

POST-FRENCH IMMERSION STUDENT PERCEPTIONS OF PARALLEL

CONCORDANCING: A MIXED METHODS STUDY

NOAH BRADLEY

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### **Abstract**

I examine the perceptions of students who have graduated from the Ontario French immersion program toward an online corpus at a university in Ontario. No corpus research has yet been conducted on post-French immersion students studying in a French Studies department at university. This study further researches the effectiveness of bilingual corpus use for writing. It presents students with a tool for overcoming language learning plateaus and provides teachers with a model for teaching corpus usage. Through a sequential mixed methods approach, I use a quantitative questionnaire and then qualitative interviews to answer the research questions. Students generally perceive corpus use positively, but not as an answer to every language learning problem, instead viewing corpus use as one of many available tools. Furthermore, students prefer using several websites to verify their word usage. In our information-driven world, students use every internet resource at their disposal to learn a language efficiently.

**Dedication**

*To mom and dad, who never waver in supporting me,  
and to Sandy, who inspired me to learn languages.*

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## Chapter 1 - Introduction

In this mixed methods study, I construct a teaching workshop and explore post-French immersion (PFI) students' perceptions of using a bilingual corpus for improving their French as a second language (FSL) writing skills. A corpus is a collection of texts that is often used for searching words or phrases. PFI students are French immersion graduates who are continuing their French studies at university. Although French immersion students excel at oral comprehension and reading, their writing and speaking skills tend to be less strong (Cummins, 1998; Lappin-Fortin, 2014; Pawley, 1985). In addition, because immersion students learn French intuitively and not analytically, they often have issues with making their sentences accurate, making them unaware of the nuances of various language forms (Hamm, 1988; Lyster, 1987, 2007; Pawley, 1985; Pellerin & Hammerly, 1986; Spilka, 1976). Furthermore, the current Ontario Ministry of Education FSL curriculum (2013a, 2013b, 2014) heavily focuses on fluency and competency, with little explicit focus on improving accuracy or language awareness. Post-French immersion students are in desperate need of new resources that can help them to recognize areas of improvement and overcome learning plateaus, and corpora have the potential to help.

While research has proliferated in recent years on using corpora to teach second languages, this approach has not been widely adopted in second language teaching practices (Boulton, 2010; Mizumoto, Chujo, & Yokota, 2016). This may indicate a lack of organized, concrete teaching strategies in this domain. It also remains largely unknown to most language instructors. Furthermore, while the number of studies examining bilingual corpus use continues to increase, no research to my knowledge has yet explored corpus use in the PFI learning context. To assist PFI students in increasing their accuracy and language awareness, I have

constructed a teaching workshop based on corpus pedagogy for PFI students to learn French. From my own personal experience, I have found corpus use to be indispensable in helping me to understand the inner-workings and subtleties of language, because it allows me to analyze sentences that are being spoken in real-world contexts. Of course, a corpus is not the only answer to the problems of language learning; but corpus use is certainly an important component that can augment the language learning experience.

Given that corpus pedagogy is an underutilized resource in language teaching, and given that PFI students need new resources to get past the plateau stage of their language learning, this study's purpose is the following: (1) to contribute to research into corpus-assisted language learning, as applied to the post-French immersion learning context; (2) to inform PFI students about an online resource to improve their linguistic accuracy and language awareness, ultimately assisting them in overcoming their learning plateaus; and (3) to present a practical instructional model for teachers who seek to use corpora in their own classrooms, especially in PFI contexts.

This thesis is organized into several sections. In Chapter 2, I review the literature on French immersion and post-French immersion to identify the needs of PFI students. I then explain corpus-based language learning by demonstrating studies on monolingual corpora and on parallel (or multilingual) corpora. I posit parallel corpora and formulaic sequences as resources for helping PFI students to improve their French learning experience. I then present the current study and its research questions.

In Chapter 3, I outline the method that I used in the study. I begin first with the study context, followed by my pedagogical intervention, which includes a workshop and homework assignments. I continue by explaining the study design and sampling techniques before outlining

the data collections tools I used, which were a questionnaire, individual interviews, and homework assignments. I then describe the procedures I used to collect the data. Next, I describe the pilot study that I conducted before commencing the current study, and I explain the ethical procedures I used. Lastly, I explain my data analysis procedures.

In Chapter 4, I present the study findings. First, I categorize the questionnaire items into scales before displaying the descriptive statistics from the questionnaire. I also present several statistical tests. Next, I present the interview findings by first describing the interview participants, then by elaborating on the thematic analysis I conducted. Finally, I integrate the quantitative and qualitative findings by discussing them according to the four subsidiary research questions.

In Chapter 5, I discuss the results of the study. I also explain the validity problems and limitations of the study. Lastly, I present various implications for educators and their students and posit possible avenues for future research.

## **Chapter 2 – Literature Review**

In this chapter, I use a data-driven language learning (DDLL) and bilingualism framework to demonstrate the benefits of bilingual corpus integration in second language classrooms. First, I present a brief history of the French immersion system in Canada before outlining its benefits and challenges. I then discuss various approaches to solving these issues before presenting studies on post-French immersion students' learning needs in Canada. In the second section, I examine the development of corpus research in language learning. I then narrow the focus to concordancing (i.e., actual corpus use by learners in the classroom), before examining concordancing with bilingual texts. I then explain how chunks of words, called formulaic sequences, are essential components of language that language students should understand before mastery of concordancing is possible. After the literature review, I present the current study and research questions.

### **2.1 French Immersion and Post-French Immersion**

Conceived by a small group of parents in Toronto, Ontario and Saint-Lambert, Québec in the early 1960s, the French immersion program has since become an integral part of education in Canada (Hammerly, 1989; Rebuffot, 1993; Roy & Association canadienne des professionnels de l'immersion, 2017). It has developed over time to have three different immersion entry points: early (5-6 years old), middle (9-10 years old), and late (11-13 years old). Additionally, there are two options for the extent of immersion: partial or total. In the 2015-16 school year, French immersion enrolment accounted for 11.3% of all French students in Canadian schools, and the total number of immersion students was 428 304 (Canadian Parents for French, n.d.). In addition, national French as a Second Language enrolment has plateaued as a whole; however,

Core French enrolment has decreased in recent years while French immersion numbers have been steadily growing. French immersion takes various forms across Canada, and each province takes a unique approach. In Ontario, the curriculum for French immersion from kindergarten to grade eight takes the following format:

French must be the language of instruction for a *minimum* of 50 per cent of the total instructional time at every grade level of the program and provide a *minimum* of 3800 hours of instruction in French by the end of Grade 8. (Ontario Ministry of Education, 2013b, p. 16, emphasis in original).

Elementary French immersion in Ontario thus includes not only studying French, but largely studying content courses like math, geography, and others with French as the language of instruction. Immersion at the secondary level involves a similar model:

Students are taught French as a subject, and French serves as the language of instruction in two or more other subjects. At the secondary level, there are academic and applied courses in French Immersion in Grades 9 and 10, and university preparation and open courses in Grades 11 and 12. (Ontario Ministry of Education, 2014, p. 16)

After students graduate from immersion programs, some decide to keep studying French. A 2014 report noted that there is a demand among French immersion graduates to continue their French studies at the post-secondary level (Association canadienne des professionnels de l'immersion, Association des universités de la francophonie canadienne, & Réseau des cégeps et des collèges, 2014).

There are many positive outcomes of the FI program (Cummins, 1998). French immersion (FI) students generally attain more second language proficiency in contrast to

students who learn a second language in non-immersion programs (Lyster, 2007). Lazaruk (2007) reports that, in a Public Service Commission of Canada study (2005), 76.6% of 540 grade twelve FI students had intermediate scores on a reading, writing, and oral French test, and 20% achieved an even higher score (p. 608). Bilingual government jobs require most candidates to take this test, and results are scored using a profile of A (beginner), B (intermediate), or C (advanced) for reading, writing, and oral interaction (Public Service Commission of Canada, 2017). A profile of BBB denotes intermediate reading, writing, and oral skills (respectively), which is the minimum requirement for most French-language government jobs in Canada. The vast majority of FI students in the study attained or exceeded this level of proficiency, which demonstrates that many FI graduates have sufficient French competency to be eligible for bilingual government jobs in Canada.

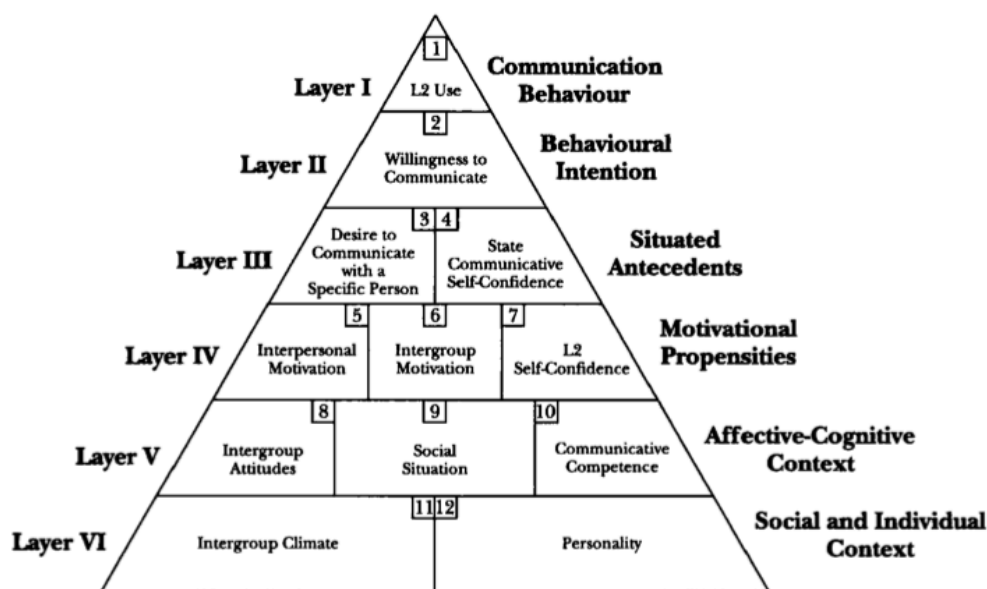
However, FI students also have several challenges that affect their language learning outcomes. First, it is important to give attention not only to linguistic factors that affect language students, but to the many non-linguistic factors as well (Gardner, MacIntyre, & Lysynchuk, 1990). A major issue is the attrition rate, which is considerable in several areas of the country (Boudreaux & Olivier, 2009; Cummins, 1998; Nazzicone, 2017; Obadia & Theriault, 1997). Socio-educational factors—including integrativeness, attitude toward learning situations, motivation, and language anxiety—also impact language learning (Gardner, 1985).

Willingness to communicate (WTC) (McCroskey & Baer, 1985) is conceptual framework that accounts not only for learner competence as a factor in learning a language, but also for motivation, context, and other variables. As applied to second language (L2) learning, there are



several variables that contribute to WTC (MacIntyre, Clément, Dörnyei, & Noels, 1998), as shown in Figure 2.1:

Heuristic Model of Variables Influencing WTC



*Figure 2.1.* Factors that affect willingness to communicate (MacIntyre, Clément, Dörnyei, and Noels, 1998, p. 547). © 1998 *The Modern Language Journal*

Here it is clear that L2 learner motivations develop via the complex interactions of several factors, including individual and social ones. WTC has also been studied in the FI education context (MacIntyre, Burns, & Jessome, 2011). In the study, FI students completed a survey about their motivations for learning French. Students were then asked to write in a journal and describe scenarios of both their willingness and unwillingness to communicate in French. The resulting written excerpts demonstrated that FI students as a whole expressed ambivalence regarding how much they were willing to communicate in French. Furthermore, this willingness or unwillingness to converse was highly context dependent. The authors also note that willing

and unwilling scenarios “are not radically different” from each other, and that “the psychological situation can change rapidly” (p. 93).

In addition, Baker and MacIntyre (2000) studied WTC, communication apprehension (anxiety), perceived competence, and communication frequency among secondary immersion and non-immersion students. They found that immersion students ( $n = 71$ ) were more willing to communicate, had less anxiety, perceived themselves as more competent speakers, and communicated more compared with their non-immersion counterparts ( $n = 124$ ). They also discovered that FI students’ WTC in French was significantly negatively correlated with their anxiety and positively correlated in a significant way with their frequency of words used in French. However, there was no significant correlation between WTC and perceived competence in French. Given that “[t]here seems to be a close relation between anxiety and perceived competence” (p. 316), it is surprising that anxiety was significantly correlated with WTC while perceived competence was not. The researchers surmise that FI students feel competent using French because they have used it for years and are exposed to it for large portions of their school day; however, this puts social pressure on them to perform well, leading to increased anxiety. One thing to note from this research is that most French immersion studies dealing with learner motivation focus on oral communication in French; there is not as much research on reading and writing.

These motivational challenges have significant effects on FI students’ language learning. With this in mind, it is especially crucial to examine the linguistic obstacles that immersion students face. Regarding language, FI students often struggle with writing but especially with

speaking, including problems with inaccuracy (Cummins, 1998; Hamm, 1988; Lappin-Fortin, 2014; Lyster, 1987, 2007; Pawley, 1985; Pellerin & Hammerly, 1986; Spilka, 1976).

Two related concepts to this problem of accuracy are interlanguage and fossilization (Selinker, 1972). Selinker defines interlanguage as “the existence of a separate linguistic system...which results from a learner’s attempted production of a [target language] norm” (p. 214). When a learner tries to speak in the target language, their lack of accuracy in fact creates an intermediate language.

Selinker claims that this interlanguage results from five factors: language transfer (the influence of the learner’s first language); transfer-of-training (the influence of language training) strategies of second-language learning; strategies of second language communication; and overgeneralization of TL [target language] linguistic material (p. 215). An example of language transfer that often occurs in French immersion is referred to as *franglais* or *anglicismes* (Anglicisms). For example, incorrectly saying *je suis peur* instead of *j’ai peur*, or mistakenly using *chercher pour un emploi* instead of *chercher un emploi* both demonstrate a transfer of English patterns of language, which are superimposed onto French. Selinker also introduces the idea of fossilization. He explains,

Fossilizable linguistic phenomena are linguistic items, rules, and subsystems which speakers of a particular [native language] will tend to keep in their [interlanguage] relative to a particular [target language], no matter what the age of the learner [sic] or amount of explanation and instruction he receives in the [target language]. (p. 215)

Fossilization was historically used to describe the halt in second language development as a whole. However, Han’s (2009, 2013) Selective Fossilization Hypothesis presents a more

nuanced and concrete view of fossilization. She states, “fossilization is local, not global. That is, fossilization never affects the entire interlanguage system, only its subsystem” (2013, p. 141). Furthermore, fossilization affects individual learners differently and at various points in their second language development. While this theory has not yet been confirmed empirically, it demonstrates that the fossilization of some language forms is inevitable and context-dependent.

A related phenomenon to fossilization is the development of plateaus in language learning (Belasco, 1967; Lyster, 2007; Richards, 2008). This is a more general term that describes the temporary (or permanent) halt in second language learning because the incentive to learn is no longer as strong. In other words, the language learner sees no need to improve their accuracy, because their current level of knowledge is sufficient to be comprehensible to others.

The issues of inaccuracy, interlanguage, plateau, and fossilization are related to the heavily content-based approach of immersion teaching. This content approach is largely an embodiment of Krashen’s (1985) input hypothesis: the idea that learners should primarily receive input or content, and that such input should be comprehensible—that is, at a slightly higher competence level than their current competence. This theory influenced the content-based instruction (CBI) approach (Brinton, Snow, & Wesche, 1989). However, the input hypothesis (as applied to French immersion) came under criticism (Lyster, 1987), as researchers recognized that this overemphasis on content was coming at the cost of linguistic accuracy. Thus, another approach to language teaching developed, called focus on form (Long, 1991), sometimes referred to as form-focused instruction (FFI). In this method, teachers intentionally inform students about the grammatical structures they are actively using. Lyster (2007) notes that,

historically, immersion programs “underestimated the extent to which the target language needs to be attended to” (p. 3). It is thus important to give more consideration to FFI.

Lyster (2007) also points out that, compared to Francophones, immersion students have “shortcomings in terms of accurate and idiomatic expression, lexical variety, and sociolinguistic appropriateness” (p. 125). As a remedy to this problem, Lyster proposes “counterbalanced instruction,” in which form-focused and content-focused teaching are integrated with each other. This view of language teaching was written about previously by Allen, Swain, Harley, and Cummins (1990), who also advocated for a balanced approach. The appropriate balance between CBI and FFI has not yet been empirically confirmed, but is still an important consideration for immersion instructors. Part of finding this balance, at least in immersion contexts, seems to be the introduction of more FFI; in the words of the authors, “Students need to be motivated to use language accurately, appropriately, and coherently” (p. 77). Focusing on the accuracy of language forms, tied together with teaching overall fluency and contextual and social competence, could likely help students become more well-rounded.

Research has also been done on post-immersion students in university settings. MacIntyre, Baker, Clément, and Donovan (2003) studied the WTC of undergraduate students learning French. Of the 59 participants, eleven were PFI students, while the others were post-Core French students. They compared the groups and found that the PFI students had significantly higher WTC, perceived competence, and speaking frequency. They also discovered that students with some kind of immersion experience had problems with anxiety, whereas Core French students had issues with their perceived competence in French. The authors state, “The results might be taken to suggest, possibly counter-intuitively, that anxiety is a greater problem

for more advanced learners. Increasing communication opportunities and challenges in the classroom likely provokes anxiety” (p. 603). This finding confirms a previous study (Baker & MacIntyre, 2000).

In another study, Péguret (2014) used a questionnaire to compare the self-reflection practices of PFI students with other post-FSL students. She found that neither group engaged significantly in reflective practices when using oral French. However, in written French, PFI students participated in significantly less self-reflection than their post-FSL counterparts. She posits that engaging in self-reflective practices and learning strategies (by using an idiomatic portfolio, for example) can increase PFI students’ language awareness, including knowledge of idioms and socio-cultural features of French.

In a qualitative study, Baranowski (2015) interviewed five incoming undergraduate PFI students, as well as Manitoban francophones and newcomers. These students were required to take a class to improve their French knowledge. An important component of this class was the creation of reflexive learning portfolios. Baranowski found that some PFI students viewed French as a means to future job opportunities. She also discovered that linguistic anxiety was especially prevalent among the PFI students. Furthermore, two PFI students found the analytical nature of the portfolios to be difficult.

Vanderveen (2015) asked 123 PFI students aged 18-42 years old to describe their past French immersion experiences. Fifty percent said that taking French immersion was “a positive and worthwhile experience” (p. 150). In contrast, over 10% of immersion graduates had a negative experience, while others had more ambivalent views. Nevertheless, the vast majority of participants (93.9%) said that they would do the program again if they could go back in time.

The top reason they provided for re-entering was for better employment opportunities, but others included travel, knowledge of another language, the applicable benefits for learning other Latin-based languages, and the ability to see from multiple perspectives. Seventy-six percent of PFI students also said that French benefited their personal lives, primarily by giving them the opportunity to travel to French-speaking countries, but also for socializing, family communication, and job opportunities. Vanderveen also asked the participants about their current French usage. Only 33% of the participants said that they still used French in their daily lives, and 50% reported not attempting to maintain their French knowledge. Of those who do use French, 19% said were French teachers. Other occupations included the hospitality industry, nursing, government positions, marketing, and sales, although the proportions for each occupation is unclear. This demonstrates that immersion graduates go into diverse fields, but that a sizeable proportion go on to post-secondary schooling to become French teachers. In addition, the vast majority of the PFI students self-assessed their language skills as good or excellent. They also rated their reading skills as strongest and their writing skills as weakest. Vanderveen concludes,

Despite favourable opinions regarding the French immersion program and second language learning in Canada, many failed to continue with the language following graduation and only attempt to use French in limited social situations often outside of Canada, such as during travel to international French speaking nations (p. 170).

In addition, Vanderveen remarks that graduates often saw French as a “commodity” to initially obtain a job rather than an essential skill to be used every day (p. 176).

While this study is not representative, it provides insight into the fact that many immersion graduates (at least in Toronto) simply do not use the French that they have learned. This forces us to ponder the outcomes of the immersion program in Toronto—or at the very least to think about what the goals of the program are, and perhaps what they should be. The following questions must be raised at the local, provincial, and national levels more broadly: for the immersion system to be considered successful on a linguistic and cultural level, what should the percentage threshold be for graduates who will keep using French for the rest of their lives? Is one-third enough? These are open questions and are certainly only one aspect of what an educational program should focus on. As we have seen, the immersion program has many positive features; however, more research should be done on a broader level to ascertain if immersion graduates are using French, why they are using it, and in what contexts they are using it.

While much of the literature has focused on immersion students, there has not been much research done on the needs of PFI students who continue with French education at the post-secondary level. Part of the difficulty is simply that there are not many of these students nationally. Furthermore, many of these students are placed in the same classes as post-Core French students, which makes it more challenging to assess their learning outcomes. However, it is likely that the obstacles they face are similar to those that high school-aged French immersion students face.

There are possible solutions to the non-linguistic problems that PFI students struggle with. One solution is to introduce reflexive, meta-cognitive strategies in the classroom. Another is to teach students the socio-cultural and historical connections that languages have with various



cultures and people groups—all with the ultimate goal of increased language awareness (Péguret, 2014). To make students more aware of language, there are now many online tools available.

One such tool that is gaining in popularity is the corpus.

## **2.2 Corpus Research**

A corpus has been defined as “the body of written or spoken material upon which a linguistic analysis is based” (W. S. Allen & Scott, 1957, p. 160). It would later be defined by Sinclair (1991) as “[a] collection of naturally occurring language text, chosen to characterize a state or variety of a language” (p. 171). Biber, Conrad, and Reppen (1998) have also defined it as “a large and principled collection of natural texts” (p. 4). The common threads running through these latter two definitions is that a corpus is natural, text-based, and intended for a certain purpose.

Modern corpus research accelerated in the 1960s, being first computerized by Francis and Kučera (1964). This area of study was eventually dubbed “corpus linguistics” by Aarts and Meijjs (1984). Since the 1960s, many researchers have published seminal works on corpus linguistics (Halliday, 1992; Leech, 1992; Sankoff & Sankoff, 1973; J. Sinclair, 1991). In the 1990s, researchers began widely applying corpus research to language teaching (Wichmann, 1997), although one of the earliest implementations in the classrooms had occurred as early as 1969 (McEnery & Wilson, 1997). When a corpus is brought inside a language classroom, the student becomes a researcher rather than a “passive receptacle” (McEnery & Wilson, 1997, p. 6). In addition, McEnery and Wilson explain that students are introduced to four new kinds of learning: discovery learning, in which students search the corpus autonomously; divergent learning, where students find differing search results from other students, creating interaction among peers in

which they share their findings; mediated learning, where the analytic process, rather than content, is learned; and directed learning, in which the instructor guides the student, but ultimately gives control to the student to take charge of their own exploration and learning.

This type of activity, in which the student actively and autonomously searches for words and phrases in a corpus to aid in language learning, is known as “ ‘data-driven learning’ (DDL)” (Johns, 1991, p. 2). This has also been called “data-driven language learning” (DDLL) (Gao, 2011, p. 256) when applied specifically to language learning. The action of a student carrying out DDLL is called “learner concordancing” (Yoon, 2011, p. 130). At this point it is important to clarify the distinction between “corpus” and “concordance.” Sinclair (1991) defines concordance as “a collection of the occurrences of a word-form, each in its own textual environment. In its simplest form it is an index. Each word-form is indexed and a reference is given to the place of occurrence in a text” (p. 32). In other words, a concordance presents a list of examples of a searched word or phrase. In addition, the tool used to analyze a concordance is called a “concordancer.” Yoon (2011) explains, “a concordancer is a computer software program that rapidly searches a corpus and produces a list of incidences of a given linguistic item (a word or phrase)” (p. 131). In short, a corpus is a collection of texts; a concordance is essentially an index of searched terms; and a concordancer is the tool that creates the concordance output of a linguistic term.

### 2.3 Learner Concordancing with Monolingual Corpora and Concordancers

Much has been written about student use of online corpora in English language classrooms (Geluso & Yamaguchi, 2014). Kennedy and Miceli (2001) made a unique and detailed apprenticeship program to teach learners of Italian how to use a corpus for their writing. They discovered that corpus apprenticeship is a complex process that cannot be done lightly.

In another study, Yoon and Hirvela (2004) sought to explore student use and perceptions of corpora in two ESL writing classrooms. Here it is important to note that I drew much of my inspiration for this project from Yoon and Hirvela's study, because of its high amount of detail and conduciveness to the educational context. It is therefore important to examine their study in depth. Their research questions were the following:

- (a) In what ways do ESL students think corpus use is beneficial for learning L2 writing?
- (b) What difficulties do students have in using a corpus?
- (c) How do students feel about using a corpus in writing instruction?
- (d) What are students' overall evaluations of corpus use in L2 academic writing?

They chose one intermediate ( $n = 8$ ) and one advanced ( $n = 15$ ) English class. Both classes were taught by the same instructor, who introduced the students to the Collins COBUILD corpus, a widely-used monolingual English corpus. The teacher spent more time explicitly using the corpus with his intermediate class than the advanced class. In addition, the advanced students did corpus activities largely outside of the classroom. The actual instruction included teaching students how to create prototype strings, which are "a synthesis of the students' findings from the concordance and collocate output produced by the concordancing programs" (p. 265). Later, students were instructed to use the corpus on their own to mitigate their individual writing

problems. The researchers implemented an in-class quantitative questionnaire in the 18<sup>th</sup> week, divided into two sections: (1) “personal background, computer use, and dictionary use” and (2) “responses to the corpus pedagogy, including their perceptions of its strengths and weaknesses” (p. 266). Later in the course, four students were asked to participate in semi-structured, qualitative interviews (two students from each class). Two respondents who had a positive experience were chosen, as well as two others who had negative experiences. In general, the researchers found that students’ perception of corpus use was positive, especially among the intermediate learners (perhaps due to explicitly teaching corpus use more in the classroom). Learners found the corpus particularly useful “for acquiring common usage of words” (p. 277). The researchers concluded that, for less advanced learners (including intermediate students), apprenticeship in corpus use is necessary for student success.

DDL also extends to different languages. Chambers and O’Sullivan (2004) conducted a pilot study in which French learners in a master’s program were taught “corpus consultation,” another term for learner concordancing. The researchers found that first language (L1) interference was reduced. In a subsequent study (O’Sullivan & Chambers, 2006), the researchers examined intermediate French learners, who had more trouble using the corpus than the graduate students of the first study, and researchers subsequently recommended that more explicit teaching is necessary. Mueller and Jacobsen (2016) conducted two studies in which Japanese learners of English learned error correction using a corpus. They found that a DDL approach was conducive for English language beginners. While the literature demonstrates that monolingual corpora and concordancers have pedagogical benefits for second language learners, less research has been done on bilingual corpora.

## 2.4 Learner Concordancing with Parallel Corpora and Concordancers

Bilingual corpora (more widely known as parallel corpora) are a collection of two corpora placed side by side, each in a different language. According to Kenning (2010), a parallel corpus “consists of a set of texts in language A and their translations in language B.” These translations may be unidirectional (i.e., A to B or vice versa) or bidirectional (i.e., A to B with B to A beside each other). The first parallel corpus was the Canadian Hansard (Tognini Bonelli, 2010), which includes French and English transcriptions of Parliamentary proceedings side by side, while Barlow (1995) created the first widely available parallel concordancer, called ParaConc (Gao, 2011). Parallel corpora and concordancers (hereafter PCCs) have been widely used in translation studies (Alotaibi, 2017). However, relatively little research has addressed the benefits of parallel corpora for language students (Bluemel, 2014).

In the early days of parallel concordancing, Frankenberg-Garcia (2000) reported using a Portuguese-English corpus to help Portuguese L1 learners of English in her class to understand the differences in preposition and noun use between the two languages. The study was largely based on her professional experience with teaching English to Portuguese-speaking students. She provided several practical examples of learner errors and how a parallel corpus could be made into teaching exercises to help students to understand their mistakes. The study as a whole was anecdotal, but nevertheless provided insight into the practicality of using a parallel corpus to make materials for use in the classroom. Frankenberg-Garcia also noted that corpora are most conducive for classes with one L1. This is an important point to consider, since many classrooms in Canada and around the world are increasing in their linguistic diversity due to globalization. Using a parallel corpus may not be appropriate if the students in a class come from many

linguistic backgrounds, since it could be quite difficult to find all of the language pairs to accommodate every student.

St. John (2001) demonstrated in an unpublished pilot study that PCCs could also be potentially valuable for teaching beginner-level language students. She also notes that the size of the corpus being used is important to consider. While large corpora give a user more results, it can be overwhelming for a student who is unfamiliar with DDL. Small corpora, on the other hand, are more manageable but may not pull up the desired search result. She also notes that parallel concordancers must have parallel paragraphs (rather than single lines of text), since word and phrase translations are not done word-for-word, but may be rephrased differently; put in a different word order; or in some cases not appear in the other language at all.

Wang (2001) constructed an English-Chinese corpus of *Alice in Wonderland* for eight students to examine. He had them analyze concordance data to find patterns with the usage of a Chinese adverb. This activity increased their language awareness. Wang found that a parallel concordance could be used for teaching or independent study. He also posits that parallel concordancing can be used for “consciousness-raising” (p. 174) and encouraging students to compare their own language to the target language, as well as helping more advanced learners to progress past plateaus and fossilizations in their learning.

Another study explored how Chinese L1 students autonomously learn legal English (Fan & Xunfeng, 2002). The researchers compiled their own corpus using hyperlinks, then asked students to do an autonomous comprehension activity pertaining to two legal cases before completing a questionnaire and participating in a group interview. The students had a tendency to read the Chinese side of the corpus first, since they were more comfortable with their first

language. However, the students found using Chinese and English for the task more helpful than just using Chinese by itself. This demonstrates that the comparison of two languages might assist students with comprehension of the target language. Interestingly, students sometimes found the English part more helpful because the Chinese phrases in the corpus had occasionally been translated in a “stiff and unnatural” way (p. 56). The issue with using parallel corpora is that they often rely on translations, and there is not always a guarantee that they have been done accurately. However, the students in the study used their analytical skills and realized that sometimes the English version was written more clearly. The researchers concluded that the students found the corpus to be useful, but that the corpus was somewhat limited in aiding the students’ comprehension of legal cases.

More recently, Montero Perez, Paulussen, Macken, and Desmet (2014) carried out two case studies with the Dutch Parallel Corpus in order to create computer-assisted language learning (CALL) activities focused on interaction and autonomy. The researchers stressed that only some types of corpora are beneficial for learning, and that corpora used in the learning context need to be “authentic” to the learners. While this term is highly debated in language research circles (Widdowson, 2000), it nevertheless has some implications for learning with corpora. This first of all means that learners should be interested in or motivated by the corpus, and that the corpus should make the context of the text excerpt available for the students so that they can understand the so-called authenticity in context. Without this context, it is “impossible for the learner to engage with the text” (Montero Perez et al., 2014, p. 169). The researchers also believe that the benefits of parallel corpora in language learning have been “underestimated” (p. 167).

Wong and Lee (2016) have the largest sample size ( $n = 131$ ) of any parallel corpus language education study, to my knowledge. The corpus they used was a collection of Cantonese movie transcripts with Mandarin subtitles placed side by side. This corpus was used for teaching Cantonese to beginner learners at university in two separate studies. In the first study, the treatment group participated in a CALL session to learn how to use the corpus, but the control group did not. The students that participated in the CALL session tested significantly higher on two post-tests (which asked students to translate sentences drawn from the Mandarin side of the parallel corpus into Cantonese) than the control group in the first study. In the second experiment, there was no control group; instead, there were control items and treatment items. The translation worksheets had only treatment items, whereas the control items appeared only on the pre-test and post-test. The researchers found that the CALL session helped students to perform well on the control items, but especially the treatment items. The researchers thus concluded, like St. John (2001), that DDLL can be used effectively with beginner-level language learners.

Corpus use in the language classroom certainly seems to be accepted by students when it is used, and it generally has positive pedagogical effects. However, a common theme that can be observed in the above studies is that they are often on a small scale and have not been empirically verified. Johansson (2009) notes that there is a dearth of “systematic studies testing the benefits of the [corpus] approach” and “controlled experiments” are lacking. It would also be useful to have more studies in new contexts. To my knowledge, no research has been done about using parallel corpora and concordancers with post-French immersion students. Parallel corpus and concordancer use has the potential to help PFI students improve, as they tend to be “non-



idiomatic in their lexical choices and pragmatic expression – in comparison to native speakers of the same age” (Lyster, 2007, p. 16). A significant benefit that many corpora may afford students is in learning “lexico-grammatical patterns, and in reducing native language interference” (Yoon, 2011). These patterns, also called formulaic sequences, are an important component of second language learning.

## 2.5 Formulaic Sequences

Research on formulaic sequences (FSs) has proliferated over the past two decades. Wray (2002) defines an FS as “*a sequence, continuous or discontinuous, of words or other elements, which is, or appears to be, prefabricated*” (p. 9). Thus an FS is a group of words that typically go together, like “part and parcel” or “at this moment in time.” Wray identified over 50 different terms to describe formulaic sequences, which makes discussion of the topic confusing. Some of the most common terms used in the literature are “collocations, phrasal verbs, idioms, and lexical bundles” (Vilkaitė, 2016, p. 5), although other terms like chunk and multi-word phrase are also used. In addition, these various terms are often defined differently, often based on associations with neighbouring words or frequency. Sometimes the terms are used with no guiding definition at all.

For the purposes of this paper, I will use the broad term “formulaic sequences” for simplicity. Research demonstrates that FSs have a critical role to play in second language learning (Hatami, 2014; Péguret, 2014; Schmitt, 2012; Wood, 2010). However, relatively little research has been done on FSs in French language learning (Forsberg Lundell & Lindqvist, 2012), and even less has been conducted on how technology can mediate the acquisition of FSs (Wood, 2015).

Formulaic sequences can improve second language education if they are used strategically. Integrating them into lessons in the actual language classroom is not immediately intuitive. However, since FSs pair very well with corpus approaches to learning (Godwin-Jones, 2017), corpus searches can be used to find examples of FSs (including those that are the most commonly-occurring) for use in a language class. In fact, formulaic sequences and corpora are so interlinked that Kennedy and Miceli (2001) stress the importance of first teaching students how to recognize language as formulaic before introducing corpora to them.

One study (Chan & Liou, 2005) used a bilingual corpus explicitly to raise students' awareness of FSs. The researchers tested the initial collocational knowledge of Taiwanese learners of English, which revealed a low awareness of FSs. Then, during the English course, students were explicitly taught about FSs by the teacher, as well as using a bilingual Chinese-English concordancer. The post-test showed that the students increased their knowledge of FSs significantly. The researchers also implemented a delayed post-test two and a half months after the post-test and found that the students had lost significant retention of FSs, but that their retention was still higher than the initial pre-test. While they enjoyed both the explicit FS instruction and the online concordancer, students liked the explicit instruction more.

From this research, it is apparent that a corpus-based approach to teaching formulaic sequences, paired with a multilingual approach (Cook, 2001; Cummins, 2007) or plurilingual approach (García, 2008; Piccardo & Capron Puozzo, 2015) could encourage students to make comparisons between their first language and the target language. Such comparisons are important for developing linguistic agency and cultural understanding (Skandera, 2008; Stiefel, 2009). Bilingualism and plurilingualism (which describes the fluid and unfixed language identity

of a language learner (Coste, Moore, & Zarate, 2009)) are increasingly crucial aspects of Canadian society. Plurilingualism can be very effective when students do a comparative analysis of languages (Cummins, 1998, 2014) and formulaic sequences. In practice, this would include the comparison of the L1 (first language) and L2 (second language), as well as more translation in language classrooms (Laufer & Girsai, 2008). However, this process is not natural and can be quite challenging:

[S]ince different languages do not have entirely identical conceptual systems, many L2 words based on L1 meanings may not be identical in all semantic properties, that is have no exact translation equivalents...In order to use the L2 word with its correct specifications, a process of semantic restructuring must occur in which the learner readjusts the semantic knowledge of the word that s/he possesses to that of the native speaker. (Laufer & Girsai, 2008, p. 699)

Every language learner is confronted with the semantic challenge of comparing two languages that are different at the conceptual level. Learning about and analyzing formulaic sequences and their untranslatable nature is therefore an important skill for second language students to master.

Through this review, we have seen that parallel concordancing paired with the teaching of formulaic sequences can be one effective way to teach a second language, especially the nuances of accuracy. A corpus-based approach that is centred on identifying and understanding formulaic sequences (through meta-cognition and socio-cultural understanding of French) could therefore help to equip PFI students with the awareness, autonomy, and tools necessary to overcome problems with accuracy and any plateaus or fossilizations in their second language development.

## 2.6 The Current Study

I largely modeled the current project off of Yoon and Hirvela's (2004) study, which as previously noted focused on student corpus usage and perceptions of corpus use. The researchers had a very detailed design that was helpful for a new researcher like myself to replicate. My study followed the general outline of Yoon and Hirvela's (2004) study, but I added several changes to their study design: (1) French learners (two intermediate PFI classes), rather than English learners; (2) student perceptions of corpora (rather than perceptions *and* use); (3) a focus on a parallel corpus (instead of a monolingual corpus); and (4) less integration of the corpus in the course, thus resulting in more autonomous student exploration (as suggested by Yoon and Hirvela (2004, p. 278)). In addition, there have been many changes in corpus research and second language research since the publication of Yoon and Hirvela's 2004 study, including innovations in parallel corpora, as well as increased student access to and familiarity with technology. Furthermore, even though the researchers determined that students found corpora useful, there has not yet been any widespread attempt to use them in language classrooms.

In order to accommodate the new post-French immersion context, I modified Yoon and Hirvela's questions. Here is the main research question for this study:

What are the perceptions of post-French immersion students about using a bilingual concordancer as an aid for writing in French?

I modified the original research questions, especially the third question (c), because in the proposed study the corpus will be used more autonomously, rather than in multiple classroom sessions. The subsidiary research questions are thus the following:

- (1) In what ways do post-French immersion students perceive bilingual concordancer use to be helpful or unhelpful for improving their L2 writing?
- (2) What difficulties do students experience in using a bilingual concordancer?
- (3) How do students feel about learning to use a concordancer via instruction, homework, and autonomous exploration?
- (4) What are students' overall evaluations of using a bilingual concordancer to aid their L2 writing development?

## **2.7 Summary of Chapter 2**

From the preceding chapter, it is apparent that post-French immersion students have several learning challenges, including motivation, anxiety, spoken and written accuracy, a lack of language awareness, and language plateaus. Parallel corpora and formulaic sequences may help to alleviate these problems by encouraging students to experiment with new learning strategies and understand language at a deeper level.

## Chapter 3 – Method

### 3.1 Study Context

This study took place at a university in Ontario. All of the participants were graduates of the Ontario FSL program. To better understand the context and participants, it is important to briefly discuss Ontario's FSL program. In 2013, the Government of Ontario released a document called *A Framework for French as a Second Language in Ontario Schools: Kindergarten to Grade 12* (Ontario Ministry of Education, 2013a). It is thus important to note that, before the new framework was introduced in 2013, the participants in the current study would have been taught in primary and part of middle school using an older curriculum. In the 2013 Framework, the government outlines a ten-year plan for the vision and goals of French education in Ontario. The guiding vision stated in the document reads, "Students in English-language school boards have the confidence and ability to use French effectively in their daily lives" (p. 8). Furthermore, the Framework states the importance of language learning being "a lifelong journey" (p. 11). This vision has not yet been accomplished, since many FI students lack the confidence to speak French outside of immersion classrooms, and a sizeable number of PFI students in the Greater Toronto Area do not use French at all after their graduation (Vanderveen, 2015). The Framework document itself concedes that some students lack confidence, "particularly when using French in authentic situations" (p. 9).

Two other documents, *The Ontario Curriculum: French as a Second Language: Core, grades 4-8; extended, grades 4-8; immersion, grades 1-8, 2013* (2013b) and *The Ontario Curriculum, Grades 9 to 12: French as a Second Language - Core, Extended, and Immersion French, 2014 (Revised)* (Ontario Ministry of Education, 2014), both promote a similar vision.

It is clear from this diagram and from the aforementioned research on French immersion that learning a language involves the interconnection and interdependence of linguistic goals and extra-linguistic goals. Together, it is hoped, these concepts will instill enough motivation in students to create lifelong language learners. This is a more holistic and realistic goal than attempting to fully instill ‘native-like’ competence.

The documents further outline the expectations for immersion students from grades one to twelve organized into the four skills (listening, speaking, reading, and writing). While they outline important linguistic and non-linguistic goals for language learning (including learning strategies, interaction, metacognitive skills, sociolinguistic and intercultural awareness, fluency, etc.), spoken and written accuracy is conspicuously excluded from the key goals in the documents. While linguistic accuracy is mentioned in both documents (especially in the grades 9-12 curriculum), it is not given the due consideration it deserves—especially considering that spoken and written accuracy is an area in which immersion students consistently struggle. The curriculum nevertheless has very positive visions, even if there are needed improvements. Now that I have explained the context of the Ontario French immersion program, it is now important to turn to the study context itself.

The participants were students in the French Studies program during the Fall 2018 semester at Glendon College, the bilingual campus at York University. The course they were enrolled in was specifically designed to help PFI students improve their oral and written skills. To achieve this, the course syllabus focused on equipping students with language reflection and awareness, learning strategies, and self-regulation through the use of online tools. This reflective approach was further reinforced by the introduction of a learning portfolio. The course also

sought to increase the students' learning motivation, as well as grammar knowledge, idiomatic knowledge, and cultural knowledge.

Before the study, the students had been taught by their professors that language can be formulaic. They learned the French terminology of various types of formulaic sequences, including collocations, recurrent segments, proverbs, and idiomatic expressions.

## **3.2 Pedagogical Intervention**

### **3.2.1 Pre-Study Workshop.**

On September 24 and 25, I hosted a workshop with Class A and Class B, respectively. The one-hour long workshop took place in an on-campus computer lab, which was integrated into part of an actual class. The goal of this workshop was to teach the students the benefits and drawbacks of Linguee, an online tool that has been described in various ways, including as a dictionary or corpus (Buyse & Verlinde, 2013); as a repository of translations (Alonso Jiménez, 2013); and as a dictionary and search engine (Sangawa, 2014). Linguee can be best described as a bilingual dictionary coupled with a concordancer (Genette, 2016), since the parallel text is not technically a corpus in and of itself, but merely searches results from a “definite set of web-corpora” (p. 22). In other words, Linguee does not draw upon a single corpus, but concordances results from multiple sources from the World Wide Web.

There were other concordancers available online to choose from for this study, but many of them seemed inaccessible, with cluttered, early 2000s-style interfaces that had confusing buttons and links. My choice for the study came down to two parallel concordancers: Linguee and Reverso Context. Both concordancers had cleaner interfaces than others, and they were both in my view relatively simple to use compared to other online corpora. While the Reverso Context



website had additional features that Linguee did not (including a conjugation feature, synonyms, grammar, the ability to make a user account, and save searched phrases), I elected to use Linguee instead for two reasons: (1) because of Linguee's simplicity, and (2) because Linguee's mobile app was completely free; Reverso, on the other hand, had ads in its app unless a user paid a subscription fee. Despite this drawback, further studies should investigate Reverso as well, perhaps even comparing it to Linguee in some way.

Linguee began in 2009 as a free, online parallel corpus and concordancing tool with largely German and English text, but it has since expanded to include many language pairs (including English-French). Linguee has both a computer desktop version and a free mobile app. To my knowledge, only two studies have used it to teach language (Buyse & Verlinde, 2013; Sangawa, 2014). The latter study mentioned it only peripherally. However, in the former study, the researchers found that Linguee on its own outperformed both (1) traditional dictionary use and (2) integrated Linguee and traditional dictionary use, by helping Dutch students perform better on a test in the categories of vocabulary, grammar, and pragmatics. Linguee was surpassed by a traditional dictionary only in the area of orthography. The researchers ultimately found that students were most satisfied with integrated Linguee and dictionary use, but that using both tools simultaneously was very time-consuming. Using a corpus like Linguee can thus be difficult and initially unintuitive for students, but ultimately rewarding.

The goal of the workshop was to familiarize students with Linguee so that they would be able to autonomously use the concordancer. McEnery and Wilson (1997) comment that, to successfully teach corpus use, the students should include those "who know what it means to use a

corpus, who know how to extract material and follow their own hunches in a corpus, and who, consequently, learn a great deal about language through learning via a corpus” (p. 7).

During the workshop in the computer lab, students were able to use their own computers while I gave an in-depth demonstration of how to use the Linguee website on the projector screen. I provided each student with a summary sheet for how to use Linguee (See Appendix A). I taught the students how to perform basic word searches, making use of the auto-complete feature for phrase searches (see Figure 3.1) and how to use quotation marks to find exact phrases and formulaic sequences.

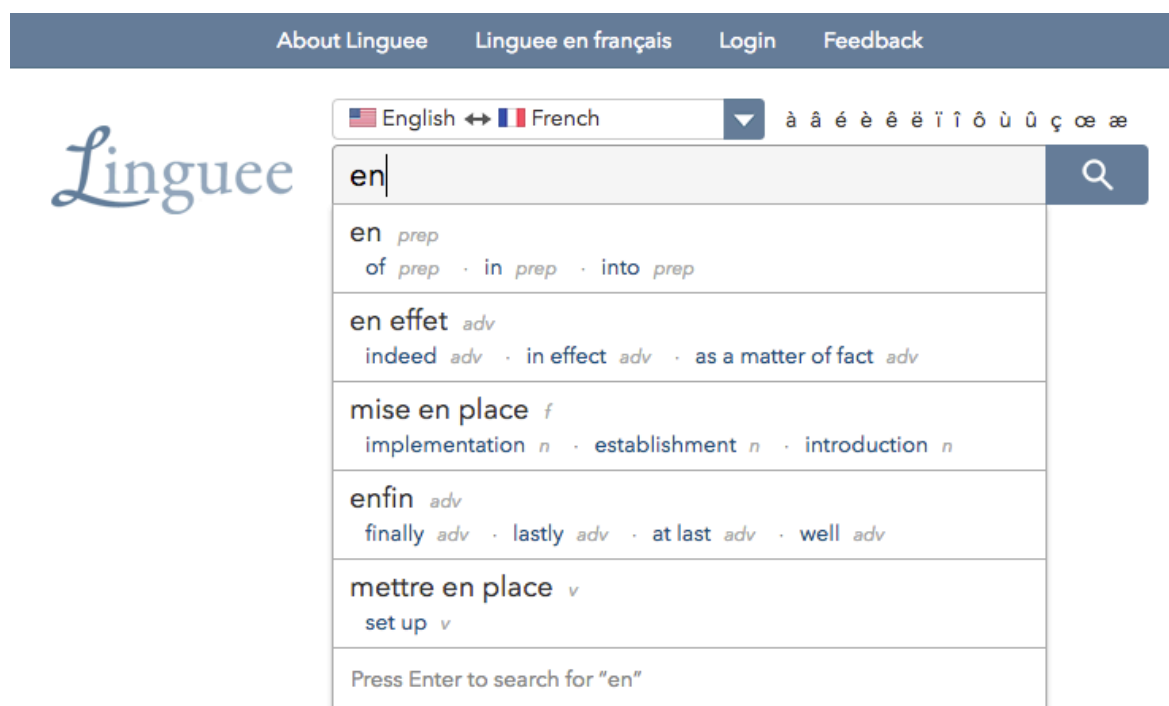


Figure 3.1. Linguee’s search bar and auto-complete feature.

Then, I showed students the “External sources” tab, which is the concordancer component of Linguee. Refer to Figure 4 to view the Linguee interface. I gave students time to compare

the highlighted portions in English versus their equivalents in French. Sinclair (1991) recommends not simply viewing corpus results and taking them “at face value” (p. 7); instead, corpus entries must be interpreted. During the workshop, I stressed to the students that it is important to think about how to interpret the search results. I also briefly explained how Linguee operates by compiling texts into a list, and that these texts are pulled from across the web. This is called web-crawling. After, I showed students that they could access the original source of the texts by clicking on the hyperlinks beneath each entry.

The screenshot shows the Linguee website interface. At the top, there is a navigation bar with links for "About Linguee", "Linguee en français", "Login", and "Feedback". Below this is the Linguee logo and a search bar set to "English ↔ French". The search bar contains the text "plage horaire" and a search icon. Below the search bar, there is a section titled "Dictionary French-English" which displays the entry for "plage horaire" as a noun, feminine, with the translation "time slot" and "time window". It also lists "See also" with related terms like "plage", "horaire", and "horaire adj". At the bottom, there is a section titled "External sources (not reviewed)" which shows two examples of the phrase "plage horaire" used in context, with the original French text on the left and the English translation on the right, along with a link to the source.

Figure 3.2. A desktop view of the Linguee interface, with the Dictionary at the top and External sources (the concordancer portion) beneath.

Then, I had students practice searching FSs on their own and finding them in their original context. After, I presented several problematic scenarios while using Linguee, including:

what to do when there are no results for a desired phrase; what to do when many results pop up, with different translations for the same FS; what to do when there seems to be no equivalent French FS for the English version; how to recognize language registers in the concordancer results; and discriminating between trustworthy and untrustworthy sources. Next, I demonstrated how to access the frequency lists on Linguee in order to view the most (and least) common words and FSs that users search in both French and English. I pointed out that the frequency lists are not based on actual everyday usage, but on the frequency of user searches.

Most common French queries, 1 to 200

What are other people translating on the internet? Watch our list of most frequent queries below. The list you see above has been recently computed from user queries and is updated every week.

1.: en effet	2.: ainsi	3.: notamment	4.: de plus	5.: alors que
6.: par ailleurs	7.: cependant	8.: mise en place	9.: surtout	10.: dont
11.: dans le cadre de	12.: selon	13.: enfin	14.: mettre en place	15.: ainsi que
16.: formation	17.: donc	18.: soit	19.: en fonction de	20.: pourtant
21.: bilan	22.: d'ailleurs	23.: par contre	24.: cordialement	25.: bien que
26.: proposer	27.: cahier des charges	28.: prise en charge	29.: fonctionnement	30.: location
31.: sinon	32.: démarche	33.: à partir de	34.: en outre	35.: ensuite
36.: en revanche	37.: constater	38.: devis	39.: toutefois	40.: concernant
41.: engagement	42.: actuellement	43.: dossier	44.: favoriser	45.: le cas échéant
46.: permettre	47.: en cours	48.: en plus de	49.: par la suite	50.: prévoir
51.: envisager	52.: enjeux	53.: indispensable	54.: désormais	55.: malgré
56.: gestion	57.: en ce qui concerne	58.: afin de	59.: dans un premier temps	60.: en tant que
61.: accompagner	62.: accueil	63.: responsable	64.: néanmoins	65.: parcours
66.: au contraire	67.: par conséquent	68.: effectivement	69.: mettre en avant	70.: sommaire
71.: puisque	72.: plan	73.: entreprise	74.: de ce fait	75.: par rapport
76.: aussi	77.: prestation	78.: récupérer	79.: assurer	80.: améliorer

*Figure 3.3.* Linguee’s frequency list, with clickable phrases organized by most commonly searched words and phrases.

Then, I had students organize into groups of two or three. I asked the students to individually search the frequency list and randomly select five French FSs. Then, I had them present their FSs to the group to see if the other students could guess both the individual meaning

of the words and the collocational meaning. This activity was meant to reveal the chunk-like nature of language; in other words, phrases cannot always be reduced to their constituent parts and translated straight across languages (Wray, 2002).

For the last exercise, I had the whole class participate in a collaborative activity in which we started writing an essay on the whiteboard together. After the students chose the essay topic, I wrote a few very simple introductory sentences in French, at the suggestion of the students. Then, using the tools they had learned during the workshop, the students added FSs to the paragraph, so that the sentences gradually become more and more developed.

### **3.2.2 Homework.**

After I delivered the Linguee Workshop to the students, they were assigned homework throughout the semester that required them to use Linguee at home in an independent setting. I created the homework to provide students with a framework and practical way of using and exploring Linguee for the first time. I also designed the assignments to elicit reflection from the students—specifically so that they could learn from the common mistakes that immersion students typically make. While designing the Linguee Activities, I used a significant amount of vocabulary from the class textbook, *Mise au Point* (Parmentier, Péguret, Phillips, & Cherciov, 2017). In addition, I consulted Ebeling (2009) as well as Mougeon and Mougeon (2003) for content and exercise ideas. I also added other vocabulary words and phrases of varying commonality and difficulty. Each Linguee Activity assignment was given a theme, as follows: language and language learning; domestic economy and consumption; urban life (part I); urban life (part II); urban life (part III); and urban life (part IV). These themes were designed in

collaboration with the course instructor to coincide with the content that students were working on in class during each given week.

The assignments asked students to translate sentences from French to English and vice versa on their own first. Then, they were asked to verify their translations using Linguee. Other questions required students to find the French or English equivalent of various common formulaic sequences and use them to write an example sentence. Each assignment also required students to write a mini-paragraph about a topic based on the weekly theme. Students had to use at least three commonly-used formulaic sequences in the paragraph. The last question of each assignment was designed to lead students into deeper thinking and reflection about the French language and formulaic sequences, with the ultimate goal of increasing their language awareness.

These homework assignments were integrated into the course, and six assignments were administered by the instructor once per week (except for the third week, during which students had a vacation). The homework assignments were required to be included with the learning portfolios and counted as completion marks. See Appendix B for an example of the Linguee homework.

### **3.3 Methods**

#### **3.3.1 Design.**

While we have seen that much research has been done on DDLL using monolingual corpora (and, to a lesser extent, parallel corpora), only two studies (Cotos, 2014; Yoon & Hirvela, 2004) to my knowledge have taken a mixed methods approach. Rooted in the pragmatic paradigm, Mixed Methods acknowledges the value of both qualitative and quantitative approaches to research (Teddlie & Tashakkori, 2009). My decision to use this methodological

framework stems from my desire to deeply understand the language learner's experience. I learned French and Spanish in university and desire to teach language one day. In my view, part of being a great teacher entails knowing as much as possible about students and being able to relate to and understand their learning experiences. Using mixed methods research provides both depth and breadth, thus building a more complete picture of language learning (Ivankova & Greer, 2015).

I followed a sequential mixed-methods study design (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Teddlie & Tashakkori, 2009), in which I first collected and analyzed quantitative data, which I used to inform my collection and analysis of the qualitative data. Yoon and Hirvela's (2004) study also roughly followed this design, although it was not explicitly stated. In this study, it is clear that the initial quantitative phase takes priority over the qualitative phase, because the qualitative stream was used to verify the findings in the quantitative phase. This, combined with the sequential design, is denoted in mixed methods research as (QUAN → qual). The quantitative phase was meant to reflect in large part Yoon and Hirvela's (2004) survey (although some questions were changed and added to contextualize it to the current study), as well as to confirm their results. The qualitative phase was confirmatory and explanatory; it was meant to confirm and explain the findings of the quantitative phase. However, it was also exploratory, in that it also uncovered student insights during the interviews.

Here I present the research questions again in the context of a mixed methods approach. For each of the four subsidiary research question, I used both quantitative and qualitative methods to answer each of them. Nevertheless, it is important to note that subsidiary research question 3 was more suited to being answered via qualitative interviews. These research

questions also provide context for the following visual depiction of the study design, shown in Figure 3.4. Again, the main research question is:

What are the perceptions of post-French immersion students about using a bilingual concordancer as an aid for writing in French?

The subsidiary research questions are:

- (1) In what ways do post-French immersion students perceive bilingual concordancer use to be helpful or unhelpful for improving their L2 writing?
- (2) What difficulties do students experience in using a bilingual concordancer?
- (3) How do students feel about learning to use a concordancer via instruction, homework, and autonomous exploration?
- (4) What are students' overall evaluations of using a bilingual concordancer to aid their L2 writing development?



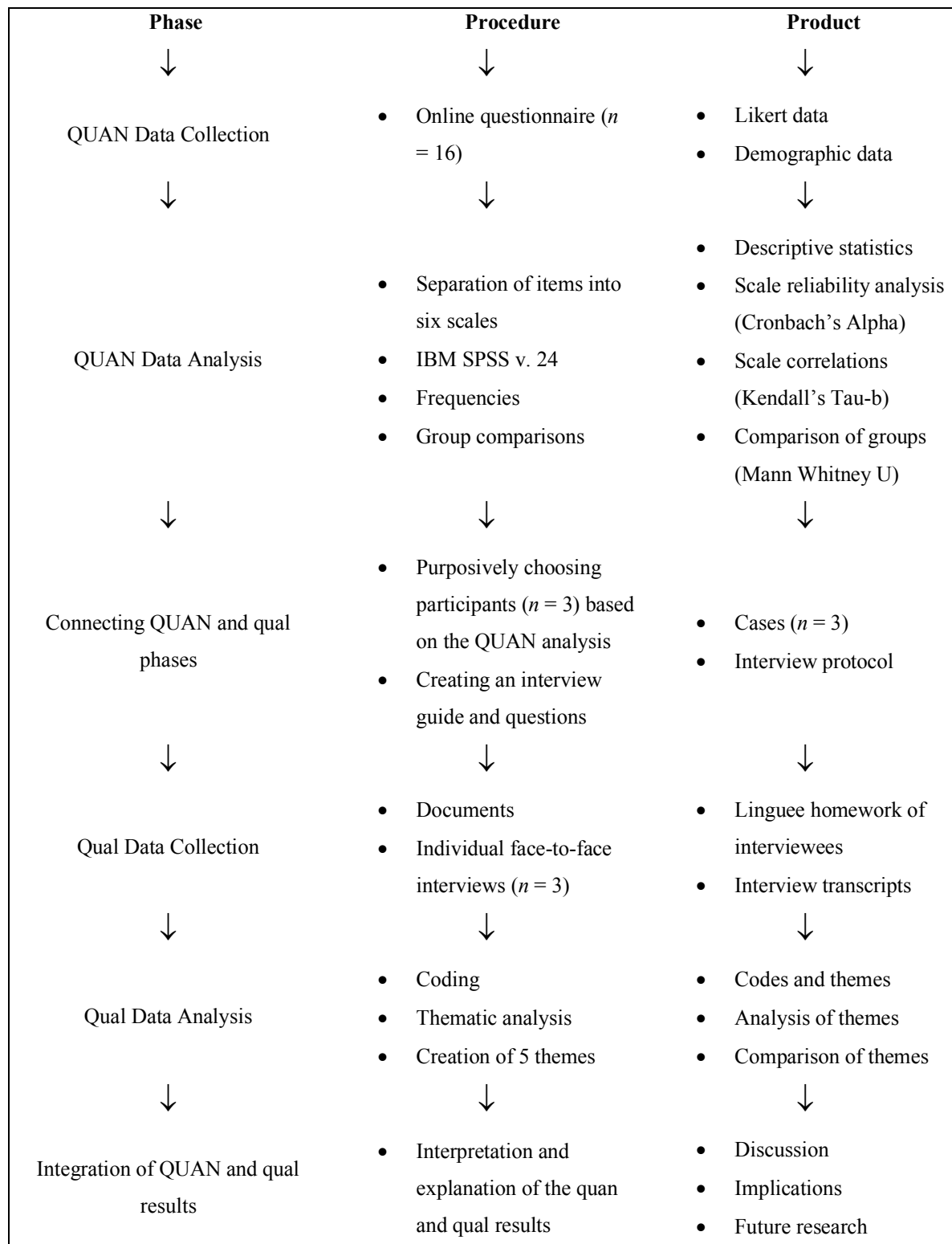


Figure 3.4. A diagram of the study procedures.

### 3.3.2 Sampling.

The research population included post-French immersion university students continuing their study of French in Canada. To my knowledge, there are no centralized data to determine the exact size of this population. However, the University of Ottawa's French Immersion Studies program has an enrolment of at least 1 100 (uOttawa, n.d.). In addition, Lamoureux (2016) determined that, of 215 French as a second language high school graduates who were enrolled in French Immersion Studies, 61% of them had done French immersion. From this small data set, one can only speculate the number of PFI students nationally, but it is likely in the thousands.

The participants included two intermediate (approximately CEFR level B1, according to one course instructor) post-French immersion university classrooms at York University (Glendon campus). Class A had 21 students ( $n = 21$ ), while Class B had 12 students ( $n = 12$ ). Ultimately, eight students from Class A and 8 students from Class B gave their consent to participate ( $n = 16$ ).

For the quantitative phase, I used a convenience sampling technique to choose the two classrooms. This method of sampling is typical for specialized students such as these (Dörnyei, 2010). Choosing two classes helped to increase the sample size. Both classes received similar instruction. In addition, each class had its own unique characteristics, including the dynamics between students and professors (as it was the same course with a different instructor in each class). Having more than one class helped to counter individual classroom idiosyncrasies.

In the following qualitative phase, I used purposive sampling to select interviewees who had different experiences with the corpus. Here I broke with Yoon and Hirvela's (2004) approach of interviewing only students with a positive experience or students with a negative

experience. I wanted to ask students who had positive experiences and negative experiences, of course; but I was also interested in examining ambivalent or more nuanced encounters that students had. I was quite constrained by the sample size, so although I contacted six students, only three were available to be interviewed. However, each student had unique perceptions of the concordance.

### **3.4 Data Collection Tools**

I used both a questionnaire and interviews to answer all four subsidiary research questions. The interviews played a confirmatory role in being compared to the questionnaire. The interviews also expanded and nuanced the answers to the research questions.

#### **3.4.1 Questionnaire.**

The questionnaire asked students about their perceptions of Linguee and was divided into two main parts. I heavily consulted Dörnyei (2010) in the planning and construction of this survey. See Appendix C for the complete questionnaire. In Part I, there were 57 Likert type questions, rated on a scale of one to six as follows: 1 = Strongly disagree, 2 = Disagree, 3 = Slightly disagree, 4 = Slightly agree, 5 = Agree, and 6 = Strongly agree. The questionnaire was a near replication of Yoon and Hirvela's (2004); however, I changed the wording of some of the questions and added some of my own, in consultation with my thesis committee. The first 13 questions were primarily about the helpfulness of Linguee and were thus used to answer Research Question 1. Questions 17-18 and 41-42 were used along with the demographic information in Part II of the questionnaire to help me understand the students. Questions 19-32 were focused on student difficulties with Linguee and assisted me in answering Research Question 2. Questions 33, 34, 35, 36, 37, 38, 40, 43, 44, 45, 52, 54, 55, 56, and 57 helped to

answer Research Question 3, regarding students' perceptions of the workshop, homework, and autonomy. Finally, Questions 14, 15, 16, 39, 46, 47, 48, 49, 50, 51, and 53 assisted me in answering Research Question 4, which pertained to overall evaluations of Linguee.

Part II was composed of prompts and questions about the students' demographic information. It included a mix of closed and open responses. I made it optional for students to enter their name, email, and phone number; all other information was mandatory in order to complete the questionnaire. The rest of the questions included: attendance at the Linguee workshop, gender, age, class enrolled in, department, enrolment in the bachelor of education program, majors, minors, year of study, nationality, first languages, other languages, home languages, French as a second language learning history, months in a Canadian university, number of Linguee activity assignments completed, and effort put into Linguee activities. I also asked students nine questions about their computer usage. The questionnaire finished by asking students two questions about their dictionary use and two questions about corpus use.

### **3.4.2 Interviews.**

I decided to take an interview guide approach to interviewing (Patton, 2015). This type of interview involves making a guide beforehand with questions and topics to cover, but it ultimately allows the interviewer to be "free to build a conversation within a particular subject area, to word questions spontaneously, and to establish a conversational style but with the focus on a particular subject that has been predetermined" (p. 439). This kind of interview is also sometimes referred to as a semi-structured interview. I thus made an interview guide containing an outline and a few premeditated questions for each interview that I planned to ask each student,

in order to keep the interviews fairly consistent (see Figure 3.4 below). It should be noted that I did not always ask every question, but rather allowed the conversation to flow naturally.

Interview Guide	
<b>Explain goal of the interview</b>	<ul style="list-style-type: none"> <li>• Discuss purpose of study</li> <li>• Explain to student why they were chosen to be interviewed</li> <li>• Explain that this is also a follow up to their questionnaire responses and homework</li> </ul>
<b>Ethics</b>	<ul style="list-style-type: none"> <li>• Ensure that student gives consent to be interviewed</li> <li>• Inform student they can end the interview at any time, take a break, or change to a new topic</li> <li>• Ask if student has any questions before beginning</li> </ul>
<b>Possible questions</b>	
<i>Introduction</i>	<ul style="list-style-type: none"> <li>• Could you describe your French learning history? (icebreaker)</li> <li>• During this last semester and these last few months, could you describe your experience with Linguee?</li> </ul>
<i>Research Question 1</i>	<ul style="list-style-type: none"> <li>• What aspects of Linguee have you found helpful for your French writing?</li> <li>• What are some things you like about Linguee?</li> <li>• What aspects of Linguee have you found unhelpful for your French writing?</li> <li>• What are some things you dislike about Linguee?</li> </ul>
<i>Research Question 2</i>	<ul style="list-style-type: none"> <li>• What difficulties did you encounter while using Linguee?</li> </ul>
<i>Research Question 3</i>	<ul style="list-style-type: none"> <li>• What did you think about learning to use Linguee during the workshop?</li> <li>• How do you think the Linguee workshop could be improved?</li> <li>• How do you think Linguee itself could be improved?</li> <li>• What do you think about learning to use Linguee on your own?</li> <li>• What do you think about learning to use Linguee by doing the homework assignments?</li> </ul>
<i>Research Question 4</i>	<ul style="list-style-type: none"> <li>• Would you add Linguee to your language learning toolbox? Why or why not?</li> <li>• Overall, what is your opinion of Linguee as a resource for French writing?</li> <li>• Overall, how would you compare Linguee with an online bilingual dictionary as a learning tool?</li> </ul>
<i>Concluding Questions</i>	<ul style="list-style-type: none"> <li>• What should I have asked you that I didn't think to ask?</li> <li>• Do you have any other comments you'd like to make about your experience with Linguee?</li> </ul>

Figure 3.5: An example of an interview guide that assisted me in facilitating each interview.

In the process of analyzing the quantitative data, I formulated new questions. This iterative process is characteristic of sequential mixed method study designs (Teddlie & Tashakkori, 2009). For each interview guide, I added these follow-up questions, which were designed to increase the clarity of the students' questionnaire answers and discover new, illuminating information. For example, I added the following question for one of the interview participants: "In the questionnaire, you mentioned that Linguee wasn't helpful for learning phrases. Could you elaborate on that?"

In the phrasing of these questions and during the actual interviews, I made sure to avoid asking leading questions (that is, yes or no questions), so as to let the students speak for themselves. I ultimately wanted to encourage the students to express themselves by talking freely about their language learning experiences as they applied to Linguee during the semester. To accomplish this, I decided ahead of time to balance allowing the conversation to flow naturally and organically with using prompts to direct the conversation, as necessary.

### **3.4.3 Homework.**

The only Linguee homework that was collected for the study was that which was completed by the three students who participated in the interviews. These assignments provided qualitative insight into how students conceptualized Linguee when writing, helping me to come up with more questions to ask during the interviews. I also analyzed the homework assignments alongside the interview transcripts in order to find more themes, which ultimately enriched the thematic analysis.

### **3.5 Data Collection Procedures**

In the first (and quantitative) phase, I implemented an online questionnaire using a form-building website called MachForm. On November 12, 2018, I emailed a link to the students to complete the questionnaire, which asked about their perceptions of Linguee. Before answering the questionnaire, the students were required to read and sign an informed consent form if they wanted to participate in the study. Sixteen students ( $n = 16$ ) responded. The questionnaire was available between November, 12, 2018 and December 21, 2018.

For the following qualitative phase, I contacted the potential interview participants by email and by phone, which was information they had already provided in the online questionnaire. I also asked the interviewees to provide me photos or scans of their Linguee homework they had completed during the semester a few days before each interview. For the interviews themselves, I captured them using a voice recorder, and each interview lasted approximately 15-30 minutes.

### **3.6 Pilot Study**

Before commencing the study, I conducted a short, informal pilot with 6 acquaintances and friends who had a history of French language learning. Three of them had been in French immersion programs. The goal of the pilot was to test the procedures and instruments, especially since I had modified Yoon and Hirvela's (2004) questionnaire and contextualized it to the study. The pilot study followed the general course of the study in an accelerated format. Before the pilot began, I gave each participant a one-on-one workshop about how to use Linguee. I then had them complete some Linguee Activity sheets. After the participants completed the survey and I analyzed the questionnaire data, I asked to interview four students. The interviews were semi-

structured, including some prepared questions, but each interview eventually lead to a natural conversational flow. I recorded the interviews and analyzed them, and I specifically examined them for questions the participants found confusing or unclear.

At the beginning of the pilot, I encouraged all the participants to email me feedback if they had any trouble with the study materials/instruments (Linguee Activities, questionnaire and interviews). This ensured that confusion about the materials and instruments was minimized for the actual study. Some of the feedback about the Linguee homework included fixing practical formatting issues about the worksheets themselves, and making the content more formal, which would be more conducive to paper writing. Many of the participants found that it took around 45 minutes to complete each Linguee Activity, so I shortened the homework assignments. Two participants also mentioned that the bonus activity for each homework assignment was very beneficial, because it required reflecting upon the strategies used to unearth the meaning of common French formulaic sequences. Because of this feedback, I made this activity a core part of the homework assignments, rather than just relegating it to a bonus question. The participants' feedback about the questionnaire items helped me fix some typos and layout issues. I did not alter any questionnaire items based on feedback from the pilot.

### **3.7 Ethical Considerations**

This study passed the Human Participants Review Sub-Committee of York University's Ethics Review Board on August 27, 2018. My project had minimal risk for the participants. The only concern was that, since half of the participating students were in my supervisor's class, they could have felt pressured to participate in the study. Because of this connection between myself and my supervisor, I asked two of my peers doing a master's program at York University to host



an informed consent session with each of the two classrooms. These sessions took place on September 14, 2018 with one class and September 19, 2019 with the other class. My peers walked the students through the details of the study while the course instructor and myself waited outside the class. Thus, I made sure that all participants understood there was no pressure at all to participate from either me or their professor. All students who were present during the informed consent session in both classes were given a hard copy of an informed consent form conforming to the requirements of the National Research Council's Research Ethics Board and the York University Ethics Review Committee.

To ensure that the students were consenting freely, it was made clear to them by the informed consent session facilitator that they would not be penalized by their professor, the institution, or me if they did not participate. Students who elected to not participate were still able to take the class and were not required to do the questionnaire or interviews. It is important to note that students were given mandatory homework assignments called Linguae Activities, which as previously mentioned were created and prepared by me. These assignments were integrated into the class syllabus, although they were for completion marks only.

Students were encouraged to bring their consent forms home for future reference and to take time to consider participating. When I sent the link to the questionnaire to the students in both classes, the informed consent form again appeared in full before the students could begin the questionnaire. At this time, the students wanting to participate gave their consent by signing the online form and selecting "I consent to participate in the study." Those who didn't want to participate could instead select "I do not consent to participate in the study." This method ensured that the professors did not know the identity of the participants.

In addition, all students either chose their own pseudonym or allowed me to choose one for them for the data reporting phase. Lastly, as an incentive to participate and as a thank you to the participants, I entered all participants into a draw to win one Best Buy \$50 E-gift card. This opportunity applied even to those students who did not participate for the whole study duration. Additionally, the three students who participated in interviews all received a \$20 gift card to the York University Bookstore.

### **3.8 Data Analysis Procedures**

I analyzed the data following a sequential mixed methods analysis, in which the quantitative data was analyzed first and lead to the following analysis of the qualitative data. In the quantitative phase, I imported the questionnaire data from MachForm into IBM SPSS Version 24 to begin the analysis. I inputted the Likert data from Part I and coded the demographic data from Part II of the questionnaire. Students who wanted to be contacted for an interview entered their names and contact information (email and/or phone number); those who were not interested in an interview left these fields blank on their questionnaires. I kept this personal identifying information separate from the other data and coded it with alphanumeric characters to keep the identity of the students confidential. The other demographic information included closed-ended questions, which were coded with numbers, whereas the responses to open-ended questions were entered into SPSS verbatim.

I originally planned to do a cluster analysis to analyze the Likert data on the questionnaire. However, the sample size was too small for this ( $n = 16$ ). Thus, in consultation with my thesis committee, it was agreed that I should instead analyze the students' responses thematically, according to different scales. First, I organized the Likert questionnaire items into

four categories, based on the four themes from Yoon and Hirvela's 2004 study: (1) advantages of corpus use; (2) problems/difficulties in corpus use; (3) student responses to corpus use in writing instruction; and (4) student overall evaluations of corpus use. While these themes were initially used to categorize the questions, I undertook a more careful study of the items and later decided to organize the questions into six different scales, with slightly different names, in consultation with my thesis committee. In the end, I established six scales that were specifically designed to answer this study's subsidiary research questions:

- (1) perceived concordancer helpfulness (corresponding to research question 1)
- (2) perceived concordancer difficulty (research question 2)
- (3) perceived effectiveness of the workshop (research question 3)
- (4) learner autonomy (research question 3)
- (5) perceived enhancement of learning (research question 4)
- (6) overall concordancer evaluation (research question 4)

After dividing the questions into the six scales, I calculated each scale's internal consistency, examined correlations between the scales, and compiled their descriptive statistics into tables. I also performed some statistical tests to compare several groups within the study sample.

In the qualitative phase, I interviewed three students. Holliday (2015) notes that, as qualitative research is naturally subjective, obtaining validity depends in large part on the transparency of the research, and that such transparency "requires a description of how the research was carried out, from decisions regarding data collection and analysis to how the beliefs and influence of the researcher were excavated and addressed" (p. 50). Here I will thus describe in detail my analysis of the qualitative data in the current study.

It is important to note that I approached this study from an etic perspective; that is, I was not a part of the social group in which the study participants interacted. However, as a recent graduate of a university French program, I do share this connection with the participants in the study. And, although I was not enrolled in French immersion, I took Core French in high school and had many French immersion peers in my university French classes.

In addition, my approach varied considerably in the qualitative analysis from that of Yoon and Hirvela's (2004) study. They did not name any specific approach, but organized their analysis somewhat in a case-study manner. That is, they reported the data, which they categorized into four sections: one for each of the students they interviewed.

While there are many forms of qualitative analysis, I decided to use analytic induction, which Patton (2015) explains "begins with an analyst's deduced propositions or theory-derived hypothesis" (p. 543). Since I used a sequential mixed methods design, I used the first quantitative phase as a starting point from which to deduce themes and patterns from the qualitative data in the second phase. Patton also remarks that qualitative analysis can be "first deductive or quasi-deductive and then inductive" (p. 543). In this quasi-deductive sense, then, I had foreknowledge about the research questions, the questionnaire, the participants, and the interview questions I created, and this inevitably affected how I consciously (and subconsciously) interpreted the qualitative data. It is therefore important to note that this was my starting point before the analysis.

However, I simultaneously remained intentionally open to finding new patterns in the data, which is called inductive analysis. Patton (2015) defines this as "[s]earching the qualitative data for patterns and themes without entering the analysis with preconceived analytical

categories,” as well as “[beginning] with specific cases, [generating] general patterns, and [discovering] common themes through cross-case analysis” (p. 551). Mackey and Gass (2011) further describe the goal of inductive analysis: “for research findings to emerge from the frequent, dominant, or significant themes within the raw data, without imposing restraints,” and that it “is determined by multiple examinations and interpretations of the data in the light of the research objectives, with the categories induced from the data” (p. 179). Thus, I first made an honest attempt to let the data speak for itself and lead me in the discovery and creation of codes; then, I looked through the qualitative data again to see if the codes matched the patterns I saw in the quantitative data. In other words, I analyzed the qualitative data in order to verify the results of the quantitative phase and answer the research questions. Indeed, Patton (2015) further explains, “After or alongside this deductive phase of analysis, the researcher strives to look at the data afresh for undiscovered patterns and emergent understandings” (p. 543). Deduction thus mediates on the border with induction, and both can flow in and out of each other. Taken as a whole, my method for the qualitative phase followed three stages: (1) the quasi-deductive stage (my starting point with pre-knowledge of the quantitative data); (2) the inductive stage (searching for emergent codes in the data and creating themes); and finally (3) the deductive stage (searching the data again to see if any codes and themes confirmed the findings from the quantitative phase and answered the research questions). This analytic procedure facilitated the comparison and integration of the quantitative and qualitative streams of the study together, helping me to answer the four subsidiary research questions in a more complete way.

Before the interviews, I did some preliminary analysis, including examining the Linguee homework for each of the three students for insight into how the students were interacting with

Linguee, as well as aiding me in the construction of more possible interview questions. I drew especially upon the first Linguee activity, in which students were asked to describe their French immersion learning history. The analysis also included the notes that I took during and after each interview. After the interview data collection, I used a software called F5 Transcription PRO to transcribe the three interviews. Here it is important to note that, while a transcript can assist researchers in analyzing interview data by facilitating annotation and ease of access, the process of transcribing is itself a form of analysis; in other words, the transcribed sentences are an interpretation of the original interview. Poland (2001) suggests that we can assess “the trustworthiness of transcripts as research data by examining how faithfully they reproduce the oral (tape) record, while also being mindful of the limitations of these media to portray the full flavor of the interview” (p. 636). I therefore began the transcription process intent on being faithful to the accuracy of what was actually spoken in the interview, while simultaneously being cognizant of the nuanced and sometimes uncertain reality of transcription representation. I also used Poland’s notation system (p. 641) to guide me in the transcription process.

In the inductive phase of the analysis, I started by looking at the transcripts. I read them several times to familiarize myself with the content. Then, I re-read them, this time writing codes on the transcriptions themselves in the page margins, as well as listing them in my research journal, organized by participant. I also made a concept map to see potential relationships between the codes. After, I compiled these codes into a table, again based on participant. Qualitative analysis is very iterative and thus I read through the transcripts again in the deductive phase, this time looking specifically for codes related to the research questions and questionnaire

responses. I added these new codes to the code table, then highlighted codes and grouped them together using different highlighting colours.

After making the code table for the transcripts, I followed the same process with the Linguee homework: I read the six homework assignments for each student multiple times; inductively wrote codes and compiled them into a table; and deductively searched for codes related to the research questions and questionnaire responses. I added these codes to the table of interview codes.

After the main emergent themes were established, I cross-referenced them with each other, as per Patton's (2015) suggestion. Finally, I determined the extent to which these themes answered the four subsidiary research questions.

### **3.9 Summary of Chapter 3**

Sixteen post-French immersion students submitted online responses to a questionnaire that took 15 minutes to complete, and which was available for just over one month. One month later, I purposively selected three students for 15-minute-long interviews. The data collection process lasted for three months. Figure 6 outlines the study procedures used. In the following chapter, I discuss the findings of both the quantitative and qualitative streams.

## Chapter 4 - Findings

### 4.1 Questionnaire

#### 4.1.1 Participants.

Of the 16 students who participated, eight were in Class A, and eight were in Class B. There were two second-year students, while the remaining 14 were in their first year. All but two students participated in the Linguee workshop. In total, there were 16 females and two males, and the age range of all the students was between 18-19 years old. The students came from four different programs, with the overwhelming majority of them ( $n = 14$ ) in French Studies. The other programs included psychology, communications, and education. Nine students were enrolled in the bachelor of education program, while seven were not. The students' majors also varied between French, business economics, psychology, and undeclared. Four of the students also had minors, such as history and French. Half of them ( $n = 8$ ) identified their nationality as Canadian, while other nationalities included Chinese, Polish, Lebanese, Greek, French Canadian, Romanian, Italian, and Hispanic. It is important to note here that the ambiguous term "nationality" may have been interpreted in various ways by the respondents (e.g., their current country of residence, former country of residence and/or ancestry). Most students ( $n = 14$ ) reported that their home language was English, but one student reported Spanish, and another reported Polish. Some students reported two home languages ( $n = 3$ ), including Chinese, Romanian, and Cantonese. One student reported 3 home languages (Polish, French, and English).

The students' French learning history was fairly diverse. Nine students reported enrolling in Early immersion from kindergarten all the way until grade 12; two students attended French



schools; and five students selected “other” and elaborated more on their French learning journey. Four of these students did French immersion from kindergarten until high school, before switching to Core French for the remainder of their high school education. One student learned French at a private school before transferring into Extended French at some point. All in all, 13 of the 16 participants had at least a few years of experience in French immersion.

In terms of homework, 13 students completed all six Linguae homework assignments, while three students had one or two incomplete assignments. The students also scored relatively high when asked about the amount of effort (from one to ten) they had put into the homework assignments ( $M = 7.81$ ).

In addition, I asked the respondents questions about their technology use and preferences. As Yoon and Hirvela (2004) point out, interacting with corpora requires access to and familiarity with technology, so these questions were important to ask. The students all either responded that they liked using computers and smartphones “sometimes” or “a lot.” Overall, the respondents enjoyed using smartphones slightly more than computers. 69% of students ( $n = 11$ ) reported using a computer several times per day for personal use, compared to 63% of students ( $n = 10$ ) who used computers for schoolwork, indicating an essentially even split between personal and schoolwork usage. This contrasts with Yoon and Hirvela’s (2004) study, which found that students typically used computers much more for personal use. Furthermore, every single student ( $n = 16$ ) in the current study unanimously reported using a smartphone several times per day for personal use, while smartphone use for schoolwork had a markedly wider distribution (S.D. = 1.40), with a sizeable number of students ( $n = 6$ ) reporting that they seldom used a smartphone for schoolwork. Furthermore, all students said that they had internet access at home. All of this

reflects the developments in technology and, especially, in smartphone usage that have occurred since the early 2000s.

Half of the students reported using a computer in both French and their first language(s) (L1) for personal purposes, and 38% used a computer in their L1. However, only one student out of 16 used a computer in French only. Regarding smartphones, students were more apt to use them in their L1 (56%), compared with 25% using a smartphone in both their L1 and French, as well as 19% using a phone solely in French. Most students (88%) said that fifty percent or more of their computer time was spent in their L1, compared with 75% of students who spent their time using a smartphone in their L1. Interestingly, only one student spent almost no time at all on a computer or smartphone in their L1 (which was Polish), instead electing to use a computer only in English and a smartphone only in French.

#### **4.1.2 Scales.**

To analyze the scales, I first summed the respondents' Likert data into scale scores, then measured the correlations between the scales. Afterward, I implemented a reliability analysis before analyzing the scale scores, using descriptive statistics, which included frequency, mean, standard deviation, and median, as well as some other measures. Lastly, I compared groups with each other, including class A and class B (as in Yoon and Hirvela (2004)); education students with non-education students; and French immersion students with non-French immersion students.

After dividing the questionnaire into six scales, I discovered that four items did not thematically fit anywhere. I therefore analyzed them separately. The items were as follows:

*17. I find the Linguee website to be more helpful for my writing than the mobile app.*

18. *I find the mobile app to be more helpful for my writing than the Linguee website.*

41. *I spent less than 1 hour per week doing the Linguee homework.*

42. *I spent more than 1 hour per week doing the Linguee homework.*

Students overall found the website more helpful than the app, and only a few respondents spent more than one hour per week working on the homework activity (see Table 4.1).

*Table 4.1: Descriptive Statistics for Dichotomously-Worded Items*

	Agree	Disagree	M	S.D.	Med.
	<i>n</i>	<i>n</i>			
Website more helpful	12	4	4.38	1.54	4.50
App more helpful	4	12	2.88	1.50	3.00
< 1 hour on homework	2	14	4.88	1.15	5.00
> 1 hour on homework	12	4	2.38	1.41	2.00
<i>n</i> = 16					

Treating these items separately from the other scales also had another advantage: since each pair of these questions was worded opposite from one another, I was able to use their answers to help evaluate the reliability of the questionnaire.

#### **4.1.3 Instrument reliability.**

To continue the analysis, I first examined the participants' responses to the above four items to give a rough initial measure of the questionnaire's reliability. For the first two questions that asked students to compare the corpus website with the mobile app, the student responses demonstrated a misunderstanding of the two questions. While students should logically have agreed with one of the questions and disagreed with the other (since these two questions were

worded diametrically opposite to each other), this did not happen in practice. Instead, almost half of the respondents ( $n = 7$ ) recorded the exact same response for both questions. The rest of the students agreed with one question and disagreed with the other. In the case of time spent doing Linguee homework, only 2 students wrote identical answers for the diametric, oppositely worded items. In fact, all of the other students answered the two questions in perfectly opposite ways, including the degree of agreement and disagreement. This indicates that the first set of questions may have been worded in a confusing manner, while the second set of questions was more clear for the students. This is further addressed in the discussion section.

I also calculated Cronbach's Alpha for each scale to determine the instrument's internal consistency. Several items needed to be deleted from some of the scales. The Concordancer Difficulty Scale did not require item deletion. However, for the Perceived Concordancer Scale, the following item was deleted, as it had an especially low item-total correlation and negatively affected the scale's consistency, reducing Alpha by more than .05:

*19. I find it difficult to use Linguee due to limited access to a computer/the Internet at home.*

For the Workshop Effectiveness Scale, the following item was deleted to increase the scale's consistency, as it had a low item-total correlation and reduced Alpha by more than .05:

*33. The Linguee searching technique was easy to learn.*

For the Learner Autonomy Scale, the following item was deleted:

*37. I use Linguee to search words/phrases during class.*

For Learning Enhancement Scale, the following item was deleted:

*57. Overall, learning about Linguee has increased my awareness of collocations and other types of multi-word phrases in written French.*

The Overall Evaluation Scale did not require any item deletion. For comparison purposes, I also conducted an internal consistency analysis for the Learner Autonomy, Learning Enhancement, and Overall Evaluation Scales, combined as a whole into one large scale (as was more or less done in Yoon and Hirvela's study). While the internal consistency for this scale was high ( $\alpha = .98$ ), I ultimately decided to discard this large scale and instead break it up, in order to ensure that the number of items on each scale did not exceed the already small sample size. The larger scale had 22 items, which exceeded the number of questionnaire respondents ( $n = 16$ ). I therefore decided to break it up into smaller scales to increase the credibility of the process for determining Cronbach's Alpha.

*Table 4.2: Descriptive Statistics for Questionnaire Scales*

Scale	Number of Items	Cronbach's $\alpha$
Concordancer Helpfulness	13	.95
Concordancer Difficulty	13	.94
Workshop Effectiveness	3	.81
Learner Autonomy	4	.96
Learning Enhancement	5	.96
Overall Evaluation	11	.97
Combined Scale (after item deletion)	49	.94

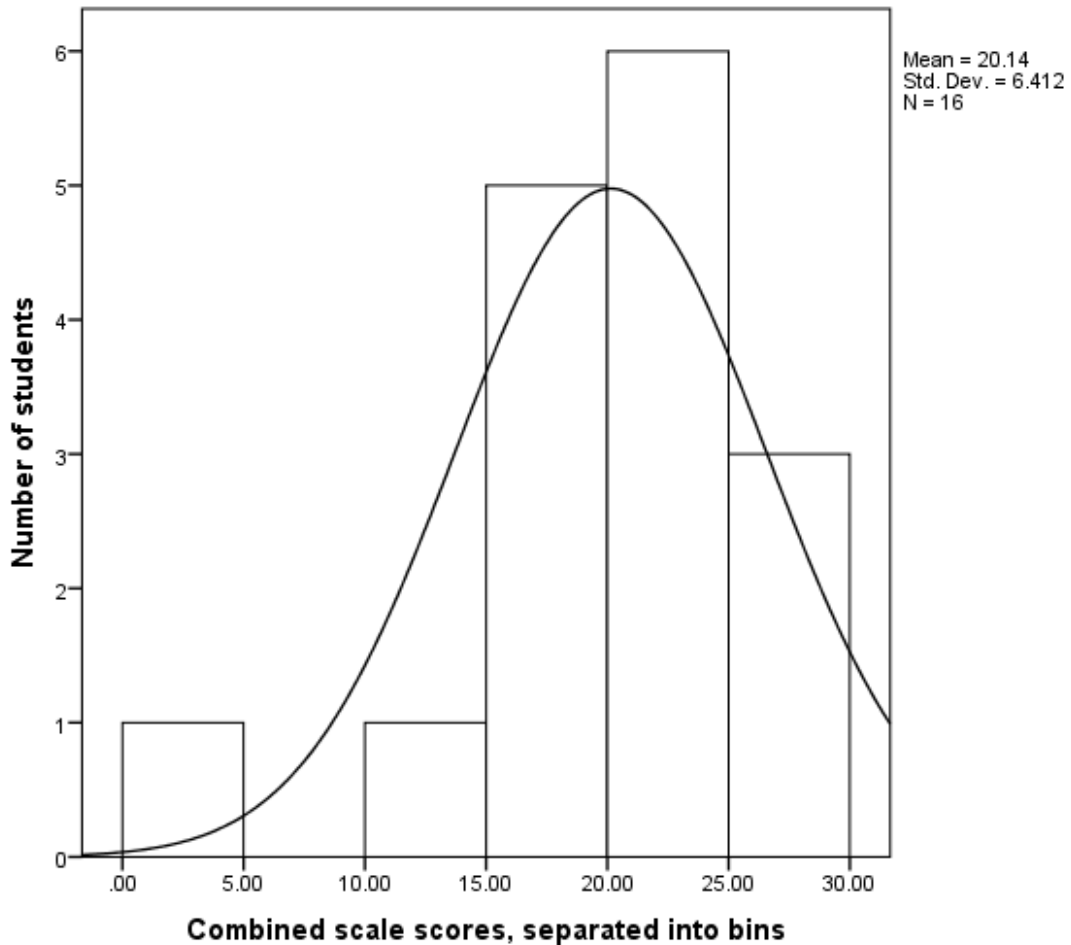
#### **4.1.4 Scale scores.**

Once I organized the questions into scales, I summed the coded Likert responses for each student according to each scale, then divided by the number of questions in the scale to come up with a “scale score” for each student. Then, using the Kendall rank correlation coefficient test (Kendall’s tau-b), I compared the scale scores with one another to find the associations they had with one another. Unsurprisingly, the Concordancer Difficulty Scale was negatively correlated with all of the other scales. The remaining scales, however, all had positive correlations with each other. I also assessed the magnitude of association between each scale using Cohen’s (1992) effect size index for the Pearson correlation coefficient, which is used to measure the “association between two variables” (Ellis, 2012, p. 16). Cohen (1992) states that coefficients from .10 to .29 reflect a small effect size; coefficients from .30-.49 reflect a medium effect size; and coefficients .50 and greater reflect a large effect size. As is evident from Table 4.3, all of the scales were highly associated with one another with the exception of the Concordancer Helpfulness Scale compared to the Concordancer Difficulty Scale (which only had a medium negative association); and the Concordancer Difficulty Scale compared to the Learner Autonomy Scale (which also had a medium negative association). The largest effect size of the scales comparison was the positive correlation between the Learning Enhancement and Overall Evaluation Scales, and the smallest was the negative correlation between the Concordancer Difficulty and Workshop Effectiveness Scales.

Table 4.3: Kendall's Tau-b Correlation Matrix of Scale Scores

Scale	Concordancer Helpfulness	Concordancer Difficulty	Workshop Effectiveness	Learner Autonomy	Learning Enhanceemnt	Overall Evaluation
Concordancer Helpfulness						
Concordancer Difficulty	-0.44*					
Workshop Effectiveness	0.66*	-0.62*				
Learner Autonomy	0.60*	-0.30*	0.61*			
Learning Enhanceemnt	0.56*	-0.56*	0.79*	0.69*		
Overall Evaluation	0.62*	-0.63*	0.75*	0.58*	0.80*	
* $p < .05$						

Then, I summed the 6 scale scores into one combined score in order to measure how positive the students' experiences were with Linguee on an overall, macro scale. I took care to reverse score the Concordancer Difficulty Scale before summing it with the other scales, because of its negative correlation. This made sense intuitively, since difficulty is usually associated with negative experiences. This macro scale afforded me a quick reference to gauge how positively in general the students perceived Linguee. Figure 7 indicates that the combined scale score had a negative skew (-1.57), with the majority of respondents reporting positive experiences.



*Figure 4.1.* Histogram of combined scale scores.

All students but two had a positive experience with Linguee in general (see Table 4.4); these two respondents (students 3 and 7) were the only ones that were below the median possible score ( $M = 14$ ) for the combined scale. They also consistently had the lowest two scores on all of the scales, except for the Concordancer Difficulty Scale, where student 2 replaced student 7. Student 13, on the other hand, had the most positive experience with Linguee of all the students.



*Table 4.4: Student Scores as a Measure of Positive Experience with the Concordancer*

ID	Combined Scale	ID	Concordancer Helpfulness	ID	Concordancer Difficulty	ID	Workshop Effectiveness	ID	Learner Autonomy	ID	Learning Enhancement	ID	Overall Evaluation
3	2.61	3	1.92	3	-4.77	3	2.00	3	1.00	3	1.00	3	1.45
7	10.07	7	2.69	2	-4.31	7	4.00	7	2.25	7	2.20	7	3.00
2	15.84	16	3.92	7	-4.08	15	4.33	6	3.25	6	2.60	2	3.82
6	18.06	5	4.31	12	-3.92	2	4.67	2	4.00	2	3.20	6	4.36
15	19.03	15	4.38	8	-3.77	5	4.67	12	4.25	15	3.60	5	4.55
5	19.34	2	4.46	11	-3.46	6	5.00	15	4.75	16	3.80	14	4.91
12	19.56	12	4.54	5	-3.38	11	5.00	5	5.00	5	4.20	12	5.09
11	21.96	6	4.62	15	-3.31	12	5.00	11	5.00	9	4.40	8	5.18
14	22.14	8	4.92	14	-3.00	14	5.00	14	5.00	11	4.60	15	5.27
16	22.44	9	5.00	1	-2.62	1	5.33	16	5.25	12	4.60	11	5.36
8	22.62	1	5.08	9	-2.46	8	5.33	8	5.75	13	4.60	16	5.36
9	23.91	14	5.23	4	-2.23	9	5.33	1	6.00	1	5.00	1	5.55
1	24.34	11	5.46	6	-1.77	10	5.33	4	6.00	14	5.00	9	5.64
4	26.33	4	5.54	10	-1.69	16	5.33	9	6.00	4	5.20	4	5.82
10	26.69	10	5.54	16	-1.23	4	6.00	10	6.00	8	5.20	10	5.91
13	27.29	13	5.85	13	-1.15	13	6.00	13	6.00	10	5.60	13	6.00
M	20.14		4.59		-2.95		4.90		4.72		4.05		4.83
S.D.	6.41		1.04		1.12		0.93		1.47		1.26		1.20
Med.	22.05		4.77		-3.15		5.00		4.50		5.00		5.23
<i>n</i> = 16													
Note: Median possible score for the combined score is 14.00, and is 3.5 for each of the other scales.													

Next, I examined the scale scores individually. For each scale, the lowest possible score was thus 1.00, and the highest was 6.00 (essentially conforming to the 6 point Likert scale). For the Concordancer Helpfulness Scale, all but 2 students found Linguee to be more helpful than not as a whole (see Table 4.5). In terms of individual questionnaire item responses, all but one student reported that Linguee was helpful for learning vocabulary, phrases, and new words and phrases. Most students reported that Linguee was helpful learning grammar, albeit to a lesser extent. The majority of students also found that Linguee was helpful for writing and revising papers, doing schoolwork at home and in class, as well as for the learning portfolio assignment they handed in at the end of the course. Most students also found that Linguee equipped them with strategies they had not encountered before. Lastly, 11 students said that Linguee made writing more enjoyable, although a significant minority disagreed ( $n = 5$ ). As a whole, then, students found Linguee to be helpful for every category of question asked, although they reported that it was least helpful for learning grammar.

These results were similar to Yoon and Hirvela's (2004) survey, except for student views on writing skills and grammar. In Yoon and Hirvela's study, an overwhelming 100% of students from both the intermediate and advanced classes found the COCA concordancer helpful for writing skills, contrasting with 75% of students in the present study. However, I also discovered that students in this study found Linguee helpful for writing papers (87%), as well as for revising papers (75%). This indicates that students may find concordancing more helpful as a tool for a specific task like paper writing, rather than writing skills in general. Regarding grammar, Yoon and Hirvela's results indicated that 79-88% found the concordancer helpful for grammar, compared with only 62% of students in the current study.

*Table 4.5: Descriptive Statistics for Scale 1: Perceived Concordancer Helpfulness*

	Helpful	Unhelpful	M	S.D.	Med.
	<i>n</i>	<i>n</i>			
Meaning of vocabulary	15	1	5.13	1.09	5.00
Usage of vocabulary	15	1	5.00	1.10	5.00
Usage of phrases	15	1	4.94	0.85	5.00
Grammar	10	6	3.63	1.26	4.00
Writing skills	12	4	4.06	1.34	4.00
Writing papers	14	2	4.69	1.54	5.00
Revising papers	12	4	4.31	1.35	4.00
Portfolio d'apprentissage	14	2	4.94	1.48	5.00
Using Linguee during class	13	3	4.44	1.46	5.00
At-home writing assignments	14	2	4.88	1.54	5.50
Learning new words/phrases	15	1	5.38	0.89	6.00
Equipping with new strategies	13	3	4.31	1.35	5.00
Makes writing enjoyable	11	5	4.00	1.41	4.50
<i>n</i> = 16					

The Concordancer Difficulty Scale revealed that students had significant misgivings about the reliability of Linguee's external sources. Students were also often unable to find the words and phrases they searched for, and often were unable to find any results for what they had searched. Students were almost split on the following questions: whether the time and effort spent searching for words was difficult; whether the cut-off sentences made using Linguee difficult; and whether the limited number of sentences in the search results made Linguee difficult. Most students did not think there were too many sentences, and most did not think the

search technique was difficult. In terms of analyzing the search results, the majority of students did not find the highlighted words nor the word frequency list to be difficult. They also had a moderately easy time of comparing English to French. Students had the least amount of difficulty with unfamiliar vocabulary, and a significant number ( $n = 13$ ) said that the French texts were not too difficult to comprehend. On average, students did not find Linguee particularly difficult. However, the normal distribution of the students' scores indicated to me that Linguee was moderately difficult for students overall. Although the students had moderate difficulties in using Linguee, they generally had fewer struggles than the students in Yoon and Hirvela's (2004) study. This might be explained by the increased familiarity with technology that characterizes most students today.

*Table 4.6: Descriptive Statistics for Scale 2: Perceived Concordancer Difficulty*

	Difficult	Not difficult	M	S.D.	Med.
	<i>n</i>	<i>n</i>			
Time and effort	7	9	2.88	1.46	3.00
Unfamiliar vocabulary	3	13	2.56	1.21	3.00
Cut-off sentences	7	9	2.94	1.57	3.00
Too many sentences	5	11	2.63	1.67	2.00
Limited sentences	7	9	2.88	1.59	3.00
Finding no results	11	5	3.69	1.85	4.00
Analyzing highlighted words	6	10	3.13	1.36	3.00
Comparing English to French	4	12	2.56	1.46	2.50
Analyzing word frequency list	6	10	3.00	1.63	3.00
Search technique	4	12	2.25	1.34	2.00
French texts too difficult	3	13	2.50	1.16	2.00
Picking reliable sources	12	4	3.81	1.11	4.00
Finding searched words	10	6	3.50	1.67	4.00
<i>n</i> = 16					

The Workshop Effectiveness Scale shows that all students but one found the workshop to be effective, and all but one understood why Linguee was being used in the class. Yoon and Hirvela (2004) also found that their students well understood the purpose of using the corpus in the class. The vast majority of students were able to find what they were searching for on Linguee.

*Table 4.7: Descriptive Statistics for Scale 3: Perceived Effectiveness of the Workshop*

	Effective	Not effective	M	S.D.	Med.
	<i>n</i>	<i>n</i>			
Workshop	15	1	5.13	1.03	5.00
Purpose of corpus	15	1	5.00	1.21	5.00
Finding needed information	13	3	4.56	1.03	5.00
<i>n</i> = 16					

The Learner Autonomy Scale builds upon the Workshop Effectiveness Scale by demonstrating that students by and large used Linguee at their own behest and on their own. All but two students indicated that they freely chose to use Linguee. 13 students also indicated that they used Linguee in other classes and that they sought Linguee for assistance. Fewer students ( $n = 12$ ) used Linguee to aid them in accomplishing other assignments, although the vast majority of students did so.

Both my study and Yoon and Hirvela's (2004) found that most students used the concordancer in other courses. However, the students in the current study reported using the concordancer more by their own choice than in Yoon and Hirvela's study. This may be due to this study's questionnaire being completely optional and outside of class time, whereas Yoon and Hirvela's students would have likely filled out the questionnaire during class and may have felt more compelled to participate than the PFI students in this study.

*Table 4.8: Descriptive Statistics for Scale 4: Learner Autonomy*

	Agree	Disagree	M	S.D.	Med.
	<i>n</i>	<i>n</i>			
I use Linguee by my own choice	14	2	4.88	1.50	5.00
I use Linguee in other courses	13	3	4.81	1.42	5.00
I use Linguee for other homework	12	4	4.56	1.83	5.00
I seek help from Linguee	13	3	4.63	1.50	5.00
<i>n</i> = 16					

The Learning Enhancement Scale had a fairly normal distribution, with students finding their learning overall to be slightly enhanced from using Linguee. Although most found Linguee to be motivating, a significant minority ( $n = 6$ ) disagreed. The students found Linguee to enhance their learning more in other areas, including confidence, enjoyment, and making strategies. While the students in this study reported less of an increase in confidence with writing than in Yoon and Hirvela's (2004), there was nevertheless a slight increase. The majority of students also said that they used the Linguee homework as a reference.

*Table 4.9: Descriptive Statistics for Scale 5: Perceived Enhancement of Learning*

	Agree	Disagree	M	S.D.	Med.
	<i>n</i>	<i>n</i>			
I use the homework as a reference	12	4	4.25	1.65	5.00
Linguee increased my confidence	12	4	3.88	1.31	4.00
Linguee increased my motivation	10	6	3.81	1.22	4.00
Linguee helped me make strategies	13	3	4.31	1.35	5.00
Linguee increased my enjoyment	12	4	4.00	1.21	4.00
<i>n</i> = 16					

The Overall Evaluation Scale shows that the students' overall perceptions of the corpus were very positive. This was especially true when all students but one said that Linguee is a useful resource and that Linguee should be used in all French courses. Students also overwhelmingly answered that they will use Linguee for their next course and for their French writing and will recommend it for the next class, and to other students. The overwhelming majority also began to like Linguee more as they increasingly used it. Many students also found that comparing French and English together improved their French writing. However, a quarter of students did not think that Linguee was more helpful than a dictionary.

In their overall evaluations of Linguee, the students were approximately just as likely as the students from Yoon and Hirvela's (2004) study to recommend using the concordancer. In addition, the students in the current study on average evaluated the concordancer higher as an overall useful resource, yet were less likely to use it in the future than Yoon and Hirvela's students. This dichotomy might be explained by the existence and proliferation in recent years of



numerous accessible online tools: the students may thus see Linguee as one tool among many, rather than as *the* tool to use.

*Table 4.10: Descriptive Statistics for Scale 6: Overall Concordancer Evaluation*

	Agree	Disagree	M	S.D.	Med.
	<i>n</i>	<i>n</i>			
Will use in the next course	14	2	5.06	1.44	6.00
Will use for French writing	14	2	4.81	1.33	5.00
Is a useful resource	15	1	5.13	1.01	5.00
Should be used in courses	15	1	4.81	1.28	5.00
Recommend it for next class	14	2	5.13	1.26	6.00
Will recommend to others	14	2	4.94	1.44	5.50
More helpful than dictionary	12	4	4.44	1.79	5.00
Have come to like it more	14	2	4.63	1.15	5.00
Comparing Eng. & Fr. helps	14	2	4.94	1.39	5.00
Has correct grammar	13	3	4.56	1.32	5.00
Has situational words	13	3	4.69	1.35	5.00
<i>n</i> = 16					

#### **4.1.5 Group comparisons.**

I decided to compare various groups using the non-parametric Mann-Whitney U test. First, I grouped the scale scores of the students into class A ( $n = 8$ ) and class B ( $n = 8$ ) and compared the two classes to each other. The Mann-Whitney U test for the Concordancer Helpfulness, Concordancer Difficulty, Workshop Effectiveness, Learner Autonomy, and Learning Enhancement Scales revealed each to be statistically insignificant ( $p = .204, .130, .352, .339$ , and  $.269$  respectively). Only the Overall Evaluation Scale was statistically significant ( $p =$

.046). In other words, classes A and B differed significantly only in their overall evaluations of Linguee. Using the probability of superiority (Grissom & Kim, 2012), I calculated the effect size to be .81:

$$p_{a.b} = \frac{U}{n_a n_b} = \frac{13}{8*8} = .81$$

In other words, respondents in class B were 81% more likely than class A to have higher scores for the Overall Evaluation Scale. This is reflected in Table 5.1, in which we can see clearly that Class B had a significantly more positive overall evaluation of the corpus than class A. Interestingly, however, class B had a more negative response than class A regarding whether they trusted Linguee to provide situationally appropriate words. It is also worth noting that class A was evenly split on the question of whether Linguee or a dictionary was more helpful for French learning.

Table 4.11: Scale 6: Overall Concordancer Evaluation ( $n = 16$ ): Class A and Class B

	Class A ( $n = 8$ )					Class B ( $n = 8$ )				
	Agree	Disagree	M	S.D.	Med.	Agree	Disagree	M	S.D.	Med.
	$n$	$n$				$n$	$n$			
Will use in the next course	6	2	4.38	1.77	4.50	8	0	5.75	0.46	6.00
Will use for French writing	6	2	4.25	1.67	4.50	8	0	5.38	0.52	5.00
Is a useful resource	5	3	4.63	1.30	3.50	8	0	5.63	0.52	4.00
Should be used in courses	7	1	4.00	1.31	4.00	8	0	5.63	0.52	4.50
Recommend it for next class	6	2	4.50	1.51	4.50	8	0	5.75	0.46	5.50
Will recommend to others	6	2	4.38	1.77	4.00	8	0	5.50	0.76	4.50
More helpful than dictionary	4	4	3.50	2.07	5.00	8	0	5.38	0.74	6.00
Have come to like it more	6	2	4.13	1.25	4.50	8	0	5.13	0.84	6.00
Comparing Eng. & Fr. helps	6	2	4.38	1.77	4.50	8	0	5.50	0.54	5.50
Has correct grammar	5	3	4.00	1.60	4.50	8	0	5.13	0.64	5.00
Has situational words	6	2	4.25	1.58	5.00	7	1	5.13	0.99	5.00
$n = 16$										

For another comparison, I grouped BEd students ( $n = 9$ ) and non-BEd students ( $n = 7$ ), and compared them according to each scale. These groups were important to compare, because a significant amount of immersion students eventually become French immersion teachers (Vanderveen, 2015). The Mann-Whitney U test revealed no statistically significant differences between BEd students and non-BEd students for Scales 1-6 ( $p = .556, .470, .983, .775, .917, \text{ and } .486$ , respectively). There was also no significant difference for the Combined Scale Score.

*Table 4.12: Scale Score Comparison: BEd and non-BEd Students*

Scale	<i>p</i>	BEd Students ( <i>n</i> = 9)			Non-BEd students ( <i>n</i> = 7)		
		M	S.D.	Med.	M	S.D.	Med.
Concordancer Helpfulness	0.556	4.76	0.93	4.92	4.37	1.21	4.62
Concordancer Difficulty	0.470	3.13	1.11	3.46	2.71	1.16	2.62
Workshop Effectiveness	0.983	5.00	0.60	5.00	4.76	1.29	5.00
Learner Autonomy	0.775	4.22	1.05	4.60	3.83	1.54	4.20
Learning Enhancement	0.917	4.89	1.26	5.00	4.50	1.80	5.00
Overall Evaluation	0.486	5.03	0.99	5.27	4.57	1.47	4.91
Combined Scale	0.837	20.77	5.43	21.96	19.32	7.88	22.14
<i>n</i> = 16							

I then grouped students who first enrolled in French as Early Immersion students all the way from kindergarten to the end of high school (*n* = 9) and compared them to students who were in different programs, including some French immersion, French school and other programs (*n* = 7). The Mann-Whitney U test revealed no statistically significant differences between Early Immersion students and their non-Early Immersion counterparts for Scales 1-6 (*p* = .861, .536, .482, .981, .674, and .312, respectively). There was also no significant difference for the Combined Scale Score.

*Table 4.13: Scale Score Comparison: Immersion and Non-Immersion Students*

Scale	<i>p</i>	Immersion Students ( <i>n</i> = 9)			Non-Immersion Students ( <i>n</i> = 7)		
		M	S.D.	Med.	M	S.D.	Med.
Concordancer Helpfulness	0.861	4.69	0.86	4.92	4.46	1.30	4.54
Concordancer Difficulty	0.536	3.10	0.95	3.38	2.75	1.35	2.62
Workshop Effectiveness	0.482	4.93	0.43	5.00	4.86	1.39	5.33
Learner Autonomy	0.981	4.11	1.19	4.40	3.97	1.43	4.60
Learning Enhancement	0.674	4.69	1.29	5.00	4.75	1.79	5.25
Overall Evaluation	0.312	4.75	0.92	4.91	4.94	1.57	5.36
Combined Scale	0.536	20.07	4.94	21.96	20.23	8.34	22.44
<i>n</i> = 16							

## 4.2 Interviews and Homework

I purposively chose students to interview based on the above quantitative analysis. I wanted to ensure that I talked to a student from both classes, especially because there was a significant difference in how each class made their overall evaluations of the corpus, with class B taking an overall more positive view. I decided to ask student 14 for an interview, since class B had a significantly more positive view of Linguee than the other class. It is important to note that student 14 was the only post-immersion student in class B available to be contacted.

Unfortunately, the student who had the most negative perception of Linguee of all the post-immersion students was not available to be interviewed. However, I decided to ask two students who had mixed feelings about Linguee. Student 6 found Linguee to be helpful and quite easy, but reported in the questionnaire that they did not find Linguee that useful for autonomous learning, and that they found it especially wanting in the area of learning enhancement. Although

they had never heard of the term “corpus” or “corpora” before the class, student 6 was the only one of all the questionnaire respondents to report familiarity with using a corpus before the semester in which the study occurred, so I was curious to learn more. Meanwhile, student 2 had a very ambivalent view of the corpus and was one of the few students ( $n = 4$ ) who found it simultaneously helpful and difficult to use. In fact, this student reported the second-most difficult experience with Linguee of all the survey respondents. Student 2’s score, with all of the scales combined together, was also the closest to the median possible score; this further indicated their ambivalence towards Linguee.

After I had chosen the students to interview, I asked them to provide me with the Linguee homework assignments, which I examined to help me in the creation of interview questions.

#### **4.2.1 Participants.**

I gave the students that I interviewed the chance to choose their own pseudonym to protect their confidentiality. Two of them asked me to come up with pseudonyms for them, so I used a random name generator to find names for them: Natalya (student 14 from the quantitative analysis) and Demetra (student 2). The other student that I interviewed chose his own pseudonym: Denzel. He was student 6 in the quantitative phase.

Natalya was a 19-year-old Canadian female student majoring in French Studies. She had been studying at a Canadian university for 3 months at the time of the questionnaire as a first year student and was in Class B during the semester in which the study took place. Natalya enrolled in French immersion when she was in senior kindergarten and continued in the program through high school. In addition, she participated in a French exchange program in grade 8. Her L1 and language spoken at home was English. On the questionnaire, under “Other languages

spoken fluently,” she listed French with a question mark afterwards, indicating that she was uncertain of her competence in French. Natalya had a generally positive view of Linguee across all of the scales. Her overall scale score was 22.14, which was higher than half of the participants (see Table 4.4). She scored higher in all of the scales compared to both Demetra and Denzel, except for the Concordancer Difficulty Scale (in which Denzel scored higher). The difficulty scale also indicated that she found Linguee to be just a little bit more easy than difficult to use overall. This net positive perspective was confirmed during the interview analysis.

Demetra was an 18-year-old Canadian female student majoring in Business Economics and minoring in French Studies. She was also enrolled in the Bachelor of Education program. Demetra had been enrolled at a Canadian university for 3 months at the time of the questionnaire as a first year student and was in Class A during the study. She began her French learning quite early at age 2 in a private daycare. Then, she entered French immersion, starting with senior kindergarten and continuing all the way through high school. While her classes were all in French from kindergarten to grade 4, she described taking classes in both English and French for the rest her immersion experience. In her grade 12 year, a third of her classes were in French, while the other two-thirds were in English. The quantitative analysis indicated that Demetra had the third lowest combined scale score (15.84) of all the participants. She had perhaps the most ambivalent view of all the study participants, since her combined scale score was the closest to the possible median score (*Med.* = 14.00). In other words, Demetra seemed to be virtually split between positive and negative experiences, albeit with a slightly positive leaning. However, upon closer inspection, Demetra’s theme scores all demonstrated positive views of Linguee, except for the Concordancer Difficulty Scale. Interestingly, despite having the second most

difficult experience with Linguee of the participants, Demetra still viewed Linguee in a subtly positive way. This unique perspective cut against the correlation of the scales. Indeed, the interview analysis revealed that Demetra took a very nuanced and mixed view of Linguee.

Denzel was a 19-year-old Canadian male student majoring in Communications. He had been studying for several months at a Canadian university as a second year student and was in Class A during the study. Denzel listed his first language and language spoken at home as English. Denzel had also gone through the French immersion program from kindergarten through to high school. He remarked that his confidence in French increased during his grade 12 year due to extra French tutoring, as well as interesting subjects like drama and philosophy. Denzel had a slightly higher overall scale score than Demetra. For all of the scale scores, Denzel and Demetra were within two positions of each other, except for perceived concordancer difficulty. Here a key difference between them was that Denzel found Linguee to be relatively easy to use. Denzel also had nuanced perceptions of Linguee.

### **4.3 Themes**

My analysis of the interviews and Linguee homework assignments lead to the creation of five main themes (see Table 4.12). Four of the themes emerged from the data; the remaining theme (Workshop, homework, and autonomous experiences) was highly connected with the third research question, and thus was premeditated. I decided to include it as a theme in and of itself because it provides insight into the students' actual tactile experiences of Linguee in multiple contexts, whereas helpfulness, difficulty, and overall evaluations are more abstract ideas that I was instead able to weave throughout all five themes. Here I should note that, in all of the discussions I had with the participants during the interviews, all three of the students mentioned



at least one other website that they had used and compared it with Linguee in various ways. These websites included Word Reference, Google Translate, and Reverso. It rapidly became apparent even during the interviews that these contrasts would be crucial to unearthing the students' views of Linguee. I did not treat these comparisons between Linguee and the three websites as a theme; instead, discussion of these comparisons is included in each of the themes I found. While I treated these five themes as separate ideas, they were all interrelated.

*Table 4.14: Description of Emergent Themes Based on Interview and Homework Data*

Theme	Description
Website design: layout, features, and interface	This involves the students' experiences with and views of the overall design of Linguee, including the dictionary, external sources, auto-complete search bar, most common dictionary requests, English and French translations, layout and positioning, and aesthetics. It also includes their views of the design of other websites, as compared to Linguee.
Workshop, homework, and autonomous experiences	This describes how students experienced Linguee during the workshop and in completing their homework activities, as well as their autonomous experiences beyond these contexts.
Uncertainty and lack of familiarity related to students' experiences during the study	This broadly includes uncertainty with aspects of using Linguee and homework instructions. It also covers novelty and a lack of familiarity with Linguee, as well as memory lapses regarding past experiences.
Verification to confirm the reliability of sources and accuracy of words and phrases	This theme involves students' concerns with the reliability of various online tools, including Linguee. Students autonomously verified and checked the words they searched for using multiple websites. It also highlights students' linguistic accuracy and their concerns with finding accurate words from the search results.
Relationship between words, phrases, and grammar	This included student searches for both words and phrases, but often one source was used to search for words and another was used for searching phrases. However, Linguee was not very helpful for grammar.

The first theme involved the design of Linguee and other websites. Linguee has several components, including: (1) a bilingual search bar with an integrated auto-complete feature; (2) a bilingual dictionary section at the top of the page, which has the word and several of its synonyms (including often used and less common synonyms), example sentences, sound clips,

parts of speech and word gender information, and expandable example FSs; (3) an external sources section, which is the concordance portion of Linguee that has a list of parallel sources (30 at maximum) in French and English; (4) hyperlinks to the original source material, attached to each external source; (5) current searches being done live by other users; and (6) links to the most frequent dictionary requests in French and English at the bottom of the page.

The students had varying perspectives of Linguee's design. While Natalya liked the simple layout and the fact that it wasn't "too crowded," Denzel did not like Linguee's design as a whole, and Demetra preferred the aesthetics of Word Reference instead. Denzel sometimes found Linguee unintuitive, and Demetra especially found the interface confusing at times and difficult to use. The students all had differing opinions of Linguee's various features; every student had positive and negative comments about their experiences.

The students also had mixed views regarding the workshop. Natalya and especially Demetra found it helpful, because it made her a more careful researcher when choosing words. On the other hand, Denzel did not find it helpful because he had already been exposed to Reverso, which is very similar to Linguee. While Natalya found the homework to be helpful, Demetra and Denzel experienced several difficulties and frustrations in completing it. In terms of autonomous learning, Natalya was the most autonomous, because she used Linguee for both her French and Spanish courses. Demetra on the other hand found exploring Linguee a little tedious.

None of the participants had heard of nor used Linguee before the study. Therefore, using the concordance was a novel experience for all of the students, except for Denzel. Thus, it was natural for the students to have some level of uncertainty with using the tool, as well as some lack of recall. Another notable finding was that the students' recall of the events of the study was

often incomplete. In addition, Demetra and Denzel experienced some uncertainty with knowing how to complete the Linguee homework.

I discovered that all the students were very perceptive and had major concerns about the reliability of the results they found on Linguee. As a result of the uncertainties mentioned in the previous theme, all three students used several external websites to verify the words and phrases that they had found using Linguee. While these other websites were used to verify the sources, the students also used Linguee itself to check the accuracy of the words and phrases they used, which was also something the students from Yoon and Hirvela's (2004) study did.

All the students used Linguee for both word and phrase searches, but they took different approaches. Interestingly, Natalya had a clear preference for using Linguee to find phrases and formulaic sequences, while using Word Reference to find single words. Demetra, meanwhile, preferred to use Word Reference to find phrases, because beneath each Word Reference word search there was a section called "formes composes" (composite forms), in which it listed examples of different formulaic sequences.

In addition, both Denzel and Demetra commented that Linguee was not helpful for grammar. They both explained that this was due to a lack of a conjugation tool on the Linguee website.

#### **4.3.1 Interrelation of themes.**

During the identification of the five themes, there were many aspects of the students' comments that made it difficult to separate what they had said into different categories. There was a significant amount of overlap, and some themes flowed into each other. The actual design of the website inevitably affected how the students perceived and interacted with it. Furthermore,

the way in which I presented it during the workshop and the format of the Linguee homework also shaped their perceptions. I stressed in the workshop to not take the search results at face value, but to explore and verify searches. The students all took this to heart and were quite thorough in making sure they were using appropriate words and phrases.

One pattern that became apparent in the creation of the themes was that all students experienced uncertainty about whether their search results were accurate. This led them to both cross-reference Linguee's dictionary with the concordance output, as well as using a second website. It is therefore clear that the uncertainty and verification themes are closely linked; uncertainty leads one to seek out a reliable source to verify if something is true or accurate. In this sense, the students actively preferred to use multiple websites like a language learning toolbox, rather than just relying on one.

#### **4.4 Integration of Quantitative and Qualitative Streams**

Here I present the findings of both phases of the study in an interconnected fashion, organized by how they answer the four subsidiary research questions.

##### **4.4.1 Subsidiary Research Question 1: In what ways do post-French immersion students perceive bilingual concordancer use to be helpful or unhelpful for improving their L2 writing?**

The results of the Concordancer Helpfulness Scale on the questionnaire (see Table 4.5) indicate that students found Linguee to be helpful for their writing. However, students found Linguee to be least helpful for grammar. The interviews somewhat confirmed this finding. It is important to note that the students may have had differing conceptualizations of the term "grammar." When asked about Linguee's conduciveness to learning grammar, both Denzel and

Demetra answered negatively, citing the lack of a conjugation tool on the website as the main reason.

During the interviews, the students described both the helpful and unhelpful aspects of Linguee. Demetra and Denzel both found the auto-complete search bar useful. All of the students found the dictionary section of Linguee to be helpful, with Denzel commenting that it was the best aspect of Linguee. Natalya found the most frequent dictionary requests to be helpful for using a “more expanded vocabulary,” but the other two students took a more negative view of the feature. Denzel didn’t like that it was unintuitively located in small text at the very bottom of the page. Demetra had further problems with it:

What I thought was annoying is that when you click on the word, you click on it, but then you have to go back...so you’re like clicking back and forth and back and forth...It was just kind of rough...it’s so crowded, and it’s so small.”

Here it is apparent that the unintuitive interface of the word frequency list inhibited Demetra’s ability to make successful word searches. Despite this interface issue, however, Demetra still found the frequency list to be helpful for finding transition words and more common words.

Natalya also used Linguee to help her find common words and phrases:

[Linguee is] helpful for translating phrases instead of just words and with context, like Google Translate will translate, but it does word for word instead of the whole phrase together, so [Linguee is] helpful with idioms and just like phrases that people say.

Here Natalya shows a preference for using Linguee for finding idioms, but interestingly also to find phrases that are used when people speak. Denzel also recognized that Linguee was helpful for finding spoken idioms.

#### **4.4.2 Subsidiary Research Question 2: What difficulties do students experience in using a bilingual concordancer?**

From the questionnaire, students had the most difficulty with selecting reliable sources, as well as issues regarding finding few or no results. These patterns were also reflected in the interview sessions.

All three students experienced some difficulties with the external sources. Natalya noted that sometimes there were too many sources that said “completely different things,” and that sometimes less reliable sources (marked with an exclamation mark caution sign and the caption, “This translation could be wrong”) appeared at the top of the results lists. This raises questions regarding Linguee’s reliability. Unfortunately, there does not seem to be any explanation for these unverified translations beyond the caution sign tagging, nor why these results have been labeled this way.

One difficulty with the external sources that Demetra found was that sifting through them was time-consuming. This was because she felt that it was necessary to scroll and read “every single example,” in order to ensure that she had found what she was searching for. These difficulties were also encountered by students in Yoon and Hirvela’s (2004) study. In addition, sometimes she wasn’t able to find the desired word. Denzel meanwhile expressed a desire for more context for the searched words. He also indicated the following:

I kind of wish [Linguee] pulled from more sources; sometimes it’s enough, but sometimes I wish it had like—it seemed like it pulls a lot from government documents. I kinda wish it pulled from more sources...can it pull from fiction? Like, novels, magazines...um probably does pull from newspapers...I think it does pull from the

magazines. I guess live transcripts of people speaking wouldn't be good cause you're learning—you wanna learn how to write and not necessarily how to say it... Yeah it's just a more diverse, like a more wider range of types of sources.

Here Denzel expresses a clear desire for an increased diversity of sources, which was also articulated by Demetra. Denzel is also implying here that having sources primarily come from government documents is essentially limiting in some way. His perception of “transcripts of people speaking” not being useful for writing was also a perception held by students in Yoon and Hirvela (2004).

Furthermore, Demetra found it hard to take words from the concordance output and use them in new contexts, especially when the dictionary portion of Linguee was not present: “If I wanna use that word but in another sense, they wouldn't give it to me, so then I wouldn't be sure if I used it correctly, and I wouldn't know if it's like ‘anglicisme’ or not.” She also adds, “you can find [the word], but you weren't sure if it was right or not.” Here Demetra shows somewhat of an awareness of anglicismes and interlanguage, as well as a desire to write the words correctly. This might also demonstrate a lack of confidence in the quality of the Linguee translations.

#### **4.4.3 Subsidiary Research Question 3: How do students feel about learning to use a concordancer via instruction, homework, and autonomous exploration?**

The participants in my study found the workshop to be very effective, and the interviews partially confirmed this finding. This also affirms the importance that many studies report on the need for some kind of pedagogical intervention when introducing corpora and concordancers to students. Natalya and Demetra both found the workshop useful. Natalya did not find it “too



overwhelming or complicated” and said she understood how to use Linguee after the workshop.

Demetra gave some more extended comments:

It was useful of course because before I did the workshop, I didn't really follow most of the steps that you've mentioned, so actually following the steps—it helped a lot, because you're more careful of where you're researching and like what you're looking for.

One benefit of the workshop for this student was that it made her more aware and conscious of the word searching process. This consciousness-raising and increased focus on analyzing language forms is an example of a teaching strategy that could help students get beyond their language development plateaus (Lyster, 2007). Demetra also found the apprenticeship aspect of the workshop helpful, especially when a practical way to use Linguee was written out in manageable, easy-to-understand steps. Having these written guidelines seemed to help her become more autonomous later, when she was completing the homework assignments. This is in line with the apprenticeship approach to corpora that is emphasized by Kennedy and Miceli (2001). Denzel found relatively less utility in the workshop:

I mean, it was okay, I mean...Mind you, I came to it kind of already having experience with that kind of website, that kind of tool...so I could understand like the whole 'you don't wanna use it to completely do all your translations; you wanna use it—pick from it to give you insight.

Denzel did not benefit greatly from the workshop, as he was already familiar with another similar website, Reverso, which he mentioned often during the interview. His conception of using websites such as these is that one must be thoughtful about which words to choose.

Concerning the Linguee homework, Natalya reported that it was helpful, but that sometimes she used Word Reference when she couldn't find words using Linguee. Demetra and Denzel, on the other hand, did not find the homework as helpful. Demetra commented, "Overall my experience was fine, like I still got the assignment done. But there was like a few that you kinda questioned, you weren't sure if it was right or not." In addition, Denzel disliked various aspects of the homework: "I couldn't find the right translation. Cause I didn't know what to put down... Maybe not the paragraph ones. I didn't like—like to be honest, (laugh) I didn't like those ones." Denzel further explained that the paragraph portion of the homework felt unnatural, because he had to work various formulaic sequences into the story, instead of just writing a story using words that were completely chosen by himself. Here it is clear that Linguee did not always provide the students with the appropriate words and phrases that they had searched to their satisfaction. Denzel also stated that he was sometimes unsure about what to do or how to find specific word searches while working on the assignment. This caused him to question whether or not the creator of the homework had double checked the "answers" themselves.

Natalya and especially Demetra made extensive use of Word Reference for the homework assignment. Word Reference is an online bilingual dictionary that also has several other features, including synonyms, conjugations, collocations anglaises (English collocations), and formes composées (composite forms, including common words that are collated to the searched word). Both remarked that, when there were too many different results, they were not sure which words to use. Therefore, they used Word Reference to double check and to find words when they could not find any results on Linguee.

Regarding learner autonomy, I found that the majority of students used Linguee on their own, including for assignments in other classes. This also confirms to an extent the success of the workshop intervention. Students also demonstrated autonomy in the interviews. Demetra mentioned in her interview that she used Linguee in another project for her French class. Natalya used it more autonomously by using it as a resource for academic writing in contexts outside of her French class. She also used it to help her in her Spanish course. Interestingly, she explained that she was able to evaluate and reflect about the meaning of the searched words with the French-English output, but that with Spanish she had to rely on the words that Linguee provided, because her Spanish proficiency was elementary. As Yoon and Hirvela (2004) recommend, concordancers like Linguee may be more helpful for learners who have at least some familiarity with the target language and thus the ability to analyze and evaluate the search results.

#### **4.4.4 Subsidiary Research Question 4: What are students' overall evaluations of using a bilingual concordancer to aid their L2 writing development?**

In terms of whether or not Linguee enhanced the students' learning, this study examined confidence, motivation, strategies, and enjoyment as factors. Out of these, the students reported on the questionnaire that Linguee helped them the most with developing learning strategies. This is a positive finding, since learning strategies can help foster language awareness (Péguret, 2014), and because using learning strategies is also a non-linguistic goal advocated for by the Ontario FSL curriculum (Ontario Ministry of Education, 2013b, 2014).

Motivation to write in French also increased, but only very slightly on average. However, Demetra during her interview asserted that she “kinda got frustrated and felt like unmotivated to use [Linguee]” when the dictionary section was not present for some word and phrase searches.

This comment confirmed her questionnaire response, in which she stated that Linguee did not increase her motivation to write in French. Demetra was also the only student interviewed that expressed this feeling of frustration and a lack of motivation. This is important to note, because it is clear that motivation is a key factor in French immersion and language learning in general (MacIntyre et al., 2011). Another notable finding was the students' awareness of collocations. This item was deleted from the questionnaire to increase the internal consistency, but I nevertheless deemed it worth discussing, because the students overwhelmingly reported that using Linguee increased their collocational awareness ( $M = 5.06$  out of 6). This further confirms the natural connection between concordancers and formulaic sequences, which is an area that further research could explore.

The students invariably used multiple tools to verify each other. Both Natalya and Demetra made extensive use of Word Reference to verify Linguee, while Denzel used Reverso for the same purpose.

Some students ( $n = 4$ ) also did not think that Linguee was more helpful than a dictionary. Denzel was one of these students who expressed this view strongly on the questionnaire. Paradoxically, during the interview he gave the opposite view, saying "Linguee is more resourceful than just a dictionary." Upon following up with him on this contradiction, he had some trouble remembering, but eventually commented,

You can depend on [a dictionary], since it's already been written to have every translation, and then Linguee you aren't as sure... I feel like with um a dictionary, you can like jump back and forth and kinda use itself to help, like if you're having an issue with it, but Linguee you kinda have to come knowing a little bit of something, and I don't

know what that something is or what I would even call it, but I feel like you have to come to Linguee knowing like something in terms of what you're looking for.

Denzel thus seems to find a dictionary to be generally more reliable, because it is established as a trustworthy source that has a definition for every word. Referring to Linguee, he also commented, "Either I can find what I'm looking for perfectly or I feel very lost; there's no in-between."

Overall, the students assessed Linguee as a positive resource for French writing. However, each of the three interviewed students favoured different websites. Natalya seemed to prefer using Linguee. However, Denzel commented, "I recommend [Reverso] to everybody whose phone I see has Google Translate on it. I'm like, 'delete that' (laugh)." Denzel preferred Reverso over Linguee because it had similar functionality to Linguee, yet had additional features, including conjugation, synonyms, and grammar. In a similar manner, Demetra explained, "I would prefer Word Reference over Linguee, because they have like the conjoint like words, like this word can go with this word, but Linguee is just—sometimes they don't have that, and sometimes they do." Her main reason seems to lie in her perception that Linguee is not as consistent as Word Reference. However, Demetra explained that it was still possible to find many different categories of words on Linguee, like "chunk of words" and "common 'expression idiomatique.'"

The students all recognized that various websites had different strengths and weaknesses, with Natalya and Denzel recognizing Linguee's utility for formulaic sequences, while Demetra concluded that Word Reference was more useful for this. Denzel commented that Linguee was "better than most translations apps I've used because of how it handles um like the right way to say the saying in French, like how someone'll say it instead of just like a direct translation." Here

Denzel demonstrates a concern for using words accurately (the “right way”), as well as an awareness that language cannot be translated verbatim, but that the L2 often has different forms that are completely different from the L1. He elaborates further, “When I wanna go for a one-off phrase or idiom or just one of those things, then I would go for Linguee first.” He also mentions, “[Linguee is] the one you pick when you want idioms.” He also described his strategy for translating sentences on Linguee: “I found myself often taking a sentence...and turning it into like meaning chunks...instead of translating it as a whole.” This demonstrates that he was using his analytical skills to break the sentence down into formulaic sequences, which he could then search.

#### **4.5 Summary of Chapter 4**

The questionnaire results show that the students’ perceptions of the concordancer were mostly positive. It also shows that the only major difference between the groups tested was the two classes’ overall evaluations of the concordancer. The interview findings demonstrate the complexity and nuance of the questionnaire results, as well as show a more complete picture of the students’ perceptions.

## Chapter 5 – Discussion and Conclusion

This section presents discussion of the key findings and lists the validity issues and limitations of the study. It concludes by proffering some final thoughts and implications for future research.

The questionnaire and interviews demonstrated that students did not find Linguee as useful for learning grammar as other subjects like new phrases or comparing English to French. However, two students during the interview seemed to conceive of grammar primarily as the French verb system; when asked about grammar, they cited only Linguee's lack of a conjugation tool, and made no comments about any other grammatical phenomena. Because immersion students are not overly familiar with grammatical concepts, as was observed in the literature review, it is possible that they did not find Linguee as helpful for grammar because they do not fully understand what grammar is. Another possibility is that immersion students do not have much experience with grammar and thus find it unnecessary or difficult. Thirdly, neither the workshop nor the homework emphasized grammar, which may have influenced the students' views. However, it is hard to draw any definitive conclusions based only on these brief comments made by two participants.

The students in this study found using Linguee to be moderately difficult, which was confirmed by all the students to varying degrees in the interviews. These students were sometimes frustrated by the unpredictable, inconsistent, and often unverified nature of the Linguee translations. Nevertheless, this was a valuable exercise for the students to learn and increase their language awareness (Péguret, 2014); that is, these students learned that language is often messy and not clear-cut—including transcriptions and translations, which sometimes

contain errors. These unpredictabilities are a natural part of language. In the end, Linguee is essentially a messy compilation and conglomerate of living translations done by living people.

Denzel's choice to use the term "answers" instead of "words" or "phrases" for the search results he found on Linguee is interesting. It seems to indicate that he views the words in the search results as output. That is, the results contain answers, among which is a 'correct' answer—rather than a list of multiple possible candidates for appropriate words and phrases. This may indicate that he had difficulty with finding the French or English equivalent of some searched phrases on Linguee. It is also possible that, since immersion students learned language intuitively and focused primarily on fluency under the Ontario curriculum, students like Denzel may not have had many opportunities to analyze and cross-reference various alternatives for using words and phrases accurately. Furthermore, I intentionally chose formulaic sequences of various difficulty levels, so perhaps some of the phrases I chose were too difficult.

Two students took issue with Linguee's external sources lack of diverse source types. The core of this criticism could be rooted in a concern about language register, genre, or dialect. It could also simply be the case that the students wanted to find sources other than just transcripts from government proceedings. Since Linguee's sources are largely transcriptions of oral proceedings from Canadian and European government bodies, this would essentially negate Linguee's utility for writing. While this is still an issue up for debate, a case can be made that transcriptions are still useful for writing, especially since spoken and written language skills have a significant amount of crossover. In addition, transcripts themselves are interpretations of oral speech, and these often take on an altered, sometimes more formal language form—unless intentionally written verbatim.



Denzel had two key insights: firstly, that using Linguee requires foreknowledge of some kind, which he was unable to exactly pinpoint; and secondly, that he was either very successful at finding results on Linguee, or he was completely lost. These two insights demonstrate the complex nature of concordancing. Like Kennedy and Miceli (2001) suggest, students need to have a certain base knowledge before using a concordancer. This knowledge should include familiarity with formulaic language, which Denzel's comment seems to confirm, although he was unable to pinpoint what exactly the required prerequisite knowledge should be. It also seems to suggest that concordancing is better suited to students who are already somewhat familiar with the target language. In addition, it seems that immersion students might have unique difficulties with analyzing the words in a concordance, because the vast majority of their education has been content-based. In other words, they have learned French somewhat intuitively, as L1 speakers tend to do, and therefore have not focused on noticing or analyzing the actual forms of language. This is merely speculative, but it could be measured in a study that compares Core French and immersion students' ability to analyze and understand concordance output.

After comparing the survey responses between Classes A and B, it became apparent that Class B gave Linguee a significantly more positive overall evaluation. While this might suggest that class B had an unusually positive evaluation of Linguee, it is important to remember that there were only 8 students who responded from each class. Class A, on the other hand, had the two students who had the most negative impression of Linguee of all the participants, and together they made up 25% of the class A sample. This must therefore be understood with the small sample size in mind. One reason for this difference might be due to instructor influence,

since the classes had different professors. Alternatively, the workshops I hosted were similar but not identical, so perhaps my presentation had an effect on their perceptions.

### **5.1 Validity Issues and Limitations**

Because of time constraints and study scope, there were not enough participants to make any generalizations, and the initially small sample size made the interview selection process even more difficult. The use of a convenience sample also reduced the generalizability of the study. Any future research on post-immersion students will have to take the small size of this demographic into account in the planning stages. In addition, some students may have had different proficiency levels, which could have affected their perceptions. Furthermore, as Yoon and Hirvela (2004) did not detail the interview questions they asked, I had to attempt to deduce them from their own analysis, and in the end I also decided to create my own questions.

There were dichotomously-worded questionnaire items that were not answered in an expected, logical way (i.e., answering yes to one question and no to the other). There could be a few reasons for these responses: (1) some students did not read the questions very carefully; (2) some students may have been unable to select N/A as an answer; or (3) some students were confused about what the questions were asking. This caused me to question the reliability of the survey, but then I examined the students' responses regarding length of time spent doing the Linguee homework per week, which was also a dichotomous pair. In this case, the students answered the questions logically. Taken together, then, these two pairs of items indicate that the first pair of questions had a specific issue (i.e., poor wording, confusion, irrelevance to respondents, etc.), while the latter pair seemed to be better understood by the respondents. Of

course, with a small sample size it is hard to judge whether the instrument was reliable based on these criteria alone.

The original study also included interviews that lasted 1 hour each, whereas my study only had 15-30 minute interviews. This could have produced less thorough data, which could be problematic, especially considering that Yoon (2005) mentioned that the interviews from her 2004 study were “not sufficient to provide a deeper understanding of the topic” (p. 55). Again, it would have been useful to actually review those interview questions, because I could only speculate about why the interviews did not enrich the analysis. However, to address this problem, I made each interview condensed with many possible questions, and I allowed a lot of meandering and freedom so that I could find out more interesting information from the participants’ answers.

Four and a half months elapsed between the workshop and interviews, and the time between the questionnaire period and interviews was two months. This made recall significantly more difficult for the participants and was a major weakness of the study. However, these lapses in memory did allow me to investigate alongside the students to help them remember, which created more fruitful and collaborative conversations. Nevertheless, future studies would do well to try to minimize this time gap, so that the experience is fresh in the students’ minds.

It is also important to note that, since I taught the students how to use Linguee during the workshop, this could have affected these positive responses. The students may have felt somewhat obligated to make positive comments in order to maintain the social relationship. On the other hand, having a previous connection with the students also served to build trust and may

have made students more comfortable with expressing their opinions, something that might not have transpired had they been interviewed by a complete stranger.

Lastly, Denzel seemed to think that I was working with Linguee in some capacity. In the spirit of ensuring he was well-informed about the research project, I explained to him that, while I had used Linguee as a student in the past, I had no connection with the Linguee organization. While Denzel was clearly the most curious of the interview participants and likely only wanted to learn about the details of the study, this question did however cause me to reflect. Because I was the one who presented the Linguee workshop and was the person who contacted the students concerning the details of the study, I could have been perceived as doing a research project on Linguee's behalf. For this reason, future researchers who are interested in pedagogical interventions with educational tools should instead have the instructor themselves or an informed third party perform the intervention.

## **5.2 Implications**

Post-immersion students may stand to benefit from corpus use, since it could help them improve their written language accuracy. However, these students learned French primarily through content and not through analyzing language forms. Since looking through a concordance is very much data-driven and analytical, this is likely not as intuitive for immersion students as it might be for other French students who primarily received form-focused instruction. This should not dissuade teachers, but rather should encourage them to experiment with corpus use as a practical gateway for immersion students to focus more on form, to start thinking about the relationship of words and phrases to each other, and to discover whether or not various words naturally collate into formulaic sequences. Corpus use can also transport the user beyond the

language itself and into the deeper context, wherein culture, register, and regional uniqueness dwell. If students are made to realize how connected language is with culture, it could help further motivate and interest them to continue learning, getting them past their language learning plateaus.

Something else of note is the linguistic diversity of the participants in this study. While all of the students spoke English, several of them spoke a language other than English and French. Immersion programs and Canadian education more broadly are both increasing in linguistic diversity as globalization continues (Cummins, 2014; Swain & Lapkin, 2005). This poses an interesting challenge for teachers and students alike, especially if a corpus approach is used. Online corpora may be unavailable for students who speak a minority language, which reduces the practicality of using such a method.

Johansson (2009) has some wise advice:

Corpora are no replacement for natural communication. They cannot replace the teacher. And, finally, they should not be used in language teaching just because we now have this wonderful tool and would like to apply it in language teaching as well. Their use is vindicated to the extent that it agrees with what we know about language and language acquisition, and can be shown to be an effective learning tool. (p. 42)

In the same vein, Kennedy and Miceli (2001) suggested that extensive corpus training and apprenticeship were necessary for successful corpus implementation. Unfortunately, this was not fully possible in this study, but the training the students received did help them significantly. It is an open question regarding just how much training students need in using corpora before they can become fully autonomous, but it seems that there would need to be more instruction for the

added complexities and nuances that parallel corpora bring, especially for post-French immersion students. It is also necessary for the instructor to be well-acquainted with using corpora in the language classroom.

Based on the fact that students in this study showed a preference for using multiple online tools for verification purposes rather than a single website like Linguee, future research could explore the websites that students made extensive use of: Word Reference and Reverso. Research could also be done on the relationship between language students and the suite of online tools that they use, as well as new tools. This could include a comparison of their usage, an examination of their function, an exploration of how students perceive the tools differently, or an assessment of their utility for student language learning. Given that our world is rapidly integrating technology into our daily lives, it is important for us as researchers and teachers to keep up to date on the tools that will help our students succeed and thrive.

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## Appendix A: Linguee Summary Sheet

### What to use Linguee for:

- To find collocations and other types of multi-word phrases that you don't know
- To avoid repetition in an essay by finding new collocations and other types of multi-word phrases
- To practice your analytical and data-filtering language skills

### Remember, Google Translate is a vending machine, but Linguee is a grocery store.

- On Google Translate, inputting words gets you a result (like a vending machine). Beware, it may steal your money! (Or, in other words, give you the wrong translation.)
- On Linguee, you have to think more about which items to choose, since there are many options (like a grocery store).



### Using Linguee in 10 Steps

1. Type the collocation (or other type of multi-word phrase) in English (or French)
2. Look at the dictionary definition
3. Scan and verify that your search matches the highlighted words in the left column;
4. If not, put quotation marks around your search and repeat the steps
5. Look at the right column and look for repetition in the results
6. If one collocation (or other type of multi-word phrase) is repeated often, you can probably use it
7. Double check by reading the actual sentence to check that the context is correct
8. If no collocation (or other type of multi-word phrase) seems to repeat in the right column, examine each closely
9. Highlight your chosen collocation (or other type of multi-word phrase) in the right column and search it in Linguee to verify it
10. Finally, if you are still unsure about the collocation (or other type of multi-word phrase), search it in a dictionary

Note: not all of these steps need to be followed every time. However, for more difficult or less common phrases, you may need to follow all the steps.

## Appendix B: Linguee Homework

## Linguee Activity 1: Language and Language Learning

Use Linguee to help you complete the following exercises. Remember to search for collocations or other multi-word phrases instead of single words.

- 1) Translate the sentence from English to French on your own. Then, verify your answer using Linguee.**

Computer-assisted language learning is a relatively new phenomenon.

<b>Your translation:</b>	
<b>Your verified translation:</b>	

- 2) Translate the sentence from French to English on your own. Then, verify your answer using Linguee.**

Je voudrais améliorer mes compétences linguistiques.

<b>Your translation:</b>	
<b>Your verified translation:</b>	

- 3)**
- a) Using Linguee, find the French equivalent of the following phrases, then write an example sentence in French using the phrase:**

Thanks for =

---

Authentic language =

---

Target language =

---

- b) Using Linguee, find the English equivalent of the following phrases, then write an example sentence in English using the phrase:**

Ça veut dire =

---

Parler couramment =

---

En tant que =

---

- 4) Write a short paragraph in French (at least 5 sentences) describing how you learned French before university. Using the Linguee frequency list (the top 1-200 French phrases searched on Linguee), find and include at least 3 French collocations (or other multi-word phrases) that you find. Then, circle the 3 collocations you used.**

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**5)**

- a. Look up “in a good way” (including the quotation marks) on Linguee. Look at all of the results carefully. Find the best French equivalent you can and write it here: \_\_\_\_\_
- b. What strategies did you use to determine the best way to express this phrase in French? \_\_\_\_\_

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- c. **Look up “in a good way” (including the quotation marks) on Linguee. Look at all the results carefully. Find the best French equivalent you can and write it here:**

---

- d. **What strategies did you use to determine the best way to express this phrase in French?**

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## Appendix C: Questionnaire

## Questionnaire: Experiences with French and Linguee

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Page 1 of 11 – Benefits of corpus use

9%

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This survey will take about 15 minutes to complete.

The questionnaire will help us understand your overall experience with Linguee. There are no right or wrong answers, nor is this a test; we are interested in your opinions. Your answers will be kept confidential. Please answer honestly, as this will guarantee the success of our investigation.

You will have until December 1, 2018 to submit the survey. If you save your progress and resume later, you will be required to enter your email when prompted (which will not be visible to the researcher).

You can stop participating in the study at any time, for any reason. Closing the browser without finishing the survey by December 1, 2018 will be considered a withdrawal from the study. If you do submit a completed survey and change your mind, you may withdraw your responses by emailing the researcher (noahjwb@yorku.ca) before December 1, 2018. If you withdraw from the study, all associated data collected will immediately be destroyed by the researcher. After deletion, any remaining data will be retained by MachForm for a limited time and then permanently erased.

Thanks so much for your time!

### Part I

The following questions are regarding your experiences with and reactions to using Linguee during this course. To answer the questions below, please use this scale:

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Slightly disagree
- 4 = Slightly agree
- 5 = Agree
- 6 = Strongly agree

For each statement below, please select the number that most closely resembles your perspective.

















## Part II

We would like to interview some students to get a better understanding of their experiences with the corpus. If you wouldn't mind being contacted for an interview (completely optional), please indicate your name and how best to contact you (phone or email). Interview participants will each receive a \$20 gift card to the Glendon bookstore. The interview would take place at an agreed upon time and location.

### Name

First

Last

### Email

### Phone

###

###

####

Please answer the following questions by writing your response or by clicking your answer, as appropriate.

**Did you participate in the Linguee workshop? \***

Yes

No

Other (Explain):

### Gender

Male

Female

Other

### Age



**Class you are enrolled in**

- Mme. Peguret  
 Mme. Abouchar-Rodrigues

**Department(s) (e.g., French Studies, Education, etc.)****Are you registered in a BEd program?**

- Yes  
 No

**Major(s)****Minor(s)****Year of study at university**

- 1st  
 2nd  
 3rd  
 4th  
 5th  
 Other

**Nationality/Nationalities****First language(s)****Other languages you speak fluently****Language(s) you speak at home**



	Not at all	A little	Sometimes	A lot
<b>In general, how much do you like using computers?</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>In general, how much do you like using a smartphone?</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Never	Seldom	About once per week	About once per day	Several times per day
<b>How often do you use a computer for personal purposes (e.g., email)?</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>How often do you use a smartphone for personal purposes (e.g., texting, email)?</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>How often do you use a computer for school work (e.g., writing a paper)?</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>How often do you use a smartphone for school work (e.g., writing a paper)?</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**When you use a computer for personal purposes, do you use French or your first language(s)?**

- French
- First language(s)
- Both
- Other language(s) (please specify):

**When you use a smartphone for personal purposes, do you use French or your first language(s)?**

- French
- First language(s)
- Both
- Other language(s) (please specify):

	Almost none	About 25%	About 50%	About 75%	About 100%
How much of your total computer time is in your first language(s)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much of your total smartphone time is in your first language(s)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have Internet access at home? \*

- Yes  
 No

Do you use a dictionary for French writing (besides Linguee)?

- Yes  
 No

If yes, what kind of dictionary do you often use? Please check all that apply.

- Bilingual  
 Monolingual  
 Paper dictionary  
 Online dictionary  
 Electronic program dictionary

Had you heard about corpora before you took this class?

- Yes  
 No

Had you used corpora before you took this class?

- Yes  
 No

If yes, which corpus/corpora did you use?

#### Appendix D: Interview Questions

Some of the following interview questions were asked, depending on conversation flow and time. However, the interview included questions that collectively covered all four research questions.

- 1) In what ways has Linguee been helpful for your writing in French? Please give specific examples. (Research Question (1))
- 2) In what ways has Linguee been unhelpful for your writing in French? Please give specific examples. (Research Question (1))
- 3) What difficulties did you encounter while using Linguee? Please give specific examples. (Research Question (2))
- 4) How did you feel about learning to use Linguee during the workshop? Why did you feel that way? (Research Question (3))
- 5) How did you feel about learning to use Linguee by doing the homework assignments? Why did you feel that way? (Research Question (3))
- 6) How did you feel about learning to use Linguee on your own? Why did you feel that way? (Research Question (3))
- 7) Overall, what do you think about using Linguee to help you write in French? Why did you feel that way? (Research Question (4))
- 8) Overall, do you feel that Linguee is a good addition to your language learning toolbox? Why or why not? If yes, in what ways? (Research Question (4))
- 9) Overall, do you like or dislike Linguee as a resource for writing? Why? (Research Question (4))

10) Overall, do you think Linguee is a more or less helpful resource than a bilingual dictionary? Why? (Research Question (4))