.2

(a) *probably*-in the initial position

Probably the most key period in the development of biblical interpretation was that of the sixteenth-century European Reformation. (BAWE corpus)

(b) *probably*-in the middle position

Double negatives are **probably** the only variation in grammar which could cause confusion to a standard user listening. (BAWE corpus)

- **Epistemic nouns**

The items in the category of epistemic nouns are derived from either ELVs (e.g., *indication*, *prediction*) or epistemic adjectives such as (e.g., *possibility*, *probability*). The devices in the first group are similar to the corresponding epistemic lexical verbs, helping writers/speakers to express their judgements towards the statement or providing evidence regarding the claims provided. The second group of epistemic nouns, on the other hand, signals the authors' level of commitment to a proposition.

In addition to the above five commonly used categories, Hyland (1998) proposed another two groups: hedging numerical data and non-lexical hedges.

- **Hedging numerical data**

Even though there are no explicit hedges included, a numerical expression indicates an implicit uncertainty due to the nature of the roundness of the number (Ferson et al., 2015). For example, 'there were 100 students who attended the lecture'. The reasonable and practical explanation for this would suggest there were around 100 students coming to the lecture, but not necessarily exactly 100. Compared with the example 'there were exactly 100 students who attended the lecture', it can be seen that the epistemic device 'exactly' lessens the uncertainty of the claim and states that there were exactly 100 students, no more or less. Hyland (1998, p. 140) specified that numerical approximations usually exploit adverbs indicating the degree of precision, such as *around*, *about*; in the research articles that Hyland examined, these adverbs occurred mainly in the research findings and discussion sections. By utilising numerical hedging, the author wants to provide an acceptable level of precision regarding the accuracy of the statement, indicating that this level of precision is adequate for the current purpose (see Example 3.3).

Example 3.3

(a) The UN budget is **around** \$12 billion a year, \$11.3 billion of which goes towards "peacekeeping operations". (BAWE corpus)

(b) Over the whole surface of the Earth, **about** 30 percent of incoming solar energy is reflected back to space. (BAWE corpus)

- **Non-lexical hedges**

Hyland (1998, pp. 141-142) proposed three types of non-lexical hedges in addition to the lexical hedges introduced above: these are "reference to limited knowledge", "reference to a model, theory or methodology" and "admission to a lack of knowledge" in research articles.

Reference to limited knowledge suggests the writer is trying to qualify the commitment by highlighting the limits of the scope of the knowledge on the subject (see Example 3.4a). In the second category, the writer qualifies the assurance of the statement by pointing out the deficiencies of the research methods adopted in the research (see Example 3.4b). In the final category, the writer comments on the scope of the experimental conditions to indicate varying degrees of certainty regarding the statement (see Example 3.4c).

Example 3.4

(a) **Nothing is known** of what occurred after the first 10 -43 seconds of the big bang.

(BAWE corpus)

(b) **In spite of the manifest differences of these two conceptions of power**, both contain features that are consistent with the realist perspective and the morphogenetic methodology.

(BAWE corpus)

(c) **We have not been able to include some variables** on which data was not available but which have been proved to be relevant in earlier studies.

(BAWE corpus)

Overall, these diverse expressions of hedging enable writers to express tentativeness and possibility, thus avoiding taking too much personal responsibility for claims and reducing their level of liability.

3.2.2 Epistemic lexical verbs and taxonomy

As introduced in Section 3.2.1, building on Palmer's (1986) classification of ELVs, Hyland (1998) broadly divided ELVs into two categories: judgement verbs and evidential verbs, according to how they facilitate the writer to express their assessment of the possibility of the claims and how confident they are (see Table 3.1). Following Palmer's (1986) framework,

Hyland (1998) proposed that judgmental verbs include the speculative and deductive categories, referring to the writer's evaluation of the factual status of the propositions as involving speculation or deduction, such as "*I speculate that*" and "*I conclude that*". The second category, that of evidential verbs can be subdivided into quotative and sensory verbs, which both involve providing supporting evidence for the statements made (see Table 3.1 for the classification). They can be paraphrased as "*Holmes believed that...*" and "*It appears that...*". In the present study, I will follow Hyland's approach to classify ELVs in my detailed discussion of the usage of ELVs in academic written discourse.

Table 3.1

Hyland's (1998) classification of epistemic lexical verbs

Category	Epistemic judgement verbs	Epistemic evidential verbs
Subcategory	Speculative lexical verbs	Quotative verbs
	Deductive lexical verbs	Sensory verbs

Within the epistemic judgement category, the speculative category implies that there is a conjecture about the validity of the statement. It mainly consists of 'performative' devices that emphasise the action of proposing the statements (Hyland, 1998 p. 120) (see Example 3.5).

Example 3.5

(a) We **proposed** to study the signalling processes involved in the normal formation of the immunological synapse. (BAWE corpus)

(b) Therefore, I **suggest** it would be very insightful for groups of willing students to visit a

hospice.

(BAWE corpus)

In addition, the speculative category includes verbs indicating the cognitive processes of the mind. These do not reflect an obvious speech or performance act. Instead, they express a more conjectural meaning than a certain one (see Example 3.6). It thus seems that they indicate a less certain expression of delivering a statement than the performative verbs.

Example 3.6

- (a) Scholars disagree over the motives for good works, **speculating** whether people were hoping to magically force god's hand or were acting through informed will.

(BAWE corpus)

- (b) I **suspected** the post-HF interaction energy calculations would be better than the high level HF calculations.

(BAWE corpus)

The deductive type of judgement verbs involves a deductive conclusion, or inferential reasoning based on a theory, rather than indicating a speculative judgement (see Example 3.7).

Example 3.7

- (a) We **conclude** that the probit model is a better predicted estimated measured model.

(BAWE corpus)

- (b) Since we can **infer** from action to motive, we have the grounds on which to praise or blame.

(BAWE corpus)

Unlike epistemic judgement verbs, which indicate the speculation and deduction in the claims, epistemic evidential verbs refer to the evidential information based either on the

previous findings reported by other researchers or the writer's own sensory evidence.

In academic written discourse, writers often need to rely on evidence from earlier sources to signal their knowledge of their field of study, as in Example 3.8. Quotative ELVs, a subset within the epistemic evidential verbs, can serve a dual purpose here. Nesi (2021) highlighted that they not only establish a connection between the current text and reported information, but also serve to indicate the writer's attitude and level of commitment to the proposition the resources express (see detailed discussion in Section 3.3.2).

Example 3.8

(a) Hurst suggests, that this was a development of a type of dwelling. (BAWE corpus)

(b) Gillies and Alldred (2002:40), however, argue that structural and individual differences may sometimes conflict with similarities. (BAWE corpus)

In addition, some verbs in the speculative and deductive category can also appear in the quotative category depending on how they are used (Vass, 2017). For instance, '*believe*' and '*assume*' can refer to speculative judgment when they occur with a first-person pronoun, as in '*I believe*' or '*I assume*'. When they are used together with a third-party subject to present previous findings, as in '*Palmer believes...*' and '*Coates assumes*', they can function as quotative verbs. Similarly, some deductive verbs such as *conclude* and *infer* can also be found in the quotative category, for example, '*Palmer concludes...*'; this strategy helps the writer acknowledge the previous research and also indicates the writer's deductive judgements.

The last group of epistemic evidential verbs is sensory lexical verbs, which refer to sensory evidence the writer provides when he/she is trying to make a claim. Hyland (1998, p. 125) specifies that the sensory evidence is often visual, and the most commonly used ELVs in this

category are *seem* and *appear* (see Example 3.9).

Example 3.9

(a) It **appears** that she is not strong enough to immediately overthrow them by herself.

(BAWE corpus)

(b) Therefore, it **seems** ironic that both systems were employing religious thinking to defend their rights.

(BAWE corpus)

ELVs constitute the largest group of epistemic modality items, having the greatest range of devices, as noted by Hyland (1998). In academic written discourse, the selection of ELVs is strategic, as writers choose an appropriate ELV to both modify certainty or doubt towards the proposition in their claims, and to indicate whether their claims are made based on their own accessible information, or the commonly accepted facts. The abovementioned categories, therefore, reflect different levels of conviction in the truth of the claims, but also help to reveal what type of evidence the writer is relying on to give the inference.

3.3 Epistemic lexical verbs and epistemic force

3.3.1 Epistemic lexical verbs and certainty level scale

One of the functions of ELVs, as explained in Section 3.2.2, is to help the writer modify the degree of the commitment to their claims. Therefore, ELVs can be viewed as a resource with varying degrees of epistemic force along a line or continuum. Although there is no consensus on how to specifically divide ELVs in terms of the level of epistemic commitment, there is an ongoing discussion in the literature on the classification of all epistemic modal markers in terms of their epistemic force, which includes ELVs. For example, Holmes (1982, p. 13), proposed three categories based on the deference indicated by the epistemic modality

devices on a scale of certainty ranging from maximum to minimum: certain, probable and possible (see Figure 3.1).

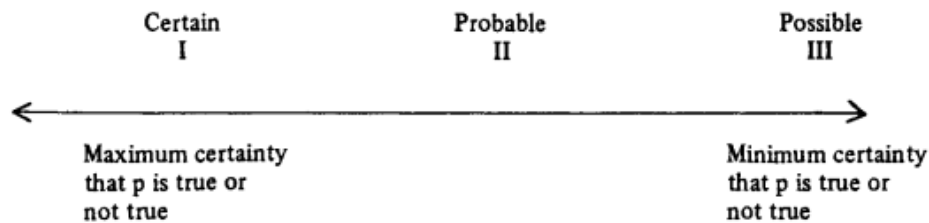


Figure 3.1 Scale of certainty of epistemic modality items (Holmes, 1982, p.13)

In the same paper, Holmes (1982) also proposed, lexical devices that express epistemic modality can be categorised into ‘boosters’ and ‘downtoners’ (p. 18), where boosters refer to epistemic devices that indicate a stronger commitment (e.g. *believe*); while downtoners suggest that the items express a more tentative meaning (e.g. *suppose*). In line with Holmes’ (1982) categorisation, Hove (1997) suggests that epistemic markers can be classified into certainty, probability and possibility. Later, Rubin, Kando & Liddy (2004) extended the framework of Hove and Holmes, adding two extremes on the scale: absolute and low, and modifying the probable and possible categories into high and moderate. Hyland (2005, 2018) tweaks the model of Holmes, classifying the devices into ‘boosters’ and ‘hedges’ according to the level of certainty they suggest. Boosters, as Holmes described, express the writer’s certainty towards what they say (e.g. *demonstrate*); hedges imply the degree of confidence that the writer is prudent to make in the truth of the proposition. Hyland & Milton (1997) place different types of epistemic devices (modal auxiliaries, epistemic lexical verbs, adjective, and adverbs) on a scale extending from maximum to minimum certainty, with the points of certainty, probability, possibility, usuality, and approximation. In discussing their model,

Hyland & Milton (1997) pointed out the weakness that there is a certain level of arbitrariness, but they also agree on its practicality in the empirical analysis of different spoken and written corpora.

As we have seen, there is no objective model for the classification of ELVs in terms of the degree of certainty they suggest. I will simply follow the classification proposed by Hyland (2005, 2018) in the present study, as it enables us to broadly place ELVs into two categories, either hedges or boosters, without specifically considering whether the devices indicate an absolute or high level of assurance towards the claims. It should be acknowledged that putting individual uses of verbs into concrete categories, such as absolute, high, moderate and low, involves a great degree of subjectivity and is to some extent arbitrary. This is due to the fact that, unlike certain epistemic modal auxiliaries, such as *must* and *may*, ELVs do not so clearly indicate whether they belong to the category of absolute certainty or low certainty, as the degree of certainty also depends on their use in a particular context. Therefore, simply classifying ELVs into either hedges or boosters seems to eliminate a certain degree of arbitrariness and increase the likelihood of obtaining a larger consensus from others.

3.3.2 Sentence constructions and level of certainty

Different ELVs reflect different levels of conviction concerning the validity of the statement provided. In addition to choosing different ELVs to assist writers in modifying assertions, writers can also employ various sentence constructions to adjust the level of epistemic force. Leech & Svartvik (2013) specify that writers are able to use personalised and impersonalised expressions to modify epistemic judgements. Personalised constructions involve using first-person pronouns to deliver writers' own evaluation of the propositional validity. In contrast, impersonalised expressions avoid the use of the first-person pronouns and help to conceal

the source of the judgement. Hyland & Milton (1997), on the basis of Leech & Svartvik's proposal, added another category of sentence construction, coined 'depersonalised forms' (Holmes, 1988), referring to structures that help the writer shift responsibility for the validity of a statement. In what follows, I give a detailed explanation of each classification, accompanied by examples.

- **Personalised construction**

The personalised construction involves the writer in an evaluation of the truth of the proposition by using the first-person pronoun *I/we*. They are often used with speculative and deductive verbs, as shown in Example 3.10 below. The accusative pronouns *me/us* can also be used together with ELVs, and are commonly seen in sentence structures such as *It seems to me/us...*

Example 3.10

- (a) Moreover, I **believe** that bilinguals may produce more gestures in Dutch than Dutch monolinguals because gestures transfer along with the language. (EC 003b⁴)
- (b) With this framework of analysis we can **expect** only a rough portrait of spontaneous communication... (EC 002a)
- (c) **We** have **shown** that, in some ways, how grammar choices in the texts have aided them in expressing their particular evaluative positions but we have left untouched lexis in itself. (EC 026b)

Kuo (1999) argues that personal pronouns can help to reveal how academic writers construct

⁴ EC represents the English L1 corpus built in the present study. The detailed introduction to the meaning of the three-digit number and the letter here is presented in Section 4.3.2.2.

their relationship with readers and with the discourse community. Using first-person singular pronouns (*I* and *me*) to deliver personal statements can be face-threatening and imposing, as the reader may feel imposed upon to either accept or reject the author's explanations. Therefore, the writer takes the risk of receiving negative feedback from readers (Xia, 2018).

In contrast, the use of *we* can perform different pragmatic functions. Harwood (2005c) gives a detailed discussion of the of *inclusive we* and *exclusive we*: "*inclusive we* refers to the writer and reader together, *exclusive we* refers solely to the writer and other persons associated with the writer" (p. 343). The two single-authored sentences in Example 3.10 above, extracted from the English L1 corpus, illustrate these two pragmatic functions. Example 3.10b is more likely to be inclusive, indicating the writer is inviting readers together to make the expectation together while *we* in Example 3.10c tend to be exclusive, referring to it is the writer who is *showing*, rather than both the writer and reader. *Inclusive we* allows writers to project their statements onto the reader or even the whole community, who share the responsibility together of constructing the statement, thus reducing the risks of disagreement of any claims made (Quirk et al., 1985, Wales, 1980). As with the use of the pronoun *I*, *exclusive we* refers to the writers as separate from their readership, with the plural indicating multiple authorship. Consequently, *exclusive we* can be viewed as more face-threatening than *inclusive we*, which is seen as a manifestation of positive politeness (Harwood, 2005c; Hyland, 2001; Kuhi, Tofigh & Babaie, 2013).

Beyond that, the writer is also able to modify the statements by using '*One +ELV...*' construction (see Example 3.11) without explicitly pointing out his/her existence. Hyland (1998, p. 183) explains that this strategy shows respect for the reader and invites them to make the same logical inferences as the writer, if they choose to relate themselves to the

claims.

Example 3.11

One would **expect** the host to control the direction of the conversation, but restrict himself to posing questions. (EC 022a)

- **Impersonalised construction**

Impersonalised forms, on the other hand, diminish the writer's responsibility by avoiding reference to the writer when expressing claims. Unlike the personalised construction, it can minimise the threat caused by contradictory and conflicting information offered by the writer and also help the writer distance himself/herself from the proposition, as described by Halloran (1984), rhetorical acts can be accomplished without human volition. There are different strategies writers can use to avoid taking explicit responsibility for their claims. One way to conceal the writer's presence in the claims is to disguise the source of evaluation by using *it* as the subject (see Example 3.12a-b); other sentence constructions (see Example 3.12c) obscure the abstract or inanimate entity that may act as the agent of the event.

Example 3.12

(a) Within the situation of teachers working in a foreign country, it could be **argued** that not only poor housing, but also a poor social life fall into this category. (EC 014b)

(b) It **seems that** McCarthy is aligned with analysis of the verbal context of classrooms, while Painter points more towards the non-verbal context of classrooms.

(EC 021a)

- (c) As is **shown** literally, because of the links with other words, active words will be activated by other words. (CC 006e)

Another common approach is “the construction of ‘abstract rhetors’ which attributes claims to the text or data” (Hyland, 1996a, p. 257) (see Example 3.13). With this syntactic structure, as Hyland (1998) explained, the writer attributes the primary responsibility to the data. Also, it indicates that some abstract entity or inanimate subjects might act as agents that exhibit this behaviour, which would leave an open space for giving the prediction in the truth of the proposition. As the sentences in Example 3.13 show, judgmental ELVs are used in this syntactic template to qualify the speculative or deductive claims. These verbs with non-writer agents suggest that writers are unwilling to take full responsibility for their own claims and commit to believing the statement to be a truth. The commonly used ELVs identified in Hyland’s (1998) study include *propose*, *assume* in the speculative category and *calculate* and *infer* for the deductive classification.

It is worth noting that although Example 3.13b below and Example 3.12c above share a similar sentence construction, the sentence in Example 3.13b indicates the entity (described as “table 2”) that may take the responsibility of making the claim; consequently, the example is classified as containing an ‘abstract rhetor’. Similar to Example 3.12b, Example 3.13c also uses *it* as subject.; however, *it* here functions as a pronoun referring to the ‘*Quantitative analysis*’ in the previous sentence, which can be replaced with other pronouns, e.g. *this appears to be...* In contrast, *it* in Example 3.12b is not an anaphoric pronoun and has to be used together within the collocation *it seems/appears that....*

Example 3.13

- (a) The data clearly **indicated** that these two discourse activities differed greatly in many

respects (EC 031a)

(b) As shown in table 2, it is clear that trip in the first type shares the similar meaning,

which refers to a planned visit to a certain destination (CC 008d)

(c) Quantitative analysis also perfectly makes the findings much more convincing. But it

appears to be a novel research technique and its analytical capacity or coverage is

limited to some extent. (CC 011b)

Another approach to indicating that writers are not prepared to commit to full responsibility for the claims and would like to conceal their presence in the statements is to use passive construction (see Example 3.14). It leaves an impression that the acts are performed by nameless forces rather than humans (Bolinger, 1982, as cited in Bandura, 2002).

Example 3.14

Thus, only the last question should be considered as a head act. (EC 022a)

- **Depersonalised construction**

Depersonalised structures, as defined by Holmes (1998), help writers shift the responsibility for the validity of a claim to others; these constructions share a similar function to the impersonalised template in helping to deemphasise the role of the writers. The most distinctive characteristic of depersonalised forms is to transfer the responsibility to other specific researchers (Example 3.15a) or a certain group of people (Example 3.15b). One of the commonly observed patterns is “integral citation” (Swales, 1986), which is realised by the form of including the name of the authors in the claims and the date and/or page number is provided in parentheses (see Example 3.15a). As mentioned in Section 3.2.2, incorporating sources into one’s writing through the use of ELVs not only establishes a connection with

existing literature, but also enables the writer to position themselves in relation to these sources. By employing different verbs, the writer can showcase their attitude and commitment to the standpoint expressed (Nesi, 2021).

Example 3.15

(a) However, Huddleston and Pullum (2005) argue that the following words are unnecessary to own the dual identity. (CC 008a)

(b) Conversely, some researchers believe that language is multimodal, which means that languages consist of various ways to express feelings and thoughts, including gestures.

(CC 005b)

However, when discussing the quotative ELVs in integral citation, Hyland (1998) also relates them to reporting verbs, as both classifications involve a similar group of verbs that can be used to report information and reflect the writer's attitude towards the information they are conveying. Nevertheless, quotative ELVs and reporting verbs also differ in some ways. Reporting verbs are commonly used to report statements and consist of verbs that do not always express the degree of certainty or possibility the speaker has about a particular fact, e.g. *tell* and *report*. On the other hand, ELVs often focus on verbs indicating the possibility of the proposition being true. Additionally, reporting verbs do not always indicate the evidence for the reported information, whereas ELVs indicate the writer's assessment of the evidence for the proposition.

As there exists a degree of overlap between reporting verbs and ELVs, it is worthwhile to briefly examine how reporting verbs have been discussed in the literature. The functions and uses of reporting verbs have been categorised by a number of researchers, such as Thompson

& Ye (1991), Thomas & Hawes (1994) and Hunston (1995). Hyland (1999, pp. 349-350), following the categories proposed by Thompson & Ye (1991) and Thomas & Hawes (1994), classified reporting verbs according to the type of activities referred to, namely “research” (those involve reporting findings, e.g. *observe*, *discover*), “cognition” (those involve mental process, e.g. *believe*, *suspect*) and “discourse” (those involve verbal expression, e.g. *discuss*, *state*). In addition, he identified three attitudes that writers can adopt towards the reported information: factive (writer acceptance), non-factive (no clear signal) and counter-factive (writer disagreement). Overall, the combination of integral citation with different reporting verbs enables the writer to establish a strong connection with existing literature while indicating their attitude towards the information presented. However, it should be noted that although ELVs and reporting verbs, as mentioned above, share similarities, the concept and functions of reporting verbs are outside of the scope of this present study, and I will mainly focus on the concept and functions of ELVs here.

Back to the depersonalised constructions involving ELVs, it can also be achieved by attributing the writer’s own opinion to a specific institutional role, which helps writers reduce their responsibility for the claim (see Example 3.16).

Example 3.16

The teacher **believed** criticizing the students in this case would have negatively affected their motivation.

(EC 002a)

3.4 Issues related to epistemic lexical verbs in EAP field

3.4.1 Problematic usage of ELVs in non-English L1 speakers' writing

Central to the convention of academic writing is the appropriate use of epistemic markers where writers are required to evaluate the level of certainty delivered in the claims. ELVs, as one of the most commonly used and precise categories, take a predominant position in giving writers flexibility in expressing their statements, conveying a suitable degree of modesty and deference. Important as these items are, ELVs are generally considered to be a challenge for English language learners, owing to their great complexity in semantic and pragmatic functions. The first reason is that some lexical verbs are polysemous, and they involve a range of several different meanings. For example, *appear* can express the meaning of “show up” and it also has the epistemic modality meaning of “reporting what you believe, although you may not be very sure about it”. To have proficient manipulation of this type of verbs, English language learners are required to first be familiar with all of the semantic meanings so that they may be able to attend to their epistemic function and adopt them in the texts.

In addition to the above complications, ELVs not only indicate the writer's assessment of their statement, but also negotiate the relationship with their readers. In academic written discourse, writers are expected to make an appropriate social interaction and manipulate distance with readers to help writers win recognition from their readers. A strong level of certainty in statements tends to leave limited room for an open discussion between readers and writers, and the readers are more likely to play a passive role, forced to accept the information presented in the texts (Hyland & Milton, 1997). In contrast, the judicious use of some hedging verbs can not only reduce the writers' own accountability for the claims, but also show that the writers are more willingly encouraging the readers to participate in the

discussion. In this way, the readers are more likely to take the writers' opinions as presupposed and align themselves with the same side as the writers.

Many previous studies that examine the use of epistemic modal devices show that Chinese L1 students tend to rely on a different range of ELVs compared with English L1 writers and that they struggle with the proper application of ELVs in their writing. Hyland & Milton (1997) compiled two written corpora, collecting 150 academic written exam scripts from Hong Kong high school students with Cantonese as L1 and 770 scripts from British English L1 students of a similar educational level and age as the Chinese Hong Kong students. The English proficiency level of the Hong Kong students ranged from A to F (Fail) according to the standard of the General Certificate of Education A-level examination. Although these authors do not only focus on ELVs, but also cover other epistemic markers too, including modal verbs, adverbials, adjectives and nouns, they found that the Hong Kong students favoured epistemic adverbs more than ELVs and that the choice of ELVs was less diverse. In addition, Hyland & Milton (1997) observed that Hong Kong students had difficulties mixing formal and informal written forms and transferring spoken usage to academic writing genres, such as the verb *think*, and that this situation is often found in the case of Hong Kong students whose English proficiency is at a lower level. In terms of the sentence structures, the Hong Kong students appeared to rely much more on the personalised template with first-person pronouns; they also had greater difficulty using depersonalised structures together with ELVs, using depersonalised constructions less and with less variety in the choice of ELVs.

Chen (2012) focused on the same five categories of epistemic markers and examined how Chinese L1 English learners use ELVs differently from English native speakers and considered ELV usage across different English proficiency levels. Chen made use of the Louvain Corpus of

Native English Essays (LOCNESS) and the Chinese Learner Language Corpus (CLEL), with a particular emphasis on the genre of argumentative essays. The study also found that Chinese EFL learners depend on a smaller number of lexical verbs compared with native English writers, and that the choice of ELVs becomes more varied with an increase in Chinese students' English proficiency. Chen also specifically focused on the usage of *think* between the groups and observed that Chinese EFL learners tended to rely on it far more than English L1 writers, although the degree of reliance declined as their English language competence increased. The overreliance on ELV *think* in argumentative essays was also reported by Yang & Zeng (2021) who specifically focused on university-level Chinese L1 students majoring in English. In contrast, Hu & Li (2015), also focusing on argumentative essays written by college Chinese EFL learners as well as English Native Speakers this time in the *International Corpus Network of Asian Learners of English* (ICNALE), found that the Chinese L1 writers underused *think*, compared with English L1 writers. They explained that this is possibly due to the fact that the English L1 writers were required to complete a 300-word essay within a short period of time, which resulted in them transferring this spoken feature much more into the written setting. This shows that, when interpreting results and comparing findings among previous studies, special care must be taken, as some differences may simply be attributed to variations in communicative goals and settings (Neff et al., 2004), which Nesi & Gardner (2012) interpret as genre differences.

Apart from analysing the usage of ELVs by Chinese EFL learners, a group of researchers has also conducted similar studies on EFL learners with different L1 backgrounds, aiming to find the same or different usage patterns and explore the potential reasons for this (e.g. Aijmer, 2002; McEnery & Kifle, 2002; Neff et al., 2003; Oh, 2007). Oh (2007) compiled two corpora: a reference English L1 corpus and a Korean L1 corpus. The English L1 corpus was compiled with

essays drawn from the *Louvain Corpus of native English essays* (LOCNESS) written by American and British university students. The NNS corpus is a collection of essays written by low-to mid-intermediate-level Korean college students, composing argumentative (67%) and expository type (33%). The researcher observed that Korean L1 students favour ELVs over other categories of epistemic devices, such as modal verbs and adverbs, which seems inconsistent with Hyland & Milton's findings. This discrepancy could potentially be attributed to the genre variation between the two studies. Approximately 70% of assignments submitted by Korean students exhibit an argumentative nature, wherein they rely on literature to construct their arguments. This tendency may result in a higher frequency of instances of ELVs. Conversely, compositions assigned to high school students in Hong Kong typically prompt them to express their personal opinions without necessarily requiring them to incorporate references.

Apart from differences, as with the Hong Kong students, the use of ELVs by the Korean students was also much more restricted. In terms of the usage of *think*, it is observed that Korean students also overused it in comparison with English L1 writers, although it was common to both corpora. Similarly, *feel* was also favoured by both groups, but Korean students tended to be more likely to use it in their texts. In addition, the frequent use of *believe* was exclusive to native English writers but was absent from the list of the top three most frequently used ELVs by Korean students.

McEnery & Kifle's (2002) study observed the different usage of ELVs and other epistemic modality devices between Eritrean second-year university students and British high school students of 16 years of age in their argumentative essays. They also found that *believe* was preferred by NS writers, but it did not appear in the top ten frequently used devices for

Eritrean L1 students. In addition, they also noticed the same phenomenon as Hyland & Milton (1997), that Eritrean L1 students largely used epistemic verbs over other epistemic modality items. This is owing to the fact that the Eritrean coursebooks present very restricted information, introducing other types of epistemic markers, such as ELVs. In contrast to Hyland & Milton's (1997) findings, which indicate that Hong Kong students used more assertive epistemic devices, Eritrean L1 writers tended to use less authoritative ELVs, such as *argue*, *think* and *believe* in their compositions. They suggest that the textbook *Foundation English* used by Eritrean L1 students could be a potential contributing factor, as it puts more emphasis on weak and tentative epistemic devices.

Although a large number of researchers have investigated the usage of all five epistemic markers (modal verbs, lexical verbs, adverbs, adjectives and nouns) between English L1 writers and non-native students with different L1 backgrounds, there are only a few studies that exclusively focus on comparing the usage of ELVs between English L1 and non-English L1 writers. Dontcheva-Navratilova (2018) explored the rhetorical variation of using ELVs between English L1 and Czech L1 writers in published research articles in two disciplines: linguistics and economics. The researcher drew on Hyland's taxonomy (1998) and investigated the distribution of judgmental ELVs (speculative and deductive) and evidential ELVs (quotative and sensory) as well as the occurrence and patterning of these ELVs across these two disciplines and between the two groups of writers (English L1 and Czech L1). The findings demonstrated that Czech L1 writers employed fewer ELVs than English L1 writers in both disciplines. Also, the results suggest that both groups of writers in the field of linguistics favoured evidential verbs to judgement verbs; economics texts of both groups showed a higher frequency of epistemic judgement verbs than evidential verbs. Focusing on linguistic texts, English L1 writers favoured evidential. Given a closer look at the most frequently used

ELVs, the results show that there were fewer disciplinary differences in using *seem* and *appear* across economic and linguistic texts; however, English L1 writers favoured these two ELVs much more than Czech L1 writers, except that Czech L1 relied on more *seem* than English L1 authors in the field of economics. In terms of the sentence patterning together with ELVs, Dontcheva-Navratilova observed some variations between the two groups of writers; for example, English L1 writers make more use of self-mention constructions than Czech authors, such as *I suggest...* while Czech writers are more likely to use abstract rhetors, such as *the paper suggests that...*

Another recent study conducted by Szczygłowska (2021), who also specifically focused on ELVs, investigated the variation in the use of ELVs between English L1 and Polish L1 writers in the area of economics research articles. Based on Hyland's taxonomy of ELVs, Szczygłowska (2021) also found that English L1 writers relied on ELVs far more than their Polish L1 counterparts. However, in contrast to Dontcheva-Navratilova's (2018) findings, both English L1 and Polish academics preferred judgement verbs over evidential verbs in Szczygłowska's study. Also, although both groups of writers favoured speculative over deductive lexical verbs, the English L1 academics' usage of speculative verbs was significantly higher than that of Polish researchers. In terms of the evidential category, quotative lexical verbs were chosen over sensory verbs by both English and Polish writers. However, the usage of quotative ELVs was significantly higher in English L1 articles than among Polish L1 writers, while Polish writers demonstrated a stronger preference for sensory verbs than English L1 writers. Regarding the variations in the usage of individual ELVs, one of the most substantial features observed is that English L1 writers particularly favoured *argue* and *believe*, while *consider* was prominent in Polish L1 writers' articles. Another interesting difference observed is that Polish writers tended to use the sensory verb *seem* more than English L1 writers but were much less likely

to use *appear* in these texts. Like the English L1 writers in Dontcheva-Navratilova (2018)'s study, those in Szczygłowska's study also demonstrated a stronger preference for using the self-mentioning pattern, such as *I/We expect (that)...* to specify their research purpose and hypothesis. Both groups of writers used *seem(s) to (be/verb)* to tentatively validate the findings of previous research, but English L1 authors also alternatively used *appear* to achieve the same purpose, which is consistent with the previous research of Dontcheva-Navratilova (2018).

In summary, the above studies reveal that English L1 writers and non-English native writers with various L1 backgrounds share some similarities in the usage of ELVs, but also importantly, demonstrate different ELV preferences in their academic written texts. The details of these studies and their precise findings must be understood in the context of factors such as genre and English proficiency (e.g. Altınmakas & Bayyurt, 2019; Gablasova, Brezina & McEnery, 2017). For instance, while Dontcheva-Navratilova (2018) and Szczygłowska (2021) examine the writing of experts in research articles, other studies, including Hyland & Milton (1997), focus on the compositions of high school students. Also, it is important to remember that even if participants focused on in different studies might share a similar proficiency level, it can vary among countries due to the different testing criteria. This discrepancy makes it challenging to draw comparisons between studies.

In addition to the impact of various genres and language proficiency focused in studies, literature also suggests that such a situation can be attributed to the influence of L1 culture, as well as EAP textbooks and materials produced by materials developers who pay less attention to ELVs. In the following section, I provide a detailed discussion of studies on the topic of how traditional textbooks and teaching materials introduce ELVs.

3.4.2 EAP writing textbooks and ELVs

In a traditional approach to English language teaching and learning, published materials and textbooks are undoubtedly a major source for teachers to design their own syllabus, prepare teaching activities and decide what to teach to students. Such an important position makes it imperative that the textbooks and materials must reflect actual language usage. However, it is observed that textbooks often ignore some important language usage information and even sometimes give inaccurate and inauthentic demonstration. ELVs, as one of the most important linguistic features of academic writing, can help writers adjust their level of certainty about their claims and create an appropriate academic tenor relationship between readers and writers. The previous literature shows that non-English L1 writers tend to have problematic usage of ELVs and some researchers have already pointed out that one of the influential factors is the misleading information provided in the textbooks (see Section 3.4.1 above). Going further, a few researchers have conducted corpus-based analyses of EAP textbooks, aiming to explore whether the traditional EAP writing textbooks have provided sufficient and accurate information when introducing ELVs.

Hyland (1998) compiled a corpus composed of 14 EAP writing textbooks as well as 8 English for Specific Purposes (ESP) writing materials published between 1980 and 1990 to explore whether they provide adequate coverage of epistemic modality markers, including modal verbs, lexical verbs, adverbials, nouns and adjectives. The results showed that the coverage of ELVs was patchy and only 8 of 14 textbooks provided sufficient information about ELVs. Among these 8 materials, only 4 of them, such as *Academic Writing Course* (Jordan, 1990) and *Writing up Research* (Weissberg & Buker, 1990), gave fair to extensive coverage of ELVs. The best coverage was provided by the textbook *Approaches to Academic Reading and Writing*

(Arnaudet & Barrett, 1984), which presented a list of ELVs in a passage and discussed the level of certainty indicated by each example. Afterwards, it provided a paraphrase exercise that asked students to choose the most appropriate ELV based on the context. A number of textbooks failed to give sufficient information regarding the use of ELVs. For example, *Plan, Write and Rewrite* (McEverdy & Smith, 1990) incorporated information about how to use ELVs to refer to literature, but it did not contain information about the 'stance' that writers can take when presenting the cited literature with ELVs. Another textbook, *Write Ideas: An intermediate course in writing skills* (Glendinning & Mantell, 1983) merely presented three examples with ELVs, saying they can be used to give recommendations.

Before Hyland (1988), Holmes (1988) conducted a similar study, investigating the adequacy of information about ELVs, but she only focused on four textbooks in the ESP field. She found that *Communicative Grammar of English* (Leech & Svartvik, 1975, 2013) and Alexander's *First Things First* (1967) provided sufficient information about ELVs for learners, although the latter's coverage was less than that of the former textbook. In the textbook *Skills for Learning* (Morais, 1980), Holmes (1988) observed some surprising gaps when introducing specific ELVs. She took the example of *suppose*. There was information about *I suppose*, which however is considered an expression predominantly used in the spoken genre; however, the infinitive construction such as *it is reasonable to suppose that...* is also commonly used in written texts, but it was not included in the textbook. Similarly, there was insufficient introduction to the usage of *tend*, which only appeared once.

To date, there have been no studies that specifically focus on the coverage and information of epistemic modality markers introduced in textbooks and other instructional materials released in China, let alone the analysis of these textbooks regarding ELVs. Li & Cui (2021) in

their study explored both students' and teachers' attitudes towards the EAP writing textbook *New Horizon College English* (NHCE) (Shu & Bian, 2000) which is one of the most popular textbooks currently available, with almost 200 universities in China using it. Although the textbook covers some information about modal verbs, students in the interview revealed that they were still confused about their function and usage. Li, Yao & Hu (2020) investigated the EAP writing textbook *New Outlook College English Reading and Writing 3* (Wang & Xu, 2015) that is widely used in China's colleges. They discovered that while it included hedges, the explanation of it focused more on the modal verbs and their meaning, purpose, and characteristics in EAP writing, but failed to address the potential errors made by Chinese L1 students.

In fact, the majority of textbooks for college students, whether they major in English or not, place greater stress on the textual structure and the general characteristics of academic writing. Even though they present information about epistemic modality, most of the content is about modal verbs, and there is no explicit section on how to utilise ELVs to deliver the statement or construct an argument with an appropriate tone, such as in *Writing English Research Papers: A Handbook for English Majors* (Liu, 2004) and *Academic Writing in English* (Wang & Zhang, 2019). That is a possible explanation for why Chinese L1 students struggle with ELVs in their EAP writing, as was frequently reported in the prior studies (see Section 3.4.1).

To conclude, it appears that no EAP writing textbooks could comprehensively cover all aspects of ELVs, more emphasis should be given to this particular linguistic feature in the future development of EAP materials, based on its important role in academic writing and the problematic usage revealed by different studies.

3.5 Conclusion

This chapter provided a detailed review of epistemic modality and the different categories and pragmatic functions of ELVs. In addition, the struggles of using ELVs revealed by EFL learners with various L1 backgrounds were also highlighted, along with the weaknesses of the traditional EAP textbooks when introducing the ELVs. In the next chapter, the methodology of the corpus-based analysis of ELVs will be discussed in detail.

Chapter 4 Methodology of the Corpus-based Analysis of ELVs

4.1 Introduction

The present corpus-based study is designed to investigate how Chinese L1 students use ELVs in their academic assignments in comparison with English L1 writers. The study involves the creation of two corpora and the findings drawn from their analysis in Chapter 5 will be utilised in the development of two types of corpus-informed learning materials of academic writing: the first only includes the data from English L1 corpus and the examples produced by English L1 writers in BAWE corpus, while the second type adds examples and observations drawn from the Chinese L1 learner corpus. The development of these two sets of learning materials will be outlined in Chapter 6. These two different types of materials will be then implemented in a pedagogical experiment involving the participation of Chinese L1 learners which examines the value of adding learner corpus data in EAP writing materials development.

In this chapter, I will introduce the methodology of the corpus research, covering the research questions and the research design. Specifically, in Section 4.2, the research questions of the present study and the statistical hypothesis test used are introduced. In Section 4.3, we look at the procedures of the corpora construction and the corpora data processing. In the end, Section 4.4 concludes this chapter.

4.2 Research questions

In the present study, two types of corpora were compiled to investigate Chinese L1 students' choice and usage of ELVs in academic assignments compared with that of English L1 writers: the English L1 corpus and the Chinese L1 corpus of students' assignments produced as part of their coursework. The present corpus-based study aims to provide answers to the following

questions:

Example 4.1

Q1: Do Chinese L1 students use epistemic lexical verbs (ELVs) in English academic writing differently compared with English L1 students? If so, in what ways?

Q2: What specific difficulties and disparities can we observe in the usage of ELVs by Chinese L1 students?

The first research question is comparative in nature, as it aims to examine the difference between two groups (Chinese L1 students and English L1 students) based on one dependent variable, that is, the usage of ELVs. The hypothesis testing approach was adopted, which is a common research approach for running a statistical analysis. It usually points to some differences in the relationship between variables and/or between groups (Levshina, 2015). There are two types of hypotheses: the null hypothesis and the alternative hypothesis. The null hypothesis assumes that there is no difference or association between different variables and groups. In contrast, the alternative hypothesis (which is directional hypothesis) has two types: one-way and two-way directional alternative hypothesis. If the researcher believes the relationship is only from one variable to the other, e.g. “A is more than B”, a one-way hypothesis is stated. If the researcher simply expects to find a difference between variables, e.g. “A does not equal B”, a two-way hypothesis will be formulated (Levshina, 2015). Subsequently, different statistical tests are employed to accept or reject either the null hypothesis or the alternative hypothesis. Based on observation of the statistical results, the hypothesis is either rejected if it does not align with the observation or confirmed if it does. In corpus linguistics, hypothesis testing includes generation of assumptions about specific linguistic features, and then carrying out the corpus-based analysis to evaluate these

assumptions, and eventually drawing conclusions (Desagulier, Desagulier & Amboy, 2017). The null hypothesis and the two-way alternative hypothesis are shown below in Example 4.2:

Example 4.2

Q1: Null hypothesis: There is no difference in terms of the usage of ELVs between Chinese L1 and English L1 students.

Alternative hypothesis: There is a difference in terms of the usage of ELVs between Chinese and English L1 students.

The second part of the research question in Q1 is more exploratory in nature than experimental. No hypotheses, therefore, are stated here. Nevertheless, according to prior research, such as by Chen (2012) and Wang & Zhang (2007), it is expected that some inappropriate usage will also be identified in the current Chinese L1 students' group, e.g., they tend to limit their usage of ELVs and are more likely to overuse the ELV *think* than English L1 students.

4.3. Research design

The present study aims to analyse the usage of ELVs in their academic assignments written by Chinese L1 postgraduate students. In this Section 4.3, two aspects will be addressed, i.e., corpora construction and data processing. Section 4.3.1 details the procedures for data collection, the consideration of representativeness, the balance of corpora and the selection of genre and discipline of the written data. The criteria for data cleansing and annotation, as well as the reliability and validity of annotation, are discussed in Section 4.3.2.

4.3.1 Corpora compilation

4.3.1.1 Data collection and corpora compilation

- **Chinese L1 corpus**

To collect assignments from Chinese L1 postgraduate students, two different approaches were adopted to advertise my study:

- Giving a presentation to the MA TESOL cohort in their tutorial meeting in the Department of English Language and Linguistics at the University of Birmingham.
- Contacting potential participants via Wechat and email.

Permission from the individual participants and the Department has been asked for and approved. I collected a total of 70 pieces of assignments produced by 19 different students: 45 pieces from the University of Birmingham, 17 from the University of Edinburgh and eight from the University of East Anglia. Regarding the topics covered, 14 pieces focus on language analysis and 56 on English language teaching training and pedagogy. In total, the learner corpus consists of 275163 tokens after the data cleaning (see Section 4.3.2.1 for details). The average word count of the written pieces is 3452. All of the participants passed the International English Language Testing System (IELTS) test, and their overall score is between 6.5-7.5. All of the writings were stored in electronic versions, and therefore they were easily processed and edited in the following stage of data cleaning.

As Nesi & Gardner (2012, p. 97) emphasised, solely relying on assignment titles is insufficient for identifying genre, especially considering that some were subjectively categorised by students themselves. Therefore, the full text of each assignment was examined to understand the topic, purpose and task, ensuring that they were put into an appropriate genre

classification. Nesi & Gardner (2012) proposed a classification of 13 genre families grounded in the BAWE corpus data. These categories were further grouped into five broad areas, according to the social functions of higher education (see Table 4.1).

Table 4.1

BAWE Genre Families and their Purposes (Nesi & Gardner, 2018, p. 53)

Social purposes	Genre family	Examples of genres
Demonstrating knowledge and understanding	Exercise	calculations; data analysis; calculations + short answers; short answers; statistics exercise
	Explanation	legislation overview; instrument description; methodology explanation; site/ environment report; species / breed description; account of a natural phenomenon
Developing powers of independent reasoning	Critique	academic paper review; interpretation of results; legislation evaluation; policy evaluation; programme evaluation; project evaluation; review of a book/ film/ play/ website
	Essay	challenge; commentary; consequential; discussion; exposition; factorial
Building research skills	Literature Survey	annotated bibliography; anthology; literature review ; review article
	Methodology Recount	data analysis report; experimental report; field report; forensic report; lab report; materials selection report
	Research Report	research article; research project; topic-based dissertation
Preparing for professional practice	Case Study	business start-up; company report; organisation analysis; patient report
	Design Specification	building design; game design; product design; website design
	Problem Question	law problem question; logistics simulation; business scenario
	Proposal	book proposal; building proposal; business plan; catering plan; marketing plan; policy proposal; research proposal
Writing for oneself and others	Empathy Writing	expert advice to industry; expert advice to lay person; information leaflet; job application; letter; newspaper article
	Narrative Recount	accident report; account of literature or website search; biography; creative writing: short story; plot synopsis; reflective recount

The genre classification employed in the present study adheres to the categorisation proposed by Nesi & Gardner (2012). The following Table 4.2 displays the genre details about the Chinese L1 corpus in the present study.

Table 4.2

Details of Genre Families in the Chinese L1 corpus

Genre	Number of pieces
Critique	22
Critique + Narrative Recount	2
Critique + Proposal	8
Essay	15
Essay + Narrative Recount	4
Methodology Recount	13
Proposal	6

The primary aim of Critiques and Essays is to develop powers of informed and independent reasoning. The Critique genre family consists of two main stages: description or summarisation of information and evaluation or critique (Nesi & Gardner, 2012, p. 95). An example of this can be seen in assignment CC009b, where students gave a description of the notional-functional syllabus and the task-based syllabus and discussed their strengths and weaknesses respectively. The Essay genre family is characterised by demonstration of the ability to construct a coherent argument and to exhibit critical thinking skills (Gardner & Nesi, 2012); it follows the structure of introduction-arguments-conclusion. For instance, CC018b discussed the main concepts of Vygotsky's social-cultural theory, following these three stages.

The Methodology Recount genre family identified in the Chinese L1 corpus “enable[s] students to become familiar with experimental procedures and the ways in which findings are made in the discipline” (Nesi & Gardner, 2012, p. 153), generally following the structure of Introduction-Methodology-Research Findings-Discussion (IMRD). For example, the student in assignment CC008d followed this framework to report their work, using COCA to conduct a

comparative analysis of three words: *tour*, *trip* and *journey*, with a focus on patterns of usage. The Methodology Recount genre family “may correspond to part of a Research Report” (Gardner & Nesi, 2012, p. 39); however, one of the distinctive features of Research Report, as specified by Nesi & Gardner (2012, pp. 142-143), is its focus on literature review and discussion, which involves students independently identifying the research gap and formulating questions through their own examination of existing literature. In contrast, Methodology Recount addresses more methods and results, with a specific emphasis on addressing questions set by teachers. Final year projects in the BAWE corpus are typically members of Research Report genre family, whereas the Methodology Recount genre family generally encompasses small experimental studies and practicals. Therefore, in accordance with their categorisation and observations, assignments of this nature, such as CC008d described above, are classified into the Methodology Recount family.

The Proposal genre centres around the planning stage of problem solving without including testing procedures, requiring writers to demonstrate their capacity to make a case for future action by presenting a clear purpose, a comprehensive plan and well-founded arguments (Gardner & Nesi, 2012, p. 173). This type of academic writing offers students’ the opportunity to simulate the planning of an activity that they may not be ready to execute practically (Nesi & Gardner, 2012, p. 182). This genre is most frequently observed in the Chinese L1 corpus as assignments that require students to design a teaching plan with persuasive justification, such as CC003a. The Narrative Recount genre family is also present in the Chinese L1 corpus. It involves students reflecting on their own personal experiences during academic or working activities (Nesi & Gardner, 2012, pp. 222-223). For example, in the last part of assignment CC017b, the student illustrates how helpful the notion of integrativeness is by drawing on their experience of teaching and learning English as a foreign language.

As we can see from this example, some assignments in the Chinese L1 corpus are realised by a “compound macrostructure” (Nesi & Gardner, 2012, p. 23), where different types of genre families can be observed in the same piece of assignment. For example, CC005c begins by giving a critical evaluation of inclusion first language (L1) in English language classrooms. This evaluation explores both the positive and negative effects of it on language learning, building upon the writer’s personal experiences as both a teacher and learner. Similarly, assignments such as CC011a encompass both Essay and Narrative Recount genre families. CC011a includes an exploration of the concepts of bilingualism and multilingualism, followed by a discussion of their comparative applicability, which is informed by the writer’s own teaching experience. Another compound genre family, Critique + proposal was identified in the corpus. For example, 010a firstly evaluates the advantages and disadvantages of inductive and deductive approaches, followed by a proposed teaching plan to teach a particular grammar point by using either or both approaches.

To conclude, the most frequently observed genre family in the Chinese L1 corpus is Critique (22 assignments), followed by Essay (15 assignments); and both of these genre families, according to Nesi & Gardner (2012), are intended to develop students’ powers of independent reasoning (see Table 4.1).

- **English L1 corpus**

To build the English L1 corpus, there were also two different approaches adopted to collect the data:

- Giving a presentation to students from the MA TESOL distance learning programme in the Department of English Language and Linguistics at the University of Birmingham.

- Extracting assignments from the Essay Bank; Essay Bank (<https://www.birmingham.ac.uk/schools/edacs/departments/englishlanguage/research/resources/essays/index.aspx>) is a free-access online essay database of the University of Birmingham that is composed of assignments for the courses and dissertations voluntarily donated by past and present students in the Department of English Language and Linguistics, who are from MA programmes in English language, such as TESOL and Applied Linguistics.

Permission from the participants and the Department was obtained before collecting assignments. In total, I collected six pieces written by two students on the MA TESOL distance learning programme, as there was only a small number of English L1 students on this programme. These assignments centre on the topic of language teacher training. To achieve a comparable corpus size to the Chinese learner corpus, I extracted 49 assignments from the Essay Bank. These assignments were from 40 different MA students majoring either in Applied Linguistics or Applied Linguistics with TESOL. The assignments covered the following three topics: Classroom and Spoken Discourse and Phonology (24 pieces), ELT Management Teacher Training (14 pieces), Functional Grammar (11 pieces). The classification of these assignments as the work of English L1 writers was assisted by the researcher's knowledge of present and past University of Birmingham students. It should be noted that all the assignments collected for English L1 corpus construction are at Distinction level. In sum, the English L1 corpus contain 274033 tokens. The average word count is 4031 words per piece of writing.

As for the Chinese L1 corpus, an examination of the genres present in assignments in the English L1 corpus was undertaken. The distribution of genre families across assignments is

presented in the following Table 4.3. As can be seen, both corpora share the same group of genre families, namely Critique, Essay, Essay + Narrative Recount, Methodology Recount and Proposal. However, in contrast to the genre families discovered within the Chinese L1 corpus, where the bulk of assignments fall under the categories of Critique and Essay, the predominant genre family in the English L1 corpus is Methodology Recount. Here, this genre family focuses on the topics of Functional Grammar, Classroom and Spoken Discourse, and Phonology, involving students reporting their experimental data analysis by applying the theories and approaches to a small case.

Table 4.3

Details of Genre Families in the Chinese L1 corpus

Genre Families	Number of pieces
Critique	5
Essay	9
Essay + Methodology Recount	3
Essay + Narrative Recount	2
Methodology Recount	28
Narrative Recount	4
Proposal	4

Additionally, there are three pieces of assignments falling into the compound category of Essay + Methodology Recount, as shown by the assignment brief provided in Figure 4.1. Also, four pieces of assignments are about reflecting how the MA course led to changes in their attitudes, beliefs and/or teaching behaviour by giving drawing on their own experience. I suggest that these assignments are members of the Narrative Recount genre family in this

case.

Several units in the Spoken Discourse module commented that the functions of linguistic items are often not predictable simply from a consideration of their forms.

- A) Make a summary of the arguments of the various approaches to the analysis of discourse on this issue (50%)
- B) Choose a written or spoken text and comment on examples which demonstrate that the functions are not predictable from a linguistic form (50%).

Figure 4.1 Requirement of the assignment CC012a suggesting the genre family: Essay + Methodology Recount

In summary, the most predominant genre family observed in the English L1 corpus is Methodology Recount (28 assignments), followed by nine pieces of assignment falling into the Essay genre family.

4.3.1.2 Representativeness and balance of corpora

In corpus studies, the representativeness and balance between corpora are always a big concern. While the corpora built for the current study seem not to be fully representative of the assignments of these three disciplines, some efforts have been made to raise the degree of representativeness of both corpora and enable them to maintain a balance. As mentioned in Section 4.3.1.1, the assignments assembled for both corpora were from three broad disciplines: TESOL, Education and Applied Linguistics; however, the texts in the Chinese L1 learner corpus are from three different UK universities (University of Birmingham, University of Edinburgh and University of East Anglia) while the essays in the English L1 corpus were only provided by students from the University of Birmingham, which seems to make the learner corpus more representative than the English L1 corpus. It should be noted that in recent

years, there have been a relatively small number of English L1 postgraduate students studying the above three subjects, and the only open-access and available source for native English speakers' assignments is the Essay Bank of the University of Birmingham, which makes the range of universities represented in the English L1 corpus seem limited. However, the difference in the number of universities included in the two corpora is negligible, as three universities are in no way representative of UK universities in general anyway.

When we look at the balance between size and number of assignments in both corpora (see Table 4.4), the number of words is very close and the number of assignments is also similar, with only a few pieces less in the English L1 corpus. It is essential, for a corpus-based study, to choose or compile a corpus of an appropriate size for achieving the research objective. Seghiri (2014) discusses the criteria for deciding whether the corpus size is sufficient for the research from the following two perspectives: size in terms of the quantity of the words and the number of the documents. For the first criteria, Sinclair (2004) proposed that a corpus should be 'big' to provide sample evidence of the studied language. However, researchers hold different interpretations of this subjective standard. Friedbichler & Friedbichler (2000) argue that a corpus with between 500,000 and 5 million words (depending on the field) is able to provide 97% of language inquiries. Other researchers, such as McEnery & Wilson (2000, 2006) and Nelson (2010) indicate that an ideal corpus should achieve around one million words. Although it is many linguists' dream to build a mega corpus to conduct their corpus studies on general language, it has been proposed by an increasing number of scholars that smaller corpora can give more favourable outcomes in specialised areas. Bowker & Pearson (2002), for example, stress that a corpus with a few thousand words is sufficient to give useful results for the research of languages for specific purposes. Other researchers (e.g. Aston, 1997) argued along the same lines, contending that small corpora are equally valuable

for sketching out certain characteristics of a language.

Table 4.4

Number of essays and tokens in both corpora

	Chinese L1 corpus	English L1 corpus
No. of assignments	70	55
No. of tokens	275163	274033

There is no consensus over the minimum number of texts required for a corpus. While Kock (1997 & 2001, as cited in Seghiri, 2014) believes that a corpus containing 19 or 20 pieces of text with around 100,000 words is more than sufficient if they are homogenous with regard to genre, geographical area, etc. Biber (1993, p. 253) in his study indicated that if the sample size is greater than 30, “a researcher can know with 95% confidence that the mean score of a sample will fall in the interval of the true population mean plus-or-minus the tolerable error”. Later, Biber (1995) further reduced this figure and suggested that a small number of texts, ten to be exact, belonging to the same genre were possibly able to represent the total elements of a specific genre. The genre families observed in both corpora based on Nesi & Gardner’s (2012) classification are discussed in Section 4.3.1.1. According to Biber’s (1995) claims, only those assignments falling into the Methodology Recount genre family in both corpora, and those that are members of Essay and Critique in the Chinese L1 corpus, are likely to be representative of their specific genre family. Of the remaining genre families present in the two corpora, there are only a limited number of pieces of writing. However, in terms of topic, the assignments in both corpora centre on two general areas: language analysis and English language teaching training and pedagogy. Each of these topics is represented by more than

ten pieces within each corpus, and so it may be considered representative.

Overall, we can say that corpora, in the present study, are relatively balanced in terms of the number of words, assignments and topics in both corpora; however, they are less balanced and representative in terms of the genre families identified in the two corpora. This is likely to be a consequence of the different collection methods utilised as well as limited texts available in the development of the English L1 and Chinese L1 corpora. As noted by Hunston (2002, p. 26), “it is a truism that a corpus is neither good nor bad in itself, but suited or not suited to a particular purpose. Decisions about what should go into a corpus are based on what the corpus is going to be used for, but also about what is available”. The detailed information on data collection as well as the difficulty in getting a similar number of assignments from both Chinese L1 and English L1 students were introduced in Section 4.3.1.1 and Section 4.3.1.3.

4.3.1.3 Genre of corpora

In academic written texts, there are different types of genres, including the research report, essay, thesis and research or conference paper, etc. (Cai, 2017). Granger & Tyson (1996) argue that language features are particularly genre-sensitive, and that the type of texts used will have a major impact on the results achieved. Therefore, the genre of written texts under study must be comparable if a significant statement is expected to be made, regarding exploring the differences in language use. As mentioned in Section 4.3.1.3, although the Chinese L1 corpus and the English L1 corpus include a similar range of genre families, the balance and representativeness of these genre families differ. In particular, the Chinese L1 corpus contains a greater number of Critiques and Essays, whereas the English L1 corpus predominantly features Methodology Recount. According to Nesi & Gardner (2012), both

Critique and Essay genre families aim to foster students' ability of independent thinking and enable them to construct their claims (or arguments) based on grounds (evidence) and supported by theories of the disciplines (p. 91). This suggests that there will be a greater incorporation of literature within these two genre families in the texts. Methodology Recount, however, focuses predominantly on the explication of methodology and the report of findings, and less on the literature review. Given that the linguistic focus of the present study is ELVs, which are commonly used to assist writers in reporting literature and expressing their attitudes towards it, the difference in genre representation must be borne in mind when interpreting the following research findings which compare ELV usage among Chinese L1 and English L1 writers.

Before starting the research, I had a specific objective in mind, which was to examine the academic assignments written by postgraduate Chinese students and native English speakers in UK. The rationale for not comparing Chinese L1 students' writing with expert writing is that expert writing is normally composed of texts from journal articles. These two types of writing have remarkable genre differences, which have been revealed by a great number of studies (e.g. Harwood, 2003; Hyland, 2002). Harwood (2005a) further highlighted that both undergraduates and postgraduates write in a range of genres, all of which differ from expert journal article genres. While genre variations are present among the two corpora in the present study, they still achieve a certain degree of similarity compared with expert journal articles. Moreover, the English L1 corpus exclusively comprises assignments that have achieved a Distinction level, indicating they are successfully academic writers to some extent. The choice to focus on three broad disciplines, namely TESOL, Education, and Applied Linguistics, was driven by the need to access a suitable number of participants, and in

particular Chinese L1 students. Over the past two decades, UK universities have experienced a considerable increase in the number of postgraduate students studying these three subjects, with Chinese students representing the largest group. There has been a much more limited number of English L1 students studying these three disciplines over the years. Nevertheless, the Essay Bank of the University of Birmingham provides full open-access to the essays of MA-level programmes including Applied Linguistics (with TESOL), TESOL and Language, Culture and Communication, completed by a group of native speakers. In this case, focusing on these three disciplines makes it practicable and possible to construct two relatively balanced corpora of an appropriate size for the purpose of the present corpus study.

It should also be noted that assignments across both corpora centre on a common theme: discussion of theories and application of theories into the language teaching classroom; however, the larger number of assignments focusing on Functional Grammar in the English L1 corpus places a somewhat greater emphasis on language analysis. Participants in the subsequent learning experiment were also drawn from the above three disciplines. Consequently, the compiled corpora are likely to align with the disciplinary backgrounds of these participants and the learning materials and activities developed based on these two corpora can potentially fulfil their specific learning requirements in their target context and in their own disciplines.

4.3.2 Data processing

4.3.2.1 Data cleaning

All the data were cleaned manually before starting the analysis. The assignments were

originally provided either in a Word or PDF format. The texts in PDF format were firstly converted into Word format in order to facilitate the following editing process. The automatic spelling checker function in the Microsoft Office Word software allows to detect spelling mistakes in assignments. As the main focus of my corpus study is to examine the appropriacy of pragmatic and semantic usage of ELVs, the spelling mistakes of words were corrected in the converting process. Another reason for using Microsoft Office Word software to clean the data is that it helps to identify the word count information for each text after the data cleaning. Later on, I was able to enter the number on a spreadsheet table and have a rough idea of the average word count of each piece of essay.

All of the assignments collected were completed version with titles, tables, references, etc. In order to only retain the main body of the texts, the following components in the texts were all removed throughout the process of data cleaning:

- Titles
- Header and footers
- Footnotes
- Captions
- Tables
- Charts
- Graphs
- References

Although only the main body of the texts was kept after the data cleaning, I noticed in the main body that there were still some sentence examples (see Example 4.3a) as well as transcripts (see Example 4.3b). They were inserted by writers in the assignments to facilitate their analysis and discussion. To ensure the final texts were the writers' own discussions on the given topics, I decided to remove them from the texts. In the meantime, it is important to note that, although the direct quotations in the assignments were not the students' own statements, they were often together with the ELVs that are the focus of my research.

Therefore, they were preserved in the process of data cleaning (see following Example 4.4).

Example 4.3

- (a) Sentence example: student aimed to analyse the following headlines of two news reports (from Chinese L1 student)

BBC: China's Xi allowed to remain 'president for life' as term limits removed.

NYT: China's Legislature Blesses Xi's Indefinite Rule. It was 2958 to 2.

- (b) Transcripts: (from English L1 student)

Transcript 1- Controlling

T: Right, thank you. Sit please.

(Pause whilst students go to their seats)

T: *(Slightly raised voice)* Sit down quickly!

T: Homework away please. Close your books. This is not a maths class.

(Students clear desks)

(T waits for all attention.)

T: Right. Books.

(Students look confused)

T: Why do we buy books? Not academic books, but novels.

SI: Study!

T: Not academic books.

Example 4.4

- (a) However, as **argued** by Ives (2013, p. 31)"the current system of students learning grammar independently is not working", the absence of support in grammar knowledge undermines the effect of this methodology. (CC 016c)

- (b) Triandis (2001: 19) **suggests** that in the future we will:

'... be able to examine the problem of 'fit ' between person, task, each managerial phenomenon and culture. Some persons fit better in some tasks and are better at

dealing with some managerial phenomena than with others. Furthermore, they are more effective in one kind of culture than in another.’ (EC 003b)

4.3.2.2 Data Annotation

Each piece of assignment in both corpora was assigned a header that encoded the basic information about the participants: English L1 corpus (EC) vs. Chinese L1 corpus (CC), and also the number of assignments the participant submitted. To preserve anonymity, each piece was labelled with a four-digit number along with a letter as a reference, allowing identification of every piece in the English L1 or Chinese L1 corpus. For example, assignment CC003a represents the first piece of writing provided by the third Chinese L1 student, and EC002b is the second writing offered by the second English L1 student.

Before doing annotation, a list of commonly used ELVs was prepared mainly based on the list proposed by Hyland & Milton (1997). The main source of their list is Holmes’ (1983, 1988) and Kennedy’s (1987) analyses of the “learned” sections of the Brown and LOB corpora. Their list is supplemented by literature on reference grammars (Quirk et al., 1972) and modality (Allison, 1995; Coates, 1983; Hyland, 1996b; Halliday, 1994; Perkins, 1983). Further additions to my list are based on Dontcheva-Navratilova’s (2018) study of ELVs in linguistics and economics research articles. Ultimately, an inventory of 28 devices that frequently occur in academic writing was subjected to analysis (see Table 4.5). Regarding the overall number of ELVs in English academic usage, there is no consensus in the literature, with Swales (1990) estimating about 50, while Thompson & Ye (1991) propose a figure over 400. In either case, it should be admitted that the number of ELVs to be investigated in the present study is limited.

Table 4.5

The list of frequently used ELVs

Judgement Verbs	
Speculative verbs	assume, believe, claim, consider, doubt, expect, feel, imply, indicate, predict, presume, regard, speculative, suggest, tend, think
Deductive verbs	argue, conclude, demonstrate, estimate, infer, prove, propose, show, suppose
Evidential Verbs	
Quotative verbs	argue, assume, believe, claim, conclude, consider, demonstrate, doubt, estimate, feel, indicate, propose, prove, regard, show, speculate, suggest, tend, suppose, think
Sensory verbs	appear, seem, view

Meyer (1997, p. 22) argues that “genuine hedging is much rarer in written academic discourse than might be expected from statistical counts of modal and similar expressions”. Instead of merely counting the targeted ELVs in the corpus software, each occurrence of ELVs was manually examined in the original texts to verify if the verb functioned as an epistemic modality device in the context. Cases that deliver non-epistemic meanings such as *appear* (“to show up”), *feel* (“to experience a particular feeling or emotion”) and *show* (“to let somebody see something”) were identified and excluded (see Example 4.5).

Example 4.5:

- (a) However, these collocations usually **appear** simultaneously and function as one preposition (Huddleston 1984: 79). (CC 001c)

(b) Sometimes after a learner actually come to the target culture environment, he/ she may **feel** disappointed. (CC 002b)

(c) Table 12 (below) **shows** an analysis of this section of the data using the S&C model without restriction on participant roles. (EC 025a)

After identifying all targeted ELVs in the written texts, I manually annotated these devices in the texts via the software *Keyboard Maestro* (2019) at the sentence level. The ELVs were firstly annotated according to their epistemic type (speculative, deductive, quotative, sensory; see details in previous Section 3.2.2). After, each individual ELV was categorised as ‘booster’ or ‘hedge’ depending on the levels of certainty indicated by the statements, along the lines argued by Hyland (2005, 2018) (see discussion in Section 3.3.1). Followed by the annotation of certainty level, the function type (personalised, impersonalised and depersonalised patterns) (Koutsantoni, 2007; Holmes, 1988; Hyland, 1998; Hyland & Milton, 1997) was marked for each ELV. As introduced in Section 3.3.2, each function type includes several different types of sentence construction and ELVs were provided with a corresponding capital letter to indicate which subcategory they belong to (see following Figure 4.2).

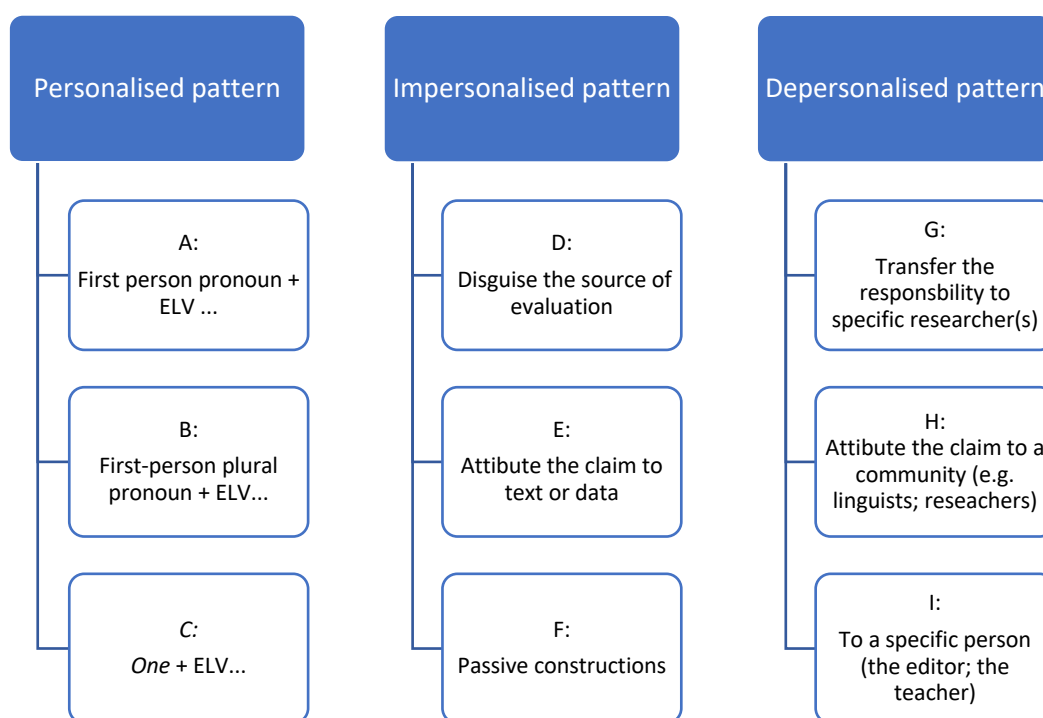


Figure 4.2 Categorization of function types of ELVs

The Example 4.6 below shows a sentence including the ELV *argue* tagged on the basis of the above scheme. In the following coding, *type= "quote"* refers to the fact that *argue* functions as a quotative ELV here. *level= "booster"* indicates that *argue* helps the writer to express a strong level of certainty in the statement. The code *func= "depersonal"* suggests that the sentence employs a depersonalised construction. The last code *cate= "G"* refers to the sentence structure as belonging to the G category of depersonalised patterns (transfer the responsibility to specific researcher(s)).

Example 4.6:

Due to the overlap between prepositions and subordinators, Huddleston and Pullum (2005) `<elv type= "quot" level= "booster" func= "depersonal" cate= "G"> argue </elv>` that more traditional grammatical subordinators should be classified into the category of prepositions. (CC 008a)

As the focus of the analysis is to examine the usage and function of ELVs in the sentence, sentence-level analysis is sufficient to determine their semantic and pragmatic function. All annotated sentences were extracted from the texts by programming and pasted into a separate cell in the spreadsheet in Excel. Also, each sentence including a tagged ELV was given a certain code. For instance, 05 stands for the fifth sentence involving ELVs in the particular assignment. By doing so, all the sentences with annotated ELVs can be located and the usage of ELVs in both corpora can be examined by observing these retrieved lines. For further analysis, I designed the following format for organising data in the spreadsheet, separating the ELVs from the rest of the information in the sentence (see Example 4.7). After completing the processes of annotation and formatting, I was able to embark upon a comprehensive comparison of the use of ELVs by both English L1 and Chinese L1 writers.

Example 4.7

File No.	Sentence No.	Left content	ELVs	Right content	Type	Level	Function	Category
003a	01	Nunan (1987)	argues	that the style of language used in the classroom environment may seriously effect a student's ability to cope in the real world, although this is contended by <u>Seedhouse</u> (1996).	<u>quot</u>	booster	<u>depersonal</u>	G

4.3.2.3 Reliability and validity of annotation

The reliability of annotation in corpus linguistic research is an essential factor in ensuring the quality of the study and yielding a valuable finding (Artstein & Poesio, 2008; Barth & Schnell, 2021; Crible & Degand, 2019; Kübler & Zinsmeister, 2015). One of the fundamental steps in the annotation process is evaluating consistency of the annotation and Hovy & Lavid (2010) further point out that there are two dimensions in measuring the reliability of the annotation: one is inter-annotator agreement measuring reproducibility (different annotators on the

same issue); the other is intra-annotator agreement evaluating the stability (consistency of the annotator alone over time). Firstly, to ensure reliability from the aspect of inter-annotator agreement, the researcher in the present study together with another colleague in the Department of English Language and Linguistics discussed some of the taggers that could be analysed in different ways; an agreement was achieved, and the discussion was utilised in the annotation of other similar examples. For instance, *argue* in Example 4.8a was considered a speculative ELV by Vass (2017) and Dontcheva-Navratilova (2018); however, the annotator and I eventually agreed to put it into the deductive category, as its semantic meaning -“you state it and give the reasons why you think it is true” (Collins English dictionary, 2020) indicates that the statement given is inferred by certain reasons and evidence. Additionally, in Section 4.3.2.2, some verbs include both epistemic and non-epistemic meaning, which therefore requires a detailed examination of their function in the context. *Propose*, as the first sentence listed in Example 4.8b, indicates the semantic meaning of “if you propose a theory or an explanation, you state that it is possibly or probably true, because it fits in with the evidence that you have considered” (Collins online dictionary, 2020), while *propose* in the second sentence expresses the meaning of “if you propose something such as a plan or an idea, you suggest it for people to think about and decide upon” (Collins online dictionary, 2020). After the comparison, *propose* in the first sentence appears to indicate a more epistemic meaning as it involves evaluating the degree of assurance of what the writer has said, while *propose* the second in the sentence tends to emphasise more on giving a proposal. Thus, *propose* expressing the same meaning as the first sentence in Example 4.8b was classified as an ELV in the present study.

Example 4.8

(a) speculative or deductive

I would **argue** that this sample size is suitable for qualitative analysis because interviewing is a time-consuming survey method which not only requires researchers to do preparation in advance, but also requires them to finish a series of work such as counting and reviewing records afterwards (Bryman, 2012). (CC 012a)

(b) ELV or non-ELV

- To deal with the incongruence between grammatical form and discourse function, Sinclair et al. (1975) **proposed** an explanatory process comprised of information about both situation and tactics. (EC 013a)
- In the original model there are five **proposed** ranks: lesson, transaction, exchange, move and act which relate hierarchically. (EC 019a)

Secondly, to investigate the stability and consistency of the annotation, both the English L1 and the Chinese L1 corpus were examined twice, with a one-year interval in between. All ELVs in the cleaned text were annotated the first time, and the sentences containing the annotation were extracted to an Excel table using R programming. In order to determine whether there were any missing ELVs during the manual annotation as well as the data transfer procedure, a new data processing method was utilised the second time. Both corpora were uploaded to Sketch Engine⁵ (<https://www.sketchengine.eu>) to examine whether any sentences including targeted ELVs had been missed. Each concordance line including targeted ELVs in the Sketch Engine was double checked against the results generated from the first

⁵ Sketch Engine a corpus text analysis software developed by Lexical Computing Limited in 2003.

time of annotation. The table of the results was updated to include any missing targeted lexical verbs that operated as epistemic modality devices. The detailed discussion of the disparity between these two data analysis results will be presented in the Section 5.7.

4.4 Conclusion

This chapter introduced the procedures for the compilation and annotation of the English and Chinese L1 corpora developed for this study. The Chinese L1 corpus is a collection of academic written texts provided by MA/MSc Chinese EFL students majoring in TESOL, Education and Applied Linguistics. The English L1 corpus was composed of texts written by native speakers of English who were MA students in the same disciplines. The data collection, cleaning, and annotation process, as well as the reliability and validity of coding were discussed. In addition, issues related to the representativeness and balance of both corpora were examined.

Initially, the corpora built for the present study will be used to conduct a comparative analysis to investigate: Q1) whether there is any difference in the usage of ELVs between Chinese L1 and English L1 writers in their academic written texts sharing a similar context and genre; Q2) what specific difficulties and disparities can be observed in Chinese L1 students' texts. The findings of the study were fed into the development of two types of corpus-informed learning materials: the first type only included corpus data from the English L1 corpus in the present study and the BAWC corpus, the second added the data from the Chinese L1 corpus together with the findings obtained in the following learner corpus research (see details in Chapter 5). Both types of materials were then compared to explore whether the learner's data combined with English L1 corpus data can strengthen students' understanding of ELVs via an online pedagogical experiment. The detailed methodology of this experiment will be introduced later in Chapter 6. The next Chapter 5 will firstly present the research findings of the

comparative corpus-based analysis of the use of ELVs in academic written texts produced by Chinese L1 writers.

Chapter 5 Research Findings of the Corpus-based Analysis of ELVs

5.1 Introduction

This chapter examines the variations in the usage of epistemic lexical verbs (ELVs) between the English L1 and the Chinese L1 corpus, focusing on the following five aspects: the top ten frequently used ELVs, epistemic type (speculative, deductive, quotative, sensory), epistemic commitment (hedges and boosters), sentence construction (personalised, impersonalised and depersonalised) as well as the grammatical pattern. Two research questions are addressed in the present corpus-based study: the first question relates to the disparities in using ELVs between the two groups of students and the second one aims to investigate Chinese L1 students' obstacles to using ELV in academic writing.

Q1: Do Chinese L1 English learners use ELVs in academic writing differently compared with native English speakers? If so, in what ways do they use ELVs differently?

Q2: What specific difficulties and disparities can we observe in the usage of ELVs by Chinese L1 English learners?

The statistical analysis in the present study was carried out on an online Log-Likelihood (LL) calculation (Rayson, Garside & Sawyer, 2000) instrument to examine whether the differences in the frequency between the two corpora are significant. The analysis in this chapter is organised according to the above-mentioned five aspects. As Section 4.3.2.3 above explained, the present corpus-based analysis has undergone two periods of data analysis to check if there were ELVs missing in the process of the manual data annotation and data transfer. Section 5.7 reveals the changes in the overall frequency of ELVs in the two corpora as a result of the different data analysis methods employed, followed by the discussion of their impact

on the subsequent corpus-informed materials production (see Chapter 6 for materials development). Sections 5.8 discusses the implications of the findings for the subsequent development of materials and the whole chapter concludes with a brief summary.

5.2 Overall frequency of ELVs

This section compares the overall frequency of ELV usage between the Chinese L1 and the English L1 corpus. As just mentioned, the significant testing adopted in the present corpus analysis is Log-Likelihood (LL) by using the online LL calculation (see Figure 5.1). Figure 2 shows the key results of the LL calculation after inputting the frequency of the word in each corpus and the corpus size of both corpora.

To use this wizard, type in frequencies for one word and the corpus sizes and press the calculate button.

	Corpus 1	Corpus 2
Frequency of word		
Corpus size		

Calculate Clear form

Figure 5.1 Log-likelihood online calculator (Rayson, <https://ucrel.lancs.ac.uk/llwizard.html>)

Key:
 O1 is observed frequency in Corpus 1
 O2 is observed frequency in Corpus 2
 %1 and %2 values show relative frequencies in the texts.
 + indicates overuse in O1 relative to O2.
 - indicates underuse in O1 relative to O2

Item	O1	%1	O2	%2	LL	%DIFF	Bayes	ELL	RRisk	LogRatio	OddsRatio
word	1336	0.49	1379	0.50 -	0.87	-3.52	-12.35	0.00000	0.96	-0.05	0.96

Figure 5.2 Example results of Log-likelihood calculator of overall occurrences of ELVs in each corpus

The following Table 5.1 presents the overall normalised frequencies of the ELVs exploited in the two corpora. ELVs in the English L1 and Chinese L1 corpus total 1379 and 1336 respectively. The result reveals a slight difference in the total frequency, with the English L1 students making use of 503 ELVs per 100,000 words, while the Chinese students use 486 ELVs

per 100, 000 words. Although the English L1 writers make use of 17 more tokens of ELVs per 100,000 words, this difference is insignificant ($LL^6=0.87$). The result is inconsistent with previous studies, such as Szczygłowska (2021) and Dontcheva-Navratilova (2018), which revealed that English L1 writers tended to use more ELVs than non-native students (whose L1 was in this case Czech and Polish respectively). This disparity may be attributed to the genre variation across two corpora in the present study. The English L1 corpus primarily consists of texts that focus on reporting language analysis results, whereas the Chinese L1 corpus predominantly comprises Critiques and Essays that involve referring to different literature to construct the arguments. It follows that the relatively high frequency of ELVs used by Chinese L1 students in the corpus developed for the current study may be expected.

Table 5.1

Total ELVs used in Chinese L1 and English L1 corpus

	Chinese L1 corpus	English L1 corpus
Total ELVs	1336	1379
Normalised frequency per 100,000 words	486	503

Taking a closer look at the ELVs used by both groups of students, Table 5.2 lists the top ten most frequently occurring items in the English L1 corpus and in the Chinese L1 corpus. The occurrences of individual ELV within each category are presented in Appendix 1. Overall, Table 5.2 suggests that English L1 writers rely more heavily on a narrower range of ELVs, with the top ten most frequently used devices accounting for around 7% more of the total usage than that of Chinese L1 students. Of the top ten most frequently used devices, seven ELVs (*seem*,

⁶ In the LL test, the number is above +3.84 is significant at the $p<0.05$ level; +6.63 is significant at the $p<0.01$; +10.83 is significant at $p<0.001$; +15.13 is significant at $p<0.0001$.

show, suggest, believe, consider, argue and *indicate*) occur on both groups' lists. While *seem* is the most frequently used ELV in both corpora, it occurs more than twice as often in the English L1 corpus. In addition, it is observed that the items *appear, expect, propose* are not in the Chinese students' top 10 list, but are favoured by English L1 writers. On the other hand, *think, tend* and *regard* only appear on the Chinese L1 writers' list.

Table 5.2

Top ten most frequently used ELVs in Rank Order and their percentage out of the total usage of ELVs in the Chinese L1 and English L1 corpora

Chinese L1 Corpus				English L1 corpus			
Rank	Item	Raw No.		Rank	Item	Raw No.	Percentage
1	seem	121	9.06%	1	seem	269	19.51%
2	show	102	7.63%	2	show	131	9.50%
3	think	100	7.49%	3	suggest	114	8.27%
4	suggest	98	7.34%	4	indicate	95	6.89%
5	believe	94	7.04%	5	appear	77	5.58%
6	tend	94	7.04%	6	consider	68	4.93%
7	consider	77	5.76%	7	expect	66	4.79%
8	argue	72	5.39%	8	propose	63	4.57%
9	indicate	62	4.64%	9	believe	56	4.06%
10	regard	61	4.57%	10	argue	55	3.99%
Total		881	65.94%			994	72.09%

5.3 Semantic distribution

The four classes of ELVs proposed by Hyland (1998) indicate different types of epistemic meaning in the discourse. This section compares how ELVs are distributed across semantic categories in both English L1 and Chinese L1 corpora. The raw frequency and the percentage of each semantic class are shown in Table 5.3. It is noticeable that both the English and Chinese groups favoured the judgement group over evidential verbs, with judgement ELVs taking up more than 60% of the total usage. The tendency for both groups of writers to favour judgement verbs may be due to the fact that, TESOL, Education and (Applied) Linguistics are

social sciences, which require writers to maintain a dubitative attitude towards their propositions and their analyses. Therefore, the written product of this discipline involves more ambiguities and assumptions rather than categorical claims (Szczygłowska, 2021).

There are also some interesting findings in the subtypes of judgement and evidential ELVs used by both groups. It is found that Chinese L1 and English L1 writers showed a stronger preference for speculative ELVs, compared with the deductive category (LL=103.37 and 137.18 respectively). This situation may be explained by the fact that writers in soft disciplines such as TESOL, Education, and Applied Linguistics tend to ‘express conjectures about a subject without firm evidence’ rather than concluding from ‘observable evidence’ (Vass Ward, 2015, p.120). In the category of evidential verbs, sensory verbs were chosen over quotative verbs by English L1 students (LL=71.44), while Chinese writers demonstrated the opposite tendency (LL=41.22). The results seem to show that Chinese L1 students tended to use significantly more quotative ELVs than English L1 writers (LL=33.33), while sensory verbs were underused in the Chinese students’ assignments to a highly significant degree, in comparison with English L1 writers’ production (LL=82.73). The detailed discussion of why Chinese L1 students relied more on quotative ELVs than sensory verbs will be presented in following Section 5.3.3 and Section 5.3.4.

Table 5.3

Distribution of ELVs across four classes in Chinese L1 and English L1 corpora

	Chinese L1 corpus		English L1 corpus		LL
	Frequency	Percentage	Frequency	Percentage	
Judgement verbs	887	66.39%	852	61.78%	0.57

Speculative	594	44.46%	594	43.07%	0.00
Deductive	293	21.93%	258	18.71%	2.08
Evidential verbs	449	33.61%	527	38.22%	6.57*
Quotative	289	21.63%	161	11.68%	36.39*
Sensory	160	11.98%	366	26.54%	82.73*

Note: * represents the difference in the frequency of ELVs between two corpora is significant

5.3.1 Speculative judgement

Speculative ELVs indicate that the statement is made based on a subjective assumption. Table 5.4 shows that the number of speculative verbs used by Chinese L1 writers and English L1 writers is comparable. In addition, the results show that both groups of students made similar use (in terms of frequency) of verbs, *consider*, *believe* and *imply*. A substantial difference, however, can be identified in the frequency of *think*. Chinese L1 writers used *think* to a significantly high degree to express their personal statements (93 occurrences), but it only occurred 22 times in the English L1 corpus (LL=46.87). The situation of overusing ELV *think* by learners of English has also been observed in written production of students with different L1 backgrounds, such as Hong Kong (Hyland & Milton, 1997), Chinese (Chen, 2012; Wang & Zhang, 2007) Korean (Oh, 2007) students. In addition to the potential effect of genre variations between two corpora in the present study, Hyland & Milton (1997) outlined another potential reason for the preponderance of the verb *think* in non-native writings: English as a Foreign Language (EFL) learners may not be certain in how to distinguish spoken and formal written forms, and therefore, transfer this spoken linguistic feature to their academic written production. In contrast, English L1 writers significantly favour the ELV *feel* (53 occurrences), which only occurs seven times in the Chinese L1 corpus (LL=40.14). This

finding is apparently inconsistent with those of previous studies (e.g. Chen, 2012; Salazar & Verdaguer, 2009), which suggest that non-native writers tend to show a stronger preference for the verb *feel*, which is one of the most frequent lexical verbs in the spoken register. The possible reason behind this inconsistency probably is that the Chinese students in my study may not grasp the full range of semantic meanings of this verb. As a result, they mainly use it to express their physical and psychological feelings 'to experience a particular feeling or emotion' rather than in its figurative sense 'to think or believe that something is the case'. It is this latter sense that is relevant to the use of *feel* as an ELV.

Regarding the speculative verbs *indicate*, *suggest* and *expect*, these were favoured more by English L1 writers than by Chinese L1 students in my study. The first two ELVs were also among the top frequently used items by English L1 writers in both the applied linguistics and economics fields in Dontcheva-Navratilova (2018)'s data; however, Czech linguistics in her study made greater use of *expect* than their English L1 counterparts. It is also observed in her study that the former two verbs were frequently employed in conjunction with abstract rhetors to evaluate the results, such as *the analysis suggests...* and *the results indicate*

In addition to the above observations, the English L1 writers showed a stronger preference for both *predict* (LL=6.36) and *assume* (LL=12.89). Szczygłowska (2021), however, found out that English native writers in her study favoured *predict* more than Polish L1 writers do, but fewer used *assume* than Polish L1 writers. Looking at the item *doubt* in Table 5.4, it is more prevalent in the Chinese L1 students' texts, with 15 more occurrences than in the English L1 corpus (LL=15.90). The finding seems to contradict results reported by Hyland & Milton (1997), which showed that *doubt* was used less by Hong Kong students compared with English L1 students. This phenomenon may be attributable to the fact that a substantial proportion

of assignments in the Chinese L1 corpus are of the Critique and Essay genre families. They aim to develop students' individual reasoning and critical thinking skills, which gave more opportunities to use *doubt* in argument construction. In contrast, the Methodology Recount genre focuses primarily on presenting experimental procedures and analysis results, with less emphasis on expressing opinions and constructing arguments. *Suspect*, which has a similar semantic meaning to *doubt* but is not included in the present list has also been identified in both corpora. However, only two occurrences in the Chinese L1 corpus and four occurrences in the English L1 corpus were observed respectively (LL=0.69).

Table 5.4

Frequencies of speculative verbs in Chinese L1 and English L1 corpora

Chinese L1 corpus	Frequency	English L1 corpus	Frequency
tend	94	indicate	91
think	93	suggest	77
consider	69	expect	66
regard	59	consider	62
believe	55	believe	55
expect	45	feel	53
indicate	45	tend	34
suggest	40	imply	32
imply	30	predict	32
doubt	16	assume	31
claim	15	think	22
predict	15	regard	17
assume	9	claim	14
feel	7	speculative	4
presume	2	presume	3
speculative	0	doubt	1
Total	594	Total	594

5.3.2 Deductive judgement verbs

Deductive lexical verbs suggest that the writers have employed theoretical evidence or logical facts to reach a conclusion. Table 5.5 shows both groups' frequency of each deductive verb

covered in the present study. As can be seen from Table 5.5, *show*, *prove* and *argue* are on the list of the top five most frequently occurring deductive ELVs, while also having a similar number of occurrences in both corpora.

However, there are also some considerable differences in the devices used by English L1 and Chinese L1 writers: *suppose* and *conclude* show significantly higher frequencies in the Chinese L1 corpus than in the English L1 corpus (LL=54.82 and 38.70 respectively); indeed, *conclude* is absent from the English L1 list. The reason behind this is that English L1 writers in the present study preferred its quotative function in the statement (see following Chapter 5.3.3). Similarly, in the Dontcheva-Navratilova's (2018) study, *conclude* is also favoured by Czech writers over English native writers. A closer look at the usage of *suppose* in the Chinese L1 corpus shows that students have a stronger preference for the grammatical pattern "*be supposed to*" (see Example 5.1a), with 53 tokens in total. Regarding the variation of the verb-*demonstrate* in both corpora, the English L1 writers used significantly more of it than do the Chinese L1 writers (LL=5.65), which seems inconsistent with Dontcheva-Navratilova's (2018) and Szczygłowska's (2021) studies where Czech and Polish writers relied more on this word to give a deductive assumption. The discrepancy in results may be attributed to the variation in genre family between the two corpora examined in this study. The English L1 corpus contained a larger number of assignments belonging to the Methodology Recount genre family compared to the Chinese L1 corpus, where students are expected to provide their conclusions or deductions based on the results of data analysis (refer to Example 5.1b).

Table 5.5

Frequencies of deductive verbs in Chinese L1 and English L1 corpora

Chinese L1 corpus	Frequency	English L1 corpus	Frequency
show	101	show	124
suppose	57	prove	44
prove	44	propose	27
conclude	28	demonstrate	25
argue	25	argue	22
infer	13	infer	10
demonstrate	11	suppose	4
propose	9	estimate	2
estimate	5	conclude	0
show	101	show	124
suppose	57	prove	44
Total	293		258

Example 5.1

- (a) As a result, the knowledge is **supposed to** be explored by students themselves
instead of being presented directly by the teacher. (CC 006c)
- (b) Here the analysis clearly **demonstrated** the need for 'E' to provide a quick
response (at line 66) in this situation,.... (EC 009a)

5.3.3 Evidential quotative verbs

The quotative category clearly contains the largest number of ELVs compared with the other three categories, as both speculative and deductive verbs can also function as quotative verbs. Table 5.6 below presents the results of the different usage of quotative verbs in both groups of students. As discussed in Section 3.3.2, Hyland (1999, p. 350) proposed a taxonomy of reporting verbs as an indication of writers' attitudes towards the source proposition and of the original authors' rejection or acceptance of it. The results in Section 5.2 above showed that the Chinese L1 students made significantly more use of quotative verbs than the English L1 students in general. As can be seen, *suggest*, *argue*, *propose* and *claim* are all in the top

five on both lists. The use of these four ELVs implies that writers were generally taking a neutral attitude towards the reported information (Nesi, 2021). Among all four verbs, *suggest* is the most frequently used quotative verb in both corpora. Taking a closer look at the first three verbs, the Chinese L1 writers seemed to rely more on them, employing *suggest* and *claim* with significantly higher frequencies than English L1 students (LL=4.59 and 4.09 respectively). Similarly, Dontcheva-Navratilova's (2018) study also showed that Czech linguists also use *claim* considerably more frequently than Anglophone scholars; however, both Szczygłowska (2021) and Dontcheva-Navratilov's (2018) results revealed that *suggest* occurred more in the Anglophone's corpus than the learner corpus instead.

Despite the apparent similarity, analysis also reveals an uneven distribution of the items listed in the following table. Compared to English L1 students, the Chinese EFL learners tended to employ a greater number of quotative ELVs as well as wider range of ELVs to justify their propositions by acknowledging previous findings. Also, what is interesting is that *believe*, indicating the writer's neutral attitudes towards cited information appears on the Chinese L1 list with 39 occurrences, as the third most frequent quotative verb, while there is only one occurrence found in the English L1 corpus (LL=45.94). This fits with the finding in Chapter 5.3.1, of the overuse of speculative *think* by Chinese L1 students; together, these findings suggest that Chinese L1 writers of English show a preference for using mental verbs to deliver their statements. Mental verbs refer to a cognitive state that is often logic-related where actions are mostly abstract (Papafragou, Cassidy & Gleitman, 2007). The situation of overreliance on mental verbs in EFL learners' writing has also been found in Granger & Paquot (2015)'s study where EFL learners also largely overused mental verbs in EAP texts in comparison with expert writing. Another possible explanation for overusing mental verbs, such as *think* here, is that the majority of assignments in the Chinese L1 corpus are of the

Critique and Essay genre families. Rather than focusing on describing the experimental procedures and findings, one of important features of these two genre families is to build an argument, involving a certain level of personal opinions or developing a coherent argument by referring to current theory or research in their disciplines (Nesi & Gardner, 2012, p. 90).

Table 5.6

Frequency of quotative verbs in Chinese L1 and English L1 corpora

Chinese L1 corpus	Frequency	English L1 corpus	Frequency
suggest	58	suggest	37
argue	47	propose	36
believe	39	argue	33
propose	36	claim	17
claim	31	demonstrate	8
indicate	17	conclude	7
conclude	15	show	7
prove	14	consider	6
consider	8	indicate	4
think	7	prove	3
demonstrate	6	believe	1
assume	3	imply	1
doubt	2	feel	1
regard	2	assume	0
estimate	1	doubt	0
show	1	estimate	0
speculate	1	regard	0
suppose	1	speculate	0
imply	0	tend	0
feel	0	suppose	0
tend	0	think	0
Total	289		161

The finding that the Chinese L1 writers used a wider range of quotative verbs to refer to evidentiary justification is unexpected. Previous studies such as Hyland & Milton (1997) and Oh (2007) examined all kinds of epistemic devices used by EFL learners and reported that they

generally depended heavily on a smaller range of choices. While this may be true of the usage of all five classes of epistemic devices (modal verbs, adverbials, lexical verbs, adjectives, and nouns), it does not seem to be true of the specific quotative ELVs. In addition to the influence of variation in genres, this could be attributed to the employment of other reporting verbs in the English L1 corpus to refer to previous findings. As Thompson & Ye (1991) proposed, there are over 400 different verbs that can be used to report previous research literature (see detailed discussion in Section 3.3.2). While the present study does not primarily focus on the concept of reporting verbs, notable observations regarding some reporting verbs, gathered from analysis of my compiled corpora, will be separately presented in the following Section 5.3.5.

5.3.4 Evidential sensory verbs

Sensory verbs are so-called because the evidence of the statements is based on the writer's sense. A comparison of the overall frequency of sensory verbs reveals that the English L1 writers used significantly more sensory verbs than the Chinese L1 writers, having more than twice as many as the latter group (366 occurrences vs. 160 occurrences, LL=82.03). An examination of the usage of each individual sensory verb in Table 5.7 shows that both English L1 and Chinese L1 students depended on *seem* mostly and made less use of *appear* and *view*. Although *seem* ranks first in both corpora, it appears twice as often in the English L1 corpus (LL=58.21). The findings suggest that Chinese students may tend to offer stronger commitments, and be less careful about using hedges, such as *seem* here to weaken the force of the claims. The detailed comparative analysis of using ELVs to deliver different levels of epistemic commitment between two groups will be presented in Section 5.4. In the same vein, *appear* occurred four times more often in the English L1 corpus (77 occurrences vs. 14

occurrences, LL=48.28). Therefore, we can see that Chinese L1 students here tended to mainly use *seem*, while English L1 writers tried to employ both *seem* and *appear*. A similar situation was found in both Choi & Ko's (2005) and Burrough-Boenisch's (2005) studies where Korean students also predominantly used *seem* over than *appear*. The less frequent occurrence of *appear* in the Chinese L1 corpus is perhaps due to learners' imperfect grasp of the word's polysemous semantic meanings. Corpus analysis reveals that Chinese L1 students in the present study tend to be more familiar with its non-epistemic meaning, 'to become noticeable or to be present', with 41 occurrences of this sense in their written production.

Cognitive anthropologists and linguists (e.g. Matlock, 2004; Yu, 2004) have pointed out that the abstract meanings of verbs are typically derived from concrete and physical meanings (related to body motion and vision etc.) via a metaphorical transfer. This historical progression, with the more abstract meanings emerging later, aligns with learners' acquisition of a language, as it is demonstrated that the abstract sense is acquired and learned later than concrete meanings. Therefore, Chinese L1 students may find it more difficult to master the figurative meanings of polysemous verbs. This is also reflected in Laso's (2009) study which showed that EFL learners have difficulty using the figurative meanings of verbs, such as *lead* and *draw*.

Table 5.7

Frequencies of sensory verbs in Chinese L1 and English L1 corpora

Chinese L1 corpus	Frequency	English L1 corpus	Frequency
seem	121	seem	269
view	25	appear	77
appear	14	view	20
Total	160	Total	366

5.3.5 Additional verbs

Regarding the use of alternative verbs to deliver statements, both groups of students used a similar number of *note* in their assignments, with 24 instances in the Chinese L1 corpus and 25 instances in the English L1 corpus. In contrast, English L1 writers tend to use *reveal* significantly more than Chinese L1 students, with 115 instances identified in the English L1 corpus and only 18 instances in the Chinese L1 corpus (LL=79.33). This is probably due to the genre variation between two corpora (see details in Section 4.3.1.1). Specifically, the Chinese L1 corpus containing a greater proportion of Critique and Essay genre families, while English L1 corpus consists of a bigger number of texts falling under Methodology Recount genre family, which leads English L1 students tend to use more of *reveal* to present the findings.

Furthermore, it is noteworthy that both groups tried to use additional verbs that indicate visual evidence, such as *observe* and *notice*. Both groups had a slight disparity in their usage of the word *observe*. The Chinese L1 corpus contained five occurrences, whereas the English L1 corpus contained 24 occurrences. However, regarding the use of verb *notice*, both groups of Chinese and English L1 students had a comparable frequency, with all having less than ten instances (9 instances vs 6 instances).

As to the use of other reporting verbs to report previous research, one of the interesting findings is the disparity in the use of *say* between two groups of students, with 60 instances identified in the English L1 corpus and only 15 in the Chinese L1 corpus. This seems inconsistent with studies that find the communication verb *say* appears more commonly in L2 students' texts than those written by English L1 writers (e.g. Lee, Hitchcock & Casal, 2018; Kwon, Staples & Partridge, 2018). The observed phenomenon maybe be ascribed to disparities in the students' English proficiency level. The current study focuses on Chinese L1

postgraduate students, while the previously stated studies studied undergraduate students who exhibit relatively lower levels of English competence. Furthermore, the findings here appear to prove that English L1 authors in the present study, despite achieving Distinction in their assignments, cannot be regarded as proficient writers, and advanced L2 writers may exhibit better linguistic performance than L1 writers in certain areas.

Example 5.2

Hymes **said** that in describing and levelling aspects of a speech event, being systematic and through was “heuristically important” (Coulthard 1985:59). (CC 002a)

In addition to verbs indicating writers’ neutral attitude towards source information, the use of reporting verbs indicating that writers accept the source information were also observed, with *highlight* occurring 6 times and 3 times respectively in the English L1 and Chinese L1 corpus (see Example 5.3). In terms of the verbs (*challenge*, *fail*, *overlook*) indicating the writer’s critical attitudes towards the reported information, no occurrences were found in both corpora.

Example 5.3

Malouf (1995) has also **highlighted** the issue of multiple participants in an exchange.

(EC 034a)

Moreover, according to Hyland's (1999) classification, reporting verbs can also serve as indicators of the author's stance towards preceding information. For instance, Nesi (2021) discovered in her research that students employ verbs such as *deny*, *disagree* and *refute* to indicate an author’s implicit views towards earlier propositions. However, only one occurrence of *deny* was identified in the English L1 corpus (see Example 5.4).

Example 5.4

Sinclair (1992) **denies** a collective Birmingham spoken discourse model... (EC 034a)

5.4 Epistemic commitment of ELVs

Different ELVs clearly express different levels of modesty and deference regarding writers' confidence in their own propositions or in the referential information cited; for example, *predict* ('something will happen') conveys a greater certainty than *speculate* ('make a guess that something might happen'). To compare the use of ELVs to deliver certainty and tentativeness, the present study categorises the listed ELVs as either 'hedges' or 'boosters' based on Hyland's (2018) classification. Figure 5.3 shows that Chinese L1 students use a significantly higher proportion of ELVs to deliver a stronger commitment than do their L1 counterparts (around 10% more, LL=10.36). These findings seem to confirm the standpoint that EFL learners tend to use "firmer assertions, more authoritative tone and stronger writer commitments when compared with native speaker discourse" (Hyland & Milton, 1997).

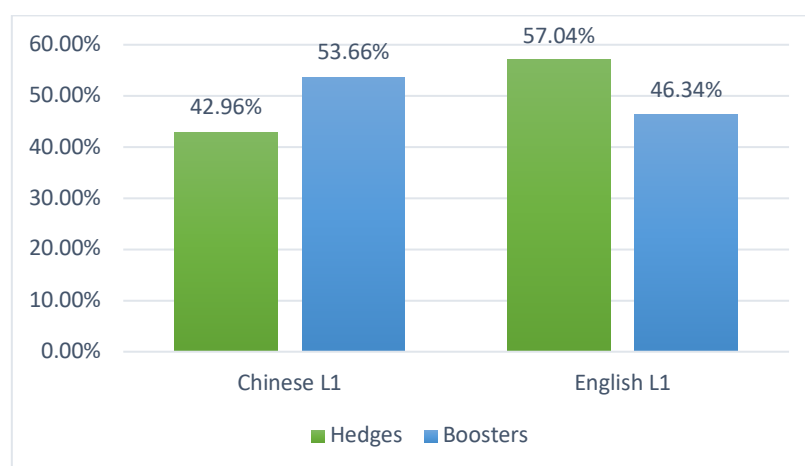


Figure 5.3 Distribution of ELVs in percentage in both the Chinese L1 and the English L1 corpora

In L2 academic writing research, cross-cultural rhetoric is considered an important factor,

responsible for certain characteristics in students' written production. Previous studies have found that writers with different L1 backgrounds show a different preference for epistemic markers. For example, Japanese, Eritrean, and Korean writers tend to be more indirect than English L1 writers (Itakura, 2013; McEnery & Kifle, 2002; Oh, 2007), while German and Iranian students use epistemic devices indicating stronger commitment more frequently (Bloor & Bloor 1991; Sabzevar, Haghverdi & Biriya, 2020). Chinese students in the present study appear to belong to the latter group. In English-speaking countries, writers tend to make less authoritative commitments to avoid potential challenges or disagreements and to weaken their personal responsibility for the statements. In contrast, it appears that writers in Chinese society may prefer to deliver more authoritative opinions in order to clarify their stance and requirements. Thus, Chinese students, influenced by this culture, would be less sensitive and less aware of tentative expressions and naturally transfer this linguistic feature into the English writing process.

Besides cultural transfer, another explanation may be tied to traditional teaching materials. As Holmes' (1988) and Hyland's (1994) evaluations of English for Language Teaching (ELT) textbooks have demonstrated (see Section 3.4.2), only a small number of textbooks cover more than a limited range of ELVs which are labelled as either 'strong' or 'weak' in terms of the assertions expressed. In many cases, their epistemic function regarding the level of commitment is emphasised less and is even disregarded. The same situation is also observed in the textbooks for Chinese college students majoring in English language. Several textbooks, such as, *Academic Writing in English: An Essential Guide* (Cheng, 2005) merely present a list of ELVs without giving adequate recognition of whether they express certainty or assertiveness. Therefore, students tend to regard ELVs as synonyms and ignore their differences in conveying epistemic commitments. In this regard, the present analysis of the

Chinese students' usage of ELVs might be able to provide materials developers with some new insights into what aspects should be given more emphasis in textbook compilation regarding epistemic devices.

5.5 Personalised, impersonalised and depersonalised expressions

In academic written texts, writers tend to use different types of sentence constructions to deliver their statements with an appropriate social distance between readers and themselves. Table 5.8 shows the analysis results of the usage of personalised, impersonalised and depersonalised expressions in both groups' written texts. There exists a similarity between the two corpora in that both Chinese L1 and English L1 writers depended less on personalised constructions (6.96% and 9.43% respectively) than on impersonalised and depersonalised forms. Taking a closer look at the differences in each category, the Chinese L1 writers used about 3% and 16% fewer personalised and impersonalised constructions than the English native speakers (LL=6.32 and 41.66% respectively), whereas they made about 20% more use of depersonalised forms than their English L1 counterparts (43.26% vs. 24.00%, LL=66.96).

Table 5.8

Distribution of the expressions of ELVs in Chinese L1 and English L1 corpora

	Chinese L1 corpus		English L1 corpus		Log-likelihood
	Frequency	Percentage	Frequency	Percentage	
personalised	93	6.96%	130	9.43%	6.32
impersonalised	665	49.78%	918	66.57%	41.66*
depersonalised	578	43.26%	331	24.00%	66.96*

The current findings seem to contradict the results reported by Hyland & Milton (1997), who found that Hong Kong students underused both impersonalized and depersonalized patterns

but employed more personalized patterns in their writings. The reason for this inconsistency may have to do with the different levels of non-English native students targeted. The data in the present study was from postgraduate students whose English level can be considered as intermediate-advanced level, whereas the academic essays in Hyland & Milton's study (1997) were from high school students, who are still considered relatively novice writers. Hyland & Milton (1997) also emphasised that the likelihood of using personalised forms decreases as proficiency increase. A similar situation has also been discovered by Lee & Deakin (2016), who analysed the argumentative essays written by advanced L1 Chinese students, where they found that the personalised form was the least frequently used category. They suggest that advanced Chinese L1 writers may feel discomfort with taking on a stronger writer identity and believe the detached writing style and adopting impersonal structures are familiar and safe. Ryshina-Pankova (2011) in their research, made a similar observation with advanced L1 German writers who favoured subtle expressions to express their statements in their academic writing. He further pointed out that the possible reason behind this is that the tendency in argumentative/persuasive writing is to try to avoid using explicit personal markers to present opinions, and instead encourage the readers to accept the authors' arguments. Similarly, Dutch speakers in Van Hell et al.'s study (2005) and Korean L1 English learners in Tang & John's study (1999) also opted for impersonal forms and appeared to avoid using explicit personal authorial presence more than English L1 writers. Tang & John (1999) suggest that such a situation may stem from the influence of the rhetorical and linguistic features of their native language and also from their status in the academic community, where giving personalised claims is considered face-threatening. In addition to the above-mentioned reasons, Hyland's subsequent study (2004) which targets Chinese L1 students, suggested a further possible explanation for this reluctance: Chinese Mainland students are

generally taught to avoid using personalised patterns, as they are subjective, informal as well as inappropriate to the academic writing genre. This misconception, in some cases, is reinforced by teachers who follow the instructions of textbooks.

As previously illustrated, personalised, impersonalised and depersonalised forms are realised by means of different structures. Furthermore, different structures within each category can also indicate a different pragmatic function in the text. Therefore, it is worthwhile to take a closer look at the different usages of each construction between the two corpora.

5.5.1 Personalised constructions

As seen from the above Table 5.8, English L1 writers used significantly more personalised constructions than Chinese L1 students (LL=6.32). The following Table 5.9 compares the frequency and percentage of each personalised construction used by both groups, illustrating similarities and differences in the usages found in each corpus. Compared with Chinese L1 writers, the English L1 students illustrated a relatively more balanced distribution of personalised constructions in general. It can also be seen very clearly that the occurrence of first-person singular pronouns is markedly higher in both Chinese L1 and English L1 corpora than other personalised forms, with the usage of *I* accounting for as much as 87.10% and 79.23% of the total occurrences of the personalised forms respectively. The relatively high percentage of using *I* in the Chinese L1 corpus in the present study, has also been observed in EFL learners with other L1 backgrounds, such as Hong Kong students (Hyland & Milton, 1997), Korean students (Chang, 2015) and Japanese students (McCrostie, 2008). The most frequent collocation of *I* in the Chinese L1 corpus is *I think/thought*, with 51 occurrences, while only 6 occurrences of this collocation were observed in the English L1 corpus (LL=40.47). In contrast, English L1 students preferred to collocate *I* collocated with *believe*, with 39

occurrences identified, while there were only 9 occurrences of this collocation in the Chinese students' texts (LL=20.34). The same situation was also reported by Ishikawa (2011) who found out that Japanese students overused *I think* and underused *I believe* in comparison with English L1 writers.

Table 5.9

Frequency and percentage of personalised forms by types in Chinese L1 and English L1 corpus

	Chinese L1 corpus		English L1 corpus		Log-likelihood
	Frequency	Percentage	Frequency	Percentage	
First person singular pronouns	82	88.17%	103	79.23%	2.48
“I”	81	87.10%	102	78.46%	2.50
“me”	1	1.08%	1	0.77%	0.00
First person plural pronouns	11	11.83%	15	11.54%	0.63
“we”	11	11.83%	14	10.77%	0.37
“us”	0	0	1	0.77%	1.39
You	0	0	1	0.77%	1.39
“one” NPs	0	0	11	8.46%	15.29*

The use of the plural subjective pronoun *we* in both corpora was much lower than that of the singular subjective pronoun *I*. Although *I* and *We* are both all self-mention pronouns, they serve different functions in the discourse. Using *I* emphasises more of the writer's own presence in the statement, indicating that the writer himself/herself is taking more responsibility for it; however, stating personal opinion with *I* tends to be more face-threatening and imposing to the readers, which may increase the risk of the interpretation being rejected by readers (Xia, 2018) (see Example 5.5).

Example 5.5

- a) I believe that the exercise of analysing this model is a very valuable activity for teachers who wish to gain a greater understanding of the classrooms they teach in.

As noted in Section 3.3.2, the plural subjective pronoun *we* has both an inclusive and exclusive function. In the English L1 corpus, 11 instances of *we* are inclusive while in the Chinese L1 corpus, eight instances are inclusive (see Example 5.6). In single-authored writing, inclusive *we* indicates an invitation to the reader to join the discussion and presupposes that both the writer and reader share similar values. Therefore, inclusive *we*, is less face-threatening, as it invites shared responsibility for the statements delivered in the text and seeks readers' involvement and cooperation while constructing authorial presence (Thompson, 2001). In this way, the writer reduces the imposition on the reader to accept his/her opinion as well as avoiding taking personal responsibility while delivering a particular statement (Koutsantoni, 2007; Xia 2018).

Example 5.6

(a) Therefore we can normally **predict** the function (acceding to or turning down) of the addressee's response... (EC 013a)

(b) We can **suggest** that it is a necessary part of our daily life, so as to enhance our social skills, teamwork ability as well as the sense of responsibility. (CC 013b)

In addition to inclusive *we*, it is observed that three instances of *we* in the English L1 corpus and Chinese L1 corpus respectively seem to be exclusive (see Example 5.7), as it is the writer himself/herself that illustrates the beliefs, rather than constructing an argument built up by a collaborative effort of both writer and reader.

Example 5.7

(a) We have **shown**, in some ways, how grammar choices in the texts have aided them in

expressing their particular evaluative positions....

(EC 026b)

- (b) We consider that it most probably occurs at the stage of conceptual preparation or lexical selection when producing speech and it is related to lemma access. (CC 011b)

The lack of formal distinction between exclusive and inclusive *we* in English poses challenges for analysts to give a clear classification of pragmatic use. This is illustrated by Example 5.8 from the English L1 corpus, which is very similar to Harwood's (2005c) example in his discussion. As *we* in the sentence is contrasted with *I*, it would seem that *we* here is inclusive- an interpretation that would be clearer if a modal were present (*We can presume...*). However, without this modal, the writer is only relating his own presumption, rather than that of both the reader and the writer; this suggests that both *we* and *I* here refer only to the writer excluding the reader. Thus, *we* here is more likely to be exclusive. Harwood (2005c) gave two interpretations for this situation. Writers may make intended effects by moving between inclusive and exclusive functions, or they may deliberately exploit the exclusive/inclusive ambiguity for their own ends. However, given that the English L1 writers in the present study are still considered novice writers, unlike the expert writers in Harwood's study, the example here could simply be interpreted as the writer inexpertly moving between *I* and *we* to refer to their own single-authored academic writing.

Example 5.8

- (a) I will assume that this was less than a calendar year, this is purely conjecture, but this still seems like a reasonable time frame for the project. We presume that the changes were implemented gradually over this period... (EC 003b)

One possible explanation for using exclusive *we* to replace *I* in their assignments might be because they are taught to refrain from expressing personal opinions using the first-person

pronoun "I" since academic writing aims to maintain objectivity in the presentation of ideas, and they resort to the exclusive *we* (Wu & Paltridge, 2021). However, a number of textbooks do not believe that exclusive *we* should have a place in student writing, such as Day (1998) arguing that "Do not use the 'editorial *we*' in place of 'I'. The use of '*we*' by a single author is outrageously pedantic." (p. 210). The corpus findings of Harwood's (2005c) study also show that only one exclusive *we* was found used by expert writers in journal articles of soft disciplines, namely Economics and Business and Management. Although student writing is a different genre from journal articles; it is likely to be inappropriate for the teaching materials in some disciplines to encourage students to use exclusive *we*, as it may indicate multiple authorship.

The singular and plural objective pronouns (i.e., *me* and *us*) were also observed during the process of data analysis, with *me* occurring once in each corpus and *us* only appearing in the English L1 corpus. Table 5.9 reveals that both groups of students in the present study used *I* and *we* more frequently than *me* and *us*. The finding is in accordance with Dontcheva-Navrátilová's (2013) study which found that both Anglo-American and Czech students employed more subject pronouns than object pronouns. In argumentative essays, subjective claims are often needed to clarify the writer's stance. The combination of *I/We* and an ELV verb in this genre, enables writers to indicate their social distance between readers and themselves as well as having the flexibility to vary their choices of ELVs to state different levels of certainty towards the claims.

As indicated in the beginning of this section, Chinese L1 students' usage of personalised constructions seems less balanced than the L1 English writers, who employed all four types of patterns. In particular, English L1 writers' use of *one* is significantly higher in delivery of

personal statements (LL=15.29) than their Chinese counterparts. In conveying a viewpoint by using *one* as subject, writers indicate that the claims are delivered either by the reader or the writer himself/herself. Readers in this case may also be involved with the claims and are guided to make the same logical inferences as the writers (Hyland, 1998). In fact, this way of implicitly drawing readers into the process of conveying standpoints might be ignored by the EFL teaching materials and classroom, which eventually leads Chinese writers to underuse it in their written production.

5.5.2 Impersonalised constructions

While personalised expressions show writers' standpoints to be their own and acknowledge their own personal responsibility for their claims, writers using impersonalised patterns, distance themselves from the claims completely by concealing the source of evaluation or shifting the responsibility to the data and therefore avoid taking responsibility. Impersonalised expressions can be further divided into three categories, i.e., disguising the source of evaluation, attributing claims to the text or data and using passive constructions. (see detailed discussion and examples in above Section 3.3.2).

In general, English L1 students used more impersonalised patterns than Chinese L1 students to a significant degree, as seen in the Section 5.5 (LL=41.66). A closer look at the frequencies of each category discloses that the occurrences of "attributing claims to the text or data" are much higher than that of "disguising the source of evaluation" and "passive constructions", accounting for more than half of the total numbers of the impersonalised patterns in both groups (see Table 5.10). Despite this similarity, one difference readily emerges when comparing the occurrences between these two groups in the category of "attributing claims to the text or data". It was underused in the Chinese L1 corpus to a highly significant degree,

compared with the English L1 corpus (LL=53.56).

Table 5.10

Frequency and percentage of impersonalised forms in Chinese L1 and English L1 corpus

	Chinese L1 corpus		English L1 corpus		Log-likelihood
	Frequency	Percentage	Frequency	Percentage	
Disguising the source of evaluation	105	15.80%	116	12.63%	0.59
Attributing claims to the text or data	400	60.15%	632	68.85%	53.56*
Passive constructions	160	24.06%	170	18.52%	0.35

Within the first category, both English L1 and Chinese L1 students preferred to use “*It + be+ ELV-ed+ that*” (40 vs 57) and “*It + ELV+ that*” (22 vs. 24) to disguise the source of evaluation (see Example 5.9a-b). However, the top three most frequent ELVs in the “*It + be+ ELV-ed+ that*” in the Chinese L1 corpus were *believed* (15 occurrences), *suggested* (9 occurrences), and *argued* (8 occurrences), while English L1 writers opted for *argued* (9 occurrences), *assumed* (8 occurrences) and *felt* (5 occurrences) most. The same situation of frequently using *it is assumed that* has also been observed in English L1 writers’ writing in the field of linguistics in Dontcheva-Navratilova’s (2018) study, who tended to use this speculative cluster more than Czech L1 linguists to describe the research findings. Fairclough (2003) argues that this approach allows not only for the mystification of agency but also for the claim of ignorance regarding the agent's identity, disguising responsibility for negative behaviour. Also, as proposed by Hyland & Milton (1997), by stating statements in an indirect or implicit manner, writers provide more space for open discussion while simultaneously lowering their confidence in the truth of the proposition. The use of implicit claims may also be owing to the controversy and complexity of the topic or the inadequate disciplinary knowledge, which

make it difficult to place writers themselves appropriately in academic written texts (Mu, 2013, as cited in Hei & Lin, 2003).

Example 5.9

- a) It is **argued** that speakers of Italian make gestures very frequently (Barzini 1964; Kendon 1992, 1995; Scheflen 1972) while Graham and Argyle (1975) noted that English culture is a low gesture culture. (CC 006a)
- b) It **appears** that I initially applied my classroom context and teaching experience to better understand the MA which in turn helped me to address particular issues. (EC 030b)

The second category of impersonalised forms sees the highest disparity in usage between the two groups, with the English L1 group using the construction of “attributing claims to the text or data” significantly more than the Chinese L1 group (LL=53.56). Although both the English L1 and the Chinese L1 groups share the same top three frequently used ELVs within this category: *seem* (180 occurrences vs 70 occurrences, LL=50.55), *show* (98 occurrences vs 94 occurrences, LL=0.10) and *indicate* (81 occurrences vs 41 occurrences, LL=13.53), the English L1 writers employed significantly more expressions with *seem* and *indicate* than the Chinese L1 students. Such a big difference in the number of occurrences may also explain why English L1 students overall used these two verbs more frequently than Chinese L1 writers, as reported in above Section 5.2.

Regarding the final category, Chinese L1 students demonstrated a greater preference for passive constructions containing *consider* (45 occurrences), *regard* (33 occurrences), and *suppose* (19 occurrences), which accounted for 61% of all passive forms. In contrast, only the high frequency of passive *consider* (48 occurrences) can be observed in the English L1 corpus,

while there were only 12 occurrences (LL=10.10) and 2 occurrences of *regard* (LL=15.83) and *suppose* respectively in the passives of English L1 learners. The high frequency of using *consider* in the passive form *was/were considered* was also reported in Szczyglowska's (2021) study, which found that Polish students preferred to use this construction more than English L1 students when either presenting the previous studies (e.g., [...] *the classical classification suggested by E. roset (1959, 1971) population is considered as young when [...]*) or summarising the significance of the research (e.g., *the research is considered to be a pilot study*) (pp. 139-141). In her later study (2022), Szczyglowska examined the variation in the use of ELVs in medical and psychological research articles. She observed that writers in both disciplines also preferred it, especially to explain how the investigation was carried out (e.g., *A P value < 0.05 was considered statistically significant*) (p.104).

5.5.3 Depersonalised patterns

Depersonalised patterns, like impersonalised constructions, help to deemphasise the role of the writers in the statements. In addition to this function, depersonalised constructions also allow writers to offer their evaluation of other researchers' propositions. A particular depersonalised construction, that has the name of the author included in the sentence (see Example 5.10), is termed 'integral citation' by Swales (1986), which is also referred to as a depersonalised construction that 'transfer the responsibility to specific researchers'. It not only allows the writers to express their stance towards authors' claims, but also indicates authors' attitudes towards an earlier proposition (see details in Section 3.3.2 and Section 5.3.3).

Example 5.10

Krashen (1973) **argued** that in children's brain, cortical lateralisation is finished by the

In contrast to impersonalised patterns, Chinese L1 students employed a higher proportion of depersonalised patterns than English L1 writers (see Section 5.5-Table 5.8). As is shown in Table 5.11 below, transferring the responsibility to specific researchers was the preferred strategy of both Chinese L1 and English L1 writers over attributing the claim to a certain community or a specific person serving as an institutional role, with the frequencies constituting more than half of the total frequencies in depersonalised forms. It can also be seen that the patterns of transferring responsibility to specific authors or to a community were used significantly more frequently by the Chinese L1 group than by the English L1 writers (LL=27.89 and 52.95 respectively), and there was no significant difference between the two groups in using the structure of attributing the claim to a specific institutional role (LL=2.64).

Table 5.11

Frequency and percentage of depersonalised forms in Chinese L1 and English L1 corpus

	Chinese L1 corpus		English L1 corpus		Log-likelihood
	Frequency	Percentage	Frequency	Percentage	
Transfer the responsibility to specific researcher(s)	293	50.69%	178	53.78%	27.89*
Attribute the claim to a certain community	267	46.19%	124	37.46%	52.95*
Attribute the claim to a specific person taking an institutional role	18	3.11%	29	8.76%	2.64

Similar findings were also observed in Sirijanchuen & Gampper's (2018) study, which found that Thai scholars in research articles preferred integral citations more than English L1 writers do (e.g., *White (2000:145) argues that...*). In the same vein, Iranian EFL students also tended to use more integral citations to report previous research (Jalilifar and Dabbi, 2012). In the

English academic genre, non-integral citations (where the author's name is given after the sentence within parentheses (see Example 5.11 below) are preponderant (Hyland, 1998) compared with integral citations. The frequent usage of integral citation in EFL learners' written texts is probably due to the fact that integral citation is the easiest way of incorporating the literature into the text to support the writers' stance. However, ELVs in integral citation not only serve to connect the current text with previous literature, they also indicate both the writer's own position in relation to source information as well as the original author's acceptance or rejection of an earlier statement. It should be noted that neither group of students in the present study are expert writers. As Sun, Kuzborska & Soden (2022) pointed out, novice writers with a limited awareness of citation purpose may find it challenging to make a clear distinction.

Example 5.11

It is the evaluative function that **seems** to be connected with the teacher's role in the classroom (Berry 1981: 123). (EC 019a)

As shown in Table 5.11 above, Chinese L1 students in the present study demonstrated a stronger tendency to relate their claims to a community, and this is to a highly statistical difference ($LL=52.95$) with an almost 10% higher usage than English L1 writers. By attributing the claim to a broader group of people, the writer attempts to increase the validity on the assumption that the members in this community are able to accept the claims delivered, as they share the same background knowledge. This construction, as a negative politeness strategy, helps writers conceal the individual form of the visual representation and protect the cited author from potential criticism. It is found in the Chinese L1 corpus that these writers seem to depend heavily on common 'discourse roles' (Tang & John 1999 p.525), such as

students, teachers and learners, which identifies that a person attends a particular discourse community. English L1 students, on the other hand, are able to use more various and complex discourse roles (e.g. language analysts, commentators and critics) that did not appear in Chinese students' essays. It should be noted that when attributing the claims to the community, claims must be supported by references or evidence, in order to persuade the readers that the statements delivered are credited. Chinese L1 students, however, tend to commit the error of ignoring this in their academic essays (see Example 5.12).

Example 5.12

Some scholars **thought** that deductive approaches which illustrate rules firstly and then examples, had more logic than inductive ones. (CC 005a)

5.6 Grammatical patterns and misuses

The final dimension of ELV usage to investigate is the similarities and differences of grammatical patterns used by Chinese L1 and native speakers of English writers as well as grammatical misuses in Chinese students' essays. The analysis reveals that the two groups of Chinese and English L1 students made frequent use of the pattern "somebody/something + ELV+ *that* clause" in the case of lexical verbs *argue* (63 occurrences vs 44 occurrences), *believe* (78 occurrences vs 55 occurrences), and *show* (91 occurrences vs 91 occurrences). "*It be + ELV-ed + that clause*" (see Section 5.2.2 above for details) as well as "*be + regarded+ as*" (36 out of 61 total occurrences vs 13 out of 17 total occurrences) were also relatively popular among both Chinese L1 and English L1 writers. In addition to the grammatical patterns shared in both corpora, the results also show that Chinese students may not be able to employ the full range of grammatical constructions in terms of certain ELVs, as some patterns are exclusively used by the English L1 writers. For example, in the case of ELV *argue for*, although

there was only one occurrence in the English L1 corpus, no such grammatical pattern can be observed in the Chinese L1 corpus (See Example 5.13a); in the case of *feel*, there was no occurrences of the grammatical pattern of *feel* + adj. (Example 5.13b) in Chinese students' texts where there were two occurrences in the English L1 corpus.

Example 5.13

- a) As a result, many language analysts argue for a separate level of discourse to realize these functional properties. . (EC 040a)
- b) The students were then given time to add anything they felt necessary before reading out their own individual presentation to the class. (EC 019a)

Another difference observed between the two groups of students is that the Chinese L1 writers tended to use certain grammatical patterns of ELVs less frequently than the English L1 writers. The ELV "*seem*" had a high occurrence in both corpora, but the Chinese L1 students showed a stronger preference for collocating "*seem*" with "*to do*" (49 occurrences) and using the pattern "*It seems that*" (26 occurrences). In contrast, English L1 writers tend to make more use of *seem*+ *adj.* (64 occurrences) and it only occurred 28 times in the English L1 corpus (LL=14.62) (see Example 5.14a-b).

Example 5.14

- a) Moreover, it seems wise to respect the advice given by Fullan as well as by Peters and Austin (cited in Kennedy and Edwards 1998, 74/75) not to over- plan, ... (EC 011a)
- b) Hofstede's work does seem surprising at times, and it is debateable if the questions asked by IBM really are indicators of the categories he gives. (EC 014b)

In the case of the other sensory verb "*appear*", the grammatical pattern "*appear to*" was used

most frequently by Chinese L1 students (14 occurrences), while English L1 writers also employed the patterns of “*It (would) appear(s)+ that* clause (6 occurrences) and *appear + adj.* (8 occurrences) (see Example 5.15a-b).

Example 5.15

- a) Additionally, it would appear that while Mind Over Matter attempts to relieve fears regarding the increasing pace of technology demonstrated at the exhibition, ...

(EC 027a)

- b) (b) Japanese students appeared weak, uncertain, and incapable of asking questions.

(EC 036a)

Also, the results demonstrate that the grammatical construction “*ELV+ noun*” was less preferred by Chinese L1 students, but it occurred more frequently in the English L1 corpus; for example, in the case of *suggest*, there were 19 occurrences in the English L1 corpus while it only appeared once in the Chinese L1 corpus (see Example 5.16a-b). The usage of *indicate* followed by a “noun” appeared 47 times in the English L1 corpus while there were only 16 occurrences in the Chinese students’ essays (Example 5.17a-b).

Example 5.16

- a) The title reflects a more formalistic style and would seem to suggest an effort by the writer to reflect the atmosphere of an exhibition in general through its lexico-grammatical choices.

(EC 027a)

- b) In addition, the quotation mark employed to describe president for life suggests the subjective opinions of the editor.

(CC 001a)

Example 5.17

- a) The text has examples of modality to indicate a strong probability that Brexit will have a negative impact on the UK economy... (EC 045a)
- b) The distinction between (a.) and (b.) is that the second group has no obvious numbers, however, the quantifiers indicate the concept of plural nouns. (CC 008b)

It is interesting to note that although, as mentioned above, Chinese L1 students tended to depend more on the grammatical pattern “*be +considered +as*”, English L1 writers, in contrast, were able to use more various constructions in the case of *consider*. The corpus analysis results show that English native writers in the present study made more use of the constructions “*be considered + noun*.” and “*be considered + adj*.” (see Example 5.18a-b) with 21 and 13 identified respectively, while these constructions only appeared 6 and 3 times in the Chinese L1 corpus. In addition, there were six occurrences of the grammatical pattern “*be considered to be*” in the English L1 corpus but this only occurred once in the Chinese L1 corpus (see Example 5.18b).

Example 5.18

- a) Even though continuous teacher/faculty development is considered a prime ingredient for innovation... (EC 012b)
- b) The follow-up move is considered obligatory and expected in classroom exchanges but not in real-world communication (D. Willis, 1992; Francis and Hunston, 1992). (EC 034a)
- c) He then further illustrated that music and pictures are also considered to be the basis for the meaning-making process in the audio and visual texts (Kree & van Leeuwen 2006). (CC 017a)

In addition to the abovementioned differences in frequency and occurrence, some

grammatical patterns are misused by Chinese L1 students. Example 5.19a-c below illustrates concordance lines showing the misuse of patterns for *seem*, extracted from the Chinese L1 corpus. The pattern “*be seem as*” was only observed in Chinese students’ writing. It appears that these students treated “*seem*” as a synonym for “*regard*” and “*consider*” and confused the grammatical patterns “*be considered/regarded as*” with “*seem + noun*.”

Example 5.19

- a) Inductive approach **is** normally **seemed as** one's first language... (CC 002c)
- b) Therefore, even though the CLT **is seem as** a better method for learners' future language development. (CC 016a)
- c) ...for example like 'family structures, education systems, political parties' **is seem as** the background underpinning the grammatical and linguistic system of the language. (CC 016a)

The misuse of the correct form of an ELV in the *there-be* construction also occurs in the Chinese L1 students’ essays (3 occurrences) (see Example 5.120). As shown below, both the *be*-verb and the notional verb are included in the one sentence, with the student misusing the root form of the ELV instead of the *ing*-form. Although the *there-be* construction (especially when it collocates with notional verbs) has been a focus of teaching in traditional instructional materials in the Chinese EFL classroom, it appears that the Chinese students still have difficulty manipulating this construction.

Example 5.20

As a result, **there is** no evidence **shows** which approach matches which age group better. (CC 002c)

5.7 Comparison of results from two stages of data analysis

As explained in Section 4.3.2.3, both the English L1 and Chinese L1 corpus were examined twice by employing different approaches. ELVs were annotated directly in cleaned texts the first time, and the full sentences containing the annotation were extracted to an Excel table using the R programming language. The second time, each concordance line containing targeted ELVs was reviewed in the Sketch Engine to examine if any ELVs were missing from the preceding in-text annotation. The discussion of the data analysis in Chapter 5 was based on the rechecked data. Appendixes 2 and 3 respectively demonstrate the frequency variations in the Chinese L1 and English L1 corpus between the overall number of ELV occurrences throughout the two periods of analysis. As shown in Appendix 2, the variations of ELV occurrences in the Chinese L1 corpus range from 0 to 28, with a mean of 5.25. The most distinctive differences between first and second times of analysis were observed in *think* (72 occurrences vs 100 occurrences). According to the examination of the English L1 corpus, the variance spans from 0 to 50, with a mean of 11.46. The distinctions of frequencies in *indicate* (49 occurrences vs 95 occurrences), *seem* (225 occurrences vs 269 occurrences), *consider* (35 occurrences vs 68 occurrences) were the most distinct.

Corpus annotation can be undertaken in different forms, depending on the objective of the research. The annotation approach adopted for the first time was textual markup, involving manually identifying and encoding the ELVs in the written texts to help mark both semantic and pragmatic semantic features of the verbs and the type of the sentence construction, in this case. It is inevitable that some ELVs have sometimes been missed as there are unavoidable human errors in the process of manual annotation. In this regard, computer programmes seem more accurate than human beings, as the programmes could theoretically

always generate the same results given the same input without missing targeted linguistic features. However, they cannot fully replace manual annotation due to some obvious limitations. Taking Sketch Engine as an example, although it is able to bring together searching and annotation under a single roof, it can only provide a limited level of flexibility for manual annotation as well as cannot be used to annotate the sentences, which seems incapable of fully achieving the present research objectives. Therefore, joint manual textual annotation-searching tools may help to improve the accuracy of the results, especially when a complicated system of annotation is involved.

As mentioned in Section 5.1 above, the insights gained from corpus analysis will be utilised to develop the following two types of learning materials. Both materials were informed by the findings of the first time of corpus annotation and analysis. Despite the fact that, as stated before, there were a few discrepancies in the total occurrences of ELVs between two analyses, the variances in the findings did not have any significant effects on the development of materials as a whole. It should be noted that both types of materials were designed based on the general insights obtained from the findings which were also verified to be consistent in both periods of analysis. The only difference that affected the accuracy of the learning materials is the first part of Session 1, which discussed the top 10 frequently used ELVs by English L1 and Chinese L1 English writers respectively (see Appendix 4 and 5). The following Table 5.12 shows the results of the two different periods of corpus analysis in relation to the top 10 most frequently used ELVs by Chinese L1 and English L1 writers. In a word, the Chinese L1 and English L1's lists in both time periods share the same group of ELVs, except 1) the verb *prove* did not show up in the English L1's list for the second time and *consider* was in the top 10 list; 2) the order of the ELVs in the lists was slightly different. Nevertheless, it will not have a substantial impact on following students' learning, since the aim of including the list in the

learning materials is to provide a general picture of what ELVs are used most often by each group and to provide some key linguistic features obtained from the corpus analysis (e.g. the grammatical patterns involving *consider*). Therefore, no important messages from the present analysis were missing in the following learning materials development.

Table 5.12

Top ten most frequently used ELVs in rank order in the first and second time of corpus analysis

	Chinese L1 corpus		English L1 corpus	
	First time	Second time	First time	Second time
1	seem	seem	seem	seem
2	believe	show	suggest	show
3	suggest	think	show	suggest
4	show	suggest	argue	indicate
5	tend	believe	appear	appear
6	argue	tend	expect	consider
7	think	consider	believe	expect
8	consider	argue	indicate	propose
9	indicate	indicate	propose	believe
10	regard	regard	prove	argue

5.8 Implications for EAP writing materials development

The present comparative learner corpus research investigated how ELVs were used in Chinese L1 students' academic written texts by comparing the ranges and frequencies of ELVs from

the following four perspectives: semantic distribution, epistemic commitment, sentence construction and grammatical patterns. In summary, the results indicate that Chinese L1 writers used ELVs differently from English L1 writers in relying on a different range of devices, expressing a stronger commitment. Also, Chinese students' usage of ELVs was less balanced in terms of the sentence constructions and grammatical patterns, and some misuses can be identified in their essays. These characteristics may be partly accounted for by the rhetorical and cultural difference between English and Chinese. Also, genre variations between corpora could be another potential factor generating different usage of ELVs observed. In addition, differences in usage as well as the problematic manipulation of ELVs observed in Chinese L1 students' academic writing might also be ascribed to the EAP writing materials which lack information on the introduction of ELVs, and sometimes even include inaccurate explanations for their usage. A few studies, including Holmes (1988), Hyland (1998) as well as Li & Cui (2021), focusing on the most popular EAP writing textbook (i.e., *New Horizon College English*) in China, have highlighted that this issue exists in the EAP materials (see detailed discussion in Section 3.4.2). One of possible ways of addressing these issues is turning to English native corpus data, which is able to provide a large number of authentic instances, and different ranges of sentence and grammatical patterns involving ELVs (Holmes, 1988). This resource is particularly valuable and necessary given the misleading information about ELVs in the EAP writing materials, as most textbooks and teaching/learning materials developers largely depend on decontextualised and intuitive examples (Hyland, 1994).

In addition to consulting an English native corpus, insights from a learner corpus as well as findings from learner corpus research can supplement those from native corpora for materials and syllabus development (Flowerdew, 2001), as they are claimed to help learners become more aware of their language use difficulty as well as the differences between native language

and learner production (Cotos, 2014). Following from the present comparative learner corpus research, the Chinese L1 corpus examples together with the findings from learner corpus analysis could be a valuable resource for EAP writing materials that emphasise the use of ELVs. Combined with the data produced by English L1 writers, both corpora can provide authentic examples that allow learners to observe and identify the differences between these two groups. In addition, the learner corpus study findings could also be used to explicitly inform students about common occurrences and misuses of ELVs particular to the Chinese L1 group. It should be emphasised here that higher or lower occurrences of ELVs identified in the present comparative study does not necessarily indicate superior or worse writing. Rather, these findings suggest two groups of students in some cases prefer to rely on different ranges of ELVs. Also, it is important to acknowledge that the English L1 writers in this study are not experts and are still relatively inexperienced, particularly in some respects. For instance, they may also struggle with distinguishing the writer's attitude from the authors' attitude in citations and how to use exclusive *we* and inclusive *we* more pragmatically appropriate. However, as discussed in Section 2.3.1, considering the genre variation between students' work for academic courses and expert writing for research articles, it appears that English L1 students' writing in the present study may serve as a more practical resource for Chinese L1 students to enhance their comprehension of native language usage.

For the following study, as mentioned in Section 5.1, both corpora as well as the learner corpus findings were fed into two different types of learning materials: the first type only consisted of English L1 students' examples as well as the explanations of the usage of ELVs; the second type added the examples from Chinese L1 corpus as well as the comparative results obtained from this chapter, which provides the opportunities for learners to observe and identify the differences between two groups of writers by exploring the corpus examples.

Also, it includes the information that explicitly describe the differences in Chinese L1 students' usage which came out from the investigation. Both sets of materials all comprised the following four sections that drew upon the corpus analysis presented in this chapter:

- Top 10 Frequently used ELVs and their categorization (Section 5.2 and 5.3)
- Level of certainty of ELVs (Section 5.4)
- Grammar Patterns of ELVs (Section 5.6)
- Sentence constructions of ELVs and the level of certainty (Section 5.5)

The materials development will be explained in detail in Chapter 6 below.

5.9 Conclusion

This chapter has discussed the similarities and differences in the use of ELVs across English L1 and Chinese L1 students and pointed out the potential problematic usage of ELVs revealed by Chinese L1 writers. In Section 5.8, I explained my intention to use the corpus findings observed from the analysis to develop two different types of corpus-informed learning materials, which form the basis for the second phase of my research.

In the next Chapter 6, I turn to the description of the methodology of my second study, including a detailed introduction to the learning materials development as well as the online learning experiment that aims to explore the effectiveness of incorporating learner corpus data and findings into materials construction for learning ELVs.

Chapter 6 Methodology of the Learning Experiment of Learner Corpus-informed EAP Writing Materials

6.1 Introduction

The second part of my thesis aims to investigate the effectiveness of incorporating learner corpus data and research findings together with English L1 writers' data in EAP writing materials to aid Chinese L1 students' comprehension of epistemic lexical verbs (ELVs). Both the constructed English L1 and Chinese L1 corpora and the results of the learner corpus research (detailed in Chapter 5) were utilised in the development of two different types of learning materials of academic English writing focusing on the use of ELVs. These two sets of learning materials were then applied in a pedagogical online experiment with two groups of MA Chinese L1 students, referred to as the experimental group (EG) and the control group (CG) respectively. Participants' learning performance was obtained and assessed via three tests (i.e., pre, post- and delayed post-tests). In addition, learners' perceptions of the provided materials were collected through a questionnaire and a semi-structured retrospective interview. In addition to exploring the effects of different types of materials on the learning performance, the present study seeks to investigate what potential factors contribute to differences in the achievement of students while they were dealing with the two different types of materials.

The chapter is organised as follows: Section 6.2 introduces the research questions, and the rationale for the research design. The development of the learning materials in the present study is presented in Section 6.3. Section 6.4 discusses the instruments used to evaluate both groups' learning performance. Section 6.5 briefly reviews the pilot study. I then turn to present the information about the participants recruited in the study in Chapter 6.6. Section

6.8 and Section 6.9 detail the data analysis approach adopted and the ethical considerations in the present study. Section 6.9 gives a brief summary of this Chapter.

6.2 Research questions and hypothesis

Similar to my corpus-based analysis, the present learning experiment study was conducted by adopting the hypothesis testing experimental approach. As noted in Section 4.2, the null hypothesis and alternative hypothesis should be formulated initially before conducting the research.

Research Q1:

Will there be any development of knowledge in the use of ELVs in both the experimental group (EG) and the control group (CG) after learning the materials? If so, are the improvements retained after a certain period of time?

The objective of the first study question is to assess the efficacy of both sets of designed learning materials. Based on the literature review in the Section 2.3.1 and Section 2.3.2, it is expected that Chinese L1 students' knowledge of the use of ELVs will increased after learning the developed corpus-informed materials. Also, this development is expected to be retained after a period of time. Therefore, the following null hypothesis and alternative hypothesis have been formulated:

Null Hypothesis: There is no development of the knowledge in the use of ELVs of both groups after learning the materials. The improvements failed to retain after a certain period of time.

One-directional alternative Hypothesis: There is a development of the knowledge in the use of ELVs of both groups after learning the materials. The improvements have retained after a certain period of time.

Research Q2:

Does the experimental group (EG)'s knowledge of ELVs improve more than the control group (CG)? If so, in what aspect and to what extent does it develop more?

In light of the literature presented in Section 2.3.2, it is expected that EG will demonstrate a better performance than CG with the help of learning materials informed by both the English L1 and Chinese L1 corpora. Therefore, the following null hypothesis and the one-directional alternative hypothesis are generated. No hypothesis is stated for the second part of RQ2, since it is an exploratory question designed to assess the effects of the materials in ELV learning.

Null Hypothesis: There is no difference in performance between two groups.

One-directional alternative hypothesis: EG's knowledge of the use of ELVs improves more than CG.

Research Q3:

What factors contribute to differences in learning performance? How to these factors map onto students' learning performance?

These two questions under RQ3 serve as a supplement to the main objective of the present study, seeking to explore whether there are any factors that affect learners' performance in each group. The processing time on completing the three tests (i.e., pre-, post-, and delayed post-tests) and the individual exercises within each test, as well as students' English proficiency level (IELTS overall score) were used as predictors to examine whether they will have an influence on students' performance. The following hypotheses were formulated:

Null hypothesis: Both processing time and English proficiency level do not influence the

students' performance.

One-directional alternative hypothesis: Both predictors or either of them will have a significant effect on students' performance.

In the past few decades, an increasing number of studies into second language acquisition (SLA) have used computers and software for providing input and learning instructions, testing learning performance, collecting learning outcomes as well as monitoring participants' processing speed on tasks. Processing speed is generally defined as the rate of completing a task with reasonable accuracy (Jacobson et al., 2011). Processing speed, often as a supplement to a language learning experiment, can help to explore how participants cognitively process the input variably (Altarriba & Mathis, 1997). A large group of studies in SLA have reported that there is a close correlation between processing time and accuracy. Snellings, van Geldern & Glopper (2002), for example, explored the effect of training on fluent lexical retrieval among Dutch L1 students and the findings suggest that learners who received the training achieved higher accuracy but with shorter reaction time when recognising the meaning of words. Similar conclusions relating faster processing speed to higher accuracy can also be seen from other SLA studies, e.g., McManus & Marsden (2017), Sato & McDonough (2019) and Suzuki (2021). As the present learning experiment was conducted online, allowing the researcher to collect students' processing time on the tests as well as on each individual exercise, the present study also explored whether there is any relationship between processing speed and accuracy rate in the three tests as well as the exercises within each test.

In addition to processing time, English proficiency level is often considered an important factor when examining learners' performance. According to published study findings from different regions of the world, EFL learners can be disadvantageous in the learning process

due to their low level of English proficiency. Studies have investigated the relationship between English language proficiency and students' performance in different aspects of English language learning. For example, Teng (2022) in the study of vocabulary learning, observed that Chinese EFL learners with an advanced English proficiency level learned a significantly greater number of words than those with a lower English proficiency level. In the area of grammar learning, Ishikawa (2018) found out that students with lower level of English proficiency benefited more from the written "language strategy" (i.e., the processing of making meaning and shaping knowledge and experience through language (Swain, 2006, p.89)) than students with a higher level of proficiency level. In the field of SLA, a group of researchers have also reported that English proficiency level and students' learning performance is closely related (e.g. Chen et al., 2020; Chang, Tseng & Tseng, 2011).

It should be noted that the primary objective of the present study is to evaluate the effects of learner corpus information on the development of EAP writing materials. Although measuring the relative effects of learners' processing time and English proficiency level is also an aim of the present study, it mainly serves as a supplement to shed light on how EFL learners mentally process corpus-informed materials.

Research Q4:

What are learners' attitudes towards the materials? Do learners value the examination of Chinese L1 students' data as part of their learning materials?

The fourth research question investigates learners' attitudes towards the two different types of learning materials. As the first sub-question is an exploratory question, no hypothesis is stated. For the second sub-question, it is expected that students prefer to see Chinese L1 students' examples of the usage of ELVs in the materials to help them realise the difference

between their production and English L1 students' usage and some common grammatical mistakes they tend to make. Therefore, a null hypothesis and a one-directional alternative hypothesis for the second question were generated:

Null Hypothesis: Learners do not demonstrate a preference for seeing Chinese L1 students' data in the learning materials.

One-directional alternative hypothesis: Learners prefer to see Chinese L1 students' data in the learning materials.

6.3 Research Design and Learning materials development

Rasinger (2013, p. 42) argues that "traditionally, experimental designs are quantitative in nature and consist of a comparison between the experimental group (the one affected by the manipulation of variables) and a control (not affected by manipulation)". The design of the present study initially involves developing two different types of corpus-informed learning materials that specifically focus on the use of ELVs: one only includes the information drawn from and examples produced by English L1 students, the other one also adds the data from the Chinese L1 corpus as well as the insights from the above learner corpus analysis in Chapter 5. In the experiment, these two sets of materials were implemented on Qualtrics (See Section 6.4.4) with two groups of Chinese L1 students (i.e., CG and EG respectively) engaging with these materials. Learners' performance was then evaluated by pre-, post- and delayed post-tests. They were also required to fill out two different questionnaires before and after the learning process: the first one is a demographic questionnaire that asks for some basic information; the second is a questionnaire collecting their perceptions of the consequences of including learner corpus data and research findings in learning materials. It should be noted that the overall learning process together with the questionnaire were carried out on

Qualtrics in a single session.

Some of the participants from both groups were also invited for a semi-structured interview to delve deeper into their attitudes towards incorporating learner corpora into EAP material development. At the final stage, all the participants were invited to do a delayed post-test on Qualtrics again, after 1-3 months at a time of their convenience. Figure 6.1 shows the overall procedures of the present study.

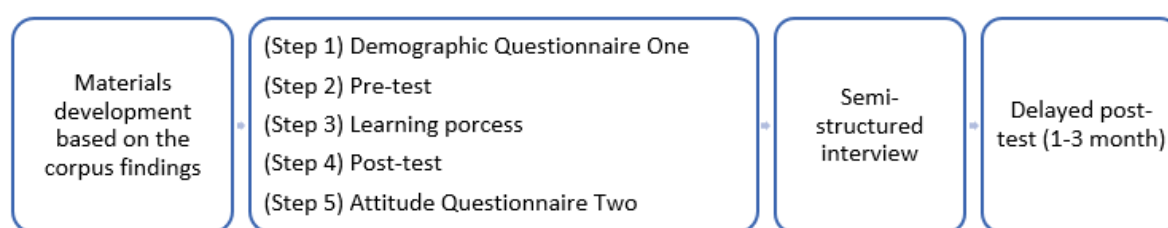


Figure 6.1 Overall procedures of the experiment

As discussed in Section 2.4.1, the development of language teaching materials, especially corpus-informed materials should follow certain frameworks as well as the principles of second language acquisition (SLA). The materials developed in the present study followed Tomlinson’s framework (2010) (see Section 2.4-Figure 2.7) and also take SLA principles into consideration when introducing the use of ELVs, including 1) providing both implicit and explicit knowledge of the use of ELVs; 2) helping learners to focus on both form and meaning of this linguistic feature; 3) providing not only sufficient input regarding the use of SLA, but also the output opportunities to utilise the structures they have noticed in the input. It should be emphasised that all the pictures were extracted from the website *creative commons* (<https://creativecommons.org/>) and have been checked to ensure they possess the licences for copy, redistribution and adaption.

This section discusses the characteristics of the contents of both sets of materials, including the Introduction, Course Overview and objectives and Sessions 1, 2, 3 and 4 (see Appendix 4 and 5). The main distinction between the two types of materials is the way in which the usage of ELVs is introduced in the content. Although the two types of materials did not incorporate the same amount of information about ELVs, it is important to keep the content as similar as possible in both types of materials. Using similar input for both versions could eliminate the likelihood of participants exhibiting disparate performance due to the contextual and cognitive task demands. The materials were designed based on the following principles:

- Materials for EG: Example sentences extracted from both English L1 and Chinese L1 corpus; the insights gained from the learner corpus research; some of the English L1 examples were extracted from the *British Academic Written English* (BAWE) corpus (Nesi, 2011; Vincent & Nesi, 2018).
- Materials for CG: Example sentences extracted only from the English L1 corpus and the BAWE corpus; the materials only demonstrate how English L1 writers typically use ELVs without discussing the usage of ELVs shown by Chinese L1 students.

As there were not always appropriate examples clearly demonstrating the pragmatic functions and structures of certain ELVs, some examples produced by English L1 writers in the BAWE corpus were used as a supplement to my corpus data and included in the learning materials. Although these examples may not share the same topic as my self-compiled corpora, the selected sentences were simple to comprehend and did not involve complex topics and uncommonly used vocabulary.

Ellis (2005), in his “Ellis Principles”, proposed that a successful instructed language learning material should have opportunities for learners to produce output. Swain (1995) also argues

that output can take the form of practice whose aim is to provide learners with opportunities to practice certain aspects of the target language they have acquired previously. Therefore, in addition to the reading content in both types of materials, a few corresponding exercises were designed after each of the first three sessions in order to help learners enhance their understanding of what they had just learned. Considering the duration of the learning process and the inclusion of relevant exercises in the post-test, there were no exercises specifically designed for the final session- Session 4.

6.3.1 Introduction and Course Overview and objectives

The two sets of learning materials share the same content in the “Introduction” section which gives an overall idea of what ELVs are, together with authentic examples written by English L1 writers. The content of the “Introduction” section in both sets of materials can be seen in Appendix 4 and 5, which contain the full materials presented to each group.

The Course Overview and Objectives in both sets of materials firstly provide the explanation of “corpus study” to help learners get a general idea of what a corpus is as well as the basics of the materials. The CG materials only illustrate the usage of English L1 writers, while the EG materials include a brief overview of the comparison between English L1 and Chinese L1 students in terms of ELV usage (see Appendix 4 and 5), based on the conclusions obtained from my previous corpus analysis (see Chapter 5.8).

6.3.2 Session 1: Frequent epistemic lexical verbs and their categorization

As the title indicates, Session 1 in both groups’ materials focuses on introducing the frequently used ELVs and how they can be categorised according to their semantic meanings. The information provided in this Session drew upon the insights revealed by Section 5.2 and

Section 5.3 above. Both sets of materials share the same content in introducing the classifications of ELVs, together with providing authentic examples written by English L1 writers (see details in Appendix 4 and 5). The two types of materials differ in their discussion of the top ten most frequently used ELVs. As Appendix 4 shows, the materials for CG only provided the English L1 list, while the EG materials included both lists drawn from English L1 and Chinese L1 writers. In addition, the EG materials provided a summary of how Chinese L1 writers used *think* and *believe* differently than English L1 students, along with examples to illustrate these differences (See Figure 6.2); this draws upon the discussion shown in Section 5.3.1.

1. It can be observed that Chinese students show a stronger preference for using verb **“think”** (see example 1, below), which is not among the top ten devices for the native speakers.
2. It is worth noting that **“think”** is commonly used in spoken language instead of formal academic written texts. In order to convey a similar meaning, native speakers prefer to use **“believe”** in some contexts (see example 2, below). Here are the examples:
 - (1) I **think** differences between the first language and the second language also stimulate semantic substitution errors. **(Extracted Chinese data)**
 - (2) I **believe** that the exercise of analyzing this model is a very valuable activity for teachers. **(Extracted from a native speaker’s essay)**

Figure 6.2 The use of the *“think”* and *“believe”* in the EG materials

After introducing the four categories of ELVs, both types of materials included a classification task in which participants were required to read five given sentences and place the ELV highlighted in bold into the appropriate category (see Figure 6.3). Detailed explanations were provided once learners submit their responses. The aim of this task is to examine whether learners have truly understood the semantic differences between ELVs after receiving the

instruction.

(1) The research results **showed** a distinct difference in the cohesive devices used by older and younger children to construct narrative.

Speculative Verbs	Deductive Verbs	Sensory Verbs
	showed	

Further Explanation:
We can see that the distinct difference is reflected in the “research results”. This indicates that the statement is based on the evidence. **show-deductive**

Figure 6.3 Example of the exercise of ELV classification

Following the above exercise, the EG materials provided additional information introducing the differences in the use of *appear* and *seem* between two groups of students, with examples demonstrated (see Figure 6.4). The information provided here drew upon the findings revealed in the Section 5.3.4, which gave a detailed discussion of how Chinese L1 students used *appear* and *seem* differently from English L1 students.



- ◆ Corpus research shows that Chinese English writers use the sensory verb ‘**appear**’ less frequently than sensory verb ‘**seem**’. English native speakers, however, use both sensory verbs in their academic essays.
- ◆ Also, the corpus investigation reveals that Chinese students tend to use ‘**appear**’ more to express the meaning of “**to begin to be seen**” (example 1, below), while native speakers prefer to use it to “**report what they believe or what they have been told**” (Collins Dictionary) (example 2, below).

(1) The first idea that **appeared** in my mind was gestures.

(Extracted from a Chinese student’s essay)

(2) The model **appears** to be unable to describe acts which perform more than one function.

(Extracted from a native speaker’s essay)

Figure 6.4 The different uses of *appear* and *seem* between English L1 and Chinese L1 students in the EG materials

6.3.3 Session 2: Level of Certainty of Epistemic Lexical Verbs

Session 2 discusses the different levels of commitments indicated by ELVs. Both sets of materials presented the information that ELVs can be broadly classified into either the “Strong” or “Weak” category; the materials provided the same information, sentence examples and a table of categorisation (See Appendix 4 and 5). The information provided here is based on the discussion in Section 5.4. In my corpus-based analysis in Section 5.4, the ELVs were labelled as “hedges” and “boosters” based on the different levels of epistemic commitment they indicate, following the categories proposed by Hyland (2005, 2018); these labels were changed to “Strong” and “Weak” in the materials. This is because the meaning of “hedges” and “boosters” may be less transparent to non-linguists. Unlike the CG materials, the EG materials included two additional paragraphs that elaborate on the fact that Chinese L1 students preferred to choose ELVs indicating a higher level of certainty, whereas English L1 writers showed a tendency to modify their statements with more tentative ELVs.

Following the above instruction, two multiple-choice tasks were provided in both types of learning materials (see Figure 6.5). Learners were required to choose the sentence that indicated a more tentative tone. The purpose is to examine whether students have a better command of the ELVs regarding the different levels of commitment indicated.

1.
 - A) It seems that relative poverty should not be discounted when considering justice.
 - B) I think that relative poverty should not be discounted when considering justice.

Answer: “**think**” expressed more certainty in comparison with “**seem**”. Choose A

Figure 6.5 Example of the exercise in Session 2

At the end of Session 2, a brief explanation of the level of commitment indicated by “I think/believe/conclude” has been included in both types of materials. It aims to help students clarify the relationship between the semantic classification and assertiveness suggested (see Figure 6.6).



- It should be noted that expressions such as “***I believe***”, “***I think***” and “***I conclude***” express a strong commitment to the proposition, even if “***I think***” and “***I believe***” are based on the speculation, rather than theoretical reasoning or calculation.

Figure 6.6 “I think”, “I believe” and “I conclude”

6.3.4 Session 3: Grammar Patterns of Epistemic Lexical Verbs

Session 3 focuses on the commonly used grammatical patterns involving ELVs in delivering a statement (see Appendix 4 and 5). The information here is based on the discussion in above Section 5.6. The CG materials include patterns frequently appearing in the English L1 corpus. In contrast, the EG materials not only present the grammar constructions preferred by both groups of students, but also some patterns that were used less by Chinese L1 writers while being frequently adopted by English L1 writers. The EG materials also explicitly compared the grammatical patterns used by each group of writers, focusing on *seem* and *appear*; for instance, Chinese L1 students made less use of “*seem/appear* +adj.”, but preferred to use “*It seems +that, seem/appear +to*”.

The exercise designed in both groups' materials included an exercise of rewriting two sentences with the required grammatical patterns (see Figure 6.7). The focus of this task is to help students use a greater variety of grammatical constructions involving ELVs to deliver statements.

(1) It seems that the rationality of such actions is unquestionable.
(change to **seem + 'adjective'**)

Answers: The rationality of such actions seems unquestionable.

Figure 6.7 Example of exercise in Session 3

In addition to the above task, the EG materials also included an exercise of sentence correction (see Figure 6.8). There were three sentences extracted from the Chinese L1 corpus and learners were required to identify the grammatical errors and correct them. The answer and a detailed explanation were provided after each exercise. The purpose of the task is to examine whether learners are able to identify the incorrect usage of ELVs and correct them with accurate grammar patterns.

Example 4

Communicative Language Teaching is seem as a better method for learner's future language development.

Answer:

"Communicative Language Teaching seems a better method for learners' future language development". or "Communicative Language Teaching is regarded as a better method for learners' future".

Explanations: The writer is treating 'seem' as the synonymous of 'regard', and so misused the grammar pattern. "Regard" can be used in the pattern "be+regarded+as...", "seem" can be used in the pattern "**seem to be**", "**seems like**", "seem+noun."

Figure 6.8 Example of the sentence correction exercise from Session 3 of the EG materials

6.3.5 Session 4: Sentence constructions of epistemic lexical verbs and the level of certainty

Session 4 emphasises the three different sentence constructions involving ELVs which can vary the level of certainty: writer prominent constructions, information prominent constructions and author prominent constructions. The three categories tally with the personalised forms, impersonalised forms and depersonalised forms adopted in the preceding corpus-based analysis (in Section 5.5). The reason why I did not use the last three terms directly in the learning materials is that they are more linguistically abstract and less transparent. Learners may struggle to grasp their meaning, which may affect their subsequent learning process. The contents of this session of both sets of materials are present in Appendix 4 and 5.

- **Category 1: Writer Prominent Constructions**

Both types of materials introduced three different constructions within this category, with sentence examples written by English L1 writers provided. Also, a more detailed usage of “*One*” and “*I*” and “*We*” as subjects was explained after. Unlike the CG materials, the EG materials also compare the usage of “*One*” between Chinese L1 students and English L1 writers. Additionally, a summary of the corpus findings showing how Chinese students use “*I*” and “*We*” differently from English L1 writers is attached at the end of the EG materials. The information provided in this session derives from the discussion of the personalised construction in Section 5.5.1 above.

- **Category 2: Information Prominent Constructions**

Three constructions were introduced in Category 2: “*It is+ ELV-ed + that clause*”, “attribute claims to the text or data” and “using passive constructions”. The information was presented along the lines of the above Section 5.5.2. It should be noted that instead of continuing to use the label “disguising the source of evaluation”, described in the above corpus analysis, I emphasised one of the specific sentence constructions, having this function “*It is+ ELV-ed + that clause*”. This was followed in the EG materials by an activity designed to raise students’ awareness of how to utilise it in a grammatically correct way (see Figure 6.9). In addition, both types of materials include a small paragraph reminding students that the simple present tense is commonly used in information prominent constructions (see Appendix 4 and 5).

From corpus evidence, Chinese writers show a stronger tendency to use the “*It is+ verb-ed “that” clause construction* (see example A above). However, sometimes they make grammatical errors. Can you identify the mistake in the following example?

It can be proven, according to Corder (1967), “Let us say that, given motivation, it is inevitable that a human being will learn a second language if he is exposed to the language data.”

Explanation:

We expect a that-clause to follow “it+ be +Verb-ed”, which contains a statement. The correct answer should be: It can be proven, according to Corder (1967), that “a human being will learn a second language if he is exposed to the language data”. Or, According to Corder (1967), it can be proven that “a human being will learn a second language if he is exposed to the language data”.

Figure 6.9 Activity of “*It is + verb-ed+ that clause*” in the EG materials

- **Category 3: Author Prominent Constructions**

The final category involved presenting two sentence constructions: “transfer your responsibility to specific researcher(s)” and “attribute writer’s opinion to a certain community (e.g. language analysts and scholars)”. The content provided here is derived from the discussion in Section 5.5.3. Both types of materials explore the second sentence construction,

but with different strategies. The CG materials list two English L1 examples to explain that when attributing personal claims to a certain group of people, references or evidence should be provided at the end. In contrast, the EG materials involved the design of a small task by presenting two sentence examples extracted from the English L1 and the Chinese L1 corpus respectively (See Figure 6.10). Learners in the EG were asked to identify the sentence written by an English L1 writer and give their reasons. The answer and detailed explanations were provided once they submitted their responses. As problematic usage in this area has been identified in my corpus-based analysis of Chinese L1 students' academic writing, the activity was designed to attract students' attention to this, with the hope that they try to avoid similar mistakes in their following writing.

More about Type B:

The two following examples are from essays written by a Chinese student and a native English writer. Can you identify which one is written by the native English writer and also give your reasons?

- (1) Some scholars thought that deductive approaches which illustrate rules firstly and then examples, had more logic than inductive ones.
- (2) Some scholars argue that with abundant communicative input and output, the knowledge of grammar is generated naturally without explicit instruction (e.g. Krashen 1981, 1982).

Answer: The second sentence

Explanation:

- Example (2) gives an example of this group of scholars and provides a reference. This means that the assertion made in that sentence is supported by evidence.
- Example (1) contains the verb **THINK**. Native speakers do not tend to use it to report other researchers' thoughts in academic writing.

Figure 6.10 Activity of using construction of “transferring your responsibly to specific researcher(s) and attribute writer’s opinion to a certain community”

6.4 Instruments

In the following section, I will discuss the features of the three tests designed, the design of the questionnaire and semi-structured interview, as well as the software adopted in the present study to carry out the experiment.

6.4.1 Features of tests

6.4.1.1 Exercise formats

In addition to the information to be read and the exercises in the learning sessions, the pre-, post-, and delayed post-tests were also designed to examine students' performance on the use of ELVs after the learning. The aim of designing pre- and post-tests is to examine and compare students' overall knowledge of ELVs before and after learning the provided materials. The delayed post-test is used to test which type of materials promote delayed retention learning best. For all three tests (i.e., pre-, post-, and delayed post-tests), there are five types of exercises included in total: fill in the gap, multiple choice, drag and drop, sentence rewrite and correction. The reasons for choosing these types of exercises are:

- they are relatively easy to design and give the score.
- they cost less time for learners to complete all exercises, compared with other formats (e.g. writing a paragraph), but are sufficient and efficient for testing learners' knowledge of the usage of ELVs before and after the instruction.

Multiple choice, gap-filling, and drag-and-drop matching exercises are considered to be the most commonly used formats in vocabulary assessment (Kilickaya, 2019) and are able to investigate both simple and complex learning. The objective of the present study is to examine Chinese L1 students' knowledge of ELVs and help to increase their competence in

using ELVs to deliver an appropriate epistemic proposition. This can be achieved through the three abovementioned information-gap exercises where learners are not required to devote a great deal of time but are still allowed to quickly check their semantic, pragmatic and grammatical knowledge of ELVs before and after the learning experiment. Also, these three exercise formats represent different levels of difficulty. Multiple choice and drag-and-drop matching tasks are relatively easier, as learners do not have to pay attention to the form and only recognise the best option among the given options. Gap-filling, compared with the above two, is more difficult, due to the following reasons:

- there are no provided options in the exercises.
- learners are required to attend to both form and meaning.

Sentence correction and rewriting formats are considered to be even harder, as they not only require learners to consider both form and meaning, but they also involve testing students' syntactic knowledge. In this regard, all five types of exercises include different levels of difficulty and cover both semantic and pragmatic as well as syntactic aspects. Read (2012) in the discussion indicates that exercises such as multiple choice and matching items are good for learners' better use of receptive knowledge. In contrast, productive tasks such as gap-filling and sentence rewriting, although considered difficult, can better facilitate the assessment of learners' perceptions of both the meaning and the form of a word after learning (Kılıçkaya, 2019). Therefore, the exercises in the present study, which combine both recognition and productive assessment formats, can provide a relatively comprehensive picture of students' performance before and after the instruction.

6.4.1.2 Content consistency

The pre-test includes two tasks: gap filling and drag-and-drop matching (see figure 6.11 and

details in Appendix 6). The first task requires participants to fill in the gap with the most appropriate ELV based on the context. The second task involves asking learners to sort the ELVs according to the level of degree of commitment they convey in the sentence. The post- and delayed post-tests share the same structure (see Figure 6.12 below and details in Appendix 7 and 8).

- | |
|--|
| <ul style="list-style-type: none"> • Exercise 1: gap-filling-fill in the gap with the most appropriate ELV based on the context • Exercise 2: drag-and-drop matching-sort ELVs based on the level of certainty they indicate |
|--|

Figure 6.11 Exercise format and the contents in the pre-test

- | |
|--|
| <ul style="list-style-type: none"> • Exercise 1: multiple choice-choosing the most appropriate ELVs matches the context • Exercise 2: multiple choice- comparing two sentence examples and choose the one indicating a tentative commitment • Exercise 3.1: sentence correction • Exercise 3.2: sentence rewriting-rewrite sentence with required grammatical patterns • Exercise 4: sentence rewriting-rewrite sentence in the way suggested |
|--|

Figure 6.12 Exercise format and the contents in the post- and the delayed post-tests

A number of researchers (e.g., Bueno Alastuey, 2011; Serrano et al., 2011) have argued that utilising the same tasks in pre-and post-tests are more likely to remove other factors that might affect the results, thus increasing the validity of the findings. However, Odlin (1994) raises the concern that adopting the same tasks in the pre-and post-tests may generate practice effects, resulting in “mean gain score that is influenced by familiarity and/or practice in taking the post-test rather than as a result of the experimental treatment” (p.327). To avoid such false treatment effects, both the pre- and post-tests adopted different formats for the exercises as well as different sentences extracted from corpora. While the pre-test appears not to share a similar design as the post-and delayed post-tests, with different types and

numbers of tasks, it tests the same aspects of learning performance, including both forms and meanings of ELVs, as the post- and delayed post-tests. It should also be highlighted that the primary purpose of the pre-test in the present study is to obtain a general idea of students' existing knowledge and perceptions of ELVs. Both gap-fill and drag-and drop tasks are sufficient to fulfil this objective as well as maintain students' learning motivation in the meantime, without requiring them spending much time on the test before the formal learning process starts.

Regarding the delayed post-test, the exercises are similar to those of the post-test, including similar tasks and exercises. Although the delayed post-test was administered between 1-3 months later and learners may not be able to remember the answers, both tests contain different authentic example sentences from corpora to eliminate the possibility that they will have retained the answers in some other way (e.g., by taking pictures of the questions as well as the answers) enabled by the mode of the online experiment (See Chapter 6.4.4 below). Participants were required to complete all tests and learning procedures online without the researcher's face-to-face supervision; it would thus be impossible to know whether participants recorded the answers by themselves via writing them down or taking screenshots in order to improve their accuracy. To reduce the practice effect, similar exercises with different sentence examples were offered to students.

6.4.2 Questionnaire

Two different questionnaires were designed for the present study. Both were carried out on the software Qualtrics. Questionnaire One was administered to each group of participants before the learning process. Participants were asked for some demographic information (see Appendix 9) to ensure they qualified for the study as well as their English proficiency level

(IELTS overall score) to facilitate the following analysis. Questionnaire Two was distributed to participants after the learning experiment (see Appendix 10). The aim of it is to investigate learners' overall level of satisfaction with the designed materials as well as their attitudes towards incorporating learner corpus data and research findings into the materials development. It involves 12 questions including 11 closed questions and one open question at the end. The 11 closed questions can be classified into two broad categories: one type asked students to select their responses to the statement from the options provided (See Example 6.1a); the other required participants to indicate to what extent they agreed or disagreed with the statement (See Example 6.1b).

Example 6.1:

- a) How do you evaluate the difficulty of learning epistemic lexical verbs via the corpus-informed materials?

A. very difficult B. difficult C. neutral D. easy E. very easy

- b) I think the corpus-informed materials increased my confidence in using epistemic lexical verbs in my future academic writing.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

Due to the fact that EG and CG received two different learning materials, four of the questions in the questionnaires were tailored to each group (Q2.4, Q2.6, Q2.7 and Q2.8) (see Appendix 10). These four questions probe participants' perceptions of the incorporation of learner corpus data and research findings into instructional material development. The following Example 6.2 shows how a different question is tailored to elicit the same kind of information in each version of the questionnaire.

Example 6.2:

EG: I really feel that examples from Chinese students' essays help to improve my awareness of the errors that Chinese writers of English tend to make.

CG: If the corpus-informed materials had incorporated examples from the writing of Chinese students, my awareness of common errors among Chinese writers of English would have been improved.

6.4.3 Semi-structured retrospective interview

A semi-structured retrospective interview was undertaken after the second questionnaire. The interview lasted no more than 20 minutes for each interviewee and was carried out online. The language used in the interview was participants' L1 Chinese, as Welch & Piekkari (2006, p. 428) argue that using participants' native language in interviews is more likely to produce more authentic answers that have more subtle details. The purpose of adopting a semi-structured retrospective approach is to further explore participants' perspectives on the developed learning materials and the reasons why they would/wouldn't like to have learner corpus data and findings in the learning materials construction, based on their responses provided in the above second questionnaire. Côté, Ericsson & Law (2005) state that retrospective interview is "designed under the assumption that individual answer interview questions are based on recall of past episodic experiences" (p. 4). The advantage of the retrospective interview is that the responses gathered from participants are more reliable and accurate than when they are forced to reconstruct answers to new questions (Chamot, 2014). The retrospective interview in the present study focuses on asking participants to recall their feelings about learning the materials as well as exploring the reasons behind choosing a specific option in the questionnaire. The retrospective interview adopts the format of semi-

structured, as this is successful in allowing the interviewer to improvise follow-up questions according to the interviewee's responses (Grey, 2014) and therefore, the interviewer could be able to acquire potential valuable information regarding the topics.

Appendix 11 shows the prepared questions that were designed for both groups. The majority of the interview questions were derived from Questionnaire Two, with the exception of the final item in the interview guiding questions. The purpose of this final guiding question in the interview is to invite participants to reflect on the most difficult part of the learning materials in order to give some complementary information to Q1 (i.e. How do you evaluate the difficulty of the materials you were exposed to).

6.4.4 Software Qualtrics

As mentioned in Chapter 6.3, the whole learning procedure as well as the two questionnaires were administered on the software Qualtrics (<http://www.qualtrics.com/>). "It is an online tool that allows creating, distributing and controlling the received answers" (Machado, 2012, p. 34). In the present study, two different sets of materials together with both Questionnaires One and Two were uploaded to Qualtrics. Students were required to complete the whole learning process and the questionnaires on this platform and their responses were recorded and collected.

Additionally, in the present study, Qualtrics was used for collecting students learning behavioural data: the processing time of each individual test (i.e., pre-, post-and delayed post-tests) and the processing time of each exercise within each test. To record this, the Time Setting (RTS) function in Qualtrics was used. In the past decades, researchers have shown an increasing interest in using various techniques to study participants' online learning behaviours by recording information on how much time they spent on task completion. The

RTS function, compared with other tracing software, holds incomparable benefits: it operates on the Qualtrics server, and therefore it does not require additional browser plugins or specialised software; it is more precise than the JavaScript method, as it is embedded in the Qualtrics interface and the researcher is able to collect reaction time directly without necessarily having programming knowledge (Barnhoorn et al., 2015) In this regard, RTS is considered one of the most reliable, valid and convenient methods for gathering basic information about students' processing time.

The following Example 7 shows one of the participants' information recorded by the RTS function on Qualtrics in the present study. As can be seen, the number 88.202 relating to 'Page Submit' indicates how long it took a participant to complete the task shown in the current page. Also, the researcher was able to add the processing time displayed on each page to get an idea of how much time each participant spent completing the entire exercise and test.

First Click: 57.29
Last Click: 87.723
Page Submit: 88.202
Click Count: 2

Figure 6.13 Example of processing time on each page displayed on Qualtrics

6.5 Pilot study

A pilot study was undertaken to examine the characteristics of the user-software interface and confirm that the learning content was appropriate for participants, that instruction was clear and to have a rough idea of the time needed to complete the self-learning of the materials.

The pilot study was carried out between October and November of 2020. The pilot involves 33 participants altogether, with 11 participants in the EG and 12 participants in the CG respectively. Participants were postgraduate students, studying different disciplines, such as Education, Applied Linguistics and Economics and Engineering. Their age range was 20-40, and there were three native speakers of English in the EG and one in the CG. The rest of the participants were all Chinese. The reason why native speakers of English were included is that they may help to examine whether the suggested answers in the designed exercises were appropriate, especially in the fill-in-gap exercise of the pre-test (see Appendix 6). As native speakers of English, they may have a better insight into whether the ELVs provided in the answers could match the context. Among the eight Chinese participants in the experimental group, seven were from MA/MSc programmes relevant to English language/Education, and one was from Engineering. Five participants in control group were from the subject of English Language, four from subjects relevant to Business (e.g. Marketing, Economics) and two from Engineering. After completing the trial, all participants were invited to provide feedback on presentation, navigation, organisation, and design through message or video chat. The responses from participants were written down and the revisions were made in line with their feedback received, as shown in the following Table 6.1.

Table 6.1

Pilot Study Modification

Problem	Solution
The researcher had to manually choose one of two types of materials and distribute to the participants, which largely affects the	One weblink was provided to participants and they were automatically diverted to one of two types of materials according to the

randomization	odd-even order of their clicks
Some learners didn't figure out the whole content organization of the materials	Table of Contents was added in the beginning
Learners were not allowed to go back to previous pages to review the information; they have to take extra time to take notes to remind them of what they have learnt	Provided the file of learning materials (only includes the main content without exercises) in the very first beginning and learners were able to download the materials
Some of characters are small and the front was not always consistent	Made the size of characters bigger and keep front consistent in the whole materials
Some learners didn't turn to the last page of the learning materials and their recorded learning process failed to be submitted on time	A clearer instruction was given to guide learners to turn to the very last page of the materials

6.6 Participants and data collection

Purposive sampling and snowball sampling were adopted in the present study. I advertised my study on different social media platforms (e.g., Wechat, Weibo and Facebook) to identify individuals who fit the criteria of my study. Once recruited to my study, they were invited to advertise my study to their acquaintances and friends to assist the researcher in recruiting more participants who can meet the requirements of the study. Both sampling strategies belong to non-probability sampling approaches. Although they are more likely to be less representative of the population and generate more sampling bias, purposive and snowball sampling can help the researcher identify the most appropriate participants with higher efficiency (Palinkas et al., 2015). In the end, 35 students in the EG and 33 students in the CG

participated in the present study. They are all Chinese MA/MSc students in UK universities, whose study programmes are from a range of different English Language and Education backgrounds (e.g., TESOL, Education, Applied Linguistics), similar to the participants' backgrounds in my prior corpus study. All of them have an IELTS score of at least 6.5 overall or an equivalent examination score (TOEFL, Pearson Test of English). Based on their score, their overall English proficiency can be regarded as intermediate to advanced (scores 6.5 to 8), and their English reading and writing skills can be considered as fair to advanced (5.5 to 8.5). These abovementioned requirements were confirmed by participants in the demographic Questionnaire 1. The demographic information of participants is presented in Appendix 12.

The data collection was conducted from November 2020 to January 2022, involving three rounds of participant recruitment. Once participants were enrolled, they were given a web-link, assigning them to one of two sets of materials based on the order of their enrolment. If they were enrolled in an odd order (e.g., 1, 3, 5, 7), they were allocated to the EG group, and vice versa. Afterwards, they were asked to follow the instructions to complete the whole procedure of the online learning experiment (see details of the procedure in Section 6.3, Figure 6.1). One to three months later, all participants in both EG and CG groups were invited to complete a delayed post-test again to see how much of the knowledge they had learned from the materials had been retained. As all the participants were contacted online, they responded to the invitation to complete the delayed post-test at different times. Therefore, it took one to three months to eventually gather their data. However, in the delayed post-test stage, two participants' data were still missing in the EG group, as they chose not to undertake the final task. In the end, 33 participants in the EG (3 males and 30 females) and 33 participants in the CG (5 males and 28 females) completed the whole learning and testing

process. In addition, their processing time on each test during the whole learning process was recorded with the help of the RTS function in Qualtrics (see above Section 6.4.4).

As mentioned in Section 6.4.3, a semi-structured retrospective interview has also been carried out to verify learners' feedback in the questionnaire and gather more detailed information about their attitudes towards the learning materials incorporating learner corpus data and findings to the development of learning materials. All the interviews were scheduled online via either Zoom or Wechat. Ten participants in each group were randomly invited to take part in the interview. The interview lasted about 20 minutes and only the sound was recorded by the digital recorder. In addition to asking students to give a more specific reason for choosing a certain option in the questionnaire, a list of prepared topics relevant to their learning experience was also addressed (see Appendix 11).

Each participant's data was tagged with letters and a number, similar to the corpus-based analysis, to ensure anonymity in the whole process as well as to help the researcher identify each participant's data in the database; for example, EG05 represents the fifth participant in the experimental group and CG15 is the 15th participant in the control group.

6.7 Data analysis approach

The data analysis in the present study adopted mixed methods, including both quantitative and qualitative analysis in order to achieve a breadth and also a depth of understanding of the study (Johnson et al., 2007). This section will give a detailed description of the data analysis approaches used for each instrument. It should be noted that there were two students who had not completed the delayed post-test. Therefore, their data has been excluded from the analysis. In the end, the number of participants in each group is as follows: EG (33) and CG (33).

6.7.1 Learning performance evaluation

Students' learning performance in both groups was evaluated by calculating their accuracy rate in the exercises. Accuracy rate in the present study was calculated as follows: the final number of a learner's score divided by the overall score. For example, the total full score in the pre-test is 19. if a student achieves 10 points, his/her accuracy rate in the pre-test will be $10/19=0.53$. Each question represents one full point. The number of the questions and potential full scores in each section in both sets of materials is displayed in the following Table 6.2. Each participant's score in each section was put together to get the total performance score. The detailed scoring system for each type of exercise is listed below:

- Multiple-choice, drag-and-sort matching tasks: If the learner dragged the option to the correct box or chose the correct option, she/he scores 1, if not she/he scores 0.
- Fill-in-the gap, sentence correction and rewriting tasks: the response was considered as correct and given 1 score if the participant's answer matched the suggested item or patterns. It should be noted that tasks such as sentence correction and rewriting are open questions where participants may provide different responses from the suggested answers given. If the learner's answer fails to provide the suggested answer, but his/her answer is grammatically and semantically correct, he/she scores 0.5. In other situations, he/she scores 0.

Table 6.2

Number of the questions and the potential full scores in each section

Test type	Exercise type	Potential total scores
Pre-test	Exercise 1	7
	Exercise 2	12
Post-test	Exercise 1	5
	Exercise 2	3
	Exercise 3.1	2
	Exercise 3.2	2
	Exercise 4	3
Delayed post-test	Exercise 1	4
	Exercise 2	3
	Exercise 3.1	2
	Exercise 3.2	2
	Exercise 4	3

To compare the overall accuracy rate between EG and CG across all three tests (i.e., pre-, post-, and delayed post-tests), as well as explore whether students processing time on each test and their overall English proficiency level (i.e., overall IELTS score) have a significant effect on their accuracy rate, a mixed-effects regression analysis was adopted. In the past few years, mixed-effects regression analysis has enjoyed great popularity in the field of SLA. Compared with traditional statistical analysis approaches, such as ANOVA and linear regression, Cunnings (2012) pointed out that the mixed-effects model can bring a number of benefits to SLA researchers; for example, the fixed effects in the model can have multiple independent variables including continuous factors (e.g., proficiency level) and categorical predictors (e.g.

nonnative vs native) or a mixture of both. Also, it can be used to examine the effects of different teaching strategies in longitudinal studies, such as how students' knowledge develops over time. In terms of random effects, the mixed-effects model in my present study can take individual differences into consideration by giving a different random intercept for each participant.

Apart from the quantitative analysis, the qualitative analysis approach was also used to examine students' responses in both groups to identify the similar or different features reflected in the exercises.

6.7.2 Questionnaires

As mentioned in Chapter 6.4.2, there were two different questionnaires administered before and after the learning experiment: the first is a demographic questionnaire; the second questionnaire is designed to explore participants' perceptions on the developed materials as well as their attitudes towards incorporating learner corpus data into their future learning materials. The primary objective of Questionnaire 1 is to collect students' information about their IELTS scores as well as verify that students enrolled are qualified for the requirements of the present study. The demographic information of both groups was categorised and presented in Appendix 11.

Questionnaire Two aims to investigate students' evaluation of the materials they have used and whether they prefer to see learner corpus data in their future language learning materials. It includes both closed-ended questions and an open-ended question at the end. The closed-ended questions were designed in the format of a Likert scale and will be analysed with a qualitative approach, as there is a limited amount of data. One of the basic measurements of analysing open-ended questions in research is coding (Friedman, 2011).

Manual coding was adopted to determine the most helpful session for learning ELVs according to participants' responses. Coding open-ended questions sometimes involves a great deal of time and the design of a complex coding scheme (Reja et al., 2003). As there was only one open question here and the potential responses from participants were limited due to the nature of the question, no laborious and complex manual work was required.

6.7.3 Semi-structured retrospective interview

To analyse the semi-structured retrospective interview, the full transcripts of recordings were firstly obtained, which is considered the ideal objective of interview (Patton, 2005). As the interview was conducted in Chinese, the transcripts were translated into English online by the software iFlyrec (<https://www.iflyrec.com/>) and rectified by the researcher afterwards. Creswell (2013) pointed out that not all the information from the recording is necessary to be transcribed for the following data analysis. While analysing data, Guest, MacQueen & Namey (2012) suggest that the researcher should "winnow" the data, that is, emphasise the vital and crucial data and ignore the irrelevant parts. Thus, some irrelevant information such as responses that are off the topic were not reflected in the transcripts.

After achieving the transcripts of interviews, manual coding was carried out on Nvivo. Figure 6.14 demonstrates an example of the coding for the category "How do you evaluate the difficulty of materials you were exposed to". Basit (2003) described that categorising and coding the qualitative data play an important role in the analyse process. They can help researchers identify the differences, commonalities and patterns among interviewees (Seidel & Kelle, 1995). With the aim of exploring common characteristics and individual differences in terms of the opinions of learning materials, transcripts were coded and annotated. The codes used in the analyse process emerged from both predetermined codes and participants'

responses, which could largely ensure that the codes have a consistent and cohesive theme or category (Creswell, 2013).

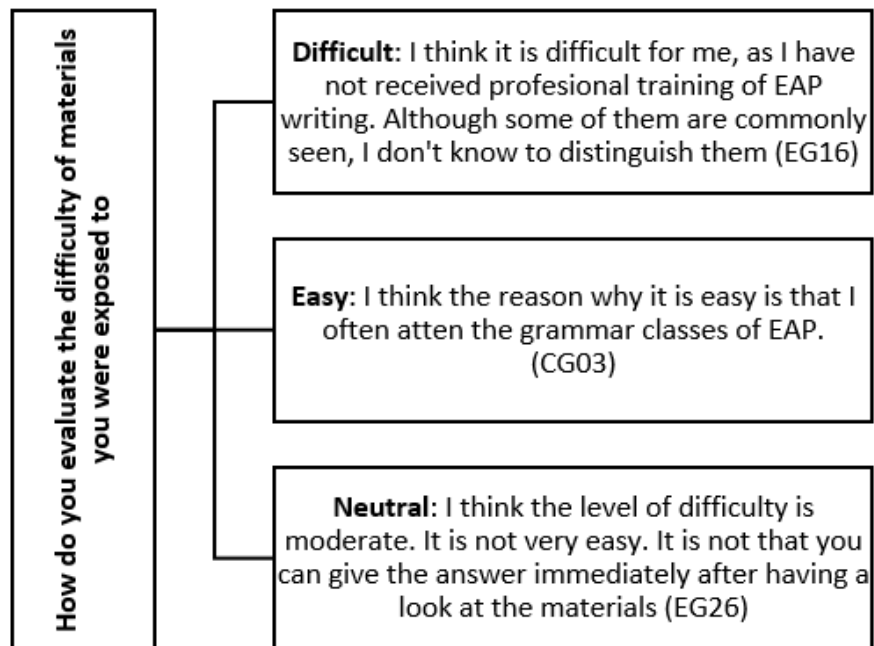


Figure 6.14 Example coding of the question “*How do you evaluate the difficulty of materials you were exposed to*”.

6.8 Ethical considerations

The ethical approval for carrying out the study was obtained from the University of Birmingham prior to data collection. As the present study involves two big stages: an online learning experiment and a semi-structured retrospective interview, two separate consent mechanisms were required from participants. Before starting the learning experiment, the participant information sheet, introducing the experimental procedures, participants’ rights as well as non-anonymity of data collection, was provided to participants via Email or Wechat. The consent form was then given on Qualtrics for participants to complete before participating in the study. If the participant agreed to take part in the study, they only needed to click the arrow to proceed. The second consent was obtained from participants who had

been invited for an interview. A new version of the participant information sheet and consent form were provided to participants before the data collection. Participants were informed that the interview would be audio recorded and that the data collection was non-anonymous in order to find their corresponding data in the previous learning experiment.

In terms of data confidentiality and anonymity, participants in both stages were informed that their data would be stored confidentially and securely. Their data would only be accessed by the researcher and supervisors, and would be anonymised in the future thesis and publications.

6.9 Conclusion

This chapter gives a detailed introduction to the research design of the learning experiment. It also explains how the findings from the comparative corpus-based analysis of ELVs among Chinese L1 students and English L1 writers fed into development of the two different types of corpus-informed learning materials in the study. The instruments adopted in the research, the approach to data analysis, and the ethical considerations were also described. In Chapter 7, I will present both quantitative and qualitative findings of the students' performance in both groups and address the first three research questions proposed.

Chapter 7 Research findings of the Assessment of Learner corpus-informed EAP Writing Materials

7.1 Introduction

The present study aims to explore the potential value of incorporating learner corpus data and research findings in EAP writing materials development, by investigating the effects of two types of learning materials informed by the comparative corpus findings presented in Chapter 5 as well as the English L1 and Chinese L1 corpus data compiled (and described in Chapter 4). The first type of materials includes examples produced by English L1 writers as well as descriptions of English L1 usage; the second adds both Chinese L1 students' example sentences from the corpus and the comparative findings obtained from the preceding corpus analysis. These two types of instructional materials were presented in an online pedagogical environment accessed by two groups of MA Chinese L1 students. The control group (CG) received the first type of materials, and the experimental group (EG) received the second type. Their performance was assessed in the pre-, post-, and delayed post-tests; their processing time on each test and their IELTS overall score were also used as predictor variables to test their influence on students' learning performance. Finally, the quantitative findings were triangulated with qualitative data collected via questionnaire and semi-structured interview, which explored participants' attitudes towards the incorporation of learner corpus data into materials development.

The present study aims to answer the following questions:

- 1) Will there be any development of knowledge in the use of ELVs in both the experimental group (EG) and the control group (CG) after learning the materials? If so,

are the improvements retained after a certain period of time?

- 2) Does the experimental group (EG)'s knowledge of ELVs improve more than the control group (CG)? If so, in what aspect and to what extent does it develop more?
- 3) What factors contribute to differences in learning performance? How do these factors map onto students' learning performance?
- 4) What are learners' attitudes towards the materials? Do learners value the examination of Chinese L1 students' data as part of their learning materials?

In this chapter, the data analysis will focus on the first three questions and the sections are organised as follows: Section 7.2 will compare the overall accuracy rate of both groups across all three tests (i.e., pre-, post-, and delayed post-tests) and investigate whether the processing time on each individual test and English proficiency (i.e., IELTS overall score) have a significant effect on students' accuracy rate. Section 7.3 takes a closer look at both EG and CG's performance on each individual exercise in each test from both quantitative and qualitative perspectives. Similarly, both groups' accuracy rate will be firstly compared to see whether there is any significant difference between the two groups in each exercise and if processing time on each individual exercise and their English proficiency level have a significant effect on their performance. The qualitative analysis will be conducted afterwards to give a detailed examination of the students' responses in each exercise. Finally, Section 7.4 will give a summary of the findings demonstrated.

7.2 Overall learning performance

Before conducting statistical analysis to address research questions 1, 2 and 3 together, I firstly carried out a descriptive data analysis to give a general idea of the variation in the accuracy rate between EG and CG in all three tests (i.e. pre-test, post-test and delayed post-

test). The following Table 7.1 presents the detailed descriptive statistic results of the accuracy rate of both groups in the three tests. Figure 7.1 is a graphic illustration of the descriptive results in Table 7.1. We can see that both EG and CG groups' mean accuracy rate increased in the post-test, compared with those in the pre-test (0.61 vs 0.71, 0.62 vs 0.68). There also appears to be a slight decrease in mean accuracy rate in the delayed post-test for both EG and CG groups (0.71 vs 0.69, 0.68 vs 0.67). In addition, it seems there was no remarkable difference in median accuracy rate between the two groups at any of the three tests, although EG had a lightly lower accuracy rate than CG in the pre-test (0.61 vs 0.62) and EG's accuracy rate was marginally higher than CG in the post-test (0.71 vs 0.68) and in the delayed post-test (0.69 vs 0.67). From eyeballing the descriptive statistics, it seems like the EG, compared with the CG, started from a lower baseline, but made slightly more improvement in the development of their knowledge, as shown in the post-test and the delayed post-test.

Table 7.1

Descriptive statistics of the accuracy rate of by group and test

Group	Pre-test		Post-test		Delayed post-test	
	M	SD	M	SD	M	SD
CG	0.62	0.14	0.68	0.12	0.67	0.16
EG	0.61	0.11	0.71	0.13	0.69	0.14

Notes: M=mean; SD= standard deviation

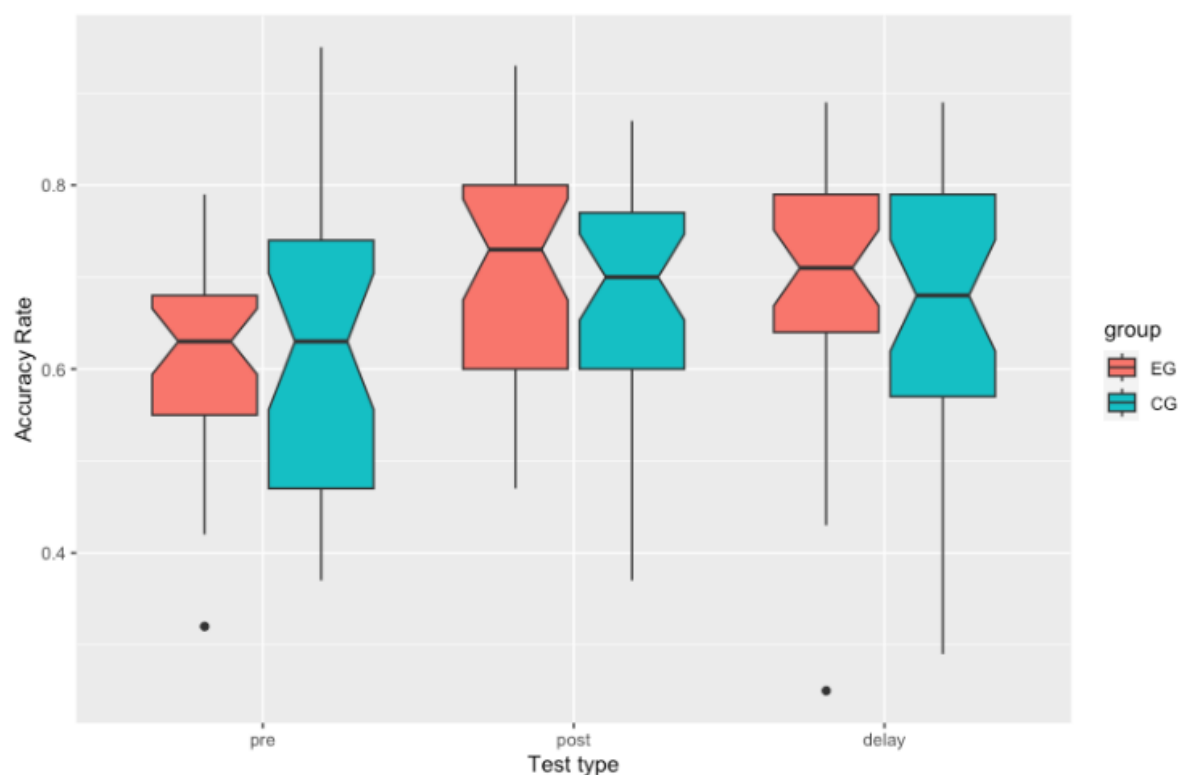


Figure 7.1 Boxplot of the accuracy rate of by group and test

To investigate whether these differences revealed above are significant, as well as what factors contribute to the students' accuracy rate, I used the *lme4* (Bates et al., 2015) and *lmerTest* (Kuznetsova, 2017) packages in R (R Core Team, 2012) to perform a linear mixed-effects regression analysis to predict accuracy rate with group (EG and CG), test (pre-, post-, and delayed post-tests), processing time on each test, English proficiency (IELTS overall score), and a two-way interaction between group and test as fixed-effects variables. As random effects, random intercepts for subject were included. Also, *emmeans* (Russell et al., 2023) package was used to do post-hoc analysis to test the simple effect under different levels of exercise and group.

Before running the mixed-effects regression analysis, it is important to recognise that the model has assumptions that are expected to be met, including 1) the absence or lower level

of multicollinearity between predictors; 2) the variance of residuals is equal across the groups and 3) the residuals of the model should be normally distributed.

Firstly, the model was checked to see whether there was a strong correlation ($VIF > 10$) between predictors. Table 7.2 below shows that overall there was no strong correlation identified between each predictor with other predictors and all the correlations were below 2.

Table 7.2

Multicollinearity between predictors

Term	VIF
group	1.02
test_type	1.49
processing_time	1.52
overall_score	1.01

Note: VIF= variance inflation factor; test_type=test (i.e., pre-, post-, and delayed post-test); overall_score= English proficiency (IELTS overall score).

Afterwards, Levene's test (Levene, 1960) was used to check the homogeneity of variance between the two groups. The result indicated that the variance was relatively equal between groups ($p < .37$).

In terms of the last assumption of normality of residuals, the histogram and the Q-Q plot in Figure 7.2 for the residuals of the model were constructed. It can be seen that the histogram is relatively bell-shaped and while there is some deviation from the expected normal line towards the tails in the Q-Q plot, overall, the residuals follow the line, which suggests the

model does not violate the normality assumption.

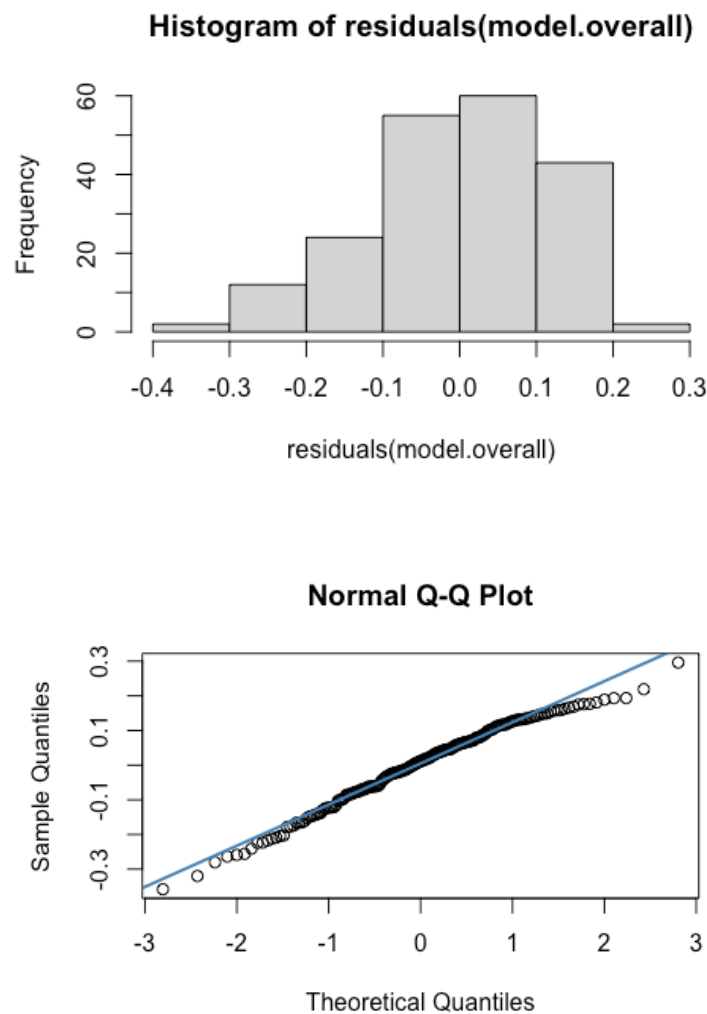


Figure 7.2 Histogram and Q-Q plot of the residuals of the model

As R defaults to taking the first category in the alphabetical order as the reference level, the CG and the delayed post-test were originally specified as the reference levels in the model. To facilitate the comparison of accuracy rate among three tests, the reference levels of the test was firstly changed to the pre-test.

Table 7.3 shows the summary of the mixed-effects model, with the referencing levels being CG and the pre-test. As can be seen, there was no significant interaction between group and

test. Also, there was no significant difference in accuracy rate between CG and EG in the pre-test. However, the accuracy rate of both post-test and delayed post-test is significantly higher than that of the pre-test in the CG. Changing the reference level to post-test, the results show that there was no significant difference in accuracy rate between post-test and delayed post-test in the CG (estimate=-0.01, $SE=0.03$, $p=.668$). Also, Table 7.3 reveals that the fixed effect of English proficiency led to a significant effect on accuracy rate (estimate=0.10, $SE=0.02$, $p<.001$), with a positive estimate indicating that average accuracy rate increased at a rate of 0.10 point per 1.0 IELTS overall score. In terms of the last fixed effect (i.e., processing time on each test), no significant effect was observed on the accuracy rate (estimate=-0.003, $SE=0.002$, $p=.18$).

Table 7.3

Summary of components in mixed-effects model of accuracy rate

<i>Parameters</i>	<i>Fixed effects</i>				<i>Random effects</i>
	<i>Estimate</i>	<i>SE</i>	<i>t</i>	<i>p(|t|)</i>	<i>(By subject)</i> <i>SD</i>
Intercept	-0.05	0.15	-0.37	0.719	0.001
EG	-0.01	0.03	-0.29	0.769	-
Post-test	0.09	0.03	2.59	0.011*	-
Delayed post-test	0.07	0.03	2.76	0.024*	-
Processing time	-0.01	0.01	-1.34	0.181	-
English proficiency	0.10	0.02	4.94	<.001*	-
EG: delayed post-test	0.01	0.04	0.42	0.674	-
EG: post-test	0.03	0.04	0.73	0.470	-

Note: * represents that the difference is significant

Changing the reference levels to EG and pre-test, the results show that, as for the CG, EG's accuracy rate of post-test and delayed post-test was significantly higher than that of pre-test (estimate=-0.12, $SE=0.03$, $p=.002$; estimate=-0.09, $SE=0.03$, $p=0.017$). Refitting the model with the post-test being the reference level, the results show that, same as CG, there was no significant difference in accuracy rate for EG between post-test and delayed post-test (estimate=-0.03, $SE=0.03$, $p=.392$). In addition, to examine whether there is a significant group difference in the post-test and delayed post-test, the post-hoc tests were employed. However, in each level of exercise, there was no significant difference in accuracy rate identified between two groups in both post-test (estimate=0.02, $SE=0.03$, $p=0.49$) and delayed post-test (estimate=0.01, $SE=0.03$, $p=0.781$).

7.3 Performance in individual test

In addition to analysing each group's overall performance across the three tests, it is also important to give a detailed analysis of students' performance on each individual exercise within all three tests, as each individual activity was designed to examine different aspects of students' knowledge of ELV usage. A linear mixed-effects model was used to predict whether there was any significant difference in accuracy rate between two groups and whether the groups demonstrated a significant difference in accuracy rate among exercises within each test. As in the mixed-effects model reported in Section 7.2, processing time on individual exercises and English proficiency were included as predictor variables to examine whether they significantly influence students' accuracy rate. Therefore, the fixed effects here also included group (EG and CG), exercise, processing time on each individual exercise, English

proficiency (IELTS overall score), with a two-way interaction between group and exercise as fixed-effects variables. Random intercepts for subjects were included. In addition to a statistical analysis, a qualitative analysis was also undertaken to examine what typical responses could be identified between groups.

7.3.1 Pre-test

The pre-test includes two exercises. Exercise 1 is gap filling, requiring students to fill in the gap with a most appropriate ELV based on the context. Exercise 2 is a drag-and-drop task in which students were asked to place three ELVs into the appropriate categories based on the level of certainty they indicate (see Appendix 6).

7.3.1.1 Quantitative analysis of the performance

The descriptive statistic results of the accuracy rate of both EG and CG in the two exercises and the boxplot of the results are shown in Table 7.4 and Figure 7.3 respectively. We can observe that both EG and CG groups demonstrated a better performance in Exercise 2 than in Exercise 1 (0.76 vs 0.36; 0.74 vs 0.39); however, it seems that CG overall demonstrated a better performance than EG in Exercise 1 (0.39 vs 0.36) while EG achieved a slightly higher accuracy rate than CG in Exercise 2 (0.76 vs 0.74).

Table 7.4

Descriptive statistics of the accuracy rate of by group and test

<i>Group</i>	<i>Exercise 1</i>		<i>Exercise 2</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
CG	0.39	0.22	0.74	0.17
EG	0.36	0.18	0.76	0.14

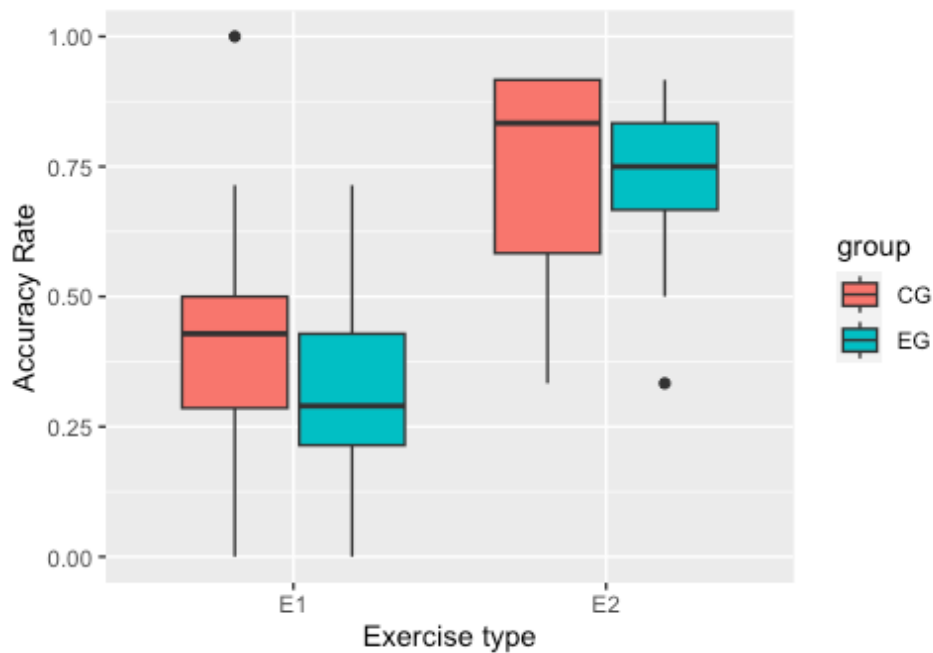


Figure 7.3 Boxplot of the accuracy rate of by group and exercise

Similarly, the model was checked to see whether it meets the above three assumptions (described in Section 7.2). Table 7.5 below shows that all variance inflation factors (VIFs) were below 5, suggesting that there was no strong correlation observed between each following predictor and other predictors.

Table 7.5

Collinearity between predictors.

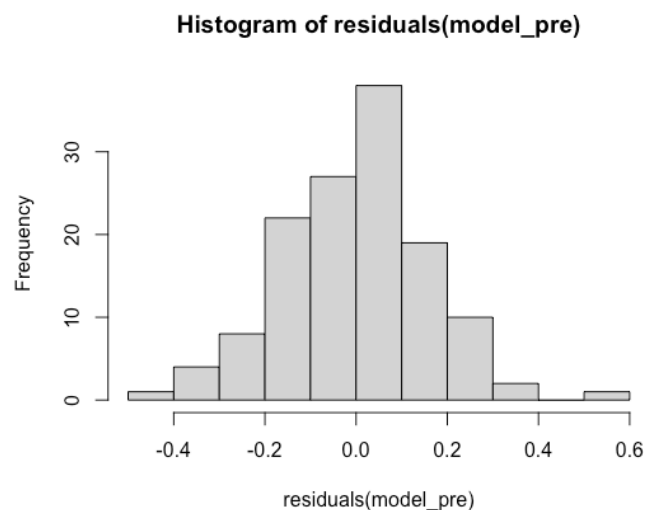
Term	VIF
group	1.02
test_type	1.88
processing_time	1.90

overall_score	1.00

Note: overall_score= English proficiency (IELTS overall score), exercise_type=test (i.e., exercise 1 and exercise 2)

Likewise, the results of Levene's test demonstrated that the variance between groups was relatively even ($p=.86$).

Again, the histogram and Q-Q plot were constructed to check whether the residuals of the model follow the normal distribution. It can be seen from Figure 7.4 that the histogram is not exactly bell-shaped and there is a systematic discrepancy of the residuals in the Q-Q plot, as the theoretical quantiles towards the left (low) are more negative than expected normal quantiles and the quantiles towards the right (high) are more positive than expected normal quantiles. The observation indicates that the model does not appear to meet the assumption. This is likely to be due to the floor effect of EG in Exercise 1 as well as the ceiling effect of CG in Exercise 2. As the deviation is not very large, I will retain the model.



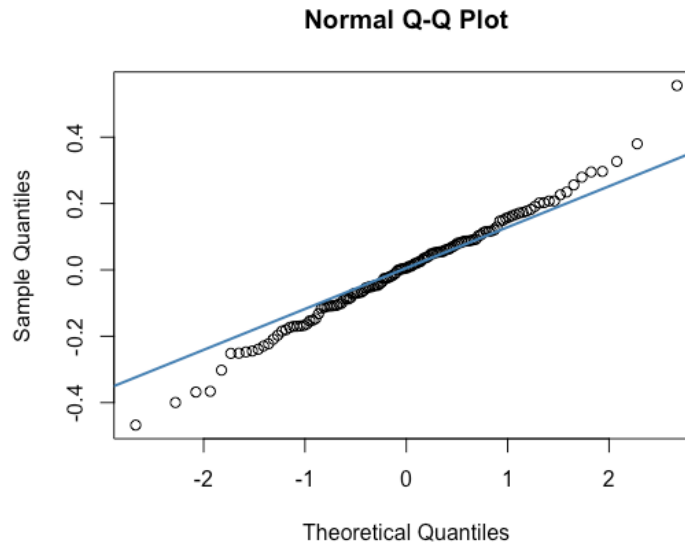


Figure 7.4 Histogram and Q-Q plot of the residuals of the model

In the same process, to verify whether the differences identified in the descriptive analysis above were significant and to explore whether the processing time on each individual exercise and students' English proficiency level significantly affected the accuracy rate, another linear mixed-effects model was used. With the reference level being CG and Exercise 1, the results of the mixed-effects regression analysis in Table 7.6 reveal that the fixed main effect for group did not lead to any significant difference in the accuracy rate, which indicates that both groups demonstrated a similar level of accuracy rate in Exercise 1. Also, it can be seen that there was no interaction between group and exercise on accuracy rate. In addition, there was no significant main effect of processing time on the exercises, suggesting processing time did not significantly affect students' accuracy rate. However, the model revealed a significant main effect of the exercise, with Exercise 2 demonstrating a higher accuracy rate than Exercise 1 for CG. The addition of a fixed main effect for English proficiency level also had a significant effect on students' accuracy rate, with the positive estimate indicating that the average accuracy rate in the pre-test of both groups increased at a rate of 0.07 point per 1.0 IELTS

overall score.

Table 7.6

Summary of components in mixed-effects model of accuracy rate of CG at Exercise 1

<i>Parameters</i>	<i>Fixed effects</i>				<i>Random effects (By subject)</i>
	<i>Estimate</i>	<i>SE</i>	<i>t</i>	<i>p(|t|)</i>	<i>SD</i>
Intercept	-0.10	0.24	-0.41	0.683	<0.01
EG	-0.04	0.04	-0.99	0.324	-
Exercise 2	0.33	0.05	6.26	<.001*	-
Processing time	-0.01	0.01	-0.69	0.492	-
English proficiency	0.07	0.03	2.29	0.025*	-
EG: Exercise 2	0.06	0.06	0.96	0.342	-

Similarly, the results show that EG also demonstrated a significantly higher accuracy rate in Exercise 2 than Exercise 1 (estimate=-0.39, $SE=0.05$, $p<.001$) by changing the reference level to EG. The post hoc tests were employed again to see whether there was any significant difference in accuracy rate under different levels of exercise. However, there was no significant difference in accuracy rate between two groups in each exercise (Exercise 1: estimate=0.04, $SE=0.04$, $p=0.335$; Exercise 2: estimate=-0.01, $SE=0.04$, $p=0.756$).

7.3.1.2 Qualitative analysis of the performance

- **Exercise 1**

A detailed examination of the qualitative data analysis reveals that two students in the EG and six students in the CG respectively filled in the gap with *seem*, and only two students in both groups provided the answer of *appear* in Q2 of Exercise 1 (see Example 7.1). Instead, there were 13 and 12 students in the EG and CG respectively filling out the gap with deductive verb *show*. The findings seem to support the previous corpus-based analysis (see Section 5.3) that Chinese L1 students favour deductive verbs more than sensory verbs and they may be less familiar with *appear* in comparison with the sensory verb *seem* (see Section 5.3.4).

Example 7.1:

Q2: Observing results, it_____ that intelligence scores are not only determined by genetics; environmental factors play a role too.

Check Answers: suggested verbs here are *appears, seems*

Q3 in Exercise 1 used the present perfect tense “has + ELV-ed”, notifying students of the required form of the ELV in the gap (see Example 7.2). However, 19 students in the EG and 21 in the CG did not pay much attention to the form required and provided ELVs with the present tense form. Also, the statement included an impersonalised subject rather than a personalised subject. Both groups of students, however, tended to choose verbs that collocate with subjects referring to a person, e.g. *believe, argue*. This may explain why Chinese L1 students in a prior corpus-based study preferred these two verbs more than English L1 students (see Chapter 5.2).

Example 7.2:

Q3: Tannen's research (1994) has () that women talk more about relationships, children, clothes and hairstyles, compared with men.

Check Answers: suggested verbs here are *shown, indicated, demonstrated, proven*.

Similar to Q3, Q5 (shown below) also demands the correct form of the ELV given (see Example 7.3). There is a modal auxiliary *can* in front of the gap, which indicates that the present tense of the ELV is required. It was interesting to find out that five students in the CG students filled in the gap with *conclude* but gave either a past tense (*concluded*) or third-person form of the verb (*concludes*). It appears that some students lack an awareness of how to integrate ELVs with modal auxiliaries appropriately.

Example 7.3:

Q5: It was not until the mid-nineteenth century that hysteria emerged as an endemic disease among bourgeois women in America. Therefore, we can () that it is a disease particularly to the Victorian bourgeois family.

Check Answers: suggested verb here is *conclude*.

- **Exercise 2**

Figure 7.5 reveals substantial differences in students' performance across four questions. Overall, both groups showed outstanding performance in Q2 and Q4 (see Example 7.4). There are 25 and 27 students in the EG and CG respectively achieving full scores for the Question 2. Also, more than two thirds of students in both the experimental and control groups provided all three correct responses in Q4; however, seven more students in the EG provided the correct answers than in the CG (28 vs. 21). Compared with Q1, Q2 and Q4, both groups demonstrated the least satisfactory performance in Q3 (see Example 7.4-Q3), where only 5

students in the EG and 4 students in the CG obtained the full three scores.

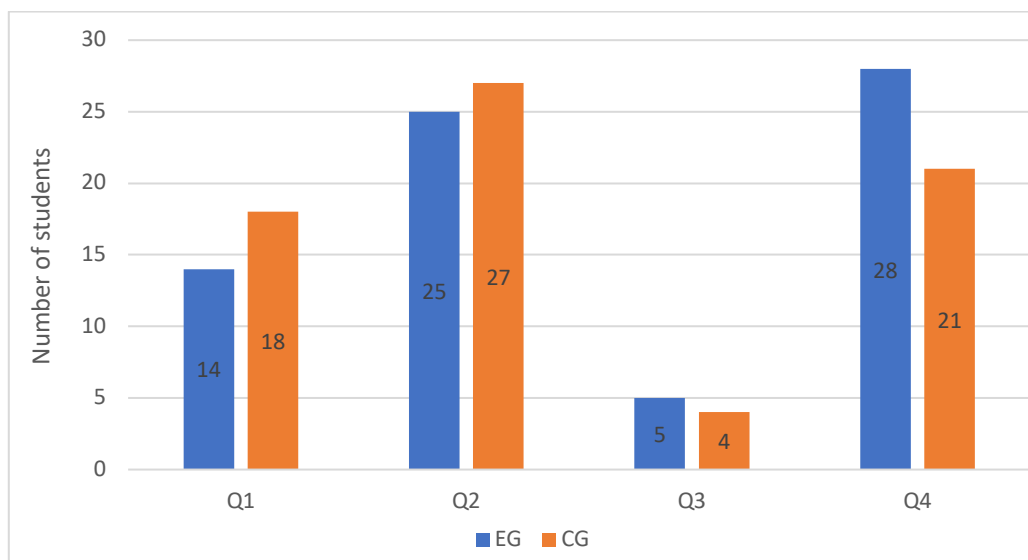


Figure 7.5 Number of students achieving full scores in each question in Exercise 2

Example 7.4:

Q2: Hume **supposes/argues/claims** that human nature fits in perfectly with a law-abiding and predictable world.

Check Answers: WEAKER: supposes; STRONGER: argues, claims.

Q3: Taking into account the informal setting and the class we **expected/speculated/predicted** that there would be some differences in the data gathered for this particular class.

Check Answers: WEAKER: **speculated**; STRONGER: **expected, predicted**.

Q4: Based on the current situation, I **think/suggest/believe** it is more efficient for the farm to employ outside workers to complete jobs when necessary.

Check Answers: WEAKER: suggest; STRONGER: think, believe.

An explanation for this may be that Chinese L1 students were less familiar with the ELVs in Q3, compared to the ELVs required in the other three exercises. This assumption seems to be supported by the previous corpus-based study, which revealed that Chinese L1 students in general favoured the ELVs in Q2 and Q4 over than the ELVs in Q3, with all ELVs having more than 45 occurrences in these two questions. Although 45 occurrences of *expect* were observed in the Chinese L1 corpus, which shows that students may be familiar with it, there were only 15 occurrences of *predict* and one occurrence of *speculate*. The unfamiliarity with *predict* and *speculate* appears to confuse students when putting them together with *expect*.

7.3.2 Post-test

The post-test for both EG and CG included five individual exercises. The first and the second exercises in the post-test take the form of multiple choice, asking students to choose the most appropriate ELV that matches the context and select the statement that expresses a more tentative voice. Exercise 3 aimed to examine students' knowledge of grammatical patterns, including two small individual exercises. Exercise 3.1 required students to correct the grammatical mistakes in the sentences and Exercise 3.2 was about sentence rewriting. The purpose of the last Exercise 4 was to examine whether students could deliver statements by using the different sentence constructions required (see Appendix 7).

7.3.2.1 Quantitative analysis of the performance

The descriptive statistic results of the accuracy rate in each exercise and the visual boxplot of the results are shown in the following Table 7.7 and Figure 7.6 respectively. It can be seen that both EG and CG groups demonstrated their best performance in Exercise 3.2 compared with the rest of the exercises (0.95 vs 0.90). For Exercises 2 and 4, CG appeared to show a relatively higher overall accuracy rate than EG (0.87 vs 0.81, 0.63 vs 0.53), while EG's accuracy

rate was higher than CG in Exercise 1 (0.68 vs 0.67) and Exercise 3.1 (0.67 vs 0.28) where the most noticeable difference was identified between the two groups.

Table 7.7

Descriptive statistics of the accuracy rate of by group and exercise

Group	<i>Exercise 1</i>		<i>Exercise 2</i>		<i>Exercise 3.1</i>		<i>Exercise 3.2</i>		<i>Exercise 4</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
CG	0.67	0.18	0.87	0.20	0.28	0.29	0.90	0.22	0.63	0.26
EG	0.68	0.21	0.81	0.22	0.67	0.32	0.95	0.15	0.53	0.26

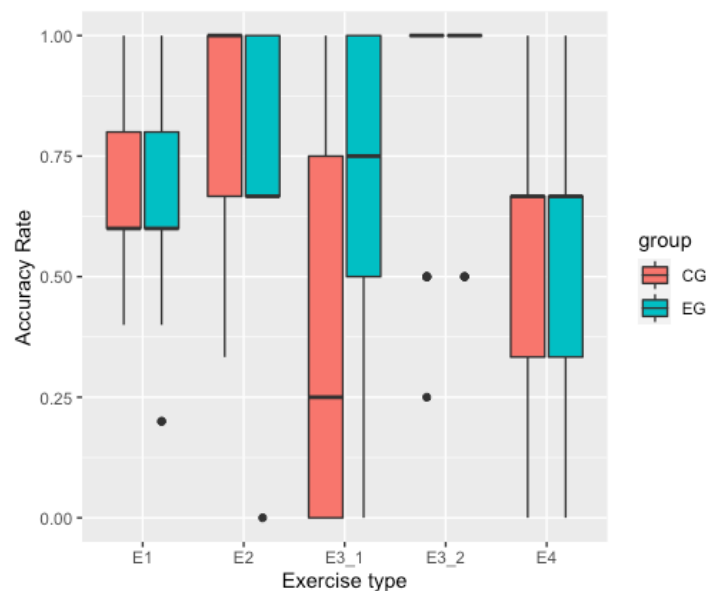


Figure 7.6 Boxplot of the accuracy rate of by group and exercise

Firstly, the model was checked to see whether there was a strong correlation among predictors. Table 7.8 below shows that the model without a two-way interaction between group and exercise overall had a low correlation of each predictor with others and all VIFs were below 1.5.

Table 7.8*Collinearity between predictors*

Term	VIF
group	1.01
exercise_type	1.45
processing_time	1.47
overall_score	1.01

Note: VIF=variance inflation factor; overall_score= English proficiency (IELTS overall score); exercise_type=test (i.e., exercise 1 and exercise 2)

In terms of the homogeneity of variance, the findings of Levene's test indicated that the variation between two groups was generally uniform ($p=.06$).

The histogram and Q-Q plot of the residuals of the model were constructed and shown in Figure 7.7, which indicates that the data seems negatively skewed and violates the assumption that the residuals should be normally distributed. It is probably because in each exercise, the number of questions was no more than five, which limits the potential normal distribution of the residuals. As the deviation is not very large, I will retain the model.

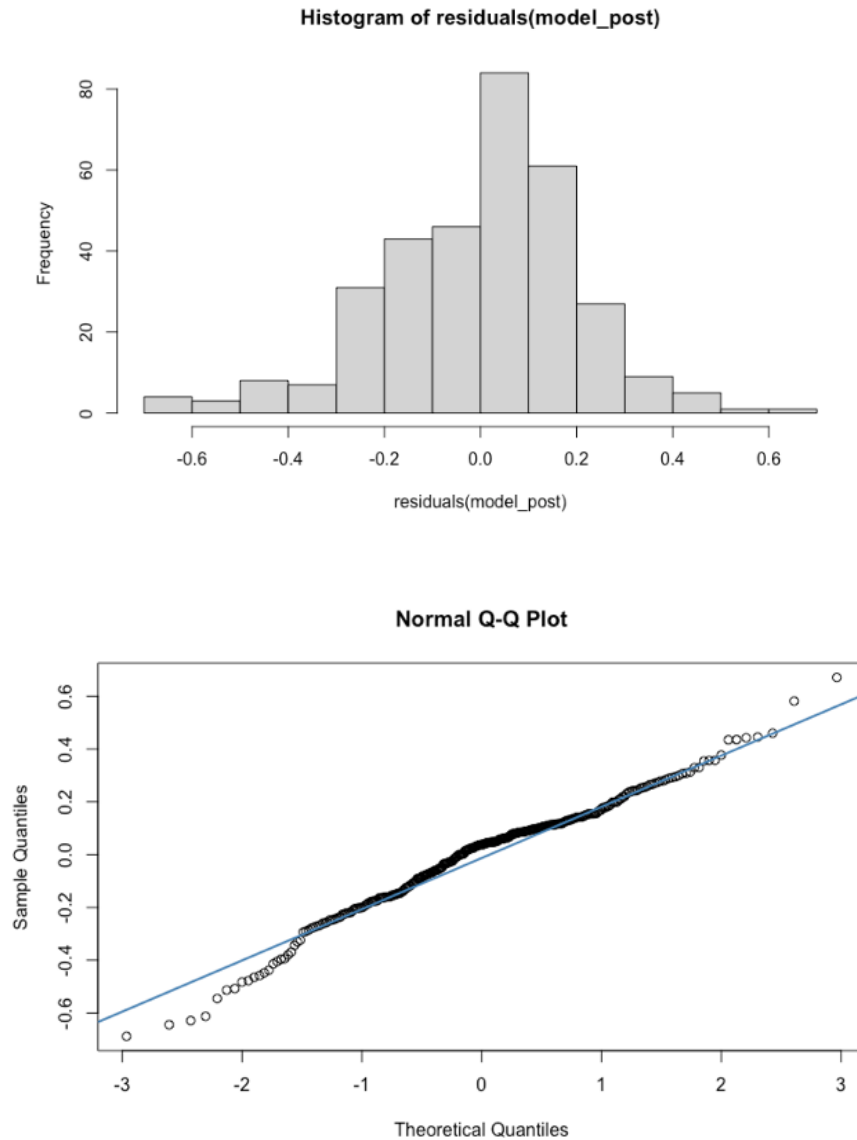


Figure 7.7 histogram and Q-Q plot of the residuals of the model

A similar linear mixed-effects model used in the pre-test was also applied here, with the reference levels being CG and Exercise 3.2. One of the reference levels was changed to Exercise 3.2 here because both groups achieved the highest mean accuracy rate in Exercise 3.2 (see above Table 7.7). To determine whether the accuracy rate of Exercise 3.2 was significantly higher than that of other exercises, the reference level was, therefore, changed to Exercise 3.2.

The results of mixed-effects regression analysis in Table 7.9 show that there was a significant interaction between group and exercise (estimate=0.33, $SE=0.08$, $p<.001$). Also, a significant main effect of exercise on accuracy rate for CG was observed, with the accuracy rate of Exercise 1, Exercise 3.1 and Exercise 4 being significantly lower than that of Exercise 3.2; however, there was no significant difference in accuracy rate between Exercise 2 and Exercise 3.2. In terms of the other two main effects, it was found out that there was no significant main effect of English proficiency level on accuracy rate; however, a significant effect of processing time on accuracy rate was observed, with students achieving a higher accuracy rate reducing at a rate of 0.02 points for every one-unit increment in time (i.e., every minute).

Table 7.9

Summary of components in mixed-effects model of accuracy rate in the CG at post-test

<i>Parameters</i>	<i>Fixed effects</i>				<i>Random effects</i>
	<i>Estimate</i>	<i>SE</i>	<i>t</i>	<i>p(|t|)</i>	<i>(By subject)</i> <i>SD</i>
Intercept	0.70	0.22	3.21	0.001*	0.006
EG	0.05	0.06	0.83	0.407	-
Exercise 1	-0.23	0.05	-4.39	<.001*	-
Exercise 2	-0.06	0.05	-1.09	0.276	-
Exercise 3.1	-0.61	0.05	-11.42	<.001*	-
Exercise 4	-0.25	0.05	-4.70	<.001*	-
Processing time	-0.02	0.01	-2.02	0.044*	-
English proficiency	0.03	0.03	1.16	0.247	-
EG: Exercise 1	-0.04	0.08	-0.60	0.551	-
EG: Exercise 2	-0.11	0.08	-1.51	0.133	-
EG: Exercise 3.1	0.33	0.08	4.40	<.001*	-
EG: Exercise 4	-0.15	0.08	-1.94	0.053	-

Changing the reference level to EG, the results of the analysis showed that the accuracy rate in Exercise 3.2 was significantly higher than all of the other exercises, Exercise 1 (estimate=-0.28, $SE=0.05$, $p<.001$), Exercise 2 (estimate=-0.17, $SE=0.05$, $p=.002$), Exercise 3.1 (estimate=0.28, $SE=0.05$, $p<.001$) and Exercise 4 (estimate=-0.40, $SE=0.06$, $p<.001$). In terms of the group difference in each exercise, the results of the post hoc tests revealed that EG achieved a significantly higher accuracy rate than CG in Exercise 3.1 (estimate=0.38, $SE=0.06$, $p<.001$); however, there was no group difference in accuracy rate in Exercise 1 (estimate=0.01, $SE=0.06$, $p<0.969$), Exercise 2 (estimate=0.07, $SE=0.06$, $p=0.254$), Exercise 3.2 (estimate=0.04, $SE=0.06$, $p=0.416$) and Exercise 4 (estimate=-0.10, $SE=0.06$, $p=0.088$).

7.3.2.2 Qualitative analysis of the performance

- **Exercise 1**

The statistical analysis revealed that there was no significant difference in the accuracy rate of both groups (see Section 7.3.2.1). However, the biggest difference in performance between both groups was identified in Q5 (see Example 7.5), where only 3 students in the EG chose B, while 8 students in the CG chose the same option. The disparity may be due to the explicit instructions provided in Session 1 of the EG learning materials (see Appendix 4-Session 1) which explained that English L1 students tended to use *believe* instead of *think* to express an individual opinion. Also, *think*, compared with *believe*, is a spoken linguistic feature, commonly used in the speaking context more than in formal academic writing.

Example 7.5:

Q5: Morgan (1997) () that the individual is unlikely to disclose how they feel about the medical advice if they do not feel the doctor will listen.

A. believes

B. thinks

Suggested Answer: Choose A

- **Exercise 2**

Figure 7.8 shows the overall number of participants in each group who were able to select the suggested answer to each question. In general, both groups demonstrated similar performance in Q1 and Q2. A slight difference in performance was observed in Q3 which involves differentiating the levels of certainty between “*seem*” and “*argue*” (see Example 7.6). In total, four more participants in the CG chose option B than in the EG. *Seem*, compared to *argue*, indicates a more tentative meaning, suggesting that the second sentence delivers a

higher level of modesty towards the claim. There appear to have been a few students in both groups who still struggled with these two ELVs in terms of the level of confidence indicated.

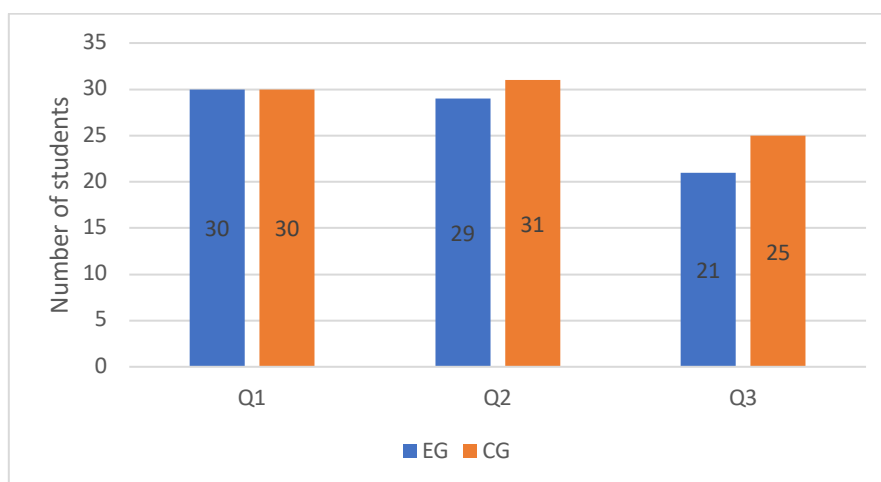


Figure 7.8 Number of participants who answered correctly in Exercise 2

Example 7.6:

Q3:

- A. Some scholars argue that the institutional changes led to technological change (e.g. Overton, 1996).
- B. By observing the research results, it seems the extinction of certain species are associated with climate changes.

Answer: Choose B.

• Exercise 3.1

Exercise 3.1 in the post-test asked students to correct the grammatical mistakes of the sentences, focusing on examining students' knowledge of the "*There be + ELV*" construction (see Q1) and the relevant grammatical patterns of *seem* (see Q2). The results in Section 7.3.2.1 revealed that the EG group demonstrated a significantly higher accuracy rate in this

exercise than CG group. Taking a closer look at students' responses in both groups, there were 21 students in the EG who kept the "*there be*" pattern and changed *suggest* either into "*to suggest*" or "*suggesting*"; In contrast, only seven students in the CG group did so. It is interesting that 13 students in the CG deleted "*there be*" in the sentence (see students' response from the Example 7.7). Although there was no grammatical mistake in this sentence construction, it could be that these students were trying to avoid the "*there be...*" pattern due to their lack of expertise with the "*there be + ELV*" construction. On the other hand, it could represent a stylistic choice in favour of a simpler, and perhaps more elegant, sentence construction.

Example 7.7

Q1: There are four comments suggest that the racist video and insulting message have a bad effect on the image of the whole brand.

Response from students:

Q1: Four comments suggest that the racist video and insulting message have a bad effect on the image of the whole brand.

Q2 in Exercise 3.1 aims to investigate students' knowledge of using grammar patterns for "*seem*" (see Q2 in Example 7.8). 22 students in the EG were able to correct the sentence; however, only 5 students in the CG successfully identified the grammatical mistake. Comparing the responses of students in both groups, only three students in the CG corrected the mistake by using relevant grammatical patterns for *seem*, such as *seem to be* or *seem like* (Example 7.8a). The other two students in the CG changed it to *is regarded as* (Example 7.8b). In contrast, there were nine students in the EG group who were able to proficiently use the

grammatical patterns of *seem*.

Example 7.8

Q2: Coping is seemed as a shifting process, influenced, to some extent, by the characteristics of personality (Revenson, 1987).

Response from students:

- a. Coping seems like/to be a shifting process, influenced, to some extent, by the characteristics of personality (Revenson, 1987).
- b. Coping is regarded as a shifting process, influenced, to some extent, by the characteristics of personality (Revenson, 1987).

The reason why the EG group demonstrated a better performance than the CG group perhaps is that the learning materials for EG include an exercise of sentence correction in Session 3, specifically focusing on “*There be + ELV*” construction and grammatical patterns involving *seem* (see Appendix 4-Session 3). The sentence examples included in this exercise for EG are authentic sentences extracted from the Chinese L1 corpus. With exposure to authentic grammatical errors made by Chinese L1 students as well as the correct usage demonstrated by English L1 students, students in the EG seemed to get a better understanding of how to apply these grammatical patterns accurately.

- **Exercise 4**

The last exercise in the post-test was trying to examine whether students achieved progress in their use of different sentence constructions. The statistical result of the mixed-effects model shows there is no significant difference in accuracy rate between these two groups ($p=.19$). Figure 7.9 shows that the biggest difference in performance between the two groups

is observed in Q2, where seven more students in the CG achieved a full score than in the EG. Although there was an additional exercise in the EG's learning materials asking students to compare the usage of author prominent construction produced by English L1 and Chinese L1 students to help them increase the awareness of how to accurately use this construction (see Appendix 2-Session 4), it seems that students still experienced difficulty mastering it and some of them often forgot to provide the reference at the end (see Example 7.9-students' response).

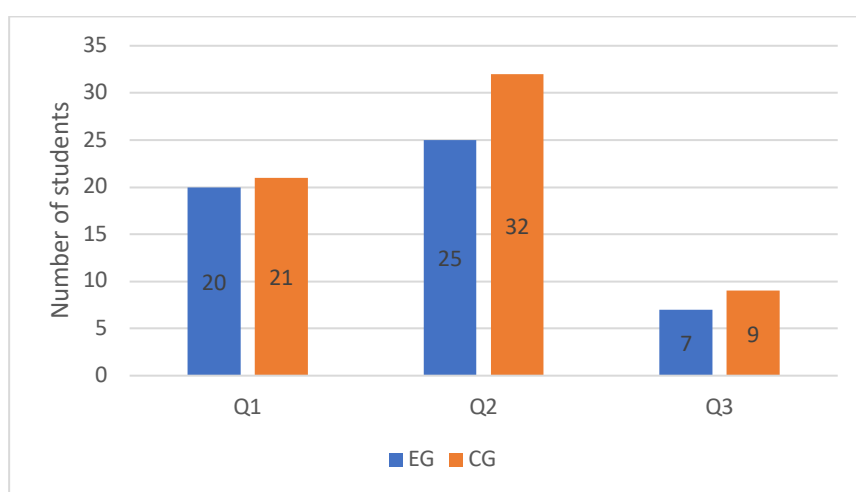


Figure 7.9 Number of participants achieving full score in each question in Exercise 4

Example 7.9:

Q3: Dornyei (2001, p. 108) argues that a learner's motivation can be increased by promoting his/her learning autonomy. (rewrite the example by attributing your opinion to a certain group people, e.g. scholars, language analysts)

Responses from students:

Language analysts argue that a learner's motivation can be increased by promoting his/her learning autonomy.

7.3.3 Delayed post-test

Similar to Exercise 1 in the post-test, the first exercise in the delayed post-test is multiple choice aims to examine whether students were able to choose the most appropriate ELV based on the context from both semantic and pragmatic perspectives. Exercise 2, as in the post-test, asked participants to select one sentence from two that conveys the more tentative meaning. Exercise 3 in the delayed post-test still included two exercises, namely, correcting grammatical mistakes in the sentence (Exercise 3.1) and sentence rewriting (Exercise 3.2). Exercise 4 in the delayed post-test aimed to investigate students' performance on varying sentence constructions. (see Appendix 8).

7.3.3.1 Quantitative analysis of the performance

The descriptive statistic results of the accuracy rate in each exercise and the boxplot of the results are demonstrated in the following Table 7.10 and Figure 7.10 respectively. In terms of the mean accuracy rate, both groups still did best in Exercise 3.2 compared to the other exercises, obtaining an accuracy rate of at least 80%. For Exercises 2 and 4, CG seems to demonstrate a slightly higher overall accuracy rate than EG (0.73 vs 0.72, 0.64 vs 0.59). For Exercise 1 and Exercise 3.1, EG was more likely to display a better performance, with the mean accuracy rate being the most considerable in Exercise 3.1 (0.64 vs 0.47).

Table 7.10

Descriptive statistics of the accuracy rate of by group and exercise

<i>Group</i>	<i>Exercise 1</i>		<i>Exercise 2</i>		<i>Exercise 3.1</i>		<i>Exercise 3.2</i>		<i>Exercise 4</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
CG	0.67	0.26	0.73	0.32	0.47	0.34	0.83	0.24	0.64	0.26

EG 0.69 0.23 0.72 0.28 0.64 0.30 0.80 0.30 0.59 0.20

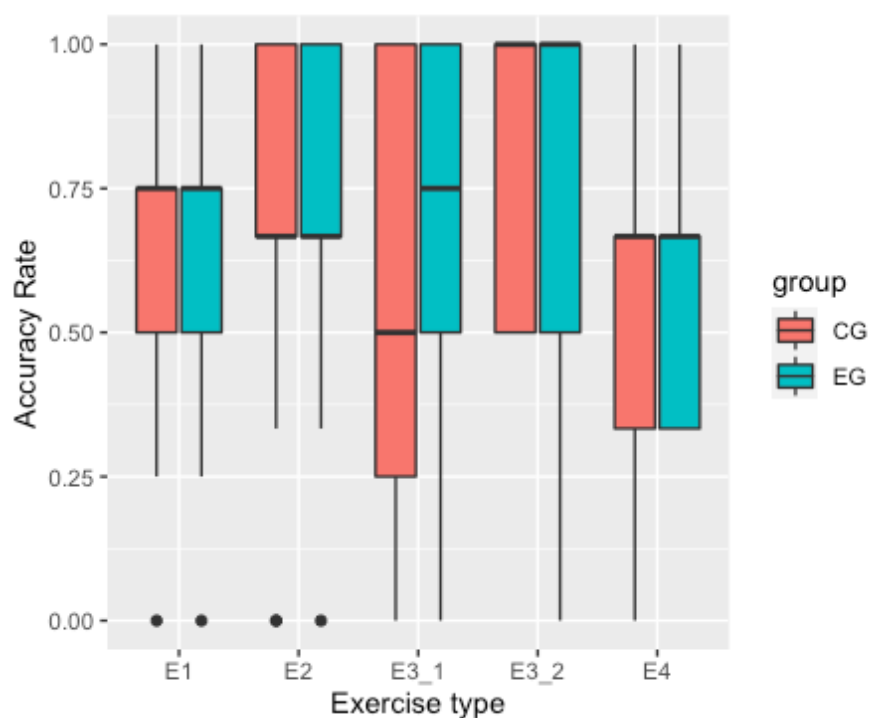


Figure 7.10 Boxplot of the accuracy rate of by group and test

Table 7.11 shows similar results of collinearity as for the post-test. The results show that each predictor had low collinearity with the other predictors, as the VIFs were below 2.

Table 7.11

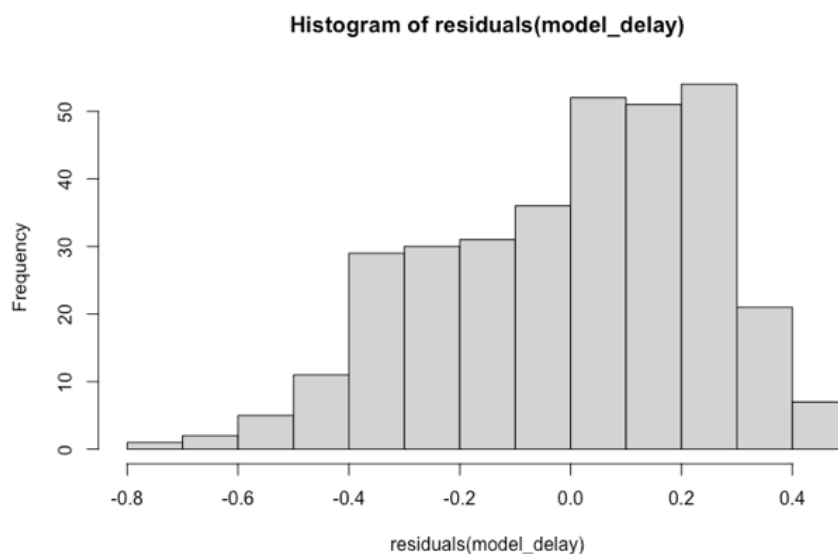
Collinearity between predictors

Term	VIF
group	1.00
exercise_type	1.89
processing_time	1.89
overall_score	1.00

Note: VIF=variance inflation factor; overall_score= English proficiency (IELTS overall score); exercise_type=test (i.e., exercise 1 and exercise 2).

Levene's test was adopted again to test the homogeneity of variance between groups and exercises. The results show that the variance between the EG and CG groups was relatively even ($p=.06$).

Figure 7.11 depicts a histogram and Q-Q plot to examine if the residuals of the model have a normal distribution. The non-bell-shaped histogram and data that are not near the distribution line in the Q-Q plot suggest that the residuals are not normally distributed. This is also possibly owing to the limited number of questions for each exercise.



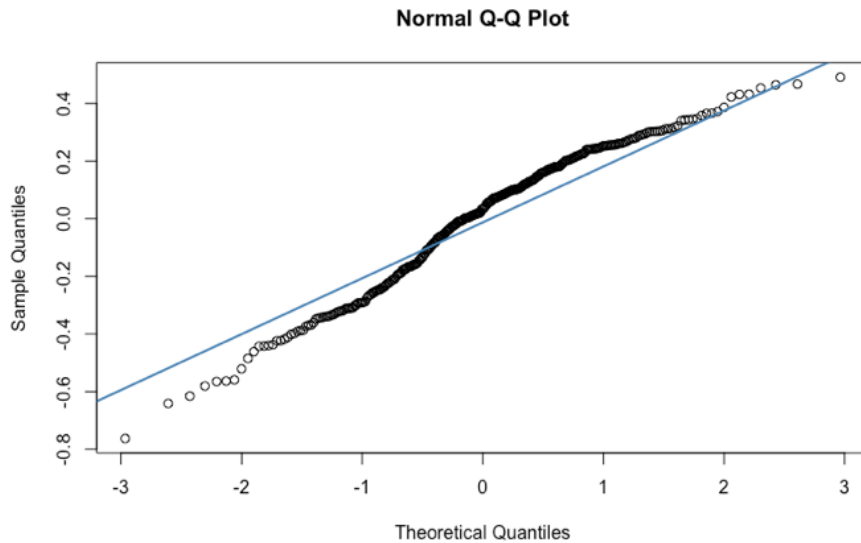


Figure 7.11 histogram and Q-Q plot of the residuals of the model

As in the post-test, the reference levels were changed to Exercise 3.2 and CG. The results of mixed-effects regression analysis in Table 7.12 show that there was a significant interaction between the group and Exercise 3.1. In terms of the group difference in accuracy rate of Exercise 3.2, the results revealed a non-significant difference. In addition, the accuracy rate of Exercise 3.2 for CG was significantly higher than that of the other exercises (i.e. Exercise 1, Exercise 2, Exercise 3.1 and Exercise 4). Also, a significant main effect of the processing time was observed, with students achieving a higher accuracy rate reducing at a rate of 0.02 points for every one-unit increment in time (i.e., every minute). The additional fixed effect of English proficiency did not lead to any significant effect on accuracy rate, suggesting English proficiency did not affect students' accuracy rate in the delayed post-test.

Table 7.12

Summary of components in mixed-effects model of accuracy rate of CG at the deled post-test

<i>Parameters</i>	<i>Fixed effects</i>				<i>Random effects</i> (<i>By subject</i>)
	<i>Estimate</i>	<i>SE</i>	<i>t</i>	<i>p(|t|)</i>	<i>SD</i>
Intercept	0.44	0.25	1.76	0.080	0.007
EG	-0.04	0.07	-0.54	0.591	-
Exercise 1	-0.18	0.06	-2.85	0.005*	-
Exercise 2	-0.14	0.06	-2.14	0.033*	-
Exercise 3.1	-0.39	0.06	-6.18	<0.001*	-
Exercise 4	-0.14	0.07	-2.01	0.045*	-
Processing time	-0.02	0.01	-2.24	0.026*	-
English proficiency	0.07	0.03	1.94	0.054	-
EG: Exercise 1	0.06	0.09	0.64	0.525	-
EG: Exercise 2	0.02	0.09	0.21	0.831	-
EG: Exercise 3.1	0.22	0.09	2.45	0.015*	-
EG: Exercise 4	-0.04	0.09	-0.40	0.689	-

Similarly, changing the reference level to EG, the accuracy rate of Exercise 3.2 was only significantly higher than that of Exercise 3.1 (estimate=0.18, $SE=0.06$, $p=.005$) and Exercise 4 (estimate=-0.17, $SE=0.07$, $p=.009$), while there was no significant difference in accuracy rate between Exercise 3.2 and Exercise 1 (estimate=-0.12, $SE=0.06$, $p=0.050$), and Exercise 2 (estimate=-0.12, $SE=0.06$, $p=0.067$). Also, the results of the post hoc tests indicated that the group difference in accuracy rate was only observed in Exercise 3.1, with EG demonstrating a significantly higher accuracy rate than CG (estimate=0.18, $SE=0.07$, $p=.007$). There was no significant difference in accuracy rate between two groups in Exercise 1 (estimate=-0.02, $SE=0.07$, $p=.756$) Exercise 2 (estimate=-0.02, $SE=0.07$, $p=.806$), Exercise 3.2 (estimate=0.04,

$SE=0.07$, $p=.599$) and Exercise 4 (estimate=-0.07, $SE=0.07$, $p=.296$).

7.3.3.2 Qualitative analysis of the performance

- **Exercise 1**

Figure 7.12 illustrates the overall performance of each group by displaying the number of students who provided the suggested answers. It can be noticed that both groups performed similarly on each question, with a difference of no more than two students. Also, it is evident that both EG and the CG demonstrated the least satisfactory performance in Q3 (see Example 7.10), with only around 10 students achieving the score. In Exercise 1 in the pre-test, both groups appeared to struggle with the sensory verbs (i.e., *appear* and *seem*) and favour the deductive verb *show* (see Section 7.3.1.2-Example 7.1). It seems that both groups of learners were still confused about the semantic functions of the sensory verb *appear* which indicated that the visual evidence was expected to be seen in the statement. Also, they seemed to lack awareness of the level of certainty suggested by “*is likely to be*” in the statement, which indicated a more tentative ELV is appropriate here. Both of these points suggested that *appear* was a more appropriate option than *show*.

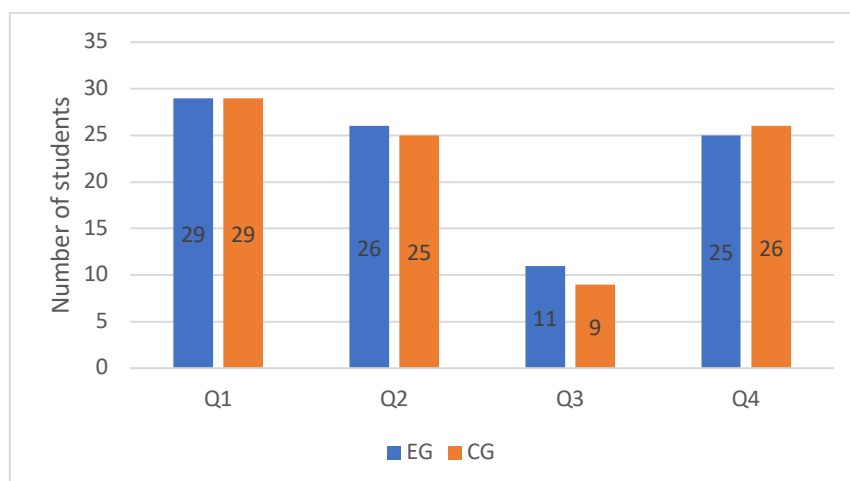


Figure 7.12 Number of participants achieving full score in Exercise 1

Example 7.10

Q3. Observing the data analysis results, it () that behaviour therapy is likely to be useful and well-used form of treatment for some psychological disorders.

A. appears

B. shows

Answer: we choose A.

- **Exercise 2**

Similarly, there was no significant difference found between the two groups in each question, but it was interesting to observe that both groups showed a less satisfactory performance in Q1 (see Example 7.11), with only around 20 students choosing the correct answer (see Figure 7.13). As revealed in the previous corpus-based analysis (see Section 5.5.1), there were no occurrences of “*One*” as subject to deliver the statement in the Chinese L1 corpus, while there were 11 occurrences in the English L1 corpus. According to students’ performance, Chinese L1 students may still struggle with the pragmatic function of this sentence construction that indicates a weaker level of certainty towards the claim, compared with a statement delivered by the person pronoun “*I*”.

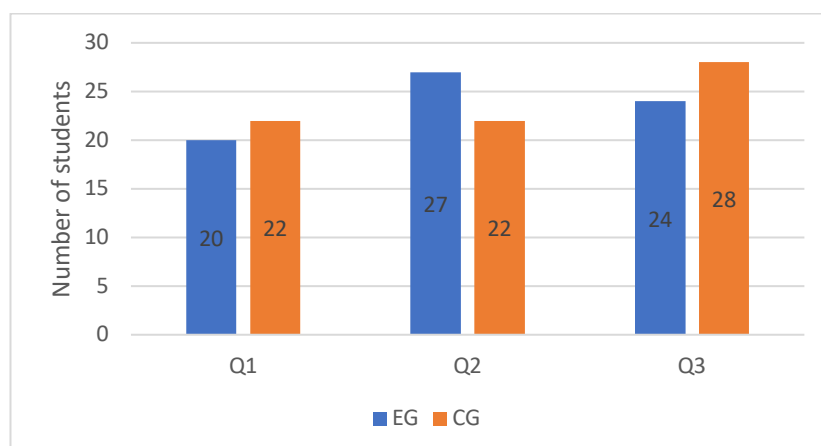


Figure 7.13 Number of participants achieving full score in Exercise 2

Example 7.11

Q1:

- A. I think that the issue of class and gender can be significantly linked together, when looking at the role of prestige in the society.
- B. In terms of porridge's supreme nutritional value, one expects it to have been a predominant foodstuff for the lower social classes.

Answers: we choose B.

- **Exercise 3.1**

Exercise 3.1 in the delayed post-test, and in the post-test, examined both groups' performance in correcting grammatical mistakes in the "*There be +ELV...*" construction and in grammatical patterns of *seem*. As was shown in Section 7.3.2.1, EG demonstrated a significant outstanding performance above CG in this exercise in the delayed post-test, with 20 students achieving the full score compared with only 13 students in the CG. 13 in the EG and 11 students in the CG replaced *seem* with the grammatical patterns *be considered as/to be* or *be regarded as*, which indicated that they may be more confident with using these grammatical patterns than those grammatical patterns involving *seem*, such as *seem like/to be* (see Example 7.12).

Example 7.12

Q1: Shakespeare is seemed as one of the first writers to include Gothic conventions in his works.

Students' response:

- 1) Shakespeare **is considered to be/as** one of the first writers to include Gothic conventions in his works.
- 2) Shakespeare **is regarded as** one of the first writers to include Gothic conventions in his works.

In terms of Q2 in Exercise 3.1, four students in the EG and eight students in the CG failed to identify and correct the grammatical mistake in the sentence. Take a detailed look at students' responses in both groups, there were nine students in each group choosing to delete "*There be*" rather than keeping it and changing the form "*show*" in the sentence (see Example 12). It seems that some of the students prefer to avoid using *there be* to simplify the sentence construction.

Example 12

Q2: There are several research results show that parenting style is the key.

Response from students:

Several research results show that the parenting style is the key.

- **Exercise 3.2**

The exercise here aimed to examine students' ability to flexibly rephrase the sentence with the required grammatical patterns. Exercise 3.2 in the post-test was comparable to this activity. The average accuracy rate of EG and CG in the post-test was 95% and 90%; however, it dropped to 80% and 83% respectively in this exercise. Compared with Q1 in this exercise, 24 students in each group were able to provide the required response; however, at least 29 students in each group successfully rephrased the sentence with the required grammatical

pattern in Q1. By observing students' responses, seven students in total from both groups used the pattern *suggest with...* (see Example 7.13). It seems they may still struggle with using "*suggest + noun expression*". The results here appear to confirm the finding of the prior corpus-based study in which Chinese L1 students were less familiar with "*suggest + noun expression*" (see Section 5.6).

Example 7.13

Q2. This study suggests that there is a difference in brain functioning between psychopaths and non-psychopaths. (change to "**suggest**" with a following noun expression)

Answer: This study suggests a difference in brain functioning between psychopaths and non-psychopaths.

Responses from students:

This study **suggests with** a difference in brain functioning between psychopaths and non-psychopaths.

- **Exercise 4**

Figure 7.14 shows the number of people who achieved the full score in each question. As seen, both groups demonstrated the best performance in Q3 and the least satisfactory performance in Q1. The Q1 question (see Example 7.14) and the Q3 question in the Exercise 4 in the post-test required students to assign the statement to a certain community. Both sets of students performed the least satisfactorily on this activity. Students' responses revealed that they either forgot to provide the reference or shifted the subject of the statement from the *language analysts* to *Wodak and Meyer*. From their performance, how to attribute the

claim to a certain community accurately still seems to be a difficult task for Chinese L1 students.

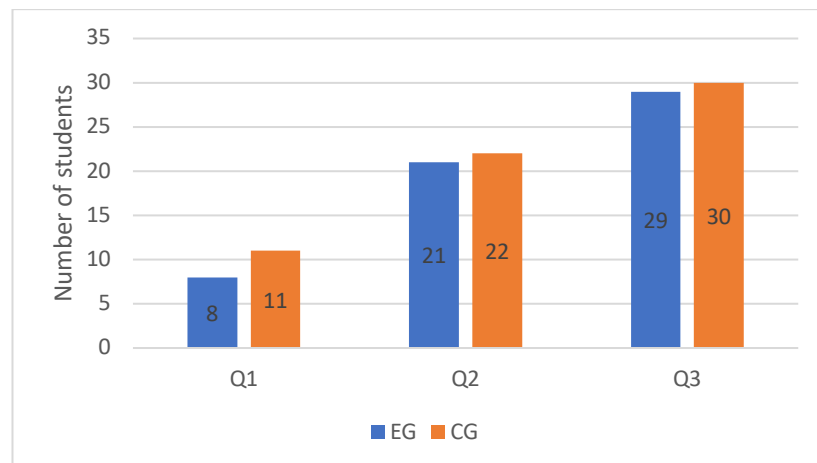


Figure 7.14 Number of participants achieving full score in each question

Example 7.14

Q1: Wodak and Meyer (2001) argue that language has no power of its own; it only gains power when powerful people use it.

Suggested answer: Language analysts argued that language has no power of its own; it only gains power when powerful people use it (e.g. Wodak and Meyer, 2001).

Responses from students:

- 1) Language analysts argued that language has no power of its own; it only gains power when powerful people use it.
- 2) language analysts argue that language has no power of its own; it only gains power when powerful people use it (Wodak and Meyer, 2001).

7.4 Conclusion

The main focus of this chapter was to give a detailed quantitative and qualitative analysis, examining and comparing both EG and CG groups' performance in the self-learning experiment. In general, both EG and CG achieved a higher accuracy rate in the post-test and delayed post-test, compared with the pre-test; however, no significant difference was identified for either both groups between the post-test and the delayed post-test. Also, there was no significant difference in accuracy rate between groups at any of the three tests. In Chapter 8, I will discuss the findings of the qualitative analysis of students' responses revealed in the questionnaire and semi-structured interview, regarding their attitudes towards the materials presented in the present study and whether they prefer to see learner corpus data and learner corpus research findings in the EAP materials.

Chapter 8 Qualitative Data Analysis: Learners' attitudes towards the materials

8.1 Introduction

The last research question is to investigate learners' attitudes towards the learning materials they were exposed to as an instructional method of learning epistemic lexical verbs (ELVs). The question posed was:

Q4: What are learners' attitudes towards the learning materials? Do learners value the examination of Chinese L1 students' data as part of their learning materials?

In this phase, two types of data were collected via a questionnaire (i.e. Questionnaire Two-see Appendix 10) and a semi-structured retrospective interview. Webb et al. (1966, 2000) argue that a mixed-methods approach triangulates the data to reduce the uncertainty in interpreting it. Flick (2009, as cited in Grey, 2014, pp. 196) also agrees that "combining methods allows for one method to compensate for the weakness or blind spots of the other". The purpose here of combining these two methods is to validate the conclusions by triangulating results obtained from using different methodologies in order to get a more thorough understanding. The chapter is organised as follows: Section 8.2 details the findings of the questionnaire. The results of the interview are presented in Section 8.3. I then turn to discuss the triangulated findings in Section 8.4 and the final Section 8.5 presents the summary of this chapter.

8.2 Questionnaire

The questionnaire consists of 12 questions in total, 11 of which are closed questions and one of which is an open question (see Appendix 10). The questions could be broadly classified into four categories based on their contents: 1) the overall learning experience; 2) the

effectiveness of incorporating English L1 corpus data; 3) the effectiveness of adding Chinese L1 corpus data and findings; 4) the most helpful part of the learning materials. Owing to the fact that the EG and CG received distinct learning materials, four of the questions in the questionnaire were tailored to each group (Q2.4, Q. 2.5, Q2.6, Q2.7 and Q2.8).

8.2.1 The overall learning experience

The following three questions explore students' perspectives on the difficulty of the learning material, their degree of engagement in the learning process, and the structure of the materials. 20 students in both groups perceived the degree of difficulty of the learning materials to be neutral, accounting for about sixty percent of the total number of participants in both groups (see Figure 8.1). In addition, it was discovered that two students in the EG found the content to be very challenging, but none of the students in the CG held the same attitude.

Q1.1: How do you evaluate the difficulty of learning epistemic lexical verbs via the corpus-informed materials?

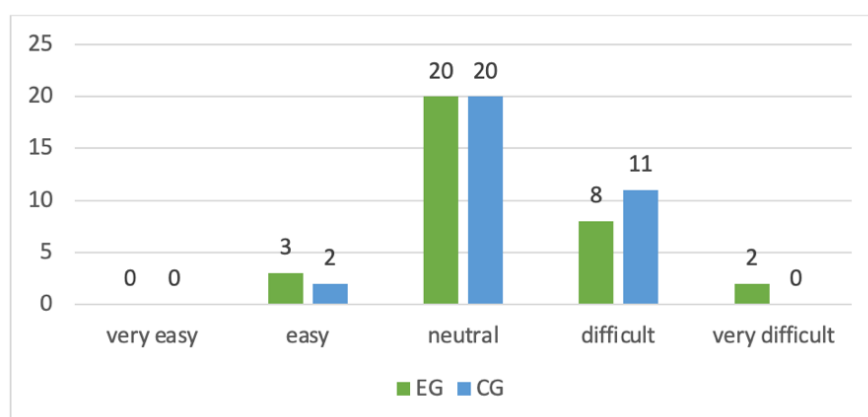


Figure 8.1 Number of participants in each category for the Q1.1

Considering the degree of involvement, Figure 8.2 shows that 22 students in the EG believed

that their participation was active, whereas there were only 14 students in the CG having the same opinion, accounting for less than half of the total number of participants. In contrast, almost half of the CG (16 students) and just six of the EG stated that their degree of engagement in the learning process was neutral. This is likely owing to the fact that the EG materials entail more implicit learning than the CG materials that involve more explicit instructions; In Session 4 of the EG materials, for instance, students were asked to identify the grammatical mistake in an example phrase.

Q1.2 How would you rate your participation in learning epistemic lexical verbs through corpus-informed materials?

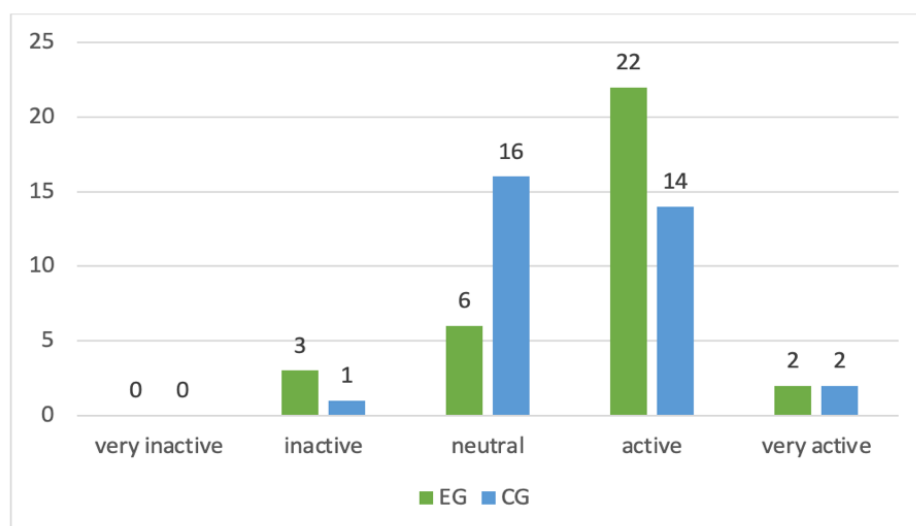


Figure 8.2 Number of participants in each category for the Q1.2

Statement 2.1 inquired about the learners' attitudes towards the structure of the learning materials. Figure 8.3 shows that over 90% of participants in both EG (30 students) and CG (31 students) agreed that the materials were well-designed, with 10 students in each group strongly believing that the instructions were presented in a clear manner.

Q2.1 I think the content of the corpus-informed materials is clearly and logically

introduced.

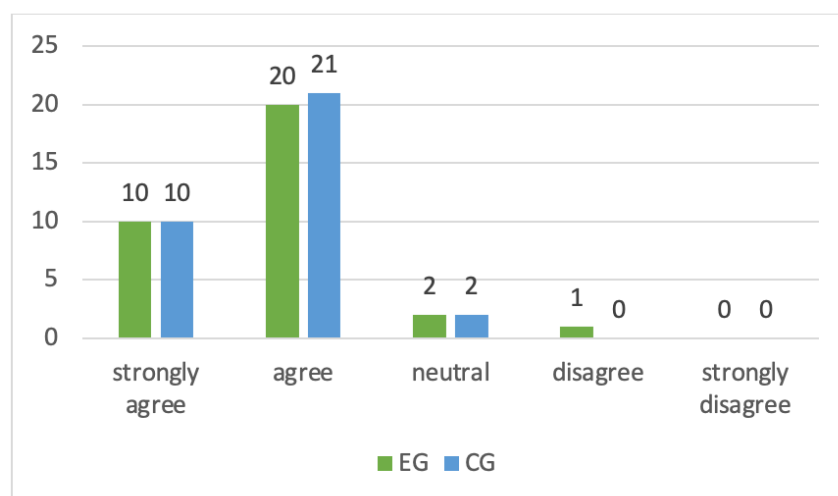


Figure 8.3 Number of participants in each category for the Q2.1

8.2.2 The corpus-based instructional materials and inclusion of English L1 corpus information

In the next three questions and statements (1.3, 2.2, and 2.3), the participants' perceptions of the effectiveness of corpus-informed materials and the use of English L1 corpus data for learning ELVs were investigated.

Figure 8.4 shows that 31 out of 33 students in the EG group found corpus-informed learning materials to be useful for learning ELVs, accounting for 94% of the total, whereas 28 students in the CG group had the same opinion, accounting for 85% of the total, 10% fewer than the EG group. In addition, five more participants in the CG than in the EG had neither a positive nor a negative view on the value of corpus-informed materials for learning ELVs.

Q1.3 How useful did you find learning about epistemic lexical verbs through the corpus-informed materials?

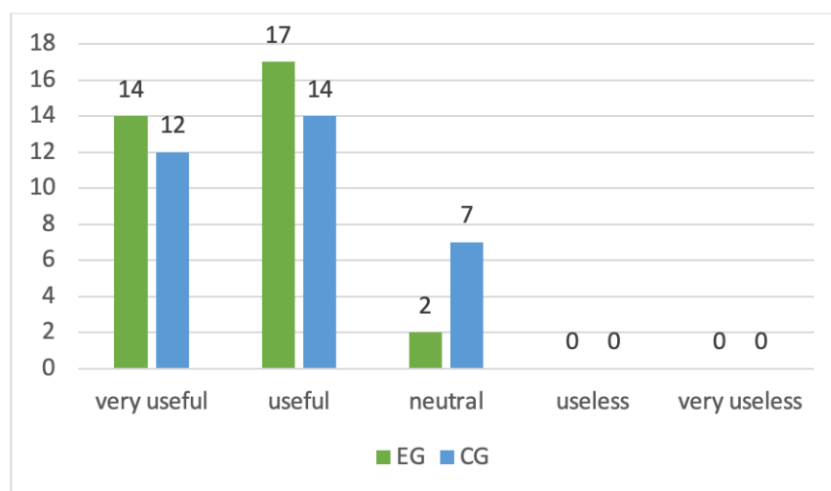


Figure 8.4 Number of participants in each category for the Q1.3

As shown in Figure 8.5, 24 students in the EG and 29 students in the CG perceived that the corpus-informed materials had increased their confidence in employing ELVs in academic writing, with the CG having 16% more participants sharing this perspective than the EG. In contrast, 15% more EG respondents than CG respondents take a neutral stance (nine students and four students respectively). There were no individuals in either group who disagreed or strongly agreed with the statement. This may be related to the fact that the EG felt more engaged in the entire learning process, but also found it challenging to digest the input including the use of ELVs demonstrated by both English L1 and Chinese L1 students. Hence, they may require more time to fully get to grips with the issues.

Q2.2 I think the corpus-informed materials increased my confidence in using epistemic lexical verbs in my future academic writing.

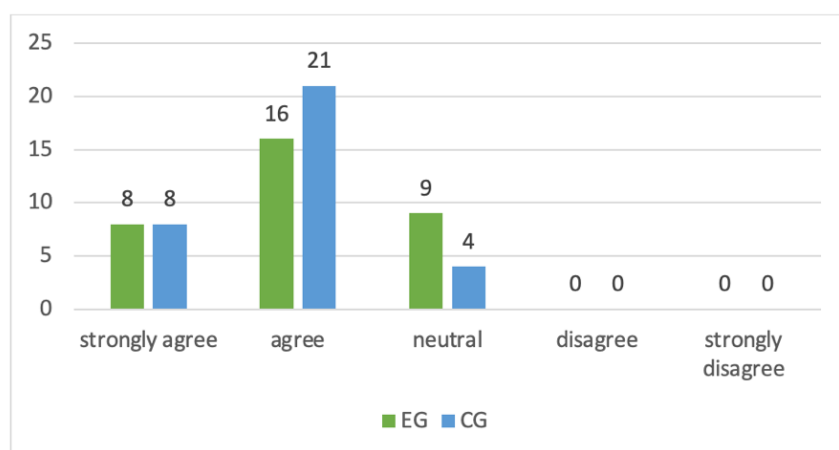


Figure 8.5 Number of participants in each category for the Q2.2

For Q2.3, five more students in the EG (31) than in the CG (26) believed they could comprehend how to use ELVs based on the examples presented by English L1 students in the materials. In addition, three students in the CG felt that, despite the demonstration of ELV usage by English L1 students, they were still unable to understand how to utilise ELVs appropriately. The absence of examples featuring Chinese L1 students' usage in the materials might be the one of the reasons. Without comparing Chinese L1 student's language use to that of English L1 students, some students may find it challenging to grasp the gap between the language production of Chinese L1 students and English L1 students. As a result, it becomes difficult to understand why the language use of English L1 students is more pragmatically appropriate and grammatically correct.

Q2.3 I was able to understand how to use epistemic lexical verbs appropriately through the examples of native writers of English.

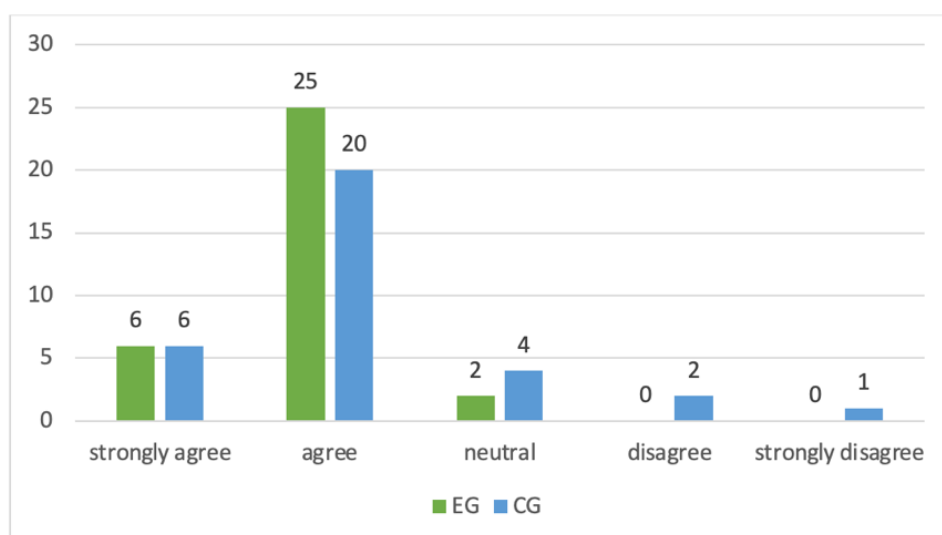


Figure 8.6 Number of participants in each category for the Q2.3

8.2.3 The effectiveness of Chinese EFL learners' data

The following statements in Part 2 (2.4, 2.5, 2.6, 2.7, and 2.8) for both groups aim to investigate students' perspectives on the incorporation of corpus data from Chinese L1 students into learning materials. Although the statements were tailored to two groups, with the exception of Q2.5, they attempted to elicit the same type of information in each version.

As shown in Figure 8.7, 29 and 28 students in the EG and CG, respectively, believed that examples of Chinese L1 students were useful for enhancing their knowledge of the typical mistakes they tend to make, representing over 85% of each group. In particular, we can see that four more students in the EG than the CG were especially positive about the usefulness of the incorporation of Chinese L1 students' data in learning ELVs. Only a small number of students in the EG and CG had a neutral stance (two and three students, respectively) or considered that the Chinese L1 learners' examples did not achieve this objective (four students and one student, respectively).

Q2.4

EG: I really feel that examples from Chinese students' essays help to improve my awareness of the errors that Chinese writers of English tend to make.

CG: If the corpus-informed materials had incorporated examples from the writing of Chinese students, my awareness of common errors among Chinese writers of English would have been improved.

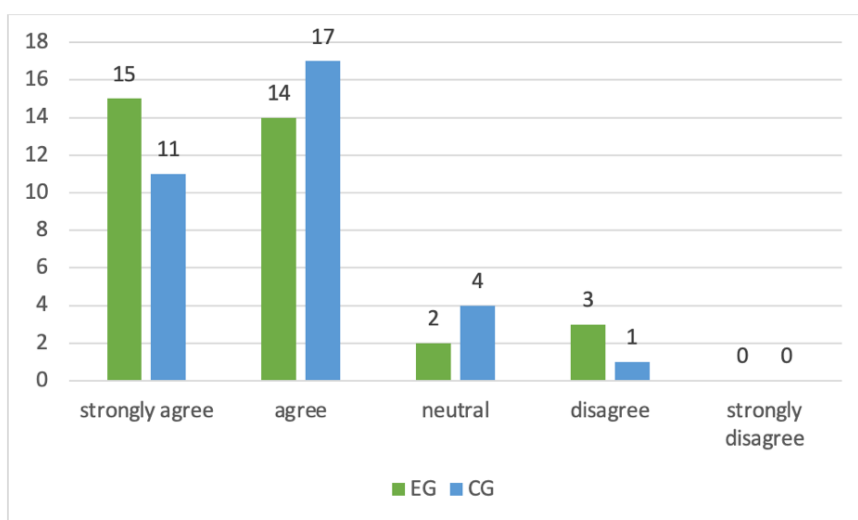


Figure 8.7 Number of participants in each category for the Q2.4

Similarly, the majority of learners in both groups claimed that they would like EFL teachers to include more examples of Chinese L1 students in their instruction, with 28 students in each group expressing a supportive attitude, representing around 85% of the total number of learners. Again, four more students in the EG than the CG held an even more positive attitude towards the statement here. Yet, four and five participants in the EG and CG, respectively, took a neutral or disapproving stance (see Figure 8.8).

Q 2.5

I recommend that English language teachers should incorporate more authentic Chinese students' data in their materials to teach Chinese English learners about epistemic lexical

verbs.

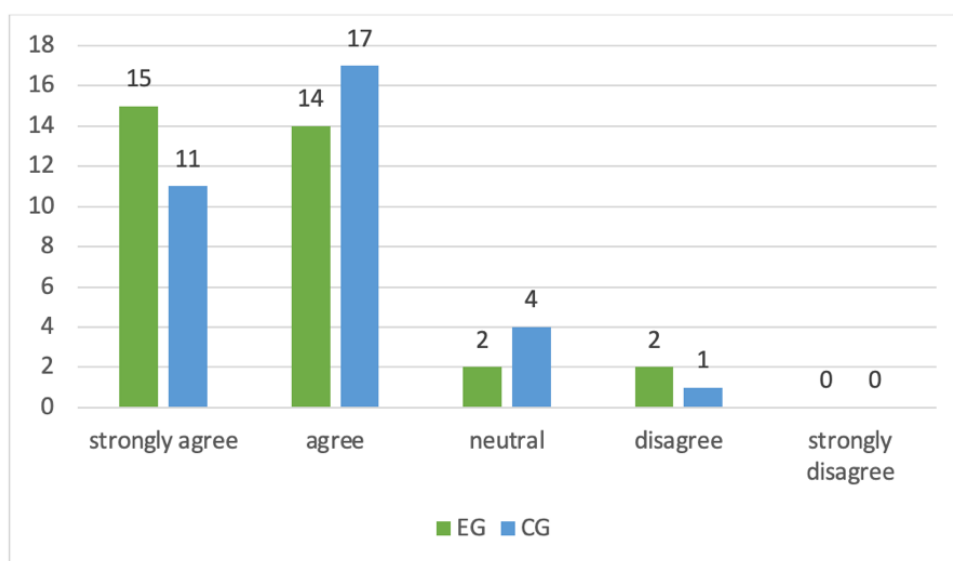


Figure 8.8 Number of participants in each category for the Q2.5

The purpose of Statement 2.6 was to determine if learners prefer to view just English L1 student examples without any Chinese L1 student examples to reduce the negative influence of their improper demonstration. Figure 8.9 reveals that more than half of students in the EG (17 students) preferred to see Chinese students' data in their learning materials, whereas a similar number of participants in the CG (18 students) would only expect to see examples from English L1 students' essays, as they were concerned that Chinese L1 students' examples might mislead them to produce the similar inappropriate usage of ELVs in their writing. Additionally, it was observed that there were six students in each group choosing the neutral position. In a word, when the EG students have actually experienced the learner corpus data in the materials, they appear to be less likely to be convinced to modify their views about the value of the learner corpora and believe that its positive influence outweighs its potential negative impacts.

Q2.6

EG: I would have preferred not to see the Chinese students' examples in the corpus-informed materials as I worry that might lead me to reproduce the inaccuracies in my own work.

CG: I prefer to only see examples of native English speakers in learning materials, as I believe that exposure to Chinese students' use of epistemic lexical verbs could lead me to reproduce the inaccuracies in my own work.

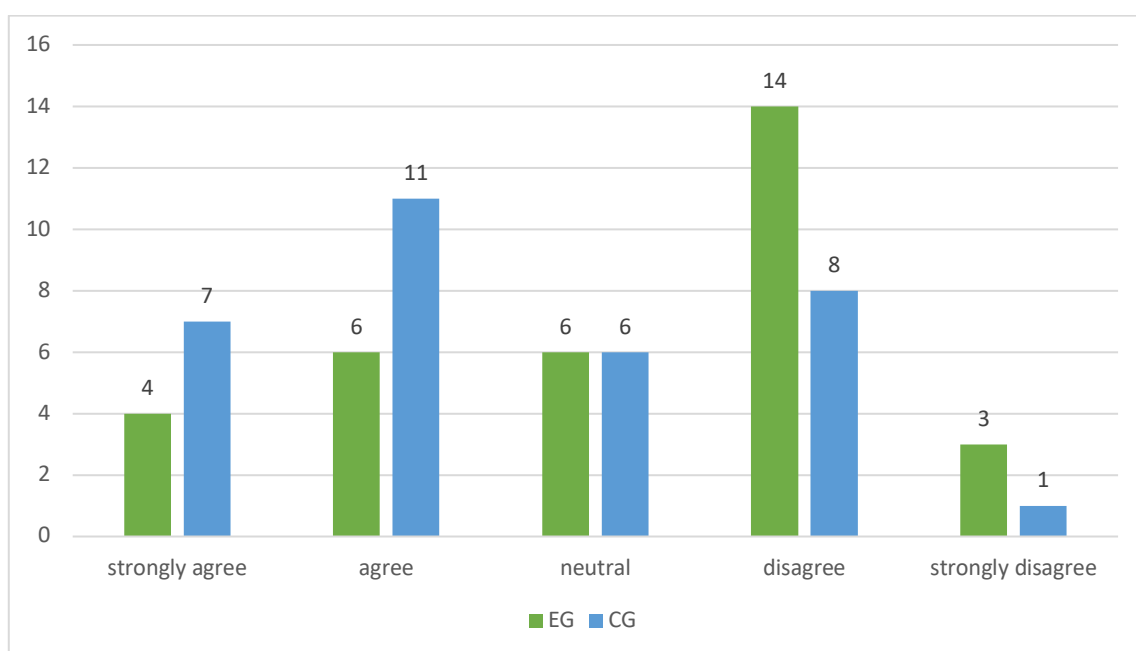


Figure 8.9 Number of participants in each category for the Q2.6

Statements of 2.7 for both groups investigate whether the incorporation of Chinese students' examples in the materials is perceived as helping students better understand the differences in the use of ELVs between English L1 and Chinese L1 students. Figure 8.10 shows that 28 students in the EG and CG respectively agreed with the statement, constituting 85% of the total number of participants in each group. It is interesting to note that there was a participant in the CG who strongly disagreed with the statement.

Q 2.7

EG: I was able to understand the differences in epistemic lexical verb usage through the comparison between native language and Chinese learner production.

CG: I think that if the corpus-informed materials had incorporated examples from the writing of Chinese students, I would have a better understanding of the differences between how native speakers and Chinese learners of English use epistemic lexical verbs.

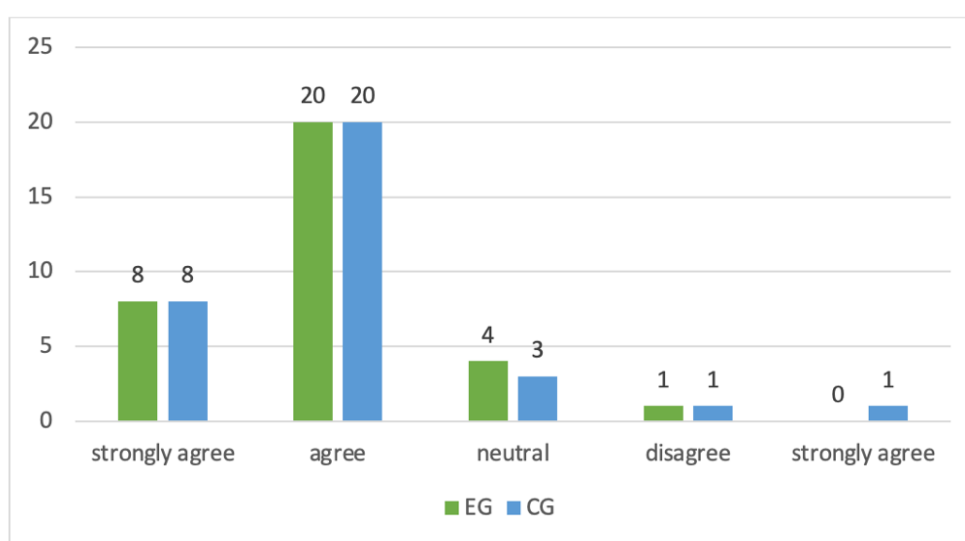


Figure 8.10 Number of participants in each category for the Q2.7

The last closed question for both groups asks whether the inclusion of both Chinese L1 and English L1 students' examples would have improved participants' comprehension of how to utilise ELVs effectively. Figure 8.11 illustrates that the majority of students in both groups showed a supportive attitude, with 27 students in each group, accounting for 82% of the total. In contrast, few students in the EG and CG (two students vs two students) believed that only the examples demonstrated by English L1 students could increase their understanding of the usage of ELVs.

Q2.8

EG: I have found that the materials combining both native-speaker examples and Chinese English learner examples have reinforced my understanding of epistemic lexical verbs.

CG: I believe that if the materials had combined both native-speaker examples and Chinese English learner examples, it would have better reinforced my understanding of epistemic lexical verbs.

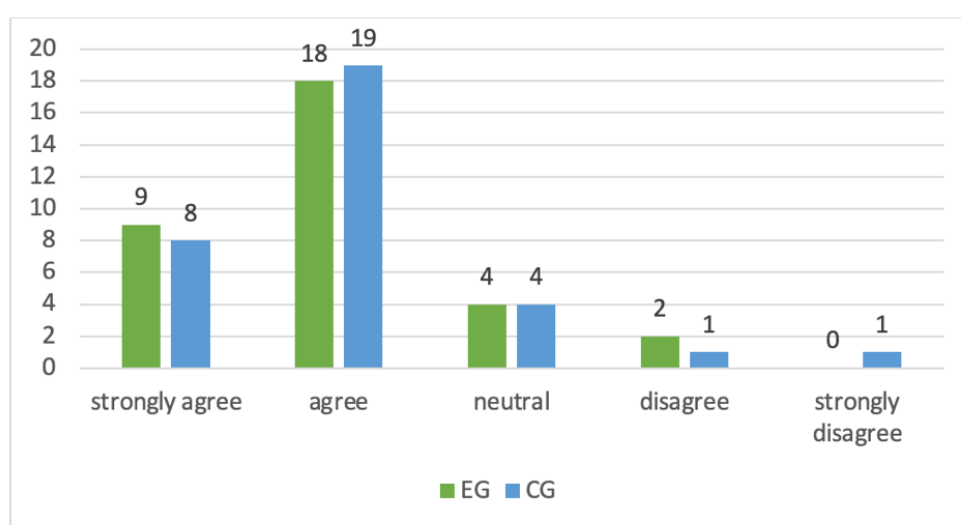


Figure 8.11 Number of participants in each category for the Q2.8

8.2.4 The most useful part in the learning materials

The last question in the questionnaire is an open question aiming to investigate which part of the materials participants found the most useful for learning ELVs. To have a clearer understanding of students' preferences for the content provided, I have manually sorted participants' replies for the following analysis.

Figure 8.12 illustrates the distribution of participants' preferences for the information delivered in the two types of materials. In general, participants in the EG favoured session 1 (eight participants) more than the other three sessions, while 11 and 12 students in the CG

preferred Session 1 and Session 2 respectively. Also, two participants in each group expressed a very high level of satisfaction with all sessions. However, a more noticeable difference between the two groups' responses is that four learners in the EG found the exercises in the learning materials useful, as the detailed explanations following the correct/suggested responses helped to clarify their confusions and better comprehend how to appropriately apply ELVs (see Example 8.1).

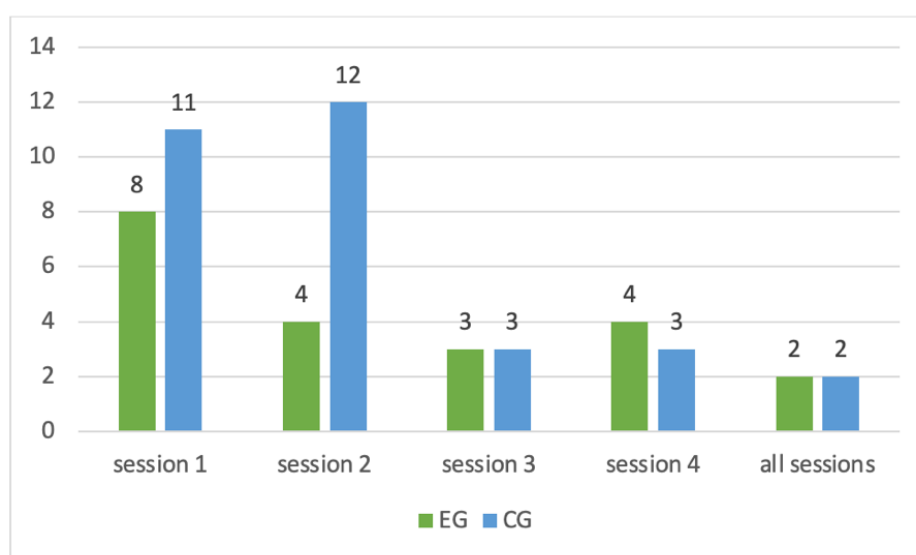


Figure 8.12 Number of participants who believes the most useful session

Example 8.1

The exercise is very useful. When I answer the question, I am not so sure of my answer, but the correct answers with a detailed explanation is really helpful. (EG09)

Due to the inclusion of two distinct sections in Session 1 (Frequently used ELVs and Categorizations of ELVs), a group of students specified in their responses which specific section they preferred. It was observed that three and nine participants in the EG and CG respectively, believed that the categorisations of ELVs were beneficial for grasping the semantic distinctions between ELVs (see Example 8.2).

Example 8.2

- a) The categories that decide the epistemic lexical verbs really help me understand the pragmatic use of them. (EG11)
- b) There are different epistemic lexical verbs to use in showing different ideas. (CG27)

In addition to the preceding observations, five students in the EG also highlighted that they favoured the content involving the comparison between English L1 and Chinese L1 students' use of ELVs. Another four students in the EG emphasised that the exercise was helpful for learning ELVs. Similarly, one student in the CG expressed her preference for the exercise of sentence rewriting.

8.2.5 Summary of the findings

To sum up the results of the students' attitudes reflected in the questionnaire, the following can be concluded. For the close-ended questions, more than 80% of students in the EG and CG considered that both types of materials were well-organised, and the corpus-informed materials and English L1 students' examples were helpful for developing their knowledge of using ELVs. A similar proportion of students in both groups expressed the preference for incorporating real-world examples from Chinese L1 students into their learning materials. This inclusion would strengthen their grasp of the differences between the language use of Chinese L1 and English L1 students, as well as improve their awareness of the typical errors that Chinese students often commit in academic writing.

In terms of the open-ended question, the EG group favoured Session 1 most, while the CG group showed a stronger preference for both Session 1 and Session 2. It was also interesting to find out that a group of students in the EG and CG respectively preferred the semantic

categorisation of ELVs in Session 1 in particular. Also, five students in the EG believed that comparing the usage demonstrated by English L1 and Chinese L1 students would help them understand the differences between the Chinese L1 students' usage and English L1 students' features.

8.3 Semi-structured retrospective interview

The purpose of conducting interviews was to supplement the questionnaire by gathering additional information on the respondents' selections. This provided the participants with a chance to elaborate their views on some issues that might have been ignored in the previous questionnaire; the approach may also help to minimise the unreliability of the data collected in the questionnaire. The interview session was semi-structured and retrospective which mainly required the participants to give the reasons behind the responses provided in the questionnaire. In the process of the interview, the order of the questions was designed to be flexible, allowing interviewers' responses to lead the direction the interview takes. A list of additional questions was prepared and asked only if they were relevant to the issues raised by the interviewer. The questions in the interview focus mostly on the same four areas as the preceding questionnaire. A complete list of questions for both EG and CG is listed in Appendix 11.

Simple random sampling was adopted in both EG and CG, as it is a reliable sampling method where each participant has the same probability of being chosen to be a part of a sample (Grey, 2014). In the end, 10 students (nine females and one male) out of 33 in the EG and 10 students (nine females and one male) out of 33 in the CG participated in the interview. The following section gives a detailed discussion of the results of the interview.

8.3.1 Attitudes towards overall learning experience

The interviewees in both EG and CG were firstly invited to comment on the level of difficulty of the learning materials and give their reasons. The majority of them in both EG and CG felt that it was acceptable in general, but not very easy (eight students vs nine students) (see Question 1a-b).

Question 1:

(a) I think the level of difficulty is moderate. It's not very easy, as it's not like you can get the answer immediately after just having a general look at the materials... I noticed there were some learning materials and some small exercises after. I think it was not too difficult, but also not very easy. (Quote EG26)

(b) It's acceptable, but I think it takes about 45 minutes to complete the learning. I think if you want to master it completely, you may need more time to learn it and also review it after. (Quote CG11)

One student in the EG found the learning materials challenging since she had not previously had formal training in EAP writing (see following Question 1c). In contrast, one student in the CG also highlighted the EAP writing training and considered the learning materials to be easy, stating "I often attend the grammar class of academic English, so the style of your design is actually similar to the style of the handout they gave me"(Quote CG03).

Question 1:

(c) I think it is difficult for me because I have not received professional training in academic writing before. Although some of verbs were commonly used, but I did not consciously distinguish them. (Quote EG16)

It was interesting to find out that another four participants in the EG and two participants in the CG also mentioned that they attended training in EAP writing during their postgraduate study. However, the materials provided in their previous training did not give a clear and detailed explanation of how to distinguish and appropriately use these ELVs in academic writing, compared with the learning materials they were exposed to in the current study (see Question 1d-e).

Question 1:

(d) I think it seems that the pre-sessional class didn't provide the information about the usage of ELV in details... especially in the sentence construction. The session four is very good, it is more in-detailed and easily understood. (Quote EG04)

(e) The relevant information about academic writing is specially taught in the pre-sessional class, and there are no relevant courses in the postgraduate study...I wasn't exposed to something like Session 3 previously... (Quote CG20)

On the second question about the level of involvement, the majority of respondents felt their participation during the learning process to be rather high, with seven students in each EG and CG providing positive feedback. Participants gave a variety of reasons for their high level of involvement, such as the desire to improve their academic writing skills and the well-arranged structure of the materials. It was interesting to know that interviewee CG20's engagement increased when she made mistakes in the exercises, as she wished to know where she went wrong and how to develop a more native-like language.

Question 2:

- a) I feel that I may be more involved in the place where I make mistakes, because I want to find out where I was wrong or how to produce the native-like usage.

(Quote CG20)

There were two interviewees in each group who felt that the learning process was a little monotonous. Both CG03 and CG11 all mentioned that they expected to see a greater variety of interactive activities, which they believed would boost their level of participation. In addition, CG03 added that she had less patience to learn as her error rate grew during the course of completing the exercises. A similar comment was also reflected in the interview with EG14 who noted that the gap between his responses and the suggested answers, particularly in the exercise of rewriting sentences, diminished his engagement. The other interviewee EG04, however, attributed her low level of participation to a lack of discussion and interaction with other students and the teachers during the learning process.

In terms of the general design of the materials, both groups of interviewees agreed that the organisation was clear and easy to follow. Two participants in the CG and three in the EG commented that the contents get progressively more challenging from the beginning to the end (see Question 3a). Another three interviewees in the EG particularly emphasised their preference for comparing the use of ELVs illustrated by English L1 and Chinese L1 writers (see Questions 3b).

Question 3:

- a) The organization of the materials is appropriate. I have a very intuitive feeling, that is, I can feel its level of difficulty is increasing along with the process of learning. And there is an internal logical relationship inside of the learning materials. The level of difficulty of contents in the materials is increasing step by step. Generally, the

arrangement is acceptable.

(Quote CG11)

- b) You can review the previous learning contents, and there are some comparisons added to the learning materials. Then there are some exercises in the end. I think it's acceptable.

(Quote EG04)

In conclusion, the majority of interviewees in both EG and CG took a neutral stance and believed that understanding the information provided in the materials was not difficult but giving their responses in the exercises still required careful consideration. Regarding their degree of engagement with the learning process, most of them in both groups gave positive feedback. Yet, it should be kept in mind that a few students said that they expected to see a greater range of exercise forms, which they felt would be beneficial for boosting their engagement. Regarding the level of satisfaction with the organisation of the learning materials, both groups of respondents concurred that the organisation was clear and led them progressively to the learning objective.

8.3.2 Attitudes towards corpus informed materials and incorporation of English L1 students' examples

The fourth question focuses on further investigating interviewees' attitudes towards the corpus-informed learning materials. Both the EG and CG believed that this type of learning material was useful for improving their linguistic knowledge of how to employ ELVs to deliver an appropriate statement in EAP writing. Four participants in the CG and two in the EG emphasised the importance of the authenticity of the examples in the corpus-informed learning materials and believed that corpus-informed learning materials were more authentic and reliable than traditional materials that were compiled with self-developed examples or/and linguistic patterns (see Question 4a-b).

Question 4:

- a) I think it's very useful. I paid more attention to the corpus-based method. Just like compilations of other textbooks... If the materials are not based on the corpus, I may think the level of reliability of it is low. (Quote CG11)
- b) I prefer this type of materials, as the English language usage in traditional textbooks are sometimes different from that in reality. I learned English in China with traditional English language learning materials. When I was studying abroad, I found that what I had learnt was different from that in the English environment. Therefore, I think this type of corpus informed materials is quite good. (Quote EG16)

Participants from both groups were then asked if their confidence in applying ELVs more appropriately had increased after studying the materials (Question 5 in Appendix 10). Similar to their replies to the preceding questionnaire (see Section 8.2.2), the majority of participants in both groups believed that the learning materials increased their confidence in utilising ELVs in academic writing. CG02 in particular stated that the materials drove her to learn how to clearly differentiate these ELVs and how to use them more appropriately in academic essays. In contrast, the respondent EG02 admitted that his confidence in utilising ELVs had undergone only limited growth, since he expected more feedback on his own replies to the exercises. Nonetheless, he did acknowledge that the materials' level of difficulty, ranging from easy to challenging, was quite helpful for understanding the function and usage of ELVs. Prior to learning how to utilise ELVs combined with different grammatical patterns and sentence structures, he was able to get a solid grasp of each individual term first.

The respondents were also asked about their perspectives on the value of using English L1 examples to learn ELVs. All the respondents in both groups agreed that including English L1

examples is helpful to clarify the distinctions in ELV usage. The participant EG20 in her response gave a detailed explanation of its function (see Question 6a).

Question 6:

- a) I think it's more straightforward and effective to use English L1 students' authentic sentence examples than to just explained the rules in words. For me, if I read a long sentence of definition, first of all, I may not understand what it means after reading it. But if, like your developed materials, you put an authentic English L1 students' sentence example here after you explain the rules, I will know what you mean.

(Quote EG20)

It is also worth noting that one student in the CG commented on the relevance of the topic of English L1 students' examples to her own subject and acknowledged its contribution to her learning (see Question 6b).

Question 6:

- b) If this sentence is closer to my major, I understand it quickly. (Quote CG06)

In summary, both groups of interviewees demonstrated a positive attitude towards the use of corpus-informed materials and the inclusion of English L1 examples. In comparison to traditional learning materials, participants placed a higher priority on the authenticity of examples in the English language learning process and would have a higher level of trust in the instances extracted from the corpus. Regarding the incorporation of authentic English L1 examples in the learning materials, the participants also indicated their preference and acceptance. They further explained that those instances chosen from the English L1 corpus enabled them to be more familiar with English L1 students' usage of ELVs in a more concrete

way than presenting them through summarised and abstract language rules.

8.3.3 Attitudes towards the effectiveness of Chinese L1 students' data

The third phase of the interview aims to further investigate participants' perspectives on whether learning materials should include more Chinese L1 students' authentic examples. 10 interviewees in the EG and eight interviewees in the CG would prefer to see a comparison of ELV usage among English L1 and Chinese L1 students. Nevertheless, student CG05 took a neutral stance, explaining that she could reflect on her own usage by seeing the language features of English L1 writers without having to observe the usage produced by other Chinese L1 students (see Question 7a). Another student CG11, on the other hand, expressed her concern about the misleading effect of exposure to Chinese L1 students' example (see Question 7b)

Question 7:

- a) This type of comparison shows where we fall short in terms of ELV usage when compared to that of NSs. This enables me to rapidly identify areas in which I need to improve. This is an excellent design, in my opinion. (Quote EG20)
- b) I hope there are very clear things to guide me, and I don't need to comparison now, as I know where my own problems are. As soon as I see what English L1 writer's features, I know where I can improve. (Quote CG05)
- c) I will easily take their inaccurate usage of these students. (Quote CG11)

In terms of the potential misleading effect brought by Chinese L1 students' examples, two students in the CG and three students in the EG also expressed their concern about this possibility. CG04 stated that she was opposed to learning resources that contain an excessive

amount of inappropriate usage demonstrated by Chinese L1 students, as she believed that a large proportion of this type of information would make it more difficult for her to remember the appropriate usage of ELVs. EG16 also discussed a similar situation in her interview (see Questions 8 and 9a).

Question 8 and 9:

- a) I don't want to see it at all, especially the parts that I am not very familiar with. When I see these mistakes, I may write them down; after I sometimes will make the similar mistakes that I have never made previously. These examples will more or less disturb me. (Quote EG16)

However, the majority of participants in both EG and CG believed that they would not have this concern. Participant EG26 took the "*there be*" construction in the materials as an example. After seeing the Chinese students' instances of erroneous usage of the "*there be*" structure, she stated that she would consciously remind herself to avoid using two verbs in the sentence. (see Questions 8 and 9b). In addition, EG10 particularly emphasised the importance of distinguishing between "*think*" and "*believe*" in the materials. He had been using "*I think*" to express his opinion in the academic writing until he read instructions and realised that "*believe*" was relatively more formal in the academic writing (see Questions 8 and 9c).

Question 8 and 9:

- b) For example, I will try not to use two verbs in the "there be" sentence pattern. It is easy to make this kind of mistake of using two verbs. I will remind myself of avoiding this mistake when I write. From the materials, I find that many Chinese students are also making this question, so I think this is very useful. (Quote EG26)

- c) Before I often use *I think* in academic writing. After learning the materials, I will never use that word again (Quote EG10)

In the control group, CG08 also expressed that she was unconcerned about the possibility of misguidance from Chinese L1 students' usage. Also, she further pointed out the relationship between age and this potential influence (see Questions 8 and 9d).

Question 8 and 9:

- d) I don't think it will affect me. I think it may affect younger students. But for me, it will be more like a wake-up call to remind me that I have made mistakes here.

(Quote CG08)

In addition, CG05 emphasised in her interview that the requirement for adding Chinese students' examples in the learning materials was strongly tied to the English skill level of the learners. Especially for EFL learners who are already proficient in EAP writing, they may not be concerned with other students' inappropriate demonstration, such as grammatical mistakes. They simply need to understand what their native language is and then strive to imitate it to improve their academic writing quality. To mitigate this potential negative effect, CG11 and CG06 also suggested that highlighting these examples and labelling them with a larger font size would be an approach to inform learners that they were from Chinese L1 students rather than usage demonstrated by English L1 writers.

Question 8 and 9:

- e) I think as long as the word size is big enough, and the instructions are clear. There wouldn't be a problem. Just in case that you list the examples, and then some students look at them and did not read them carefully. They may think they are

correct usage and mimic.

(CG06)

When both groups of interviewees were asked whether they would recommend that EFL teachers should include more authentic Chinese L1 students' examples to teach ELVs, eight students in each group agreed that it would be preferable to see EFL teachers incorporate some Chinese L1 students' examples when teaching ELVs. Supporters in both groups expressed a similar view that incorporating these examples would help students become more aware of the differences in usage of ELVs among Chinese L1 and English L1 student writers, and that it would encourage the EFL learners to avoid repeating some of the grammatical mistakes commonly made by Chinese L1 students in their future academic writing.

Question 10:

- a) I think if the teacher only recommends appropriate usage demonstrated by English L1 students, learners won't know what common mistakes they will tend to make. So I think incorporating Chinese L1 students' usage will help you avoid repeating these mistakes by taking out the mistakes that Chinese students often make. (Quote EG15)

There were two interviewees in each group who, on the contrary, expressed their concern or took a neutral stance. EG16 explained her reasons and specified that she preferred to see this comparison provided by the teachers after she made the inappropriate usage (see Question 10b). CG20 also noted that students may be less concerned about the mistakes if they are made by a wide group of Chinese L1 students rather than by students themselves. (see Question 10c)

Question 10:

- b) From my own personal experience, I may prefer that the first time I learn a new thing, I receive the standard usage, and then when I practice, for example, if I make a mistake, then I may want to see the comparison between the mistake and the standard usage. I think at different stages of learning, I may need different ways.

(Quote EG16)

- c) But if the teacher tells them directly, this is what I picked up from a large Chinese L1 corpus, students only consider it as a mistake and won't pay much attention to it to remind themselves to avoid making same mistakes in the future.

(Quote CG20)

8.3.4 The most useful and difficult part in the learning materials

Similar to the preceding questionnaire, all respondents were asked for their opinions on the most useful session of learning ELVs as well as their reasons behind. There were four students in the CG and three students in the EG preferring the Session 1 of the introduction to the categorisation of ELVs (i.e. speculative, deductive and sensory verbs). These participants agreed that this session helped to clarify the distinctions among these verbs. CG02 particularly emphasised that she has never seen this type of information in teaching resources in China (see Question 11a).

Question 11:

- a) I especially like the categorisation of verbs in Session 1, as I have never seen such a detailed distinction between these words in Chinese textbooks. Anyway, it is really useful.

(Quote CG02)

In addition, two students in the CG and three students in the EG indicated their preference

for Session 2, which focuses on differentiating ELVs according to the level of certainty they imply. For example, CG08 reflected on her previous usage and mentioned she was just randomly picking up the verbs without considering the differences in epistemic commitment (see Question 11b). Also, EG26 revealed in the interview that this session increased her awareness of distinguishing these verbs based on different degrees of certainty (see Question 11c).

Question 11:

- b) I actually had this problem when I was writing before. I wasn't sure when to use *claim*, when to use *show*. These verbs were actually used indiscriminately before, and then it was very clear after learning the materials, so I think explaining the verbs based on their categories (i.e. weak or strong) is very helpful to me.

(Quote CG08)

- c) I think the session of introducing degree of certainty of verbs is very attractive to me, so after I studied it, I thought I would look up some specific words, such as some other words, although they have similar meanings, there may be some differences in tone in usage, so I will check it for myself.

(Quote EG26)

There were two students in the CG and three students in the EG stated their preference for Session 3 that introduces the different grammatical patterns of ELVs. EG13 emphasised that she was used to adopting the pattern "*seem to be*" frequently, but she now knows that English L1 students more frequently use *seem+adj*. (Question 11d)

Question 11:

- d) I always like to use something like *seem to be*, but I seldom use the pattern *seem+*

adjective. So I think it's actually helpful to me after learning this session.

(Quote EG13)

In terms of the last Session 4, two students in the EG and one participant in the CG believed the information here increased their awareness of how to vary sentence structure to change the level of certainty of the statement (see Question 11e). EG04 also added that she had received similar training on how to use different sentence constructions to deliver statements, but the information was not detailed enough (see Question 11f). Despite the fact that student EG02 did not specify which session she preferred most, she mentioned that the entire learning materials had helped her improve her awareness of distinguishing these words, and she was now more aware of selecting the most appropriate verb to express her opinions rather than only treating them as synonyms.

Question 11:

e) Another point is that I have never knew before that I could change the subject from the first person into the third person or the first plural person to change the tone of the claim.

(Quote CG10)

f) I think the Session 4 is really helpful for my learning. Although the pre-sessional schools also introduced similar information, but they were not in detail.

(Quote EG04)

Apart from the abovementioned responses, two students in the EG also noted that the exercises in the learning materials helped them reflect on their own usage, allowing them to (see Question 11g).

Question 11:

- g) The exercise made me have a good reflection on my study. If I didn't do it, I would only read your description of the text, and I would think I understood it. But in fact, when I really started to do the exercise, I would find that it was not the case. There were some places that I really didn't pay much attention to. (Quote EG19)

The final concluding point that deserves attention is the interviewees' opinions regarding what they considered the most difficult part in the learning materials. The majority of respondents in both groups (six students in the CG and eight students in the EG) believed that the categorisation of ELVs in Session 1 was the most difficult part. They noted that, despite carefully reading the explanations of the differences, they were still unsure how to distinguish them in the subsequent exercise. Additionally, three students in the CG and two participants in the EG revealed that they were struggling with Session 2. Participant E26, for example, shared that there were some overlaps among these verbs regarding their semantic meanings, but she was not able to clearly distinguish them based on the degree of tentativeness and certainty (see Question 12a). Finally, two students in the CG reported that Session 4 was a challenging task for them. As they were unfamiliar with the classification of the sentence constructions, they found it difficult to fully grasp the information.

Question 12:

- a) I have learnt academic writing before, it seems that I have not paid special attention to this part. I just know that some words, such as suggest and indicate, have similar meanings, but I don't know which one is more tentative. (Quote EG26)

8.3.5 Summary of interviews

In general, both groups of interviewees held a positive attitude towards the learning materials

they were exposed to, in terms of the general organisation and effectiveness of corpus-informed materials for ELV learning. They also recognised the value of incorporating the Chinese students' examples to remind students of the differences in use of ELVs between two groups of students and how to avoid similar grammatical mistakes in future academic writing. It is also important to note that respondents in the CG were more conservative when considering the inclusion of Chinese students' data into the EFL teaching process, as they were concerned about its misleading effects. On the other hand, a few CG interviewees suggested that if these examples could be highlighted or demonstrated with a larger font size in the learning materials, the potential negative impacts could be mitigated to some extent.

8.4 Triangulation of the findings

As previously stated, the integrative method that triangulates the findings to validate the conclusions and probe certain issues in greater depth, requires the interpretation of the results from both quantitative and qualitative data analysis approaches. This method enables the researcher to have a comprehensive understanding of a complex issue, here, students' attitudes towards the overall organisation of the materials, the effectiveness of including English L1 students' corpus data and the effectiveness of highlighting Chinese L1 students' usage in learning ELV. Hence, the results from the questionnaire and interview are triangulated and discussed in this section, to provide a comprehensive understanding of students' feelings towards the materials presented in the study.

In the first part of questions, examining the overall learning experience, more than half of participants in both EG and CG deemed the level of the difficulty of the materials to be neutral in the questionnaire. Similarly, the majority of interviewers in both groups had the same opinion. In terms of their level of participation, more than 70% of students in the EG who

responded to the survey stated that their overall learning experience was active, whereas fewer than 50% of students in the CG held the same attitude and about 50% of the remaining CG students held a neutral stance. In the interview process, three students in each group of 10 stated that their participation was relatively low. Two CG students indicated that they were expecting more variety in exercise type. For the last question asking about the overall design of the learning materials, over 90% of students in both groups agreed that the materials were well-designed and clearly-organised. All the interviewees in both groups also concurred that the content was easy to follow.

The second category of questions investigated participants' perceptions of corpus-informed learning materials and the effectiveness of using English L1 students' examples in ELVs learning. The majority of participants in both the questionnaire and the interview agreed that corpus-informed materials were beneficial, and four interviewees in the CG and two in the EG preferred corpus-informed materials over traditional materials as the corpus-informed materials compiled with authentic examples were more reliable. In addition, whereas more than half of participants in both groups stated that their confidence in utilising ELVs effectively had grown after studying the materials, the CG group had five fewer students who had the same opinion than EG. Tracking the reason behind this, interviewee EG02 admitted that the increase of his confidence in using ELVs was relatively limited, since he expected more personalised feedback on his responses in the exercises. This may suggest that students may need more support when engaging with learner corpus-informed materials during the self-learning process. In response to the last question on the usefulness of learning ELVs from the examples of English L1 students, over 80% of respondents believed that these examples helped them better grasp how to use ELVs appropriately when delivering claims. A student in the CG highlighted the positive impact on her learning that came from the topic of the

examples provided by English L1 students, which closely relevant to her own subject.

The third part elicits students' perspectives on the incorporation of examples and data from Chinese L1 students into instructional materials. According to the questionnaire, almost 85% of respondents in each group preferred to see examples demonstrated by Chinese L1 students in the instructional materials and felt that this would help them be aware of the difference in the use of ELVs between the two groups and increase their awareness of trying to make similar mistakes in their future writing. A similar percentage of participants in each group also wanted EFL teachers to incorporate more Chinese L1 students' examples in their teaching materials and believed that comparison of the usage of English L1 and Chinese L1 students would assist them in recognising the gap between their own usage and English native language features. However, when considering whether such examples may have a potential misleading effect, eight more students in the CG group than the EG indicated that they have such a concern and therefore would only like to see English L1 students' examples. Similarly, two more interviewees in the CG than in the EG had a neutral or opposing position, stating that they would only prefer to see English L1 students' demonstrations, either because she did not find reflecting on the language difficulties of other Chinese L1 students useful for their own learning, or because she was worried that it would be more likely to memorise them displayed by Chinese L1 students' examples.

In terms of the final question in the questionnaire, around 70% students in the CG believed that the Session 1 and Session 2 were the most useful parts for learning ELVs, among which there were 9 students who showed their preference for the categorisation of ELVs introduced in Session 1. In contrast, EG had a more balanced preference for each session, with the largest number of participants preferring Session 1 (8 students) and three of them also indicating

that the categorisation of ELVs in Session 1 was the most helpful section. In a subsequent interview, four students in the CG and three students in the EG described why they preferred the categorisation in Session 1; for instance, CG02 stated that she had never seen this type of classification in conventional Chinese teaching materials, which she felt it was extremely beneficial for her ELV learning. Furthermore, five students from the EG indicated in the questionnaire that they found the exercises helpful. Two of these students stated that the activities allowed them to self-reflect on their language use, identify their language use difficulties, and recognise the disparity between their own output and the usage of English L1 students. When asked to consider the most difficult part of the learning materials, the majority of respondents from both groups indicated that classifying ELVs according to their semantic differences was challenging, as they had never paid attention to such differences previously. According to the data gathered, it seems that the section students found most challenging was also the one that was most beneficial for their ELV learning.

8.5 Conclusion

The results of both the questionnaire and interviews in this chapter indicate that the responses from both EG and CG were generally positive. The majority of students in both groups felt that the materials they were exposed to were well-organised and helpful for their ELV learning. In addition, both groups exhibited greater satisfaction with the use of corpus-informed materials for ELVs learning. However, while the majority of participants in both groups showed a preference for seeing how Chinese L1 students' examples compare with English L1 students' usage in the learning materials, a few more students in the CG than in the EG were more concerned about the possible misleading impact of exposure to errors. Also, participants found the categorization of ELVs in Session 1 to be both the most demanding but

also the most beneficial element of the materials, according to the results of the questionnaire and the interview.

In the next chapter, I will turn to discussing further both quantitative and qualitative findings shown in the previous and present chapters in light of the literature and methodologies in Chapter 2 and Chapter 6 respectively.

Chapter 9 Discussion and implications

9.1 Introduction

The present study attempted to bring together learner corpus study and instructional materials development in an investigation of Chinese L1 students' use and learning of epistemic lexical verbs (ELVs), exploring the potential value of learner corpora in EAP writing materials development. The study unfolded in two stages. Firstly, an English L1 corpus and a Chinese L1 learner corpus of English consisting of MA academic essays in the field of TESOL, Education and Applied Linguistics were compiled and explored to identify similarities and differences in the usage of ELVs. Corpus examples and the comparative corpus findings then informed two different types of learning materials: the first type of materials was informed by corpus data from the English L1 corpus together with some examples from BAWE corpus; the second type added Chinese L1 students' examples together with insights from the learner corpus findings. These two types of learning materials were presented to two groups of MA Chinese students, referred to as control group (CG) and experimental group (EG). Both types of materials aim at improving students' pragmatic, semantic, grammatical and syntactic knowledge of epistemic lexical verbs (ELVs) as epistemic modality resources in academic writing. The learning outcomes of both groups were evaluated using pre-, post-, and delayed post-tests; their processing speed on tasks and English proficiency level were also used as predictors to examine their relative effects on students' learning performance. Finally, students' feedback on the learning materials and their attitudes regarding the incorporation of learner corpus data and associated findings into learnings materials were collected using a questionnaire and an interview.

In this chapter, I will review the findings of the learner experiment (reported in Chapter 7) and the attitude study (reported in Chapter 8) and relate these to the literature discussed in Chapter 2. I will also probe into the implications of these results from both theoretical and practical perspectives. In Section 9.2, I consider each of my research questions in turn and identify whether the hypotheses are to be accepted or rejected on the basis of the results obtained. In Section 9.3, I give a detailed discussion of the effects of including Chinese L1 learner corpus data and research findings into the materials development in terms of ELV learning, as well as the factors that contributed to variation in the students' performance. In Section 9.4, I discuss the implications of the study from the following three perspectives: the development of learner corpus-informed materials based on SLA theories, the principles of the construction of learner corpora and the application of learner corpus-informed learning materials in an online language learning environment (OLL). The chapter ends with a summary of the whole chapter.

9.2 Research questions and hypotheses

Research Q1:

Will there be any development of knowledge in the use of ELVs in both the experimental group (EG) and the control group (CG) groups after learning the materials? If so, are the improvements retained after a certain period of time?

The aim of this question was to investigate the effectiveness of using Chinese L1 students' corpus data and findings in learning ELVs. The following hypotheses were formulated:

Null hypothesis: there is no development of knowledge in the use of ELVs in both EG and CG groups after learning the materials. The improvements fail to retain after a certain period of

time.

One-directional alternative hypothesis: There is a development of knowledge in the use of ELV usage of the students after using the corpus informed materials integrating both NSs and Chinese EFL learners' data. The improvements have retained after a certain period of time.

The results in Section 7.2 indicated that, compared with the performance in the pre-test, students in both groups showed a significant improvement in the post-test and delayed post-test, compared to the pre-test. Nevertheless, there was no significant difference in performance between post-test and delayed post-test in either group. Therefore, the null hypotheses that there will be no development of students' knowledge in terms of ELV learning and the improvements fail to be retained are rejected.

Research Q2:

Does the experimental group's (EG) knowledge of ELVs improve more than the control group's (CG)? If so, in what aspect and to what extent does it develop more?

These two components of the research question explore the effectiveness of the treatment applied in the current study. The following hypotheses were formulated and as the second part of the question is more of an exploratory question, there is no hypothesis stated:

Null hypothesis: There is no performance difference between two groups for the utilisation of ELVs.

One-directional alternative hypothesis: EG's knowledge of the use of ELVs has increased more than CG's.

As discussed in Section 7.2, the results showed that no significant difference in the accuracy rate was identified between EG and CG at any testing point (i.e. pre-test, post-test and

delayed post-test). Nonetheless, it was observed that EG had a significantly higher rate of accuracy than CG on both the post-test and delayed post-test for Exercise 3.1 (described in Section 7.3.2.1 and Section 7.3.3.1). In the post-test for Exercise 3.1, 22 students and 21 students in the EG were able to correct the grammatical mistakes involving the "*seem*" and "*there be*" constructions with the ELV respectively, whereas only five and seven students respectively in the CG were able to do so (see Section 7.3.2.2). Similarly, 23 and 29 students in the EG achieved the full score while there were 13 and 25 in the CG who did so in Exercise 3.1 in the delayed post-test (see Section 7.3.3.2).

In this regard, the null hypothesis was partially rejected because, despite the fact that there was no significant difference in overall performance between the two groups at post-test and delayed post-test, EG demonstrated a higher accuracy rate than CG in Exercise 3.1 at both the post-test and the delayed post-test.

Research Q3:

What factors contribute to differences in learning performance? How do these factors map onto students' performance?

These two questions aimed to explore if there were any factors that affected learners' performance within each of the groups. Processing time on each individual test, processing time on each question within each test as well as participants' English proficiency level (i.e. overall IELTS score) were explored to see if they significantly affected students' performance.

The following hypotheses were stated:

Null hypothesis: Both processing time and English proficiency level do not influence the students' performance.

Alternative hypothesis: Both predictors or either of them will have a significant effect on students' performance.

The results showed the English proficiency level had a significant effect on students' accuracy rate on three testing points, with their average accuracy rate increasing at a rate of 0.10 point per 1.0 IELTS overall score. However, in terms of the processing time on tests, no significant effect was observed on the accuracy rate. Within each test, English proficiency level had a significant effect on students' accuracy rate in exercises in the pre-test, with students' average accuracy rate increasing at a rate of 0.07 point per 1.0 IELTS overall score; no significant effect of processing time on exercises was found on students' accuracy rate. In contrast, processing time on exercises at both post-, and delayed post-tests led to a significant effect on accuracy rate, with students achieving a higher accuracy rate reduced at a rate of 0.02 point for every one-unit increment in time (i.e. every minute); while no significant effect was found of English proficiency level on accuracy rate in exercises at these two tests. As a result, the null hypothesis was rejected, and the alternative hypothesis was accepted.

Research Q4:

What are learners' attitudes towards the learning materials? Do learners value the examination of Chinese L1 students' data as part of their learning materials?

The aim of these two questions was to explore learners' perceptions of the materials they were exposed to, as well as whether they preferred to see the learning materials including Chinese students' examples and corpus findings in their learning materials. As the first question is an exploratory question, the hypothesis is stated only for the second question:

Null hypothesis: Learners do not prefer to see the learning materials including Chinese L1

students' examples as well as the corpus findings.

One-directional alternative hypothesis: Learners prefer to see the learning materials including Chinese L1 students' examples as well as the corpus findings.

As discussed in Chapter 8, in general, positive feedback was received from both EG and CG in the questionnaire and interview. The responses to the questionnaire and interview from both groups showed a high level of satisfaction with the learning materials provided. The majority of participants stated that the materials were well-organised and helped them better understand the distinctions between ELVs and how to use them more appropriately while delivering a claim; however, it is interesting to note that 8 more students in the EG than the CG believed that the overall learning experience was active.

In addition, 80% of participants in both groups showed a preference for seeing examples from Chinese L1 learner corpora, as well as the findings from Chinese L1 learner corpus research, as they perceived that this could help them to avoid common mistakes made by Chinese L1 students. In particular, the results from the questionnaire revealed that in general, EG held a more positive attitude towards the usefulness of the Chinese L1 students' data (see Section 8.2.3). However, when asked whether they would be worried about the potential misleading effects brought about by exposure to Chinese L1 students' usage in the materials, a few more participants in the CG than the EG expressed their concern (see Section 8.2.3 and Section 8.3.3).

In light of these results, the null hypothesis can be rejected. The alternative hypothesis was accepted as the majority of learners preferred the materials to contain Chinese L1 students' examples and corpus findings in order to assist them in addressing their language difficulty. Regarding the first question, both groups of participants were generally satisfied with the

materials designed and the majority of them believed that the materials they accessed improved their understanding of how to use ELVs appropriately in academic writing.

9.3 Discussion of the findings

Before discussing in detail the effects of the two sets of corpus-informed learning materials, and considering whether incorporating learner corpus data and research findings can help to improve students' linguistic knowledge, I will briefly review what the compilation of the two types of materials entailed in the present study: the materials for the CG include example sentences produced by English L1 writers extracted from the English L1 corpus as well as the BAWE corpus, along with the interpretation of the usage of ELVs by native speakers; the materials for the EG included examples from the Chinese L1 corpus and findings obtained from the comparative corpus analysis. Throughout the whole learning process, students in the CG were able only to observe the usage provided by English L1 writers without having the opportunity to identify and/or be explicitly informed of the typical difficulties that Chinese L1 writers have in using ELVs. Additionally, the development of both types of materials adhered to both Tomlinson's principles (see Figure 2.7 in Section 2.4.1) and the theories of second language acquisition (SLA) discussed in Section 2.4.1.

The four following measures, based on the information delivered in the materials, were used in the present study to examine students' linguistic performance in terms of the learning effects:

- **Categorizations of ELVs:** learners are able to choose appropriate ELVs based on the epistemic meaning indicated by ELVs in the context provided.
- **Level of Certainty of ELVs:** they are able to choose/use appropriate ELVs to deliver an

appropriate degree of certainty and doubt based on the context.

- **Grammar Patterns:** they are capable of varying and accurately using the grammar patterns involving ELVs.
- **Sentence constructions:** learners are able to adopt different constructions to adjust the level of confidence or modesty expressed; learners are able to achieve accuracy in the form of these sentence constructions.

In addition, as the present study investigated the potential relative effects of processing time on tests, exercises and English proficiency level on students' performance. I will probe into the reasons for the findings relating to these predictors.

9.3.1 Overall Linguistic performance

As previously discussed, students in both EG and CG showed an improvement in their understanding and the use of ELVs at both the post-test and delayed post-test, compared to the pre-test in general. This indicates that both groups' knowledge of ELVs has increased considerably after learning with the materials provided. However, there was no significant difference in the accuracy rate between the two groups in the post-test and the delayed post-test, after receiving the different treatments. There are several possible reasons behind this result. As explained in Section 3.4.1 above, using ELVs in both semantically accurate and pragmatically appropriate ways is a difficult task, due to the polysemous nature of these words and the complexity of their pragmatic functions. In addition, learners may need more time to benefit from the learner-corpus based content and activities, as they found them more challenging. This assumption is also supported by students' responses in the questionnaire, with two participants in the EG believing that the materials are very difficult

(see Q1.1 in Section 8.2.1) and five more in the EG holding a neutral attitude towards the usefulness of the learning materials in assisting them in learning ELVs (see Q2.2 in Section 8.2.2). These two reasons may have contributed to the fact that the additional treatment in the EG did not lead to either a short-term or long-term difference in students' performance.

In the pre-test, both groups' accuracy rate in Exercise 2 was significantly higher than in Exercise 1 overall. The task type employed in the materials might be a potential explanation for such a considerable performance gap between two activities. To remind the readers again, Exercise 1 asks participants to fill-the-gap with the most semantically and pragmatically appropriate ELV to suit the context, whereas Exercise 2 is a drag-and-drop activity in which students are required to sort ELVs according to the level of certainty they imply. The drag-and-drop activity might be easier for learners, as it simply tests students' knowledge of the epistemic commitment of ELVs. In addition to this, the fill-in-the gap activity requires learners to combine semantic knowledge of ELVs with an awareness of the forms and grammatical patterns related to ELVs. In this instance, the fill-in-the-gap activity is a production task that is more cognitively demanding for learners, whereas the drag-and-drop activity tests learners' comprehension and requires less cognitive thinking. The fact that both groups performed better in the drag-and-drop exercise than in the fill-in-gap exercise suggests that the task may affect the learners' performance differently. This conclusion has been supported by Cummins's (1983) research on cognition, which indicated that the tasks involving processing more information at the same time are more demanding.

In the post-test and the delayed post-test, Exercise 3.1 reveals the most distinct performance disparity between the two groups. EG demonstrated a considerably higher accuracy rate than CG. Exercise 3.1 is a grammar correction activity that requires students to detect and correct

grammatical errors. The outstanding performance of EG in Exercise 3.1 can probably be interpreted as an instructional influence. The learning materials for EG, as reviewed above, were compiled by combining both English L1 and Chinese L1 students' examples as well as learner corpus findings. As I have discussed in the literature Section 2.3.2, Nesselhauf (2004) believes that English language learners should be aware not just of what native language is like, but also of the common challenges they face. The findings, therefore, seem to be able to demonstrate that learner corpora may be particularly useful in the learning of grammatical patterns, as they can provide further refinement in detecting those forms that learners struggle with (Meunier, 2002).

In addition, although there was no significant difference in accuracy rate between groups overall at both post and delayed post-tests. It was interesting to find that in the post-test, CG demonstrated a significantly higher accuracy rate in Exercise 3.2 than in Exercise 1, Exercise 3.1 and Exercise 4; and EG's accuracy rate in Exercise 3.2 was significantly higher than all the rest of four exercises. In the delayed post-test, the accuracy rate of Exercise 3.2 for CG was significantly higher than that of the other exercises (i.e. Exercise 1, Exercise 2, Exercise 3.1 and Exercise 4). For EG, the accuracy rate of Exercise 3.2 was only significantly higher than that of Exercise 3.1 and Exercise 4. As with the post-test, the only significant difference in accuracy rate between groups was observed in Exercise 3.1. To remind the readers again here, Exercise 1 and Exercise 2 are all multiple-choice tasks that required students to choose the most appropriate ELV and the sentence indicating a higher degree of tentativeness respectively; Exercise 3.2, however, is a sentence rewriting task, asking students to rewrite claims with grammatical patterns provided. Multiple-choice tasks, like drop-and-drag tasks, need less cognitive processing, whereas sentence rewriting is a "constructed-responses task" (Ellis, 2006) that is more cognitively demanding. It appears that the results observed here

could only partially support the previous explanation. However, Ellis (2009) also noted that learners can orient themselves differently to different activities, which may explain why students also performed well in Exercise 3.2, even achieving a considerable higher accuracy rate than Exercise 2 in the delayed post-test. Thus, the overall results of the present study may also show the significance of combining a variety of tasks to assess different facets of students' knowledge, as it is impossible to construct a task that can measure all types of performance and linguistic knowledge (Ellis, 2005).

9.3.2 Type of linguistic performance

9.3.2.1 Categorization of ELVs

Exercise 1 in the post-test asked students to choose the most appropriate ELV on the basis of the context, examining both students' semantic and pragmatic knowledge. As summarised in Section 9.3, there was no significant difference between EG and CG in this exercise overall. However, the findings also show that 8 out of 33 students in the CG chose '*thinks*', while only three out of 33 students in the EG chose it (see Section 7.3.2.2). The explicit instruction in the EG materials, which compares the usage of these two ELVs by English L1 and Chinese L1 students, (see Appendix 4) may account for the observed distinction of EG in answering this related question. This result demonstrates the significance of the learner corpus; as Paquot (2007) notes, learner corpus data can help to reveal learners' typical language and address their problems. The results also support the conclusions that Cotos (2014) drew from her study: learner corpora, combined with English L1 corpora can reveal L2 learners' difficulties and enhance EFL learners' understanding of the differences between their production and English L1 language features, and lead to an improved knowledge. As discussed in Section 3.4.1, there is a high frequency of using "*think*" in Chinese EFL learners' academic writing,

even among advanced learners (e.g. Chen, 2012; Hu & Li, 2015; Wang & Zhang, 2007). Specifically addressing this issue, Millar & Lehtinen (2008, p. 68) argue that using authentic learners' production can create a condition for students to notice how their production is different from that of English L1 writers. Also, they proposed that it appears to be helpful to have a 'warning' box, pointing out learners' issues, e.g. overreliance of "*I think*" in their essays. In the EG's materials, Chinese students' overreliance on "*think*" and the contrast of their usage with that of English L1 writers along with sentence examples, were placed in a box in the EG's materials to help students notice the gap. The results of the present study appeared to support the claims made by Millar & Lehtinen (2008) who have argued that the learner corpora can be put to good use for helping students address the specific linguistic difficulties to learners from the same background.

The quantitative results of Exercise 1 in the delayed post-test also revealed no significant difference in performance between the two groups. However, the qualitative findings suggested that both groups performed the least well in Q3 where students were required to differentiate between *appear* and *show*. The findings seem to corroborate the earlier corpus findings that Chinese L1 students may be less familiar with sensory verbs, particularly *appear* (see Section 5.3.4).

9.3.2.2 Level of certainty of ELVs

Exercise 2 in both post- and delayed post-tests tested participants' knowledge of epistemic commitment involving both individual ELV and sentence construction. As mentioned earlier, there was no significant difference in students' accuracy rate in Exercise 2, since both groups demonstrated a similarly high level of performance (see Section 7.3.2.2 and Section 7.3.3.2). The possible reason for this similarity could be attributed to the type of exercise. As with drag-

and-drop exercises, multiple choice is considered relatively easy, as it has the advantage of a relatively small guessing factor (Brown & Hudson, 1998), which therefore may explain the high level of accuracy rate in both groups.

The results also revealed that the biggest disparity between the two groups was observed for Question 3 in the post-test, where there were four fewer students in the EG than in the CG who selected the correct option. To remind the readers again, Question 3 aims to test students' knowledge of *seem* and *argue* regarding their levels of epistemic commitment. The finding may be due to the fact that EG materials perhaps did not provide a rich enough description of sufficient examples of the usage of these particular ELVs. The lack of any effect of the input on target linguistic performance has also been explained by Miao (2014) who emphasised that adequate input was a crucial factor for acquisition and that students would be more likely to produce the proper usage of target linguistic features if they received sufficient input. When considering applying learners' output to materials development, Granger (2004) also suggested that teachers and materials designers need to provide more information about learners' errors and learner-aware activities to facilitate students to discover their interlanguage and better tackle these issues.

9.3.2.3 Grammar Patterns

When examining participants' knowledge of different grammar patterns, we do find significant group differences, with the EG achieving a higher accuracy rate than the CG in Exercise 3.1 in both post-test and delayed post-tests. According to Section 7.3.2.2, 14 additional students in the EG identified the grammatical issue in the "*there be*+ ELV" pattern and corrected it without omitting *there be*. In terms of the *seem* grammatical patterns, 17 more learners in the EG were able to rectify the mistake than in the CG. Similarly, in the

delayed post-test, four more students in the EG than in the CG received the full score when re-testing their knowledge of the "*there be*+ ELV" grammatical pattern, and ten more students in the EG than in the CG corrected the grammatical error involving *seem*.

One of the key findings of the present study is that learner corpus-informed materials have the most significant effect on students' learning performance in terms of the grammar patterns. A learner corpus can not only be used to compile error notes, but also be used to help learners focus on the aspects that are still problematic at an advanced English level (Rundell, 2007). Session 3 of the materials for EG enabled learners to identify and reflect on their own problematic usage of grammar patterns involving ELVs, raising their awareness. One additional task in Exercise 3.1 in the EG materials involves asking learners to identify the grammatical errors of examples extracted from the Chinese L1 learner corpus and rectify them by producing accurate sentences. Rutherford (1987) proposed that error identification and correction could be one strategy for raising learners' awareness of the grammatical system of a language. Mendikoetxea, Bielsa, & Rollinson (2010) share a similar view and argue that designing an activity in which students are asked to correct the grammatical errors they or their co-learners make is helpful for raising their grammatical consciousness and helping them to bridge the gap between the target form's linguistic features and their interlanguage. In contrast, it seems that information from the English L1 corpus alone did not provide language learners with the opportunity to identify this gap that has been proven useful for increasing learners' consciousness of their problematic usage of the targeted linguistic feature. Although English L1 corpora can provide authentic and appropriate usage of targeted linguistic features, it is learner data and only learner data that identify what is challenging for learners as a whole or for a specific subset of learners (sharing the same mother tongue, level of proficiency, etc.).

9.3.2.4 Sentence Construction

Session 4 in both types of materials mainly focuses on how different sentence constructions can assist writers in adjusting their tone while delivering statements. Exercise 4 in the post-test and delayed post-tests consisted of three sentences that students were asked to rewrite using the required sentence construction. It is worth reminding the reader again that each task in the exercise corresponds to a specific type of sentence construction described in the materials. As summarised in Section 9.2, there was no significant difference in accuracy rate overall between EG and CG. Although there was a specific task in the EG's materials that aimed to increase students' awareness of how to properly and reliably attribute a claim to a certain community group, the EG did not significantly outperform the CG.

One potential explanation could be that Chinese students' examples misled the students and directed their attention to the examples that demonstrated the inappropriate usage. One justification Nesselhauf (2004, p. 140) provided is that there is a danger that learners will remember the negative rather than the positive examples, or the positive demonstration will only remain partly undigested. Therefore, on the suggestion of Granger (1996b), Nesselhauf advocated that when learners are exposed to negative evidence, exercises should follow to consolidate the native speakers' language use. The EG's materials that featured examples of Chinese students' inappropriate usage perhaps did not give sufficient opportunities for learners to practise what they had learned immediately after the learning, which may have misled the students in the EG, who ultimately did not demonstrate a better performance than the CG who were only exposed to the positive evidence provided by English L1 students' usage.

9.3.3 Learning effects: task completion performance

9.3.3.1 Processing time

As summarised in Section 9.2, processing time on three tests (i.e. pre-, post- and delayed post-test) bore no relationship to accuracy rate; however, the findings showed that students' processing time on individual exercise in both post- and delayed post-tests had a significant effect on accuracy rate, with students achieving a higher accuracy rate reduced at a rate of 0.02 point per every minute. The results partially support the findings of Taguchi's (2008) study which showed that there was no significant effect of processing speed on linguistic performance. One of the possible reasons for no significant effect of processing time on the three tests is that students were very cautious when completing exercises in the pre-test, particularly Exercise 1 that asked students to fill in the gap with the most appropriate ELV based on the context given. As mentioned in Section 9.3.1, this type of exercise is cognitively demanding, requiring students to pay attention to both the forms and the meaning of the language features. Therefore, some students may be very cautious about giving their responses and slow down their processing speed. This explanation has been proposed by De Boeck & Jeon (2019) who also suggested that cautiousness slowed the processing speed but could increase the likelihood of achieving the correct response.

In addition, many SLA cognitive studies also revealed a similar relationship between faster processing speed and higher accuracy (e.g. Harrington, 2006; Rodgers, 2011; Segalowitz, 2003). According to De Boeck and Jeon (2019), it connects to an individual's cognitive efficiency, which allows for a quicker but more accurate response. Cognitive efficiency, as defined by Hoffman (2012), refers to qualitative gains in knowledge related to the effect and time invested in acquiring the knowledge. Therefore, the faster response with a higher

accuracy rate of students in exercises in both post- and delayed post-tests may be owing to their relatively higher cognitive efficiency resulting from the treatment. In other words, students in general, investing more mental effort, were cognitively efficient and engaged. This explanation is, however, discussed in detail with different types of cognitive efficiency in Hoffman (2012). As it is not the focus of the present study, it was not included here.

The results here also highlight the importance of exploring the relationship between learners' processing speed in tasks and their learning performance. Researchers such as Ellis & Schmidt (1997, p. 146) also call for this type of study:

SLA research aspires to understand acquisition, and acquisition results from dynamic processes occurring in real time. It is difficult to gain an understanding of learning and development from observations of the final state,...If we want to understand learning, we must study it directly.

One explanation for the dearth of such studies is the difficulty of observing and collecting data on students' classroom behaviour. These studies can be conducted more easily with the advancement of technology by utilising various software or functionalities given by websites, such as Qualtrics, the website used for this study. Also, the user-behaviour tracking technology may also enable researchers to collect such data more precisely from a large number of learners concurrently. Because of this, we researchers are able to observe how learners' processing speed affects the outcome of their English language learning.

9.3.3.2 English proficiency level

The present study also looked at whether students' different English proficiency levels affected their learning performance. As summarised in Chapter 9.2, students with higher

English proficiency levels demonstrated a better performance in all three tests (i.e. pre-test, post-test and delayed post-test). Within three tests, the only significant effect of English proficiency level on accuracy rate was observed in the pre-test stage and there was no positive effect of English proficiency level on accuracy rate in the post- and delayed post-tests. The finding seems to indicate that a higher English proficiency level only contributed to students' performance in the pre-test stage, and so the high English ability students did not benefit more from the treatment they received than those with lower English ability. However, it is difficult to explain the findings in terms of SLA literature, as there are few studies that specifically investigate the correlation between processing time on exercises and accuracy rate in relation to corpus-based instructions. One possible explanation for the positive correlation in the pre-test between English proficiency level and performance is the different levels of cognitive ability engaged. More-proficient students, compared with less-proficient students are able to use multiple cognitive strategies to comprehend the task better, such as using prior knowledge to help them predict and guess the unknown words and the potential answers (Britton & Tesser, 1982; Lin & Yu, 2015). Therefore, students with a higher level of English proficiency in the pre-test, may demonstrate a higher level of ability to activate their prior knowledge that assists them in the comprehension of context in the sentences. In contrast, students with a lower English ability may have more difficulty understanding the sentences involved in the task and their performance was thus not as good as that of the students with a higher English proficiency level.

The lack of a significant effect of English proficiency on the performance of both groups in exercises in both post- and delayed post-tests appears to contradict the findings of Yang & Quadir (2018), Sotelo-Dynega et al. (2013) and Taguchi (2008), who found that students with a higher level of English proficiency performed significantly better than those with a lower

level of English proficiency after receiving the treatment. This could be due to the difficulty of the learning materials. As detailed in the interview, the majority of participants in both groups concurred that the materials were not easy and that they needed a bit more time to digest the information provided (see details in Section 8.3.1). It is possible that even students with a high level of English proficiency and cognitive ability require a longer period of instruction to facilitate their comprehension in this area. Nevertheless, the level of the learning materials is closely relevant to the complexity of ELV usage in nature. As explained in Chapter 3, the usage of ELV in academic writing is both semantically and pragmatically complex. Although attempts were made to keep the instructions and explanations in both groups' materials simple and clear, ELV usage is still considered a challenging linguistic feature even for advanced EFL learners to master.

9.3.4 Learners' attitudes

To gain a better understanding of learners' attitudes towards the two distinct types of materials they were exposed to, a questionnaire and semi-structured interview were conducted following the learning process. Overall positive feedback from the questionnaire was received from the results of the data analysis in Section 8.2 and 8.3. The results showed that both groups of students taking part in the study were satisfied overall with the learning experience. An interesting finding is that eight more students in the EG than the CG believed that their learning process was active (see Section 8.2.1-Q1.2). Two interviewees in the CG explained that the lack of a range of interactive activities contributed to a low level of engagement. The finding supports Seidlhofer's (2000) argument that learners can play a more active role in the learning process when dealing with learner corpus data. The materials for the EG involve both English L1 and Chinese L1 learner corpus data, allowing learners to

compare and identify discrepancies between their own output and that of English L1 speakers. In this sense, the EG showed a comparatively higher level of engagement in the overall learning process.

Regarding the effects of learning materials in learning ELVs, the majority of students of both groups in the questionnaire agreed that the learning materials improved their comprehension of how to convey statements by using ELVs appropriately, as they were informed by authentic corpus data as well as shared a similar topic to their own MA subject, as revealed in the interview (see Section 8.3.2-Question 6) However, five more students in the EG than the CG were unsure about the effects of learning materials on improving their confidence in using ELVs in future academic writing (see Section 8.2.2-Q2.2). One of the possible reasons mentioned in Section 8.2.2 is that involving both Chinese and English L1 corpus data is more challenging, and learners may need more time and additional assistance to really comprehend the information delivered. Cotos (2014) observed a similar situation, wherein the group provided with concordance lines extracted from both the learner corpus and the English L1 corpus, brought up the time issue and required additional help from instruction to help their understanding. While integrating learner corpus data into learning materials seems to increase the level of learning engagement, it is also a challenge for learners to get to grips with the linguistic issues within a short period of time.

Despite the fact that the CG was not exposed to the corpus data of Chinese L1 students, the majority of them in both the questionnaire and interview, like the EG, expressed a preference for seeing Chinese L1 students' corpus data in the learning materials, which they believe helps to enhance their awareness of the distinctions of language use between two groups as well as the language difficulty Chinese L1 students tend to have. Whereas eight more individuals

from the CG in the questionnaire expressed their concern that they may be negatively impacted by the inappropriate language usage demonstrated by Chinese students. This side-effect of learners' errors has already been noticed by Bernardini (2004), who suggests that although incorporating learner corpora brings excitement for the students, as they have more opportunities to notice and solve problems by themselves, they may also feel frustrated and uncertain when they notice the problematic language usage produced by learners. To mitigate this potential side-effect, the materials provided for the EG not only compared the usage of Chinese L1 and English L1 students, but also provided additional information on how to use them appropriately and the rationale for doing so. Such an arrangement was supported by Cotos (2014, p.218) who suggested that teachers should "supply learners with answer keys for at a least sample of corrected misuse to help them confirm their linguistic hypothesis", which may explain why fewer learners in the EG did not have this concern.

The triangulated findings of questions regarding the most difficult and useful sessions in the questionnaire and interview indicated that despite most CG students believing that the categorisation of ELVs in Session 1 is the most challenging part, they also benefit the most from this section. The EG, in contrast, had a more balanced response in the questionnaire but five interviewees emphasised that the exercises were beneficial. It supports Swain's (1995) standpoint that in the process of language learning, learners should be provided with sufficient opportunities, and they therefore are able to practice the acquired target linguistic features in order to achieve the learning outcomes.

To conclude, although an increasing amount of research has been carried out in recent years on applying learner corpora into the field of EFL teaching/learning, not many studies have focused on applying learner corpora in EAP materials development, especially ones that also

incorporate the findings of learner corpus research and that investigate learners' attitudes towards such a method. Cotos (2014) in her study, adopted a data-driven learning approach by utilising a learner corpus in the teaching of linking adverbials; the majority of students who were exposed to their own writing output provided positive feedback towards such a learning approach. They stated that they could better identify their own shortcomings and also notice the errors, some of which they had made themselves. The findings of the present study seem to support Cotos' study as well as Seidlhofer's (2002) conclusion about learner corpora being a strong beneficial factor for EAP learning.

9.4 Implications of the study

From the above discussion, it seems that learner corpora can make a useful contribution to the development of EAP instructional materials and assist EFL learners in addressing certain language difficulties when using ELVs. The implications of the present study can be examined from both theoretical and practical aspects, including the following three areas: how to combine the development of learner corpus-informed learning materials with SLA theories; how to construct both NS and learner corpora in preparation for materials production; how to utilise online platforms to assist the self-learning of the materials.

9.4.1 learner corpus-informed learning materials and SLA theories

One of the key findings of the present study is that learner corpora have shown a potential value of grammar learning in the development of EAP materials. To remind the readers here again, the learning material for the EG (see Appendix 4-Session 3) included an explicit instruction. It presented the varied usage of grammatical patterns exhibited by Chinese L1 and English L1 authors, along with the authentic examples. Also, an error correction task informed by the Chinese L1 corpus data was designed to draw learners' attention to the

grammatical errors that Chinese L1 students tend to make. In addition, the suggested answers and the detailed explanations were also provided in the task. The findings seem to support the value of explicit and focus-on-form instruction in grammar learning as revealed by a large number of empirical SLA studies (e.g. Andrew, 2007; Dekeyser, 1994; Nazari, 2013; Rahman & Rashid, 2017; Scott, 1990). Also, in terms of the error correction exercise, Parrott (2000) in his book *Grammar for English Teachers* also included this exercise, and Meunier (2002) highlighted that the majority of students find it helpful, and it helps them remember problematic areas when they need to deal with them. The findings here seem to support Meunier's argument.

However, as summarised in Section 9.3.2, the findings suggest that both groups demonstrated a similar level of performance in the remaining exercises, which examine the semantic and pragmatic knowledge of ELVs. One of the possible reasons behind this is that although the EG's materials include both implicit and explicit instructions when comparing the usage of Chinese L1 and English L1 writers in terms of the semantic meanings and pragmatic functions, the majority of the information was supplied explicitly, limiting learners' opportunity to infer the semantic and pragmatic distinctions between ELVs on their own. The results seem to contradict the argument proposed by Aufa (2011) that explicit instruction is more effective than implicit instruction to help learners develop their pragmatic competency and Sökmen's (1997) standpoint suggests that students are more likely to benefit from explicit instruction to improve their semantic awareness of the vocabulary. Schmidt (1993), arguing that implicit learning seems to be more successful for students learning fuzzy language patterns on the basis of their perceptual similarities and non-salient linguistic features. Therefore, when integrating learner corpus data and research findings in the development of corpus-informed materials, it seems essential to include more implicit instruction to help

learners enhancing their semantic and pragmatic understanding of ELVs.

Another explanation for the insignificant difference in semantic and pragmatic learning performance between the two groups may also be related to insufficient positive input and output for learner corpus-informed materials. As noted in Section 2.4.1.3, comprehensible and meaningful input is a prerequisite for implicit learning to take place and for learners to pick up the ‘meaning’ of the L2 without awareness. In addition to insufficient input, output taking the form of exercises can provide learners with the opportunity to practice what they have learned from the input in order to achieve the target language (Swain, 1995). The findings seem to support Swain’s standpoint as well as Nesselhauf’s (2004) argument which emphasised the importance of providing sufficient positive evidence from the NS corpus and the exercises to consolidate the target language structure. ELVs, as discussed in Chapter 3, is a complex linguistic feature in both meaning and form even for English L1 writers. Therefore, when constructing learner corpus-informed instructional materials, especially those dealing with complex issues, materials developers may need to incorporate more positive evidence and be careful about the proportion of the negative evidence from the learner corpus as well as provide more practice opportunities to enhance what they have acquired from the target language features. The findings, on the other hand, also support Meunier’s (2002, p. 134) argument that:

learner corpus should in no way replace the use of native input, but should only be used, here and there, to complement native data and to illustrate carefully selected L1 dependent characteristics, as well as universally problematic areas.

Although the main purpose of the present study was not to examine the effects of applying SLA theories to corpus-informed materials development, it presents a preliminary image of

how to construct EAP materials by integrating both English L1 students' examples and learner corpus data and findings based on the SLA theories to maximise students' learning outcomes. The feedback from students in this study is relevant to both materials developers and language educators. It offers insights into how materials development can effectively steer students' focus towards specific linguistic features, improve their language competence, and maintain their interest throughout the learning process.

Furthermore, this study deepens our comprehension of the role SLA theories play in shaping the development of corpus-informed EAP materials, especially those based on learner corpora. It also provides insights into how learners process language input and deal with output.

9.4.2 Learner corpora compilation and EAP materials development

The present study sheds light on how to create a learner corpus for the development of EAP materials, where there is no existing tailor-made learner corpus. It is suggesting that learners' awareness of their interlanguage could be enhanced by seeing their own writing product; however, from collecting assignments, compiling learner corpus to designing materials is a time-consuming process. In this study, the examples sourced from the learner corpus for materials development did not come from the participants' own written work, but they are real authentic language produced by the Chinese postgraduate students majoring the same subjects. Although I was aware that using a learner corpus that did not include the participants' own writing product for developing learning materials has its own disadvantages, such as failing to reveal their own individual problematic language usage, which could lead to less engagement in the learning process, I decided to compile the learner corpora with previous Chinese students' assignments. The advantages ascertained by Granger & Paquot

(2012), who argue that such a type of learner corpus is still able to present students with typical interlanguage features, especially when the learner corpora are made up of genre-specific and disciplines-specific texts written by learners within the framework of language for specific purposes or content courses. Granger (2014) similarly, argues that materials informed by this type of learner corpus are still more relevant to learners' own productions and motivate learners to reflect on their own language use and increase their language awareness. Also, it can largely avoid students' embarrassment over being exposed to their own mistakes and therefore reduce their possible motivation for learning (Nesselhauf, 2004).

One of the biggest advantages of incorporating both NS and learner corpus data into materials development, whether in a direct or indirect way, is that it involves exposing learners to authentic data, which allows them to take an active role in exploring and detecting interlanguage. However, Lorenz (2000) pointed out that authentic data can be messy. As noted in Section 2.4.2.1, when incorporating corpus data into the development of materials and activities, it is essential to draw learners' attention to the target linguistic features (Granger & Tribble, 2014). Therefore, in the present study, the corpus data employed in the materials development has been tailored while retaining the key language features (e.g., grammatical errors, sentence construction) to make it easier for learners to focus on the targeted language phenomena.

To conclude, it appears the learner corpus-informed learning materials addressing the same topic of academic writing as well as with tailored corpus data, effectively enhance learners' awareness of how to appropriately use ELVs to deliver statements. Although the current study only focused on a much more limited linguistic feature, namely the use of ELVs in academic writing, it contributes to our understanding of the value of how to construct learner corpora

and employ learner corpus data in the development EAP materials.

9.4.3 Learner corpus informed EAP materials in online learning environment

The present study attempted to put the designed materials into an online learning environment (OLL) by utilising the Qualtrics website to track students' processing time on tasks and exercises in order to obtain more precise information on students' online learning behaviour. The data collected assisted in identifying what actions or factors are related to variation in the process of the information and learning performance. The information gained from the present study is of great value in EFL contexts. Teachers would then have a better idea of which sections are more cognitively demanding and/or harder for learners to finish based on their processing time as shown. Studies, such as the present one can make a small contribution to the understanding of the theory/research underpinning the practice in terms of putting corpus-informed learning materials into an online learning environment.

When considering connecting corpus and/or learner corpus with EAP learning, researchers would often begin by instructing learners in using corpus-relevant software to focus on target linguistic devices. There is no doubt that EAP learning will increasingly take place OLL with the development of the technology, whether it is software-based and/or web-based, particularly after experiencing the COVID-19 pandemic. This puts more pressure on teachers and materials developers to seek the most flexible, easy-manipulated and readily available means of providing students with more pedagogically principled materials. The present study has shown that applying a learner corpus in materials development does not necessarily involve the utilisation of software which requires the necessary skills to manipulate the corpus tools. The learner corpus can also be directly used for designing the materials and then put on the website to facilitate students' self-learning, where students' data on learning behaviour, such

as processing time, can also be collected and analysed in the meantime. The approaches taken in the present study involving tracing students' behaviour also provide a better understanding of the potential contribution of how to combine learner corpus-informed materials and technology together to better facilitate language learning.

9.5 Conclusion

This chapter summarised the main findings of the learning experiment and provided the potential rationale for the results obtained. In addition, the chapter discussed the implications of the present study regarding the relationship between SLA theories and learner corpus-informed learning materials, learner corpus construction and materials development as well as how to apply the learner corpus-informed materials in an OLL environment. In the following chapter, I will briefly summarise the key points of each chapter and highlight the significance of the present study, followed by pointing out the limitations of the study and future research direction.

Chapter 10 Conclusion

The present study has explored the effect of incorporating learner corpus data and research findings into EAP writing materials development that operationalised epistemic lexical verbs (ELVs) as a Chinese L1 students' language difficulty, as well as the potential factors that contribute to students' differing performance. One of the primary objectives of the present study is to get a better understanding of how and in what way learner corpora can make a further contribution to EAP materials development by assisting learners in mastering certain language features, as opposed to only using native English speakers' corpus data. Also, the present study investigated the relative effects of English proficiency level and processing time on students' performance and shed light on how learners' prior English ability and learning behaviour affect their learning outcomes in response to corpus-informed instructions.

This concluding chapter firstly provides a summary of the thesis, followed by the significance of the present study. Then, the overall limitations of the present study as well as the recommendations for future research are presented respectively in Section 3 and Section 4. The chapter is finally concluded with final remarks.

10.1 Summary of the thesis

Chapter 1 provided the background and context of the present study. It began with reviewing the current trend of corpus-informed EAP materials development and raised the question of whether the field of EAP teaching needs to also incorporate learner corpora in materials development as a means of assisting learners in addressing language use difficulties. Then, it discussed the problems that English as a Foreign Language (EFL) learners with different L1 backgrounds have in mastering ELVs to deliver statements. To address this issue, the present study proposed four questions, covering the following research objectives: 1) to investigate

whether providing Chinese L1 students with access to authentic English L1 students' written language together with their own production could help them to better understand the differences between their own production and the features of the target linguistic form; 2) to explore participants' attitudes towards the designed materials and incorporation of learner corpus data into learning materials; 3) to probe into the relative effects of English proficiency level and processing time on students' learning performance. The whole chapter ended with the structure of the thesis.

Chapter 2 focused primarily on three aspects of the relationship between corpora and the development of EAP materials. In the first section, the principles of compilation of English L1 corpora and learner corpora were discussed in the context of incorporating them into instructional materials development, which was followed by a systematic literature review of previous studies involving the application of English L1 corpora and/or learner corpora in EAP materials development. The last section highlighted the framework and SLA theories that corpus-informed learning materials should adhere to.

Chapter 3 reviewed the significance and complexity of ELVs in written discourse as well as the classification based on their semantic functions, epistemic commitment and the sentence constructions involved. The chapter concluded by discussing the problematic use of ELVs reported in the previous studies and lack of information regarding the introduction of ELVs in EAP textbooks, highlighting that the insufficient information about ELVs in the EAP textbooks may be one of the potential reasons for this situation.

Chapter 4 described the methodology adopted in the corpus study. Firstly, two sets of corpora, an English L1 corpus and a Chinese L1 corpus were compiled of academic essays collected from MA postgraduate students in the field of Education, TESOL and Applied Linguistics and

produced as part of their coursework. Then, a detailed description of the procedures of data cleaning and annotation was introduced together with a discussion of the reliability and validity of the annotation.

Chapter 5 presented the findings of the corpus-based analysis from the following five perspectives: overall frequency of ELVs, semantic distribution, level of epistemic commitment, sentence constructions and grammatical patterns. The results indicated that Chinese L1 students used ELVs differently from English L1 writers, depending on different range of devices, expressing a stronger epistemic commitment. Also, Chinese writers' use of ELVs was less balanced in terms of the sentence constructions and grammatical patterns and misuses can be identified in their essays. Finally, the implications of the learner corpus analysis for the following materials development were discussed.

Chapter 6 addressed the methodologies employed in the online learning experiment of learner corpus-informed EAP writing materials. The chapter started with reviewing the research questions for the study as well as introducing the five main content sessions in two sets of learning materials: introduction and overview to the course; frequently used ELVs and their categorisation; level of commitment; grammatical patterns and sentence constructions. The two sets of learning materials share the same topic and organisation in each session but differ in the information included: the first type for CG was only informed by corpora data produced by English L1 writers; the second for EG added Chinese L1 students' corpus data as well as the findings obtained from prior learner corpus research. Then, the chapter introduced instruments used to observe performance. Also, learners' perceptions of applying learner corpus in materials development were collected through questionnaires and semi-structured interviews to obtain a triangulated result. After, both quantitative and qualitative data

analysis approaches were introduced, after which the ethical consideration were addressed.

Chapter 7 and Chapter 8 presented the findings of the learning experiment. Chapter 7 analysed the performance of students on the pre-, post-, and delayed post-tests, revealing that both EG and CG showed a substantial improvement on the post-test and delayed post-test compared to the pre-test. In terms of the group difference, EG achieved a significantly higher accuracy rate than CG in the exercise of identifying and correcting grammatical mistakes in both post-test and delayed post-test due to the additional exercise of error correction informed by the Chinese L1 corpus. In addition, it was observed that processing time on tests had no significant influence on the overall accuracy rate, however, students' English proficiency level had a significant impact on their overall performance. In contrast, processing time bore a relationship on accuracy rate at exercises in both post- and delayed post-tests, but English proficiency level only had a significant effect on accuracy rate in the pre-test. Chapter 8 analysed students' attitudes and evaluations of the learning materials obtained from both the questionnaire and interview. The findings overall suggested that both groups expressed a high degree of satisfaction with the developed materials and considered the corpus-informed materials useful for learning ELVs. While the majority of students in both groups agreed that Chinese L1 corpus data should be included in the development of instructional materials, a few more students in the CG were concerned about being misled by the negative evidence presented by Chinese L1 students.

Chapter 9 summarised the findings of the present study and related them to the literature discussed in Chapter 2. Then, it suggested ways of developing learner corpus-informed instructional materials by starting from the assumption that learner corpus-informed materials should adhere to SLA theories to facilitate students' perceptions of the target

language knowledge and that learner corpus should compile of the texts that share the similar genre and discipline as students' own production to help language learning. In the end, how to incorporate an online learning environment together with corpus-informed materials to assist educators and researchers in getting a deeper understanding of second language learning acquisition was discussed.

10.2 Significance of the present study

The present study contributes to our understanding of the value of applying learner corpora in EAP materials development that specifically focus on the teaching and learning of ELVs particularly in the Chinese EFL context. Despite the fact that the learning materials that included learner corpus data did not improve students' knowledge of ELVs in every aspect compared to their counterparts who only accessed English L1 students' data, the findings demonstrated that learner corpora are particularly helpful for learning grammar patterns and attending to specific learner errors.

So far, most learner corpora findings that discuss the usage of Chinese EFL learners are at the level of implications (e.g, Chen, 2010; Flowerdew, 2014b; McEnery & Kifle, 2002; Oh, 2007). To date, there are only a few EAP materials informed by learner corpora in China, which are mostly computer-assisted and/or corpus software-dependent (e.g, CALL programme, TeleNex). The present study combined learner corpus data and research findings with pedagogy in an investigation of Chinese L1 students' usage of ELVs, evaluating its value in developing learning materials without requiring students to handle corpus-relevant software. In this sense, the present study may be able to provide a practical framework for both teachers and materials developers to attempt to use learner corpora to develop EAP materials to address other linguistic issues of EFL learners, and apply them in the traditional classroom

without computer or corpus software assisted.

Also, the study seems a first step in exploring the relative effects of learners' English proficiency level and processing speed on their learning performance by using corpus-informed materials in an online language learning (OLL) environment. It provided an easily operated approach to data collection for observing students' learning performance as well as their learning behaviours which can be replicated by other studies. Compared with inserting extra user-behaviour tracking technologies into the original experiment programme, the present study used the built-in functions of Qualtrics to record the learners' processing speed. This approach provides a relatively easy way for researchers to observe learners' learning behaviours and also contributes to our perceptions of the mechanism learners employ when dealing with corpus-informed input in an OLL environment.

10.3 Limitations of the present study

There is no doubt that every study has its own limitations, and the present research is not an exception. One limitation is the assumption that the use of ELVs by English L1 students can serve as a model for Chinese L1 writers of English. Although problematic, it has been explained that the choice not to utilise expert English L1 writers' was due to the distinctions in genre type (see Section 2.3.1). It should be noted that English L1 university students are still considered novices in some areas, particularly in how to differentiate writer and author's stance in citation and how to use personalised sentence constructions, despite the fact that their assignments achieved a Distinction level. In specific areas, the inclusion of authentic examples from English L1 students may mislead Chinese L1 learners. Another limitation is the compilation of the English L1 corpus. As introduced in the methodology chapter, there were some differences in the compilation of the two corpora due to difficulties in accessing native

English speakers on MA programmes in the areas of TESOL, Education, and Applied Linguistics, which are more popular with Chinese students studying in the UK. Ideally, the assignments would be written by two groups of students concurrently on the same courses and from the same university. This would ensure that the texts of both corpora belong to the same genre families, and that there is a similar representation of each genre in the two corpora. This would improve the comparability between the two corpora. As discussed in Chapter 5, it can be seen that the use of ELVs is genre specific. Consequently, it is difficult to identify whether differences in the use of ELVs by Chinese L1 learners and English L1 students, outlined in Section 5.3, are consistent differences in usage or the product of genre variation in the present study. However, it should be emphasised that MA TESOL and Education programmes have a very small number of English native students and Chinese L1 students make up a significant proportion of them in recent years. As a result, it was difficult to acquire a sufficient and comparable number of academic essays written by English L1 students at the same time. The method adopted in the present study made it more manageable for me to collect sufficient data from English L1 students and look at the differences in the usage of ELVs in the academic texts of postgraduate levels. A closer examination of the use of ELVs between two groups of students undertaking the same writing tasks at the same time and at the same university is a research activity that I hope to pursue after this PhD study.

It is also important to acknowledge that the list of ELVs in the present study is non-exhaustive. Furthermore, the compiled list may not be ideally suited to examining the use of ELVs in assignments submitted by MA students majoring in TESOL, Education and Applied Linguistics. The list developed by Hyland & Milton (1997) was derived from an analysis of research papers and with reference to relevant literature (see details in Section 4.3.2.2). Their ELV list was subsequently employed to examine compositions written by high school students.

Dontcheva-Navratilova's (2018) list of ELVs was created for the purpose of investigating the use of ELVs between Anglophone and Czech scholars in research articles within the fields of Linguistics and Economics. Therefore, there exists disparity between the above two studies and the present study in terms of genres and English proficiency level; thus, it is possible that other ELVs employed by the MA students in the present study were not covered, which may limit my observation ELV usage variation between two groups of students.

I must also acknowledge that the categorisation of ELVs according to the epistemic meanings (speculative, deductive, quotative and sensory) was somewhat subjective. Although in Hyland's book, some ELVs have already been classified into certain categories with sentence examples provided, not all of the ELVs were specifically defined in his classifications. Although whenever I was unsure of my categorizations, I sought assistance and suggestions from my colleagues who are English L1 in the Department of English Language and Linguistics to have an inter-coding agreement pair review on the classification, there is still a certain level of subjectivity in the classification.

In addition, the sampling of the participants for the learning experiment is another limitation of my present study. Due to the difficulty of recruiting enough participants at one individual university at the same time, two groups of students were enrolled from different universities in UK with different English requirements for entrance. Nonetheless, both groups' students were required to achieve the minimum English language requirements regulated by their own universities, or to be enrolled in EAP pre-sessional courses to fulfil the language requirement after the course. Therefore, the comparable backgrounds convinced me of the comparability among students. However, it would be more worthwhile in the future study to recruit participants from the same educational institute to ensure better homogeneity of participants.

Furthermore, the data collection was impacted by Covid-19 pandemic and ideally a larger dataset of participants within each group could be achieved within a shorter time period. In addition, students' linguistic performance in the present study was observed from pre-, post-, and delayed post-test. Such a design aimed at analysing not only the immediate treatment effects of the learning materials, but also whether the effects can be long lasting over a certain period. However, as many Chinese MA students took extra pressure and felt overwhelmed with online learning during the COVID-19 pandemic, it was difficult to require students to complete the delayed post-test with a similar time interval. As a result, participants in both groups took the delayed post-test at different time intervals, ranging from one month to three months, which increases the likelihood that incidental learning on ELVs during their MA programme or other resources contributed to their improved performance on the delayed post-test, rather than the learning materials.

10.4 Future Research

Many questions remain to be addressed by future research. In the present study, the value of incorporating learner corpora in the development of materials focusing on the use of ELVs in the EAP writing field is explored. For learner corpora to advance effective EFL learning, more research needs to focus on pedagogical applications instead of learner corpus analysis that solely identifies learners' problematic usage of linguistic features. Also, as a large number of previous studies have revealed that, EFL learners encounter a variety of difficulties in using English not only in the EAP field, but more studies are also expected to be carried out to investigate the potential of learner corpora in the instructional materials development to assist learners in addressing different types of language use difficulties.

In addition, the findings and conclusions drawn in the present study have been bound to the limited types of activities and tasks designed. Further study could involve designing other different and more complex tasks, for example, including a few tasks that require students to write a paragraph or even longer texts to examine students' performance after being exposed to the learner corpus data and comparative findings. This way, the effects of learner corpus-informed materials on learners' performance in the usage of ELVs, as well as the impact of task design on learning performance could be examined more precisely.

There are very few studies looking at the impact of English proficiency level and processing speed on learning performance involving receiving corpus-informed treatment in an online learning environment. One of the purposes of the present study is to further our knowledge of the complex issues involved in second language learning, particularly those involving the use of corpus-informed EAP materials. The debate over the use of putting language instruction online is not an either/or scenario in which the teacher must choose between two alternatives. Technology use is certainly widespread now and language learning online has become and will be a more popular approach, especially after experiencing the pandemic in recent years. What we need for future research is to understand how to combine corpus-informed learning materials with online learning environment and how learners respond to this type of instruction.

10.5 Final remarks

I came to this project with the goal of examining the value of learner corpora in the acquisition of ELVs through the use of corpus-informed EAP materials combined with data from English L1 and Chinese L1 students as well as the learner corpus research findings. I hope that students would make the best possible use of the learner corpus-informed materials to

improve their understanding of usage of ELVs in the four domains of semantics, pragmatics and grammatical patterns and sentence constructions. Although the quantitative analysis revealed they only benefited more in the area of grammatical patterns from the learner corpus-informed learning materials, the majority of participants in both the questionnaire and interview explicitly believed that Chinese L1 students' examples and usage were helpful for enhancing their awareness of the differences between their own language usage and that of English L1 students. Additionally, they also found these examples helpful in avoiding similar grammatical errors made by Chinese L1 students in their future writing.

One of the reasons for this is that ELVs are a difficult linguistic feature to master, even for native English speakers. Also, it was difficult to require students to fully concentrate on the learning materials, as some reflected in the interview that the learning process is a bit long which may have distracted them from the learning content and affected the learning effects. However, I am optimistic about the potential for students to learn specific language devices via learner corpus-informed materials. If they were given sufficient information, the right preparation, and sufficient yet diverse exercises, they could use this type of learning materials on their own more effectively. Additionally, as the conclusion was only drawn from a single learning experiment, it is crucial in the future to establish a longitudinal study that involves examining students' use of ELVs in the authentic EAP writing setting, which will enable the researchers to gain a more comprehensive understanding of their long-lasting practical value, as Boulton (2011, p.39) notes, the long-term linguistic and cognitive/constructivist benefits is the biggest advantage of using corpus data in L2 learning.

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Appendices

Appendix 1 The usage of ELVs in both Chinese L1 and English L1 corpus in each category

Category	Epistemic Lexical Verbs	Frequency	
		Chinese L1	English L1
Speculative	assume	9	31
	believe	55	55
	claim	15	14
	consider	69	62
	doubt	16	1
	expect	45	66
	feel	7	53
	imply	30	32
	indicate	45	91
	predict	15	32
	presume	2	3
	regard	59	17
	speculative	0	4
	suggest	40	77
	tend	94	34
	think	93	22
Overall		594	594
Deductive	argue	25	22
	conclude	28	0
	demonstrate	11	25
	estimate	5	2
	infer	13	10
	prove	44	44
	propose	9	27
	show	101	124

	suppose	57	4
Overall		293	258
Quotative verbs	argue	47	33
	assume	3	0
	believe	39	1
	claim	31	17
	conclude	15	7
	consider	8	6
	demonstrate	6	8
	doubt	2	0
	estimate	1	0
	imply	0	1
	feel	0	1
	indicate	17	4
	propose	36	36
	prove	14	3
	regard	2	0
	show	1	7
	speculate	1	0
	suggest	58	37
	tend	0	0
	suppose	1	0
	think	7	0
Overall		289	161
	appear	14	77
	seem	121	269
	view	25	20
Overall		160	366

Appendix 2 The usage of ELVs Chinese L1 corpus of two analysis in rank order

First time		Second time	
ELVs	Frequency	ELVs	Frequency
seem	115	seem	121
believe	90	show	102
suggest	87	think	100
show	85	suggest	98
tend	84	believe	94
argue	72	tend	94
think	72	consider	77
consider	67	argue	72
indicate	60	indicate	62
regard	59	regard	61
suppose	55	prove	58
prove	46	suppose	58
claim	43	claim	46
propose	40	expect	45
conclude	39	propose	45
expect	37	conclude	43
imply	28	imply	30
view	23	view	25
demonstrate	17	doubt	18
appear	13	demonstrate	17
assume	12	predict	15
doubt	12	appear	14
predict	10	infer	13
infer	10	assume	12
estimate	5	feel	7
feel	5	estimate	6
presume	2	presume	2
speculate	1	speculate	1

Appendix 3 The usage of ELVs English L1 corpus of two analysis in rank order

First time		Second time	
ELVs	Frequency	ELVs	Frequency
seem	225	seem	269
suggest	106	show	131
show	101	suggest	114
argue	55	indicate	95
appear	55	appear	77
expect	52	consider	68
believe	47	expect	66
indicate	45	propose	63
propose	40	believe	56
prove	38	argue	55
consider	35	feel	54
imply	33	prove	47
feel	31	tend	34
demonstrate	30	demonstrate	33
tend	30	imply	33
claim	29	predict	32
assume	27	assume	31
view	18	claim	31
predict	15	think	22
regard	15	view	20
think	8	regard	17
infer	8	infer	10
conclude	5	conclude	7
presume	3	speculate	4
speculate	2	suppose	4
suppose	2	presume	3
estimate	2	estimate	2
doubt	1	doubt	1

Now we are ready to begin our course on
“Verbs for Academic Writing”!



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- ◆ Introduction
- ◆ Pre-test: What You Know Already
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- ◆ Session 3: Grammar Patterns of Epistemic Lexical Verbs
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and the Level of Certainty
- ◆ Post-test: See What You Have Learnt

Introduction:

Verbs for Academic Writing: How to report your and others' statements

In academic writing, you will often be required to report the research of others and also to make assertions with a suitable degree of modesty or confidence.

Here are some examples:

(1) McNamara (2001) **believes** that an ill person will function and think differently than when they are healthy.

(2) Flavell (1977) **suggested** that stages in development must show distinct, qualitative changes rather than differences in quantitative ability.

(3) Midgley (2000) **argues** that thought and culture cannot be broken down into

The verbs in bold above are called **epistemic lexical verbs**.

In academic writing, these verbs can help to show how the reader should interpret other researcher's work, such as a claim (example 1), or a suggestion (example 2), or an argument (example 3). Also, it can be used to show writer's degree of certainty towards their proposition (example 4 and 5).

These are both very important characteristics of academic writing, but learners often struggle with the appropriate use and selection of these verbs.

Let's do some small exercises now!

Please complete the following two exercises independently **without consulting dictionaries or any other reference materials!**





It is not always easy to choose an epistemic lexical verb that expresses both our intended meaning and a suitable 'degree of commitment'.

Course Overview and Objectives:

A corpus study (an investigation of the language of a collection of authentic written texts) comparing the academic English writing of both Chinese and English students has shown a difference in the ways that these students use epistemic lexical verbs:

1. Chinese writers sometimes overuse, underuse and misuse certain epistemic lexical verbs, in comparison with native speakers of English.
2. Chinese students prefer to use more devices which convey a higher degree of confidence, e.g. '*Nunan **argues** that...*' (Chinese writers) vs. '*Nunan **suggests** that...*' (Native speakers).
3. Chinese English learners often use a smaller range of grammar patterns, and sometimes make grammatical errors.



After your self-learning of materials, you should be able to:

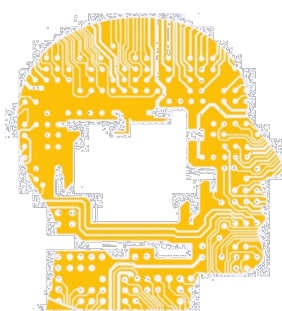
- (1) use a greater range of epistemic lexical verbs choices, and make appropriate verb choices.
- (2) consider the degree of tentativeness or commitment that you want to convey in making statements or reporting the research of others.
- (3) employ a greater variety of grammar patterns and reduce the grammatical errors.

Session 1: Frequent Epistemic Lexical Verbs and Their Categorizations

The following two columns show the most frequent epistemic lexical verbs used by native speakers of English and Chinese students, based on a corpus study.

Top Ten Most Frequent Epistemic Lexical Verbs in Rank Order

Native Speakers of English	Chinese Writers
seem	seem
suggest	believe
show	suggest
argue	show
appear	tend
expect	argue
believe	think
indicate	consider
propose	indicate
prove	regard



Through this course, we are going to take a closer look at the corpus findings and see what we can learn from the table above.

1. It can be observed that Chinese students show a stronger preference for using verb **“think”** (see example 1, below), which is not among the top ten devices for the native speakers.
2. It is worth noting that **“think”** is commonly used in spoken language instead of formal academic written texts. In order to convey a similar meaning, native speakers prefer to use **“believe”** in some contexts (see example 2, below). Here are the examples:
 - (1) I **think** differences between the first language and the second language also stimulate semantic substitution errors. **(Extracted Chinese data)**
 - (2) I **believe** that the exercise of analyzing this model is a very valuable activity for teachers. **(Extracted from a native speaker’s essay)**

It is important to choose a verb that matches the meaning we want to convey. Epistemic lexical verbs can be classified into three main categories: **speculative verbs**, **deductive verbs** and **sensory verbs**.

(1) **Speculative Verbs**: indicates that there is an assumption about the truth of the commitment (Hyland, 1998).

E.g. It is **predicted** that deaths from bowel cancer could drop by 15% as a result of screening.

(2) **Deductive Verbs**: specify that the statements derive from theoretical reasoning or calculation (Hyland, 1998).

E.g. It is **argued** that interview is different from daily chatting as interview has specific aims and it is question-based.

(3) **Sensory Verbs**: are distinguished by the fact that the judgements are made according to sensory evidence which often involves visual proof (Hyland, 1998).

E.g. Through inspecting the figures, there **seems** to be no discrepancies between the two variables.

Exercise:

Please read the following sentences. For each of the verbs in bold, put them into the relevant category (speculative; deductive; sensory) based on your understanding.

- (1) The research results **showed** a distinct difference in the cohesive devices used by older and younger children to construct narrative.
- (2) Although it has not been confirmed, he **believed** that there were three factors that made Florence different from other Italian towns.
- (3) Through observing the statistic results, the model **appears** to be unable to describe acts which perform more than one function.
- (4) Sinclair and Coulthard (1975) **proposed** their BM model for analyzing spoken discourse based on traditional native-speaker classroom interactions.
- (5) In the text, scientific terms are not defined to the reader because the writer of the text simply **assumes** that the reader knows what the acronyms mean.

Your Answer:

- (1) Speculative Verbs:
- (2) Deductive Verbs:
- (3) Sensory Verbs:

Checking Answers:

- (1) Speculative Verbs: believe, assume
- (2) Deductive Verbs: show, propose
- (3) Sensory Verbs: appear

Further Explanation:

(1) The research results **showed** a distinct difference in the cohesive devices used by older and younger children to construct narrative.

Answer: We can see that the distinct difference is reflected in the “**research results**”. This indicates that the statement is based on the evidence. **show→deductive**

(2) Although it has not been confirmed, he **believed** that there were three factors that made Florence different from other Italian towns.

Answer: We see that the statement “**has not been confirmed**”. This indicates that it is likely to be a speculative belief”. **believe→speculative**

(3) Through observing the statistic results, the model **appears** to be unable to describe acts which perform more than one function.

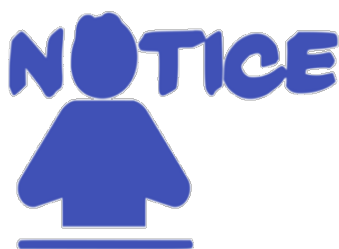
Answer: We can see that the statement is based on “**observing the statistic results**”, which tells us the statement is based on writer’s visual evidence. **appear→sensory**

(4) Sinclair and Coulthard (1975) **proposed** their BM model for analyzing spoken discourse based on traditional native-speaker classroom interactions.

Answer: The model is based on “**based on traditional native-speaker classroom**”, which indicates that “**propose**” belongs to deductive category.

(5) In the text, scientific terms are not defined to the reader because the writer of the text simply **assumes** that the reader knows what the acronyms mean.

Answer: It can be seen that the writer is making a conjecture about the reader’s knowledge. **assume→speculative**



1. Corpus research shows that Chinese English writers use the sensory verb **'appear'** less frequently than sensory verb **'seem'**. English native speakers, however, use both sensory verbs in their academic essays.
2. Also, the corpus investigation reveals that Chinese students tend to use **'appear'** more to express the meaning of **"to begin to be seen"** (example 1, below), while native speakers prefer to use it to **"report what they believe or what they have been told"** (Collins Dictionary) (example 2, below).

(1) The first idea that **appeared** in my mind was gestures.

(Extracted from a Chinese student's essay)

(2) The model **appears** to be unable to describe acts which perform more than one function.

(Extracted from a native speaker's essay)

Session 2: Level of Certainty of Epistemic Lexical Verbs

In the previous session, we have learned that epistemic lexical verbs refer to different types of justification: assumption, theoretical reasoning or sensory conclusion. Choosing the appropriate epistemic lexical verb is also about indicating the appropriate level of certainty in the statement expressed.

All the epistemic lexical verbs can be classified into two broad categories on the basis of their strength of voice:

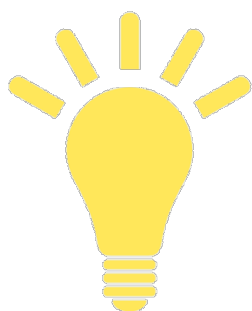
1. If you are sure of your ground, you can use **'strong'** epistemic lexical verbs to relate to your statements.
2. Some epistemic lexical verbs are used to show when you are not very sure about something, these verbs are **'weak'** epistemic lexical verbs.

Examples:

1. Some people **argue** that babies usually start to learn their mother tongues with a single word.
(**argue**-**'strong'** epistemic lexical verb)
2. Some psychologists **suggested** that development was an accumulation of small qualitative changes over time (Butterworth, 2002).
(**suggest**-**'weak'** epistemic lexical verb)

The following table lists some of the most common epistemic lexical verbs to express either a strong or a weak commitment in the academic writing.

Level of Commitment	
Weak	Strong
suggest seem appear indicate claim	believe think argue consider regard conclude



Corpus analysis reveals that Chinese students tend to choose stronger epistemic lexical verbs than native speakers:

They prefer to use more of the stronger verbs to deliver statements with a higher certainty or confidence in the proposition, e.g. ***I think...***. Native speakers of English, however, tend to adopt more of the tentative verbs listed to express a tentative claim, e.g. ***The results indicate...***.

Exercise:

Please read the following examples and tick the sentence which indicates a more tentative tone.

1.

- A) It seems that relative poverty should not be discounted when considering justice.
- B) I think that relative poverty should not be discounted when considering justice.

Answer: “think” expressed more certainty in comparison with “seems”. Choose A.

2.

- A) It appears that majority of wrongful convictions arise from eyewitness error.
- B) I conclude that the majority of wrongful convictions arise from eyewitness error.

Answer: “conclude” expressed more certainty in comparison with “appear”. Choose A.



1. It should be noted that expressions such as “***I believe***”, “***I think***” and “***I conclude***” express a strong commitment to the proposition, even if “***I think***” and “***I believe***” are based on the speculation, rather than theoretical reasoning or calculation.

Session 3: Grammar Patterns of Epistemic Lexical Verbs

In our above examples so far, you may have noticed that some verbs are followed by “**that**”+ **clause**, and some used other patterns. Now we are going to have a look at what grammar constructions can be used with epistemic lexical verbs.



Corpus evidence shows that Chinese students tend to use a restricted number of grammar patterns in their academic essays, compared with native speakers of English.

- (1) Both groups of students make frequent use of the patterns “**Verb + that-clause**”, “**It be + Verb-ed + that-clause**” and “**be + regarded/ + as**”.

Native English Speakers

Nunan (1987) **argues that** the style of language used in the classroom environment may...
The intonation **suggests that** it is more of a question, as it has a slight rising tone.

It is argued that the development of critical realism is a positive development...

It was believed that Man, the animals and all of inanimate nature were linked.
... intonation **is** widely **regarded as** slippery.

Chinese Writers of English

He **believes that** all educational activities are political.

He also **concluded that** in most cases, students only receive the structure...

It is believed that action promotes thinking and lay foundation for...

It is argued that deductive approach is most often consistent with...

It seems that learners have their own learning styles and the styles...

Listening and reading **are regarded as** input parts among the four skills.

(2) Chinese learners of English make a lot less use of the following grammar patterns.

“be considered +adjective/noun” and “be+ considered +to be”

Native English Writers

follow-up move **is considered obligatory** and expected in classroom exchanges...
continuous teacher/faculty development **is considered a prime ingredient** for innovation...
The results **are considered to be** fairly accurate as there was only a slight...

Verb followed by a ‘*noun*’.

Native English Writers

Further studies **suggest correlations** between obesity and a high-fat diet.
Her acts **indicate acceptance** of his topic, but her tonal choice is not encouraging.

Seem/appear with a following a ‘*adjective*’

Native English Writers

Their relationship **seems idealized**, yet it gives the most pleasure throughout the novel.
As such it **appears illogical** that ambush defenses are accused of causing...

Chinese writers tend to use these verbs appear and seem more exclusively in these patterns:

Chinese Writers of English

It seems that learners have their own learning styles and the styles...
Children **seem to** have natural abilities to learn the pronunciation.
This method **appears to** be a one-way interaction, which means it is mostly...

Exercise 3.1:

In academic writing, even experienced learners of English can choose the wrong grammar pattern sometimes. Can you identify the errors in these sentences written by Chinese learners of English, and correct them?"

(1) Communicative Language Teaching is seem as a better method for learner's future language development.

Answer:

"Communicative Language Teaching seems a better method for learners' future language development". or "Communicative Language Teaching is regarded as a better method for learners' future".

Explanations: The writer is treating 'seem' as the synonymous of 'regard', and so misused the grammar pattern. "Regard" can be used in the pattern " **be+regarded+as...**", "seem" can be used in the pattern "**seem to be**", "**seems like**", "**seem+noun.**"

(2) There is no evidence shows which approach matches which age group better.

Answer:

"There is no evidence showing which approach matches which age group better" or "There is no evidence to show which approach matches which age group better".

Explanations: There are two tensed verbs in the sentence: 'is' [present tense] and 'shows' [present tense]. This is a very common mistake when using "There be +..." sentence structure for Chinese students.

(3) This should be regarded to a strength rather than a weakness.

Answer:

"This should be regarded as a strength rather than a weakness".

Explanations: The writer misused the pattern "be regarded as...".

Exercise 3.2:

Please read the following sentences and rewrite them with a different grammar construction.

(1) It seems that the rationality of such actions is unquestionable.

(change to **seem+ 'adjective'**)

Answer: The rationality of such actions seems unquestionable.

(2) It was considered a problem for the state to acknowledge the emperor as divine.

(change to **be + considered +to be**)

Answer: It was considered to be problematic for the state to acknowledge the emperor as divine.



WELL DONE!

Only one more session to go!

Session 4: Sentence Constructions of Epistemic Lexical Verbs and the Level of Certainty

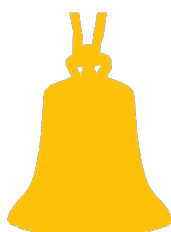
It is not only the verbs themselves that can express different level of modesty or confidence, but different sentence constructions can also indicate your attitude towards the statement reported.

Category 1: Writer Prominent Constructions

Writer prominent constructions often emphasize the writer's their own personal responsibility for the claims, or they may include the reader in order to persuade them to accept the statements reported. Three different types can be adopted to fulfill the above-mentioned functions, shown in the following examples:

1. **I believe** that some of these aspects within this research are not concrete enough to allow generalization.
2. **We believed** that the errors involved were reduced to insignificance.
3. **One considers** that women are more likely to be sexually assaulted by a relative.

Using first person pronoun 'I' (as example A) expresses writer's stronger certainty towards his/her statement, compared with the use of first-person plural pronoun 'we' (as in example B)



Using "One" (as example C) as subject can indicate the claim is expressed either by you or the rewriter, which helps to weaken your personal voice and enables readers to agree with your statement in an acceptable way. **This construction is rare among native English writers, but Chinese writers tend to use even less of this construction.**



Differences in the usage of the 'I' and 'We' between native speakers and Chinese writers:

- (1) Chinese students show a strong preference to use first-person pronoun structure, and they also restrict their choices mostly to "***I think...***". In contrast, native speakers use a wider range of epistemic lexical verbs (e.g. believe, regard, predict) with "***I***".
- (2) First person plural pronoun "**we**" is more frequently used by native speakers, while Chinese writers seem to be less familiar with this structure.

Category 2: Information Prominent Constructions

Sometimes, writers want to shift the responsibility for the claim from themselves to the research or the researchers under discussion. Three useful constructions can be used to allow writers to weaken the voice strength of their statements.

A. "It is" + verb-ed "that" clause

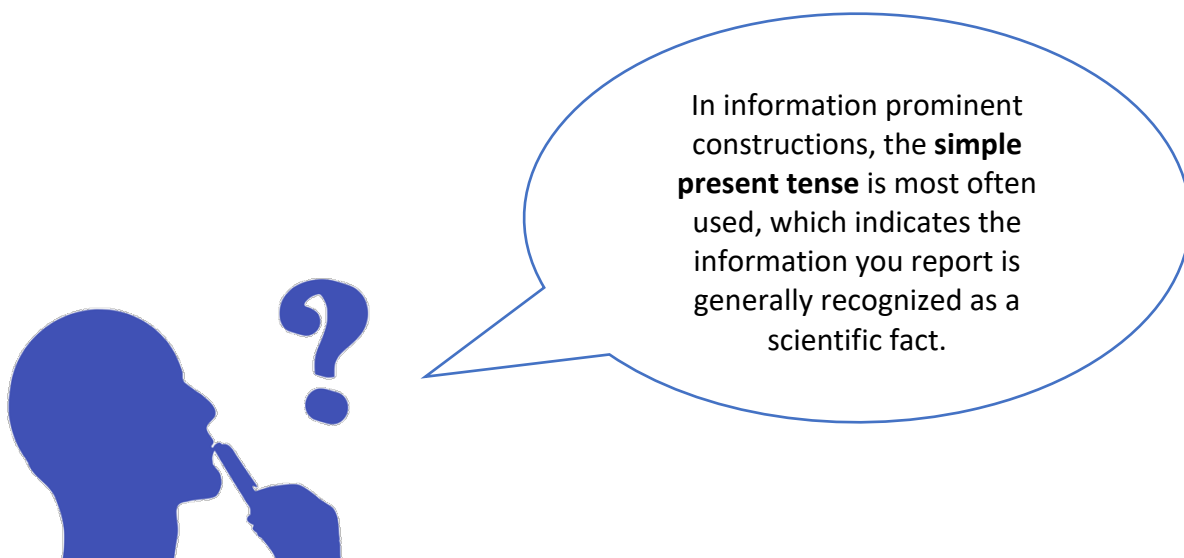
It is argued that badgers are the main spreaders of the disease.

B. attribute claims to text or data

Most evidence indicates that similarity of personality is important.

C. passive constructions

The Civil War in Russia could **be considered** a fight between Reds and Whites.



From corpus evidence, Chinese writers show a stronger tendency to use the "It is" + verb-ed "that" clause construction (see example A above). However, sometimes they make grammatical errors. Can you identify the mistake in the following example?

It can be proven, according to Corder (1967), "Let us say that, given motivation, it is inevitable that a human being will learn a second language if he is exposed to the language data."

Explanation:

We expect a that-clause to follow "it+ be +Verb-ed", which contains a statement. The correct answer should be: It can be proven, according to Corder (1967), that "a human being will learn a second language if he is exposed to the language data". Or, According to Corder (1967), it can be proven that " a human being will learn a second language if he is exposed to the language data".

Category 3: Author Prominent Constructions

Author prominent constructions are also often adopted in academic writing to help to shift the writer's responsibilities to another. There are two useful approaches, both of which serve to bring a sense of authority to the statement:

A. transfer your responsibility to specific researcher(s)

Huddleston and Pullum (2005) argue that the following words are unnecessary to own the dual identity.

B. attribute your own opinion to a certain group people, e.g. language analysts, scholars

Functionalists believe that tense is not the just the grammatical state of the verb (e.g. Reichenbach, 1947).

More about Type B:

The two following examples are from essays written by a Chinese student and a native English writer. Can you identify which one is written by the native English writer and also give your reasons?

- (1) Some scholars thought that deductive approaches which illustrate rules firstly and then examples, had more logic than inductive ones.
- (2) Some scholars argue that with abundant communicative input and output, the knowledge of grammar is generated naturally without explicit instruction (e.g. Krashen 1981, 1982).

Answer: The second sentence

Explanation:

1. Example (2) gives an example of this group of scholars and provides a reference. This means that the assertion made in that sentence is supported by evidence.
2. Example (1) contains the verb **THINK**. Native speakers do not tend to use it to report other researchers' thoughts in academic writing.

Conclusion:

You have now completed the main session! Let's do some short activities to check how much you have learnt!



Well done! You have now completed all the learning sessions!

In the following part, you will be invited to fill in a very short questionnaire (only takes you 5 minutes) asking about your learning experience.

Please read the questions carefully and let me know how you feel about the above learning materials.



Now we are ready to begin our course on
“Verbs for Academic Writing”!



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- ◆ Introduction
- ◆ Pre-test: What You Know Already
- ◆ Course Overview and Objectives
- ◆ Session 1: Frequent Epistemic Lexical Verbs and Their
Categorizations
- ◆ Session 2: Level of Certainty of Epistemic Lexical Verbs
- ◆ Session 3: Grammar Patterns of Epistemic Lexical Verbs
- ◆ Session 4: Sentence Constructions of Epistemic Lexical Verbs
and the Level of Certainty
- ◆ Post-test: See What You Have Learnt

Introduction:

Verbs for Academic Writing: How to report your and others' statements

In academic writing, you will often be required to report the research of others and also to make assertions with a suitable degree of modesty or confidence.

Here are some examples:

- (1) McNamara (2001) **believes** that an ill person will function and think differently than when they are healthy.
- (2) Flavell (1977) **suggested** that stages in development must show distinct, qualitative changes rather than differences in quantitative ability.
- (3) Midgley (2000) **argues** that thought and culture cannot be broken down into distinct units, since they are moving and developing patterns in human behaviors.
- (4) It is **expected** that the noise will be a distractor, causing some memory impairment.
- (5) It **seems** imperative for both witnesses and the legal system to be aware of these Factors.

The verbs in bold above are called **epistemic lexical verbs**.

In academic writing, these verbs can help to show how the reader should interpret other researcher's work, such as a claim (example 1), or a suggestion (example 2), or an argument (example 3). Also, it can be used to show writer's degree of certainty towards their proposition (example 4 and 5).

These are both very important characteristics of academic writing, but learners often struggle with the appropriate use and selection of these verbs.

Let's do some small exercises now!

Please complete the following two exercises independently **without consulting dictionaries or any other reference materials!**





It is not always easy to choose an epistemic lexical verb that expresses both our intended meaning and a suitable 'degree of commitment'. This learning materials are designed to help you to make appropriate choices in your future academic essays.

Course Overview and Objectives:

A corpus study reveals that English students showed a difference in the way of using epistemic lexical verbs:

1. They are able to use a wider range of epistemic lexical verbs and make a more appropriate verb choice.
2. They prefer to use more tentative devices to weaken their statements. e.g. '*Nunan **suggests** that...*'
3. They are able to use more various grammar patterns to deliver in making claims.



After your self-learning of materials, you should be able to:

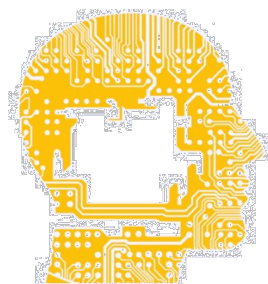
- (1) use a greater range of epistemic lexical verbs choices, and make appropriate verb choices.
- (2) consider the degree of tentativeness or commitment that you want to convey in making statements or reporting the research of others.
- (3) employ a greater variety of grammar patterns and reduce the grammatical errors.

Session 1: Frequent Epistemic Lexical Verbs and Their Categorizations

The following column shows the most frequent epistemic lexical verbs used by native speakers of English.

Top Ten Most Frequent Epistemic Lexical Verbs in Rank Order

Native Speakers of English	
	seem
	suggest
	show
	argue
	appear
	expect
	believe
	indicate
	propose
	prove



Through this course, we are going to take a closer look at the corpus findings and see what we can learn from the table above.

From above table, native speakers use “**seem**” and “**appear**” frequently in their academic writing to report “what they believe or what they have been told, although they are not sure” (Collins Dictionary).

1. It **seems** expedient for language teachers to analyze the language of the classroom and assess its effectiveness.
2. Observing the results, the model **appears** to be unable to describe acts which perform more than one function.

Also, English speakers use “**suggest**”, “**argue**” and “**believe**” often to either report the research or findings of other scholars or convey their own standpoints.

1. To address the proposed problem, Hedge (2000) **suggests** a number of ways to strike a balance between accuracy and fluency.
2. Prabhu (1987) **argues** that reasoning-gap tasks are most effective, as they promote a more sustained interaction with meaning.
3. I **believe** this assignment is one of the most powerful catalysts for change.

In addition, they prefer to use “show” “indicate” as well as “suggest” to express their statements on a reference of examples, data results and so on.

1. The results **showed** that an educational intervention resulted in a reduction in visits to the child health clinic.
2. The data **indicated** that these two discourse activities differed greatly in many respects.
3. In English language, the inconstant relationship between form and function **suggests** that perhaps forms can never be comprehensively presented and explained, as attempted in various pedagogical grammars.

It is important to choose a verb that matches the meaning we want to convey. Epistemic lexical verbs can be classified into three main categories: **speculative verbs**, **deductive verbs** and **sensory verbs**.



(1) **Speculative Verbs**: indicates that there is an assumption about the truth of the commitment (Hyland, 1998).

E.g. It is **predicted** that deaths from bowel cancer could drop by 15% as a result of screening.

(2) **Deductive Verbs**: specify that the statements derive from theoretical reasoning or calculation (Hyland, 1998).

E.g. It is **argued** that interview is different from daily chatting as interview has specific aims and it is question-based.

(3) **Sensory Verbs**: are distinguished by the fact that the judgements are made according to sensory evidence which often involves visual proof (Hyland, 1998).

E.g. Through inspecting the figures, there **seems** to be no discrepancies between the two variables.

Exercise:

Please read the following sentences. For each of the verbs in bold, put them into the relevant category (speculative; deductive; sensory) based on your understanding.

- (1) The research results **showed** a distinct difference in the cohesive devices used by older and younger children to construct narrative.
- (2) Although it has not been confirmed, he **believed** that there were three factors that made Florence different from other Italian towns.
- (3) Through observing the statistic results, the model **appears** to be unable to describe acts which perform more than one function.
- (4) Sinclair and Coulthard (1975) **proposed** their BM model for analyzing spoken discourse based on traditional native-speaker classroom interactions.
- (5) In the text, scientific terms are not defined to the reader because the writer of the text simply **assumes** that the reader knows what the acronyms mean.

Your Answer:

- (1) Speculative Verbs:
- (2) Deductive Verbs:
- (3) Sensory Verbs:

Checking Answers:

- (1) Speculative Verbs: believe, assume
- (2) Deductive Verbs: show, propose
- (3) Sensory Verbs: appear

Further Explanation:

(1) The research results **showed** a distinct difference in the cohesive devices used by older and younger children to construct narrative.

Answer: We can see that the distinct difference is reflected in the “**research results**”. This indicates that the statement is based on the evidence. **show→deductive**

(2) Although it has not been confirmed, he **believed** that there were three factors that made Florence different from other Italian towns.

Answer: We see that the statement “**has not been confirmed**”. This indicates that it is likely to be a speculative belief”. **believe→speculative**

(3) Through observing the statistic results, the model **appears** to be unable to describe acts which perform more than one function.

Answer: We can see that the statement is based on “**observing the statistic results**”, which tells us the statement is based on writer’s visual evidence. **appear→sensory**

(4) Sinclair and Coulthard (1975) **proposed** their BM model for analyzing spoken discourse based on traditional native-speaker classroom interactions.

Answer: The model is based on “**based on traditional native-speaker classroom**”, which indicates that “**propose**” belongs to deductive category.

(5) In the text, scientific terms are not defined to the reader because the writer of the text simply **assumes** that the reader knows what the acronyms mean.

Answer: It can be seen that the writer is making a conjecture about the reader’s knowledge. **assume→speculative**

Session 2: Level of Certainty of Epistemic Lexical Verbs

In the previous session, we have learned that epistemic lexical verbs refer to different types of justification: conjecture, theoretical reasoning or sensory conclusion. Choosing the appropriate epistemic lexical verb is also about indicating the appropriate level of commitment in the proposition expressed.

All the epistemic lexical verbs can be classified into two broad categories on the basis of their voice of strength:

1. If you are sure of your ground, you can use **'strong'** epistemic lexical verbs to relate to your statements.
2. Some epistemic lexical verbs are used to show when you are not very sure about something, we can use these verbs **'weak'** epistemic lexical verbs.

Examples:

1. Some people **argue** that babies usually start to learn their mother tongues with a single word. (**argue**-**'strong'** epistemic lexical verb)
2. Some psychologists **suggested** that development is an accumulation of small qualitative changes over time (Harris & Butterworth, 2002). (**suggest**-**'weak'** epistemic lexical verb)

The following table lists some of the most common epistemic lexical verbs to express either a strong or a weak commitment in the academic writing.

Level of Commitment	
Weak	Strong
suggest seem appear indicate claim	believe think argue consider regard conclude

Exercise:

Please read the following examples and tick the sentence which indicates a more tentative tone.

1.

- A) It seems that relative poverty should be not discounted when considering justice.
- B) I think that relative poverty should not be discounted when considering justice.

2.

- A) It appears that majority of wrongful convictions arise from eyewitness error.
- B) I conclude that the majority of wrongful convictions arise from eyewitness error.



1. It should be noted that expressions such as “***I believe***”, “***I think***” and “***I conclude***” express a strong commitment to the proposition, even if “***I think***” and “***I believe***” are based on the speculation, rather than theoretical reasoning or calculation.

Session 3:

In our above examples so far, you may have noticed that some verbs are followed by **“that”+ clause**, and some used other patterns. Now we are going to have a look on what grammar constructions can be used with epistemic lexical verbs.



Corpus evidence shows that native English of speakers tend to use following grammar patterns frequently in their academic essays.

(1) **“Verb + that-clause”, “It be + Verb-ed + that-clause” and “be + regarded+as”.**

Native English of Speakers

Nunan (1987) **argues that** the style of language used in the classroom environment may...
The intonation **suggests that** it is more of a question, as it has a slight rising tone.

It is argued that the development of critical realism is a positive development...

It was believed that Man, the animals and all of inanimate nature were linked.
... intonation **is** widely **regarded as** slippery.

(2) **“be considered +adjective/noun ” and “be+ considered +to be”**

Native English Writers

follow-up move **is considered obligatory** and expected in classroom exchanges...
continuous teacher/faculty development **is considered a prime ingredient** for innovation...
The results **are considered to be** fairly accurate as there was only a slight...

(3) **Verb** followed by a ‘noun’.

Native English Writers

Further studies **suggest correlations** between obesity and a high-fat diet.
Her acts **indicate acceptance** of his topic, but her tonal choice is not encouraging.

(4) Seem/appear with a following a '*adjective*'/ '*to do*' and "*it appears/seems that + clause*"

Native English Writers

Their relationship **seems idealized**, yet it gives the most pleasure throughout the novel.

Sheep **seem to** sense this danger and avoid these patches.

It seems that equal political rights are not an adequate response to Okin's...

As such it **appears illogical** that ambush defenses are accused of causing...

The authors **appear to** have deliberately avoided linguistic terminology,

It appears that its perceived status is greater than reality.

Exercise:

Please read the following sentences and rewrite them with a different grammar construction.

(1) It seems that the rationality of such actions is unquestionable.

(change to **seem+ 'adjective'**)

Answer: The rationality of such actions seems unquestionable.

(2) It was considered as a problem for the state to acknowledge the emperor as divine.

(change to **be + considered +to be**)

Answer: It was considered problematic for the state to acknowledge the emperor as divine.



WELL DONE!

Only one more session to go!

Session 4: Sentence Constructions of Epistemic Lexical Verbs and the Level of Certainty

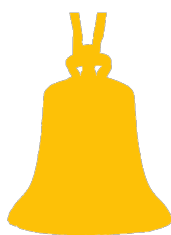
It is not only the verbs themselves that can express different level of modesty or confidence, but different sentence constructions can also indicate your attitude towards the statement reported.

Category 1: Writer Prominent Constructions

Writer prominent constructions often emphasize the writer's their own personal responsibility for the claims, or they may include the reader in order to persuade them to accept the statements reported. Three different types can be adopted to fulfill the above-mentioned functions:

1. **I believe** that some of these aspects within this research are not concrete enough to allow generalization.
2. **We believed** that the errors involved were reduced to insignificance.
3. **One considers** that women are more likely to be sexually assaulted by a relative

Using first person pronoun 'I' (as example A) expresses writer's stronger certainty towards his/her statement, compared with the use of first-person plural pronoun '**we**' (as in example B)



Using "One" (as example C) as subject can indicate the claim is expressed either by you or the reader, which helps to weaken your personal voice and enables writers to agree with your statement in an acceptable way. **This is a rare construction.**

Category 2: Information Prominent Constructions

Sometimes, writers want to shift the responsibility for the claim from themselves to the research or the researchers under discussion. Three useful constructions can be used to allow writers to weaken the voice strength of their statements.

A. “It is” + verb-ed “that” clause

It is argued that badgers are the main spreaders of the disease.

B. attribute claims to text or data

Most evidence indicates that similarity of personality is important.

C. passive constructions

The Civil War in Russia could **be considered** a fight between Reds and Whites.



In information prominent constructions, the **simple present tense** is mostly often used, which indicates the information you report is generally recognized as a scientific fact.

Category 3: Author Prominent Constructions

Author prominent constructions are also often adopted in academic writing to help to shift the writer's responsibilities to another. There are two useful approaches, both of which serve to bring a sense of authority to the statement:

A. transfer your responsibility to specific researcher(s)

Huddleston and Pullum (2005) argue that the following words are unnecessary to own the dual identity.

B. attribute your own opinion to a certain group people, e.g. language analysts, scholars

Functionalists believe that tense is not the just the grammatical state of the verb.
(e.g. Reichenbach, 1947)

When using **Type B**, it is necessary to write with references or evidence supported as the example (1) or the example (2).

(1) **Functionalists believe** that tense is not the just the grammatical state of the verb.
(e.g. Reichenbach)

(2) **Some scholars argue** that with abundant communicative input and output, the knowledge of grammar is generated naturally without explicit instruction (e.g. Krashen 1981, 1982).

Conclusion:

You have now completed the main session! Let's do some short activities to check how much you have learnt!



Well done! You have now completed all the learning sessions!

In the following part, you will be invited to fill in a very short questionnaire (only takes you 5 minutes) asking about your learning experience.

Please read the questions carefully and let me know how you feel about the above learning materials.



Appendix 6 Pre-test for both EG and CG groups

Pre-test: What you know already

Exercise 1:

Please fill the gap in the following examples of academic writing, choosing what you think the most appropriate lexical verb. Don't worry if you are struggle with this exercise; there will be plenty of opportunities to advance your understanding on this topic.



(1) Tannen's research (1994) has () that women talk more about relationships, children, clothes and hairstyles, compared with men.

Check Answers: suggested verbs here are *shown, indicated, demonstrated, proven*.

(2) Observing results, it () that intelligence scores are not only determined by genetics; environmental factors play a role too.

Check Answers: suggested verbs here are *appears, seems*.

(3) Grice () that speakers are cooperating in communication, and this led him to develop his 'cooperative approach'.

Check Answers: suggested verbs here are *assumed, believed, suggested, supposed*.

(4) Taking the opposing viewpoint, Nunan (1987) () that style of language used in the classroom environment can seriously affect a student's ability to cope in the real world.

Check Answers: suggested verbs here are *argues, suggests, claims*.

(5) It was not until the mid-nineteenth century that hysteria emerged as an endemic disease among bourgeois women in America. Therefore, we can () that it is a disease particularly to the Victorian bourgeois family.

Check Answers: suggested verb here is *conclude*.

(6) In traditional cultural patterns, women should look for men who are in top positions in companies or other positions of power. However, I () that in future generations, women will place increasingly less importance on men's wealth and power.

Check Answers: suggested verb here is *predict*.

(7) All three students were () 'skilled' readers, as they had no learning problems and had to regularly read university level texts as part of their degree courses.

Check Answers: suggested verbs here is *considered*.

Exercise 2:

For the examples below, please sort the three verbs in bold according to the different degree of the commitment they convey.



- (1) Many studies **indicate/show/suggest** that species have larger distributions where rainfall is more seasonal.

WEAKER >>>>>>>>>>>>>>> STRONGER

[illegible]

Check Answers: WEAKER: indicate, suggest; STRONGER: show.

- (2) Hume **supposes/argues/claims** that human nature fits in perfectly with a law-abiding and predictable world.

WEAKER >>>>>>>>>>>>> STRONGER

$$\left(\begin{array}{c} \vdots \\ \vdots \\ \vdots \end{array} \right) >>>>>>>>>>>>>>>>>> \left(\begin{array}{c} \vdots \\ \vdots \\ \vdots \end{array} \right)$$

Check Answers: WEAKER: **supposes**; STRONGER: **argues, claims**.

- (3) Taking into account the informal setting and the class size, we **expected/speculated/predicted** that there would be some differences in the data gathered for this particular class.

WEAKER >>>>>>>>>>>>>>> STRONGER

[illegible]

Check Answers: WEAKER: speculated; STRONGER: expected, predicted.

- (4) Based on the current situation, I **think/suggest/believe** it is more efficient for the farm to employ outside workers to complete jobs when necessary.

WEAKER >>>>>>>>>>>>>>> STRONGER

[illegible]

Check Answers: WEAKER: suggest; STRONGER: think, believe.

Appendix 7 Post-test for both EG and CG groups

Post-test: SEE WHAT YOU HAVE LEARNED

Exercise 1:

For the following examples, please choose the most appropriate epistemic lexical verb that matches the context.

(1) Based on his research results, Hewings (1992) () that an accurate interpretation of utterances in discourse demands analysis of intonational characteristics.

A. argues

B. believes

Answer: We can see that the statement is based on Hewings' research results, which indicates that it is a theoretical conclusion. **Choose A**

(2) Looking at the graph, it () that cognitive development maybe depends more on the social background of the infant.

A. appears

B. shows

Answer: We can see that the statement is based on visual evidence from the graph. Also, "maybe" indicates that the writer is not very certain about his/her statement.

Choose A

(3) Although I am not certain about it, I () there would be some differences in the data gathered for this particular class.

A. predict

B. propose

Answer: We can see that writer is speculating that there would be some differences, but is not sure about it, therefore, **Choose A** is more appropriate.

(4) It is () that the methodological approach adopted by the teacher as well as their perceptions of foreign language learning might be influenced considerably by the textbook.

A. assumed

B. shown

Answer: “Might” in the sentence indicates the writer is making a conjecture that the teachers’ methodological approach and perceptions could be influenced by the textbook, although he/she is not sure about it. Therefore, we **Choose A**

(5) Morgan (1997) () that the individual is unlikely to disclose how they feel about the medical advice if they do not feel the doctor will listen.

A. believes

B. thinks

Exercise 2:

Please compare two examples in each group, and choose the one that conveys a more tentative meaning.

(1)

- A. I believe that the tax influences consumer's spending.
- B. One assumes that a demonstration video would dramatically increase sales.

Answer: Compared with '*believe*', '*assume*' expresses a tentative commitment. Also, the first personal pronoun "I" strengthens the level of the certainty towards the statement.

Choose B

(2)

- A. We conclude that at 1% significance level, we can reject the null hypothesis that class attendance is not related to exam performance.
- B. Some researchers conclude that there are several managements and non-management factors influencing fox predation on lambs (e.g. Moberley et al, 2003).

Answer: The first sentence contains the first personal plural pronoun, which strengthens the certainty of the commitment. The construction in the second sentence attributes the statement to a certain group of people "researchers". Therefore, we **choose B**.

(3)

- A. Some scholars argue that the institutional changes led to technological change (e.g. Overton, 1996).
- B. By observing the research results, it seems the extinction of certain species are associated with climate change.

Answer: The second sentence adopted '*seem*', which expresses a lower degree of certainty towards the claims, compared with the first sentence using '*argue*'. Therefore, we **choose B**.

Exercise 3.1:

In each case, please identify the errors and write down the correct sentences.

- (1) There are four comments suggest that the racist video and insulting message have a bad effect on the image of the whole brand.

Suggested Answer:

“There are four comments suggesting that the racist video and insulting message have a bad effect on the image of the whole brand” or “There are four comments to suggest that the racist video and insulting message have a bad effect on the image of the whole brand”.

Explanations: There are two tensed verbs in the sentence: ‘are’ [present tense] and ‘*suggest*’ [present tense]. Therefore, suggest should be change to “**suggesting**” or “**to suggest**”.

- (2) Coping is seemed as a shifting process, influenced, to some extent, by the characteristics of personality (Revenson, 1987).

Suggested Answer:

“Coping is regarded/considered as a shifting process, influenced, to some extent, by personality characteristics (Revenson, 1987).” Or, “Coping seems a shifting process, influenced, to some extent, by the characteristics of personality (Revenson, 1987)”.

Explanations: The writer is treating ‘*seem*’ as the synonymous with ‘*regard*’ or ‘*consider*’, and so misused the grammar pattern. “Regard” and “consider” can be used in the pattern “**be regarded/considered as**”; seem can be used in the pattern “**seem +noun.**”, “**seem to be**”, “**seem like + noun.**”

Exercise 3.2:

Please read the following sentences and rewrite them with the required grammar patterns suggested.

- (1) Sharing a kitchen appears to be an important factor in the formation of friendships.
(change to ***It + appears+ that***)

Answer: It appears that sharing a kitchen is an important factor in the formation of friendships.

- (2) The previous evidence indicates that there is an overlap between chronic illness and impairment.

(change to ***indicate with a following noun expression***)

Answer: The previous evidence indicates an overlap between chronic illness and impairment.

Exercise 4:

Please read the sentences below and rewrite them in the way suggested. Please try not to change the original 'degree of commitment' conveyed by the statement.

(1) Based on the previous evidence, I suggest that the Egyptian culture was in fact relatively open.

(rewrite the example by using a construction that **DOES NOT** refer to the writer (I, we, one))

Suggested Answers:

(A) The previous evidence suggests that the Egyptian culture was in fact relatively open.

(B) Based on the previous evidence, it is suggested that Egyptian culture was in fact relatively open.

(2) The results show that the system has a response time of approximately 14000 seconds.

(rewrite the example by using construction "*It is+ Verb-ed+that*")

Suggested Answers:

(A) It is shown by the results that the system has a response time of approximately 14000 seconds.

(B) According to the results, it is shown that the system has a response time of approximately 14000 seconds.

(3) Dornyei (2001, p. 108) argues that a learner's motivation can be increased by promoting his/her learning autonomy.

(rewrite the example by attributing your opinion to a certain group people, e.g. scholars, language analysts)

Suggested Answer:

(A) Some linguists argue that a learner's motivation can be increased by promoting

his/her learning autonomy (e.g. Dornyei, 2001, p.108).

(B) Some scholars (e.g. Dornyei, 2001, p.108) argue that a learner's motivation can be increased by promoting his/her learning autonomy.

Appendix 8 delayed post-test for both EG and CG groups

Hello again! Thank you very much for completing the previous self-learning activities!

Now, let's do another small test to see how much knowledge has been



Exercise 1:

For the following examples, please choose the most appropriate epistemic lexical verb that matches the context.

(1) Despite lacking solid research evidence, State theorists (e.g. Brow, 1985) () that hypnosis may alter a person's state of awareness.

A assume

B. consider

Answer: ““lacking solid research evidence” indicates that the statement is not derived from the theoretical evidence. Also, ‘may’ indicates State theorists are not very sure of the statement, and that the statement amounts to an assumption. Therefore, we choose **A. assume**.

(2) Archaeologists have always argued over the meaning of monumental structures in the field of archaeology. I () that archaeologists will certainly continue this debate to build up a greater understanding of these monumental structures.

A. suggest

B. predict

Answer: From ‘will certainly’ in the sentence, we can see that the writer expresses a stronger certainty towards his/her statement. Also, ‘will’ suggests the event is going to happen in the future. Therefore, we choose **B. predict**.

(3) Observing the data analysis results, it () that behaviour therapy is likely to be a useful and well-used form of treatment for some psychological disorders.

A. appears

B. shows

Answer: We can see the statement is based on visual evidence from ‘Observing the data analysis results’. Also, ‘is likely to’ indicates that the writer is not sure about the his/her statement. Therefore, we choose **A. appears**.

(4) Based on the previous analysis, Benner (1984 cited in: Muir, 2004) () that intuition is an essential part of nursing judgement.

A. argues

B. speculates

Answer: we can see the statement is 'based on the previous analysis', which indicates that it is a theoretical conclusion. 'Speculate' indicates that there is an assumption when the writer is expressing his/her statement. 'argue', however, indicates that the statement is based on the evidence. Therefore, we choose **A. argues**.

Exercise 2:

Please compare two examples in each group and choose the one that conveys a more tentative meaning.

(1)

A. I think that the issue of class and gender can be significantly linked together, when looking at the role of prestige in the society.

B. In terms of porridge's supreme nutritional value, one expects it to have been a predominant foodstuff for the lower social classes.

Answer: Although both verbs '*think*' and '*expect*' express a strong commitment, the first person pronoun '*I*' strengthens the level of the certainty towards the statement. Therefore, we choose B.

(2)

A. The statistics suggest that if aggressive acts are not always chastised, children will hold a belief that their modes of behavior are acceptable.

B. We believe that we are able to obtain a better understanding of communication and interpersonal skills with a variety of people in a range of settings.

Answer: 'believe' in the second example delivers a stronger level of certainty, compared with "suggest" in the first sentence. Also, "We" in the second example strengthens the certainty of the statement. Therefore, we choose A.

(3)

- A. Pinker and Prince (1988) conclude that the model had failed to generalize the past tense transformation in English to novel verbs.
- B. It is assumed that children have already perceived and stored adult representations that they can map onto before they start producing words.

Answers: The first sentence adopted 'conclude', which indicates a stronger commitment, compared with 'assume' in the second example. Therefore, we choose B.

Exercise 3.1:

In each case, please identify the errors and write down the correct sentences.

- (1) Shakespeare is seemed as one of the first writers to include Gothic conventions in his works.

Suggested Answers:

- A. Shakespeare is regarded/considered as one of the first writers to include Gothic conventions in his works.
- B. Shakespeare seems/seems to be/seems like one of the first writers to include Gothic conventions in his works.

Explanations:

The writer is treating 'seem' as the synonymous with 'regard' or 'consider', and so misused the grammar pattern. "Regard" and "consider" can be used in the pattern "**be regarded/considered as**"; seem can be used in the pattern "**seem +noun.**", "**seem to be**", "**seem like + noun.**"

- (2) There are several research results show that the parenting style is the key.

Suggested Answers:

A. There are several research results showing that the parenting style is the key.

B. There are several research results to show that the parenting style is the key.

Explanations:

There are two tensed verbs in the sentence: 'are' [present tense] and 'show' [present tense]. Therefore, suggest should be changed to "showing" or "to show".

Exercise 3.2:

Please read the following sentences and rewrite them with the required grammar patterns suggested.

(1) It seems that investing money in an area with profit potential is wise. (use the grammar pattern **seem + adj.**)

Answer:

A. It seems wise to invest money in an area with profit potential.

B. Investing money in an area with profit potential seems wise.

(2) This study suggests that there is a difference in brain functioning between psychopaths and non-psychopaths. (change to **suggest with a following noun expression**)

Answer:

This study suggests a difference in brain functioning between psychopaths and non-psychopaths.

Exercise 4:

Please read the sentences below and rewrite them in the way suggested.

(1) Wodak and Meyer (2001) argue that language has no power of its own; it only gains power

when powerful people use it.

(rewrite the example by attributing the expressed opinion to a certain group of people, e.g. scholars, language analysts)

Suggested Answers:

(A) Some scholars **(e.g. Wodak and Meyer, 2001)** argue that language has no power of its own; it only gains power when powerful people use it.

(B) Some language analysts argue that language has no power of its own; it only gains power when powerful people use it **(e.g. Wodak and Meyer, 2001)**.

Note: It is always a good idea to include a reference that provides at least one example of the 'group of people' who are making this claim.

(2) From the facts provided, I suggest that teachers' ability to tailor their classes to fit their learners compensates for any inconsistency in approaches.

(rewrite the example by using a construction that DOES NOT refer to the writer (I, we, one))

Suggested answerers:

(A) The facts provided suggest that teachers' ability to tailor their classes to fit their learners compensates for any inconsistency in approaches.

(B) Based on the facts provided, it is suggested that teachers' ability to tailor their classes to fit their learners compensates for any inconsistency in approach.

(3) According to Eves (2000), wild apes are predicted to become extinct within the next fifteen to fifty years. (rewrite the example by using construction **"it is+ Verb-ed+that"**)

Suggested answers:

According to Eves (2000), it is predicted that wild apes will become extinct within the next fifteen to fifty years.

Appendix 9 Questionnaire One

Demographic questions: Please provide the following information

1. What is your gender?

A. male B. female C. others D. prefer not to say

2. What is your age?

A. 18-25 B. 26-35 C. over 35

3. How long have you been studying English (years)

4. Are you still a student now?

A. Yes B. No

5. What subject are you studying now? (Question 4-----A. Yes)

6. What is your highest qualification? (Question 4-----B. No)

7. What is the subject of your highest qualification? (Question 6----Question 7)

8. What is your latest IELTS score and when did you take it roughly?

Time: Overall score: Reading: Writing:

9. Please provide your name and your email address so that I can share the learning materials with you.

Name: _____

Email Address: _____

Appendix 10 Questionnaire Two

Experimental group:

1. Please read the following questions and select your response to the statement from the options provided.

1.1 How do you evaluate the difficulty of learning epistemic lexical verbs via the corpus-informed materials?

A. very difficult B. difficult C. neutral D. easy E. very easy

1.2 How would you rate your participation in learning epistemic lexical verbs through corpus-informed materials?

A. very active B. active C. neutral D. inactive E. very inactive

1.3 How useful did you find learning about epistemic lexical verbs through the corpus-informed materials?

A. very useful B. useful C. neutral D. useless E. very useless

2. Please read the following statements carefully and indicate to what extent you agree or disagree with each one.

2.1 I think the content of the corpus-informed materials is clearly and logically introduced.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.2 I think the corpus-informed materials increased my confidence in using epistemic lexical verbs in my future academic writing.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.3 I was able to understand how to use epistemic lexical verbs appropriately through the examples of native writers of English.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.4 I really feel that examples from Chinese students' essays help to improve my awareness of the errors that Chinese writers of English tend to make.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.5 I recommend that English language teachers should incorporate more authentic Chinese students' data to teach Chinese English learners about epistemic lexical verbs.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.6 I would have preferred not to see the Chinese students' examples in the corpus-informed materials as I worry that might lead me to reproduce the inaccuracies in my own work.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.7 I was able to understand the differences in epistemic lexical verb usage through the comparison between native language and Chinese learner production.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.8 I have found that the materials combining both native-speaker examples and Chinese English learner examples have reinforced my understanding of epistemic lexical verbs.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

Open-ended question:

Which part do you think is the most useful part in the materials for learning ELVs?

Control group:

1. Please read the following questions and select your response to the statement from the options provided.

1.1 How do you evaluate the difficulty of learning epistemic lexical verbs via the corpus-informed materials?

A. very difficult B. difficult C. neutral D. easy E. very easy

1.2 How would you rate your participation in learning epistemic lexical verbs through corpus-informed materials?

A. very active B. active C. neutral D. inactive E. very inactive

1.3 How useful did you find learning about epistemic lexical verbs through the corpus-informed materials?

A. very useful B. useful C. neutral D. useless E. very useless

2. Please read the following statements carefully and indicate to what extent you agree or disagree with each one.

2.1 I think the content of the corpus-informed materials is clearly and logically introduced.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.2 I think the corpus-informed materials increased my confidence in using epistemic lexical verbs in my future academic writing.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.3 I was able to understand how to use epistemic lexical verbs appropriately through the

examples of native writers of English.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.4 If the corpus-informed materials had incorporated examples from the writing of Chinese students, my awareness of common errors among Chinese writers of English would have been improved.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.5 I recommend that English language teachers should incorporate more authentic Chinese students' data in their materials to teach Chinese English learners about epistemic lexical verbs.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.6 I prefer to only see examples of native English speakers in learning materials, as I believe that exposure to Chinese students' use of epistemic lexical verbs could lead me to reproduce the inaccuracies in my own work.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.7 I think that if the corpus-informed materials had incorporated examples from the writing of Chinese students, I would have a better understanding of the differences between how native speakers and Chinese learners of English use epistemic lexical verbs.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

2.8 I believe that if the materials had combined both native-speaker examples and Chinese English learner examples, it would have better reinforced my understanding of epistemic lexical verbs.

A. strongly agree B. agree C. neutral D. disagree E. strongly disagree

Open-ended question:

Which part do you think is the most useful part in the materials for learning ELVs?

Appendix 11 Interview guiding questions

Experimental group

Q1: How do you evaluate the difficulty of materials you were exposed to?

Q2: How would you rate your participation through your whole learning process? Do you feel tedious in the learning process?

Q3: How you think of the overall organisation and design of the materials?

Q4: Do you think the corpus-informed materials helped you better understand how to use ELVs appropriately in the academic writing, compared with the traditional learning materials?

Q5: Do you feel corpus-informed materials increase your confidence in using ELVs in your future academic writing?

Q6: Do you have a better idea of how to use ELVs appropriately through the demonstration of the usage of ELVs produced by native writers of English?

Q7: Do you feel that the examples of Chinese students' essays help you improve your awareness of avoiding the errors that Chinese students tend to commonly make?

Q8: Do you feel the materials combining both NSs and Chinese students' examples will reinforce your understanding of how to use ELVs?

Q9: Do you prefer not see Chinese students' examples in the materials, as you may worry that these instances may lead you to reproduce the inaccuracies in your own writing?

Q10: Do you recommend English teacher to incorporate more authentic Chinese students' data in teaching ELVs?

Q11: Which part do you think is the most useful part in the materials for learning ELVs?

Q12: Which part is the most difficult part of the materials based on your experience?

Control group

Q1: How do you evaluate the difficulty of materials you were exposed to?

Q2: How would you rate your participation through your whole learning process? Do you feel tedious in the learning process?

Q3: How you think of the overall organisation and design of the materials?

Q4: Do you think the corpus-informed materials helped you better understand how to use ELVs appropriately in the academic writing, compared with traditional learning materials?

Q5: Do you feel corpus-informed materials increase your confidence in using ELVs in your future academic writing?

Q6: Do you have a better idea of how to use ELVs appropriately through the demonstration of the usage of ELVs produced by native writers of English.

Q7: Would you like to see some Chinese students' examples to help you improve your awareness of common errors made by Chinese students?

Q8: Do you feel the materials combining both NSs and Chinese students' examples will reinforce your understanding of how to use ELVs?

Q9: Do you prefer not see Chinese students' examples in the materials, as you may worry that these instances may lead you to reproduce the inaccuracies in your own writing?

Q10: Do you recommend English teacher to incorporate more authentic Chinese students' data in teaching ELVs?

Q11: Which part do you think is the most useful part in the materials for learning ELVs?

Q12: Which part is the most difficult part of the materials based on your experience?

Appendix 12 Demographic information of participants as per Categories

Category		Control Group	Experiment Group
Gender	F	28	30
	M	5	3
Age	18-25	22	24
	26-35	11	8
	Over 35	0	1
Years of Study English	Less than 10	1	1
	10-20	26	30
	Over 20	2	2
Subject	TESOL	21	25
	Education	6	3
	Linguistics	5	4
	Other (e.g. translation)	1	1
IELTS Overall	<=6	0	1
	6.5-7.0	19	16
	7.5-8.0	14	16
	8.5-9	0	0
IELTS Writing	<=6	14	10
	6.5-7.0	18	20
	7.5-8.0	1	2
	8.5-9	0	1
IELTS Reading	<=6	3	1
	6.5-7.0	8	12
	7.5-8.0	12	8
	8.5-9	10	12