

Multilingual electronic glossing: implementing and evaluating an alternative reading aid for students at the University of the Western Cape.



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Masters Thesis submitted to the Faculty of Arts, Department of Linguistics, University of the Western Cape in Partial Fulfilment of the Requirement for the Masters Degree in Linguistics

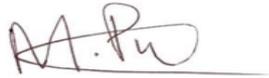
By

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Prof. Bassey. E. Antia

DECLARATION

I, Mlondolzi Pute, hereby declare that the work presented in this thesis entitled, “Multilingual electronic glossing: implementing and evaluating an alternative reading aid for students at the University of the Western Cape”, is my own work. All sources used or quoted have been duly indicated and acknowledged. This work has not been submitted previously in its entirety, or in any part, at any higher education institution for the degree purposes.



19/12/2018

Signature

Date



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DEDICATION

This work is dedicated to my mother, Vuyiswa Patricia Pute, and all students who do not have the advantage of accessing their education in their home language in South Africa.



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ACKNOWLEDGEMENTS

A big shout out to:

Vuyiswa Patricia Pute, for ruining my plans to dropout in the ninth grade, and for loving me.

Prof. Bassey Antia, for your guidance, patience and support. I am sorry for the stress I have caused you. I have gained so much information from you. Thank you so much.

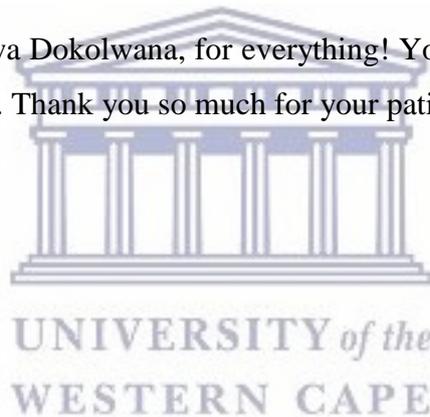
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ABSTRACT

Vocabulary knowledge is an indicator of language competence. There is a positive relationship between literacy levels and the medium of instruction. Research has shown that reading comprehension is largely dependent on the reader's vocabulary knowledge in the language in which the text is written (Kieffer & Lesaux, 2007; Nation, 2001; Sutarsyah, Nation, and Kennedy, 1994). The lack of vocabulary knowledge is normally one of the major challenges for many university students struggling with their academic work, especially those for whom the language of tuition is not a first language. African (and Afrikaans mother-tongue) students are unable to access information in their home languages because of the lack of terminology and texts in African languages (Edward and Ngwaru, 2011). There is research in South Africa showing that vocabulary is a challenge for university students, especially at first-year level (Butler & van Dyk, 2004, Manik, 2015: 236, Nkomo & Madiba, 2011). Vocabulary, being such a problem, ultimately affects the academic performance of many students.

Although some universities have provided multilingual online glossaries (and other resources) in an effort to accommodate multilingual students struggling with comprehension in the medium of instruction, these modes of delivering glossaries are associated with a few problems. Consulting traditional glossaries/dictionaries disrupts the reading process and affects the flow of ideas. It is also possible that the reader will forget the term in question (or its context) right after consulting the dictionary/glossary, therefore readers have to look-up the same term in the dictionary/glossary several times to ensure that they match it with its definition accurately. In some dictionaries/glossary lists, readers will not find the desired term, or the term they find will not provide an adequate definition – which ends up frustrating the reader. Sometimes the list of definitions for one term that readers find in dictionaries/glossary lists is difficult to comprehend. Instead of providing clarity, the definitions can confuse readers even further. The comprehension of some definitions provided in dictionaries/glossary lists depend on prior understanding of several other terms.

This study aimed to explore an alternative way of delivering glossaries. It proposed electronic glossing and studied the effects of multilingual glosses on non-English home language students of psychology at the University of the Western Cape. The study produced qualitative and quantitative data regarding students' experience of reading under two conditions: the glossed text condition and a non-glossed condition (with access to conventional reading aids).

The study employed both qualitative and quantitative research methods. Research questionnaires were administered to 167 students at the University of the Western Cape (UWC) Bellville campus. The results revealed that all students struggle with understanding academic texts written in English but Xhosa home language students are affected more. An experiment the involved 9 students studying at first year level was also conducted in a computer lab at UWC. The results from that experiment showed that accessing information in both English and their home language enhanced the students' understanding of the content.

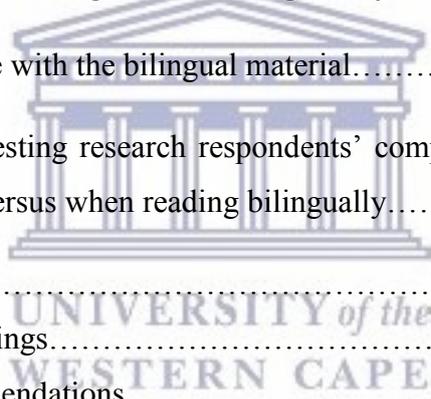
Key words: electronic glosses, academic texts, psychology, vocabulary knowledge, isiXhosa.



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CHAPTER 1:

Introduction

1.1 Background

Vocabulary is said to have a strong bi-directional relationship with reading comprehension (Kieffer & Lesaux, 2007; Nation, 2001). In other words, reading comprehension is determined by the reader's vocabulary size and level, and extensive reading increases comprehension of the text. As important as vocabulary is for reading in the mother-tongue, it is perhaps even more important for reading in the second language. It has been claimed that insufficient vocabulary knowledge is one of the main obstacles that second language readers need to overcome to achieve full reading comprehension (Alqahtani, 2015).

It is usual to classify the vocabulary or the lexicon of a language into three categories: general language vocabulary, academic words and technical vocabulary (Nation, 2001). This classification is important to understanding how and for whom vocabulary constitutes an obstacle in reading. The general language vocabulary comprises the high frequency words of a language and is essential for the basic use of a language. High frequency words include both function words (e.g. in, for, the, of, and a) and content words (e.g. arrive, discuss, follower, impossible, leader). According to Nation (2001), high frequency words cover 80% of most texts and are prevalent across different kinds of uses of the language. Mehrpour & Rahimi (2010: 294) define text coverage as "the percentage of running words in the text known by the readers".

Academic words, according to Nation (2001), refer to words that are common in different kinds of academic texts and across academic disciplines. Academic vocabulary typically covers only 8-12% of the running words in the text (Schmitt, 2010; Nation, 2001), but it is very important when using a language for academic purposes in many disciplines (Nation, 2001). Some examples of academic words are: correlate, attribute, category, analyse, theorise, internal, monitor, etc.

Technical vocabulary (or terminology) is defined as words or phrases which are recognizably specific or closely related to a topic and a particular field (Tsubaki, 2004). Some technical words maybe unique to a particular subject area while some may resemble high-frequency

words in form but have specialized meanings in a given field (Nation & Kyongho, 1995). Examples of technical words in Economics are: isocost, utility, and duopoly.

Knowledge of general vocabulary, which according to Schmitt (2010) covers 80% of most texts, can be a challenge for English second language speakers (since home language English speakers mostly have this vocabulary) in the context of both non-academic and academic texts. Even though it covers approximately 8-12% of academic texts, academic vocabulary is indispensable for understanding academic texts, irrespective of whether in first language or second language use contexts. According to Nation (2001: 12), this “small list of words is very important for anyone using English for academic purposes”. Technical vocabulary is “essential to understanding discourse in a field, and can cover 10% or more of the running words in a text from that field” (Sutarsyah, Nation and Kennedy, 1994 cited in Schmitt 2010: 77). It has been claimed that the students’ inability to recognize lexical items hinders the effectiveness of text processing, impedes text comprehension (Sidek & Rahima, 2015; Moghadam, Zainal & Ghaderpour, 2012) and ultimately results in poor academic performance and in students dropping out of school.

There is research in South Africa showing that vocabulary is a challenge for university students, especially at first-year level (Maher, 2011; Butler & van Dyk, 2004; Manik, 2015; Nkomo & Madiba, 2011). This problem does not only affect English second language speakers but English home language speakers as well. A considerable number of (Black) university students matriculate from under-resourced schools where it is not uncommon for instruction to take place at least partially in the students’ home language. Inadequate knowledge of vocabulary occurring in English academic texts has been identified by many researchers as a challenge of academic literacy for many students in South Africa who do not have English as a home language (Dalvit & De Klerk, 2005; Pretorius, 2000; Cliff, Ramaboa & Pearce, 2007). Dalvit and De Klerk (2005: 6) found that “while exposure to English before coming to university enhanced students’ confidence, the reality of the linguistic standards required at university undermined it”. Pretorius’ (2000) study reveals that insufficient vocabulary knowledge results in the inability of first year psychology students to access information effectively and meaningfully from texts.

In response to these challenges, many South African universities have developed multilingual glossaries to support the academic literacy needs of their students. Let us examine a few examples. Rhodes University has glossaries for first-year isiXhosa-speaking students

studying Computer Studies, Political Philosophy, Geography, Law, Pharmacy, Education and Journalism (Sam, Dalvit & Maseko, 2010). Rhodes University students can access these multilingual resources online and they are encouraged to give feedback regarding the usefulness and the appropriateness of the terms and definitions. The University of Cape Town (UCT) has online multilingual glossaries in all eleven official languages to support students with low proficiency in the language of instruction. Though other people benefit from the online multilingual glossaries, Nkomo and Madiba (2011) note that the online glossaries were created to assist non-native English speaking students at first year level. They also maintain that “the glossaries are aimed at concept literacy in the different content-learning areas, with the pilot project focusing on developing glossaries for Statistics, Economics and Law” (Nkomo & Madiba 2011:157). Similarly, the University of Stellenbosch has developed a multilingual mobile dictionary called MobiLex to help expand students’ vocabulary, especially non-native English students. This multilingual mobile dictionary facilitates students’ understanding of subject-specific terminology (Economic and Management Sciences). Available on the institution’s web page, MobiLex explains concepts to students in English, Afrikaans and isiXhosa. The University of Stellenbosch also offers a multilingual (English, Afrikaans and isiXhosa) glossary list which allows students to access subject-specific terminology.

The University of KwaZulu Natal (UKZN) has developed several multilingual (English-isiZulu) terminology lists and glossaries unique/specific to the following disciplines: Education, Nursing (midwifery), Law, Economics, Psychology and Dental Assisting. Online glossaries at UKZN have been developed to supplement existing first year course materials in economics, engineering and accounting as well (Mawonga, Maseko, Nkomo, 2014; Kaschula & Maseko, 2014).

1.2 Statement of the problem

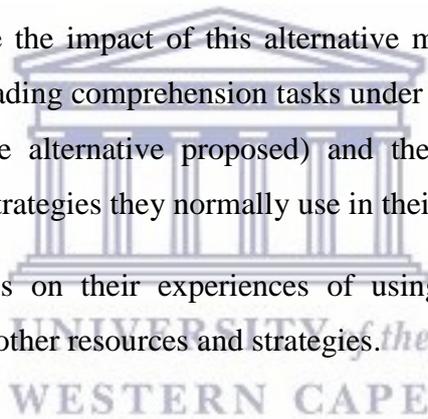
There would seem to be few in-depth academic studies of these glossaries (Nkomo & Madiba, 2011). Mawonga et al (2014: 75) assert that research “needs to be undertaken to observe the use and the effectiveness of the glossaries. That is, a study needs to look at how the role players in higher education, i.e. teachers and students, experience multilingual glossaries and other resources in indigenous African languages”.

A number of shortcomings have been identified with both online and hardcopy glossaries as reading support (Antia, 2017a). It has been argued that consulting traditional glossaries/dictionaries significantly disrupts the reading process. The reader has to stop reading to type in a search word into an online glossary, or to page through a dictionary. Such disruption may affect the flow of ideas (Tono, 2001; Antia, 2017a; Shen, 2013; Knight, 1994). It is also possible that the reader may forget the term in question (or its context) right after consulting the dictionary/glossary, leading to a situation where readers look-up the same term in the dictionary/glossary several times in order to ensure that they match it with its definition accurately. In some dictionaries/glossary lists, readers may not find the desired term, or the term they find may not provide an adequate definition – which ends up frustrating the reader. Sometimes the definitions that readers find in dictionaries/glossary lists is difficult to comprehend. Instead of providing clarity, the definitions may confuse readers even further. The comprehension of some definitions provided in dictionaries/glossary lists may depend on the reader’s prior understanding of several other terms. Even though “not all glosses are dictionary-based, consulting the dictionary as a source for glossing can easily make reading a one or two page academic text become a three to four hour ordeal” (Antia, 2017a: 2). Antia (2017a: 2) posits that the consequences of these limitations “include students not engaging adequately with academic texts, misrepresenting the content of texts and consequently obtaining low marks in assessments”. There is clearly a need to examine an alternative way of delivering glossaries to students.

1.3 Aim and objectives

Given the above shortcomings of traditional glossaries, the aim of this study was to examine an alternative, text-based and technology-supported, mode of making vocabulary assistance available to isiXhosa-speaking students reading academic texts in English. In order to achieve this, the study had the following objectives:

1. To collect baseline data on students' experience of reading academic texts in English.
2. To develop a bilingual English-isiXhosa glossary on the basis of a sample of English texts prescribed for students in Psychology.
3. To create a database of the glossary within an Active Terminology Recognition software, which presents the glosses as widgets that popup easily when the relevant texts are being read.
4. To experimentally evaluate the impact of this alternative mode of delivering glosses by having students perform reading comprehension tasks under two conditions: electronically glossed text condition (the alternative proposed) and the use of conventional online resources as well as other strategies they normally use in their reading tasks.
5. To elicit participant views on their experiences of using both the alternative mode proposed and the range of other resources and strategies.



CHAPTER 2:

Literature review

2.1 Vocabulary and academic literacy in South African higher education

Vocabulary is an important issue of epistemic access in South African higher education institutions (HEIs). Because of the state of its intellectualization, English (and to some extent Afrikaans) is the main language of tuition in higher education. English is not a home language for the majority of university students in South Africa (Gambushe, 2012; Kaschula & Maseko, 2014; Desai, 2012; Vimbai, 2012). Other official South African languages barely have a place in (higher) education due to their perceived ‘inadequacy as scientific/academic languages’ (Kaschula & Maseko, 2014: 21). This means that African home language students do not enjoy the benefits of accessing education in their mother-tongue. It is important to note that vocabulary is not only a problem for English non-home language students but for English home language students as well. However, the view is that vocabulary probably affects English non-home language students more than it does English home language students (Kaschula & Maseko, 2014). Kaschula and Maseko (2014) blame the public schooling system, where instruction is reported to partially take place in the students’ mother-tongue, for the majority of students’ lack of academic proficiency in English – the main language of instruction.

University students face many challenges including understanding academic vocabulary (Vimbai, 2012). Insufficient vocabulary in the language of tuition has been identified by many researchers as one of the main academic challenges facing university students in South Africa (Blacquiére, 1989; Leibowitz, 2001; Perkins 1991; Pretorius, 1995; Vorster & Reagan, 1990; van Rensburg & Weideman, 2002). Pretorius’ (2000) study reveals that insufficient vocabulary knowledge results in first year psychology students’ inability to access information effectively and meaningfully from texts. This failure to access information effectively and meaningfully prevents academic success and increases the student dropout rate (Mamaila, 2001).

Unfortunately, there is very limited and readily available vocabulary compilations in African languages to support the academic literacy needs of students – which is why, as seen earlier on, many universities are creating glossaries to support their students) (Gambushe, 2012; Kaschula & Maseko, 2014; Desai, 2012; Vimbai, 2012).

2.2 Vocabulary and comprehension

It is perhaps not surprising that researchers have highlighted vocabulary as an important issue of students' epistemic access, considering the importance of vocabulary in academic literacy. As McWilliams and Allan (2014) observe, part of what it means to be academically literate is possessing the technical vocabulary of a discipline. Also Weideman (2003: xi-xii) argues that academic literacy means understanding a 'range of academic vocabulary in context'.

There is a strong relationship between vocabulary knowledge and reading comprehension. Vocabulary size, i.e. the quantity of words in a language the reader possesses (cf. Anderson & Freebody 1981; Henriksen, 1999; Meara, 1996; Nation, 1990; Read 1993, 2000), determines the level of text comprehension the reader will achieve. Vocabulary size is an indicator of language proficiency. As Nizonkiza and van Dyk (2015: 150) put it: "the number of words learners know – vocabulary size – characterises their language proficiency".

Researchers have described the vocabulary load in academic texts. Much research (Laufer & Ravenhorst- Kalovski, 2010; Nation, 2006; Schmitt, 2008, 2010; Schmitt & Schmitt, 2012; Kurnia, 2003) suggests that 4,000-5,000 word families and the mastery of Academic Word List (AWL) are a minimal threshold for keeping up with academia. Nizonkiza and van Dyk (2015: 151) say "[t]his vocabulary size allows text coverage of about 95% of a running text". Depending on the type of text, academic and technical vocabulary combined could account for between 4% and 60% (perhaps more) of the words in a text. The inability to recognize academic and technical vocabulary makes text comprehension impossible (Mehrpour & Rahimi, 2010). Academic and Technical words "are essential to subject matter comprehension. They are the very substance of the subject that teachers are trying to teach. Without an understanding of these words, students would be crippled in their study of subject matter" (Nelson-Herber, 1986: 629).

2.3 Dictionary use and text processing

Given the different types of vocabulary occurring in academic texts, and their specific needs, students may consult a range of types of reference works – from general language dictionaries to more specialised content dictionaries. There have been studies on the effects and challenges of dictionary-use. Shen (2013) claims that the use of bilingual electronic dictionaries plays a significant role on reading comprehension. One's language proficiency level determines the extent to which bilingual electronic dictionaries will be effective.

According to Knight (1994), Shen's claim is not necessarily true. Knight maintains there is a lack of evidence supporting the claim that using a dictionary increases comprehension.

In fact, dictionary use has been associated with several problems by scholars such as Tono (2001), Antia (2017a), Shen (2013) and Knight (1994). It has been argued that consulting dictionaries significantly disrupts the reading process. The reader has to stop reading to type in a search word into an online glossary, or to page through a dictionary. Such disruption may affect the flow of ideas (Tono, 2001; Antia, 2017a; Shen, 2013; Knight, 1994). Dictionary users may forget a term (or its context) they have just looked-up, and may have to look-up the same term again. There is also an issue encountering different definitions for the same term. This increases the likeliness of users choosing wrong word definitions. Even worse, there is a chance that users will not find what they are looking for in their dictionary or the definitions will be difficult to comprehend. The comprehension of some definitions provided in dictionaries/glossary lists depend on the reader's prior understanding of several other terms. As has been pointed out by (Antia 2017a), dictionary consultation as a source for glossing can prolong the reading process of (even shorter) academic texts. The above mentioned problems can frustrate users. Antia (2017a: 2) posits that the consequences of these limitations "include students not engaging adequately with academic texts, misrepresenting the content of texts and consequently obtaining low marks in assessments". There is clearly a need to examine an alternative way of delivering glossaries to students.

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CHAPTER 3:

Theoretical framework: Electronic glossing and translanguaging in reading

The theoretical framework for this study draws on two areas: electronic glossing and translanguaging.

3.1 Electronic glossing

Many scholars see glosses as attempts to increase the reader's comprehension of a given text (Antia, 2017a; Blohm, 1982; Roby, 1999; Hartmann & James, 1998). Blohm (1982) in Roby (1999: 95) defined a 'gloss' as "a type of reader-activated superimposed intratext notation that replaces abstractly-composed text content with concrete referents to promote readers' cognition". For Nation (1983), Pak (1986) and Lomicka (1998) traditional glosses are definitions or explanations of the meanings of words located at the bottom or sides of a text in support of reading comprehension. Similar definitions of traditional glosses can be found in Antia (2017a) and Hartmann and James (1998). Antia (2017a:1) further states that interlinear or marginal notations provide "information in response to anticipated or actual concerns of comprehension and interpretation".

With the extension of computer technology to the area of reading, the concept of electronic glosses has emerged. Lenders (2008: 458) defines electronic glosses as "vocabulary annotations in hypertext format that contain information about a word in a text that appear on the same screen as the text and can be viewed by the learner as long and as often as required".

There are three types of (electronic) glosses: Dictionary-type glosses, ready-made glosses and special types of glosses. Dictionary-type glosses present information about the meaning(s) of a word (or phrase) in a typical printed dictionary format. The second type, i.e. ready-made glosses, presents readers only with information that is relevant in a given course/field. According to Lenders (2008: 458) ready-made glosses "may include the same definitions and L1 translations found in general dictionaries, but they provide only information concerning the meaning of the glossed word in the given context". With ready-made glosses, information may be presented either in one mode or in a combination of different modes.

Very similar to ready-made glosses are 'Special types' of glosses Lenders (2008). Often the only difference between the two types of glosses is that special types of glosses "include a task for the learner" (Lenders, 2008: 459). One example would be providing learners with

multiple “possible translation[s] of the glossed word in multiple-choice format” to see whether the learners would be able to make a right choice (Lenders, 2008: 459 citing Nagata, 1999 and Watanabe, 1997). Another form of glossing is ‘input enhancement’ whereby sentences of the original texts are simplified without altering the original meaning. According to Lenders (2008: 459) text simplification is done to support learners “in making correct inferences about the meaning of the input”. Lenders (2008: 459) says that input enhancement “is more suitable when reading comprehension rather than vocabulary learning is the goal”.

The use of electronic glosses is arguably better than the use of dictionaries in that electronic glosses can provide context-appropriate definitions and translations whereas dictionaries are most likely to provide multiple conflicting definitions for one term. Electronic glosses can make use of text simplification or elaboration to support learners “in making correct inferences about the meaning of the input” (Lenders, 2008: 459). Unlike dictionaries, glosses can be accessed on the same page (or screen in the case of online texts) whenever and for as long as they are needed. For this reason, electronic glosses are less likely to interrupt the reading process (Nation, 2001). In addition, electronic glosses can present information in different modes.

As shown below, Roby’s (1999) taxonomy of glosses is based on their authorship, presentations, functions, focus, language, and form:

I. Gloss authorship

1. Learners
2. Professionals
 - Instructors
 - Materials developers

II. Gloss presentation

- A. Priming
- B. Prompting

III. Gloss functions

- A. Procedural
 - Metacognitive
 - Highlighting

- Clarifying

B. Declarative

1. Encyclopedic
2. Linguistic
 - a. Lexical
 - i. Signification
 - ii. Value
 - b. Syntactical

IV. Gloss focus

- Textual
- Extratextual

V. Gloss language

- L1
- L2
- L3



VI. Gloss form

- Verbal
- Visual
 1. Image
 2. Icon
 3. Video
 - a. With sound
 - b. Without sound
 - c. Audio (only)

Ercetin (2001: 61) explains Roby's taxonomy of glosses: "glosses can be prepared by learners or professionals; they can be presented before or during reading; they may function to highlight or clarify important points or just to provide lexical or syntactic information; their focus may be textual or extratextual; they may be provided in first language or target language; they may be verbal or visual presented in a variety of media".

A set of claims around electronic glossing are easily seen to flow from Roby's taxonomy of glosses. Gettys, Imhof, and Kautz (2001:91) claim that electronic glosses "enhance general comprehension, improve vocabulary retention, and save student's time and effort in reading L2 texts". These glosses are said to be more convenient compared to traditional glosses. Ohtake et al (2003: 2) argues that "computerized gloss-embedding system may help to make the reading process less of an ordeal in that the glosses may be accessed by the click of a mouse button, thereby avoiding the time-consuming nature of dictionary look-up". This also means that the reader decides autonomously to check a glossed word (Lenders, 2008). Electronic glosses accommodate learners of differing levels of proficiency and learning styles better than conventional glosses (Ohtake et al, 2003). Glosses embedded in electronic texts cannot interrupt the reading process when not checked.

Immediate access to electronic glosses means that readers do not experience the frustration of searching tediously for an appropriate definition, and possibly forgetting it right after its retrieval. Readers are guaranteed context-accurate definitions and explanations for words when checking 'ready-made' glosses. This eliminates the risk of incorrect inferences likely to be made by users of print-based dictionaries/glosses.

In electronic glosses, the presentation of information in multiple modes (i.e. text, pictures, video and sound) is possible and encouraged as it enables the reader to approach the text more globally, rather than linearly. Information which is coded in multiple modes is learned better than that which is coded only in one mode (Chun & Plass, 1996).

According to Brett (1998), the use of hypertext to provide additional information can make lexical items and their linguistic features salient and noticeable. In print-based dictionaries/glosses, an important lexical item can easily go unnoticed by the reader due to its presentation. Lenders (2008: 461) claims that "[v]ocabulary has to be noticed and actively processed to become intake and eventually part of the learner's lexicon".

Viewing electronic glossing more as computer-assisted reading rather than reading instruction, the US National Reading Panel reports that "the use of hypertext (highlighted text that links to underlying definitions or supporting or related text, almost like an electronic footnote), while technically not reading instruction, may have an instructional advantage" (<http://www.eldis.org/document/A28291>).

The above framework on electronic glossing, therefore, provides design principles for the solution I had implemented in my study. It also suggests criteria for comparing this solution to other types of reading assistance employed by students. Let us now turn to the second framework.

3.2 Translanguaging

Research has shown that the use of multiple languages in multilingual classrooms has always played a significant role in the comprehension of the subject matter (Hornberger & Link, 2012). Today, the systemic use of two or more languages for different functions (i.e. input and output) in the same lesson is referred to as translanguaging. Hornberger and Link (2012: 262) define translanguaging as “a purposeful pedagogical alternation of languages in spoken and written, receptive and productive modes”. Li Wei (2011a; 1223) says “translanguaging is both going between different linguistic structures and systems, including different modalities (speaking, writing, signing, listening, reading, remembering) and going beyond them. It includes the full range of linguistic performances of multilingual language users for purposes that transcend the combination of structures”.

In translanguaging, ‘languaging’ refers to the holistic process through which people come to understand and produce knowledge through language (Baker, Jones & Lewis, 2012). According to Baker (2011: 288), “Translanguaging is the process of making meaning, shaping experiences, gaining understanding and knowledge through the use of two languages”.

In translanguaging (e.g. in the classroom), both the ‘weaker’ and the ‘stronger’ languages are used; the stronger language helps the weaker language develop faster (Williams, 2002). The practice of translanguaging has an impact on learners inside and outside of the school environment. For one, it promotes understanding and tolerance between cultures (Creese & Blackledge, 2010; Makalela, 2013). Translanguaging is also said to maximize one’s learning ability and to eliminate rote learning in that it requires students to process information multiple times (Nomlomo, 2010).

Baker (2001, 2006, & 2011) claims that translanguaging is capable of promoting a deeper and fuller understanding of the subject matter. In Wales, teachers “deliberately used translanguaging to optimize cognitive development and content learning” (Baker, Jones and Lewis, 2012: 10). Kunze (2015: 15), drawing from Creese and Blackledge (2010), Garcia (2009) and Makalela (2013) says a substantial body of literature “support to the idea that it is

one of the best ways to cultivate and enhance the academic proficiency of children with linguistic heterogeneity”. She asserts that the education system should aim to ‘cultivate linguistic endowments’ instead of limiting bilinguals with monolingual instructional approaches. Through translanguaging, students are able to use all their linguistic resources; this increases their cognitive benefits (Wei, 2011; Makalela 2013, 2014; Creese & Blackledge, 2010; Antia, 2017b).

The current study is concerned with making terminology and definitions available in isiXhosa when isiXhosa-speaking students read English texts. Through translanguaging, the vocabulary of isiXhosa home language speakers can be expected to improve, and content learning to be maximized. I will be examining if reading bilingually will improve the students’ thinking ability as bilingual reading is associated with cognitive benefits.



CHAPTER 4:

Methodology

4.1 Introduction

It is to be recalled that the aim of this study was to test an alternative, text-based and technology-supported, mode of making vocabulary assistance available to isiXhosa-speaking students reading academic texts in English. In this study, both quantitative and qualitative research methods were used. The quantitative research method is the quantification of the problem by producing numerical data. It was used to analyse the research subjects' performance on the test questions. The qualitative research method is "concerned with human beings: interpersonal relationships, personal values, meanings, beliefs, thoughts and feelings" (Leedy, 1993: 142). It was used to gain a better understanding of the impact that reading bilingually, i.e. in isiXhosa and English, has on isiXhosa home language speakers. The use of individual interviews (with open-ended questions) allowed research subjects to provide explanations, which ultimately shed much light on the problem of the study.

4.2 Data for the study

The study required several kinds of data. It required baseline data on students' experience of reading academic texts in English. This data was collected using a questionnaire that the researcher created with the guidance of his supervisor. The questionnaire was administered by the researcher to students registered in different faculties at the University of the Western Cape. 147 students with different home languages and at different levels of study responded to the questionnaire.

As can be seen in the appendix, the questionnaire sought to elicit students' biographical information, experience with academic texts, preferred language for discussing with colleagues and making annotations, and degree of satisfaction with reading aids.

The study also required; two English texts in the field of psychology, isiXhosa terms and definitions for the English terms and phrases in the text that the researcher chose to gloss, and data on isiXhosa students' experience of reading academic texts using conventional resources and strategies.

The two short texts used in this study are from a website called OpenStax that has a collection of academic texts in all fields of study. The researcher was introduced to OpenStax when he was assisting colleagues in their research studies a year prior to working on the

current study. One text was glossed and the other was not. Conventional reading resources were provided for participants when they read the non-glossed text. To get the data on isiXhosa students' experience of reading academic texts using conventional resources and strategies, nine research participants (two of them worked together) were asked to read a text (text A) in English using online dictionaries/glossaries and other strategies, and answer five questions based on it. The research participants were then asked to speak on their experience of reading the text using the above mentioned conventional resources.

For the glossed text (text B), difficult terms, phrases and/or sentences needed to be identified. The text was given to four isiXhosa-speaking students studying psychology at first year level (who matriculated in high schools located in black townships where learners are partially taught in their home languages as discussed in chapter three) to read and identify anything that they did not understand. The researcher tested the four students' knowledge of some of the items that they did not identify as difficult in the text and found that there were unidentified items the students did not quite understand. The researcher decided produce isiXhosa equivalents of items from text because according to research, discussed in chapter three, African home language students have the worst academic performance out of all the other home language groups in South Africa. The researcher, assisted by fellow colleagues, developed the Xhosa terms, phrases and definitions (with the assistance of fellow colleagues who have studied Psychology, isiXhosa and Language and Communication Studies and who both have worked on similar studies and projects before) for the English terms identified (by the four students and himself) in that text. The researcher majored in Psychology and has an honours degree isiXhosa. At third year and honours levels, the researcher took a "translation and editing" module. His fellow colleagues have studied Psychology, isiXhosa and Language and Communication Studies and have both worked on similar studies and projects before. It is these reasons that qualified the researcher and his colleagues to carry the task of developing Xhosa equivalents of English terms and phrases (and definitions) in text B.

After the Xhosa items had been developed, the text (text B) was uploaded on Cooljargon (the widget). The Xhosa terms and definitions were then embedded in the English text (text B) that the participants read for the second test. This second test produced data on isiXhosa students' performance on reading academic texts using embedded glosses versus using other resources. The interview after this test produced data on isiXhosa students' subjective experience of reading academic texts using embedded glosses versus using other resources. The interview questions can be seen in the appendix.

Figure 1: Text A

Personality is shaped by genetic and environmental factors. The culture in which you live is one of the most important environmental factors that shapes your personality. The term culture refers to all of the beliefs, customs, art, and traditions of a particular society. Culture is transmitted to people through language as well as through the modelling of culturally acceptable and non-acceptable behaviours that are either rewarded or punished. With these ideas in mind, personality psychologists have become interested in the role of culture in understanding personality. They ask whether personality traits are the same across cultures or if there are variations.

Three approaches can be used to study personality in a cultural context: i) the *cultural-comparative approach*; ii) the *indigenous approach*; and iii) the *combined approach*, which incorporates elements of both views. Since ideas about personality have a Western basis, the cultural-comparative approach seeks to test Western ideas about personality in other cultures to determine whether they can be generalized and if they have cultural validity. The indigenous approach came about in reaction to the dominance of Western approaches to the study of personality in non-Western settings. Because Western-based personality assessments cannot fully capture the personality constructs of other cultures, the indigenous model has led to the development of personality assessment instruments that are based on constructs relevant to the culture being studied. The third approach to cross-cultural studies of personality is the combined approach.

Questions:

1. Please indicate whether the following statement is True or False:

Culture refers to all of the beliefs, customs, art, and traditions of a particular society and this can have a significant influence on the development of someone's personality.

2. Please list the 3 approaches used to study personality within a cultural context:

a. _____

b. _____

c. _____

3. The following statement is an example of which approach:

Since ideas about personality have a Western basis, the cultural-comparative approach seeks

to test Western ideas about personality in other cultures to determine whether they can be generalized and if they have cultural validity

- a. Cultural comparative approach
- b. A varied approach
- c. Personality testing approach
- d. A shared approach

4. Please complete the following statement using the appropriate words provided: ('conversations', 'language', 'punished', 'observations', 'rewarded' and 'modelling').

Culture is transmitted to people through _____ as well as through the _____ of culturally acceptable and non-acceptable behaviours that are either _____ or _____.

5. Please indicate whether the following statement is True or False:

Western ideas about personality is the same across all cultures and contexts with very little to no variation.

Figure 1 shows the non-glossed Psychology text (text A) on Personality that research participants read with access to conventional reading aids and the five questions they had to answer.

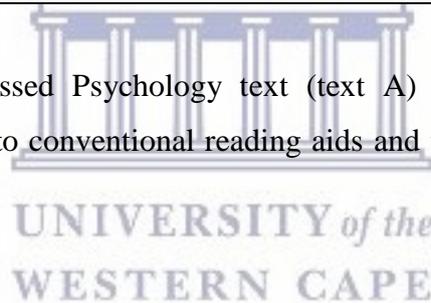


Figure 2: Text B

Personality refers to the long-standing traits and patterns that propel individuals to consistently think, feel, and behave in specific ways. Our personality is what makes us unique individuals. Each person has an idiosyncratic pattern of enduring, long-term characteristics and a manner in which he or she interacts with other individuals and the world around them. Our personalities are thought to be long term, stable, and not easily changed. The word personality comes from the Latin word persona. In the ancient world, a persona was a mask worn by an actor. While we tend to think of a mask as being worn to conceal one's identity, the theatrical mask was originally used to either represent or project a specific personality trait of a character.

DEFENSE MECHANISMS

Freud believed that feelings of anxiety result from the ego's inability to mediate the conflict between the id and superego. When this happens, Freud believed that the ego seeks to restore

balance through various protective measures known as defense mechanisms. When certain events, feelings, or yearnings cause an individual anxiety, the individual wishes to reduce that anxiety. To do that, the individual's unconscious mind uses ego defense mechanisms, unconscious protective behaviours that aim to reduce anxiety. When we use defense mechanisms, we are unaware that we are using them. Further, they operate in various ways that distort reality. According to Freud, we all use ego defense mechanisms.

Questions:

1. Please indicate whether the following statement is either True or False.

An individual's personality is a complex network of patterns and long-standing traits that influence the ways in which he/she might think, feel and behave?

2. Fill in the missing words in order to complete the sentence, using the following terms provided: ('Superego', 'ID', and 'ego').

Sigmund Freud theorised that one's feelings of anxiety developed from the _____ inability to mediate conflicts between the _____ and the _____.

3. Please indicate whether the following statement is True or False.

The word personality comes from the Latin word persona, which refers to any number of people in a community.

4. Briefly describe what Freud termed a defence mechanism:

5. Please indicate whether the following statement is True or False:

According to Freud, defence mechanisms only occur in people who experience severe anxiety and stress.

Figure 2 shows the glossed Psychology text (text B) on Personality and the five questions they had to answer. Clicking on (or mousing over) any of the underlined terms and phrases in this text allowed research participants to view Xhosa equivalents and definitions.

4.3 Data collection

The nine research participants (two participants worked together) wrote both tests. They were all tested on the same day at different times – there was a fifteen-minute gap between each appointment to ensure that research participants do not meet outside the lab and discuss the experiment. The researcher made sure that he was alone with each research participant in the computer laboratory where the experiment took place. Research participants first read the

non-glossed text (text A presented in figure 2) with access to traditional online glossaries/dictionaries. After reading the text, the nine participants were asked to answer five questions based on the text. These questions and text B's questions were set by a Psychology lecturer. This test produced data on Xhosa students' experience of reading academic text using conventional resources and strategies. For the second test, the text (text B presented in figure 3) was uploaded on Cooljargon, a software which allowed the nine research participants to view the Xhosa equivalents and definitions of the underlined English words and phrases in the text by simply clicking on (or mousing over) them. Research participants were briefed by the researcher regarding how they can access embedded Xhosa terms, phrases, clauses and definition. The researcher believed that annotating the text with Xhosa equivalents and definitions would be advantageous for the Xhosa home language research participants. Based on their understanding of the electronic glossed text, the nine research participants were asked to answer five questions based on it. When they read the glossed text, research participants were asked to read out loud and move the cursor over the terms as they read. A software named Flashblueberry was used to record their voices, mouse movements and written answers. The second test produced data on isiXhosa students' performance on reading academic texts using embedded glosses. Results from the two tests were compared to determine which mode of delivering terminology is better than the other.

After writing both tests, research participants were interviewed by the researcher. The interview questions are presented in figure 4. The interviews produced data on Xhosa students' subjective experience of reading academic texts using embedded glosses versus using other resources.

4.4 Research participants

147 students registered in different faculties at the University of the Western Cape (UWC) responded to the questionnaires that the researcher used to collect baseline data on isiXhosa students' experience of reading academic texts in English. The questionnaires were administered by the researcher at UWC's Bellville campus to students with different home languages. Respondents' levels of study ranged from first-year to postgraduate level.

The experiment involved nine Xhosa home language research participants - all studying Psychology at first year level at the time of the experiment. The researcher chose to involve students studying Psychology because he is very familiar with the discipline, and it was easy for him to recruit them. All respondents were recruited individually, except for the two students who worked together, after a Psychology lecture.

4.5 Data analysis.

Both the qualitative and quantitative research methods were used in analyzing the data for this study. The data on isiXhosa students' experience of reading academic text using conventional resources and strategies and the data on their subjective experience of reading academic texts using embedded glosses were analyzed qualitatively. Between electronic glosses and the conventional resources (and strategies), the researcher was interested in finding out which mode of delivering terminology did the participants find more useful than the other, how much time was spent consulting either mode, and whether the participants made use of the resources at all.

The data on isiXhosa students' performance on reading academic texts using embedded glosses versus using other resources was analyzed quantitatively. After marking the two tests, the researcher compared the scores of each participant(s).

4.6 Ethics Statement

The permission was sought from the Registrar before the researcher approached the participants for this study. Then the researcher obtained the consent of all participants. The purpose of the study was explained to research participants in detail. The personal details of the research participants were not taken – not relevant. The research participants were guaranteed that their participation will be voluntary; that they could withdraw from the study at any time and the data they provide will be destroyed. Also, research participants will be guaranteed anonymity. Data collected was only used for the purpose of the study. It was analysed according to the research aims and objectives.

CHAPTER 5:

Quantitative data presentation and analysis

5.1. Introduction

Two types of data (i.e. the quantitative and the qualitative data) will be presented in two separate chapters – in this chapter and in chapter 6. This chapter presents the quantitative data and its detailed analysis. It addresses the first objective of the study, which is students' experience of reading academic texts in English.

5.2. Overview of research participants and basic biographical data

In this section, we present basic biographical data on the respondents (their home language, level of study and faculty), which will subsequently be used in processing answers to the substantive questions in the questionnaire.

A total of 147 students registered at the University of the Western Cape (UWC) responded to the questionnaires which were handed out at the Bellville campus. All the items on the questionnaire were answered by all 147, except the item related to level of study (answered by 142) and faculty (answered by 144). Table 5.1 shows the distribution of the respondents according to reported home languages.

Table 5.1: Reported home languages (XHO = isiXhosa, AFR= Afrikaans; ENG = English; Other = African languages other than isiXhosa, Afrikaans and/or English, HL = Home language)

	Frequency	Percent
XHO	81	55.1
AFR	21	14.3
ENG	23	15.6
OTHER	22	15.0
Total	147	100.0

As Table 5.1 shows, IsiXhosa home language speakers make up the majority of the 147 respondents. The second largest group is English home language speakers, followed by the other home language (HL) group. Afrikaans home language speakers are the least represented in the study.

The 147 respondents are not all in the same level of study. As the table below shows, the respondents' study levels range from first year level to postgraduate level.

Table 5.2: Respondents according to their year of study.

		Frequency	Percent
	FIRST YEAR	22	15.0
	SECOND YEAR	52	35.4
	THIRD YEAR	49	33.3
Valid	FOURTH YEAR	10	6.8
	POSTGRADUATE	9	6.1
	Total	142	96.6
Missing		5	3.4
Total		147	100.0

The levels of study of respondents range from the first year level to the postgraduate level as shown in table 5.2. The majority of the respondents are in their second and third year levels of their studies. 15 percent of all the respondents are in the first year level of their studies. Respondents in the fourth-year and at postgraduate level of their studies are the least represented.

Table 5.3: Respondents according to the faculties in which they are registered. (Arts = Arts Faculty, EMS = Economic Management Sciences Faculty, EDU = Education Faculty, Science = Science Faculty, Law = Law Faculty, CHS = Community and Health Science Faculty, Dentistry = Dentistry Faculty)

		Frequency	Percent
	Arts	83	56.5
	EMS	17	11.6
	EDU	14	9.5
	SCIENCE	14	9.5
Valid	LAW	3	2.0
	CHS	10	6.8
	DENTISTRY	3	2.0
	Total	144	98.0
Missing	System	3	2.0
Total		147	100.0

The data presented in table 5.3 shows that the respondents are registered in the following different faculties: Arts, Economic Management Sciences (EMS), Education (Edu), Science, Law, Community and Health Science (CHS), and Dentistry. An overwhelmingly large number of the respondents are in the Arts faculty. The second largest number is that of 17 respondents from the EMS faculty. All the other faculties have less than 14 respondents each.

Based on the above datasets, Tables 5.4 and 5.5 present cross-tabulations. Table 5.3 cross-tabulates home language and year of study.

Table 5.4 Home language and year of study. The percentages are expressed inside the brackets

		Year level of study					TOTAL
		FIRST YEAR	SECOND YEAR	THIRD YEAR	FOURTH YEAR	POST GRADUATE	
Home language	XHO	9 (11.25)	36 (45)	25 (31.25)	6 (7.5)	4 (5)	80
	AFR	4 (20)	5 (25)	6 (30)	3 (15)	2 (10)	20
	ENG	3 (14.3)	5 (23.8)	10 (47.6)	1 (4.8)	2 (9.5)	21
	OTHER	6 (28.6)	6 (28.6)	8 (38.1)	0	1 (4.8)	21
Total		22 (15.5)	52 (36.6)	49 (34.5)	10 (7)	9 (6.3)	142

A high percentage (76.25%) of Xhosa HL respondents are in their second and third year levels of study. 11.25 percent of the Xhosa HL group are first-year students. The highest percentages of the Afrikaans HL, English HL and other HL groups are in the third year level of study.

Table 5.5: Home language and faculty of study

		Faculty						DENTISTRY	Total
		Arts	EMS	EDU	SCIENCE	LAW	CHS		
Home language	XHO	50 (61.7)	6 (7.4)	4 (4.9)	13 (16)	1 (1.2)	6 (7.4)	1 (1.2)	81
	AFR	11 (55)	1 (5)	6 (30)	0	0	1 (5)	1 (5)	20

ENG	14 (66.7)	3 (14.3)	2 (9.5)	0	2 (9.5)	0	0	21
OTHER	8 (36.4)	7 (31.8)	2 (9.1)	1 (4.5)	0	3 (13.6)	1 (4.5)	22
Total	83 (57.6)	17 (11.8)	14 (9.7)	14 (9.7)	3 (2.1)	10 (6.9)	3 (2.1)	144

The highest percentages of all the HL groups are in the Arts faculty. The Xhosa HL respondents outnumber the other HL groups in the Arts, Science and CHS faculties. The Xhosa HL group also is the second most represented group in the EMS, Education and Law faculties. Other HL respondents are the most represented in the EMS faculty with 31.8 percent. In the Education faculty, with 30 percent, the Afrikaans HL group is the majority. The English HL group has the highest percent (9.5%) in the Law faculty than any other HL group.

The basic biographical details presented above on respondents of the current study will enable the processing of substantive items on the questionnaire administered. For the purpose of reducing the length of the research paper and the workload, the questionnaire items will be processed according to respondents' HL and not their level of study.

5.3. Experience with reading materials in English

Sometimes two and at other times three items on the questionnaire were pulled together to construct the respondents' experience with reading materials in English. Tables 5.6, 5.7, 5.8 and 5.9 present the composite data:

The table below presents the composite data of question 7 (Circle to indicate your English language proficiency) and question 1 (Do you often find academic readings written in English easily understandable?).

Table 5.6: Respondents' English proficiency, and the ease of understanding English-written academic texts

	indicate your English language proficiency			Total
	GOOD	FAIR	POOR	
XHO	33 (42.8)	41 (53.2)	3 (3.9)	77
Home AFR	8 (42.1)	10 (52.6)	1 (5.3)	19
language ENG	17 (73.9)	6 (26.1)	0	23
OTHER	4 (19)	17 (80.9)	0	21

Total		62 (44.3)	74 (52.8)	4 (2.8)	140
		You find English-written academic texts easily understandable?			Total
		YES (Easily understandable)	NO (not easily understandable)		
	XHO	47 (58.7)	33 (41.2)	80	
Home	AFR	9 (42.8)	12 (57.1)	21	
language	ENG	19 (82.6)	4 (17.4)	23	
	OTHER	12 (54.5)	10 (45.4)	22	
Total		87 (59.6)	59 (40.4)	146	

Only Afrikaans HL and Xhosa HL respondents rated their proficiency in the English language poor. The Afrikaans HL group, reported by 5.3 percent, has the highest percentage and the Xhosa HL group, with 3.9 percent, has the second highest percentage. With 80.9 percent, the other HL group has the largest number of respondents with a fair proficiency in English; followed by the Xhosa HL group with 53.2 percent, and the Afrikaans HL group with 52.6 percent. As can be expected, the English HL group has the least percentage (26.1) of respondents whose proficiency in the English language is just poor.

The Afrikaans HL group has the highest percentage (57.1) of respondents who do not find academic texts written in English easily understandable. This is followed by the other HL group with 45.4 percent, and by the Xhosa HL group with 41.2 percent. The English HL group has the least number of respondents, reported by 17.4 percent, who struggle with understanding English-written texts, and the highest percentage (82.6) of respondents who find English-written academic texts easily understandable.

The results from the two sides of table 5.6 are incongruent. The reported proficiency levels for respondents with African languages, including isiXhosa, do not match the number of African HL (including isiXhosa) respondents who struggle with understanding academic texts. The data also reveals that there are English HL respondents whose proficiency in the English language is fair but claim to find academic texts written in English easily understandable. The results of the Afrikaans HL group in both sides of table 5.6 are nearly the same.

The next set of tables deal with the content of academic texts written in English and will reveal whether the previous results can be confirmed or not. The Tables further unpack what it is that is experienced as difficult in academic texts written in English by what HL group.

The table below presents the composite data of question 2.i. (When reading your academic texts, how often do you come across terms that are not easy to understand?), question 2.ii. (When reading your academic texts, how often do you come across phrases [i.e. groups of words] that you are not familiar with?) and question 2.iii. (When reading your academic texts, how often do you find that there are whole sentences that are not easy to understand?).

Table 5.7: Frequency of difficult terms, phrases and sentences encountered.

		You come across difficult terms ...?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	31 (38.3)	41 (50.6)	9 (11.1)	81
	AFR	8 (38.1)	10 (47.6)	3 (14.3)	21
	ENG	5 (21.7)	14 (60.9)	4 (17.4)	23
	OTHER	8 (36.4)	12 (54.5)	2 (9.1)	22
Total		52 (35.4)	77 (52.4)	18 (12.2)	147
		You come across difficult phrases ...?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	18 (22.2)	53 (65.4)	10 (12.3)	81
	AFR	7 (33.3)	8 (38.1)	6 (28.6)	21
	ENG	4 (17.4)	12 (52.2)	7 (30.4)	23
	OTHER	2 (9.1)	16 (72.7)	4 (18.2)	22
Total		31 (21.1)	89 (60.5)	27 (18.4)	147
		You find sentences that are difficult to understand?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	17 (21)	29 (35.8)	35 (43.2)	81
	AFR	2 (9.5)	12 (57.1)	7 (33.3)	21
	ENG	1 (4.3)	12 (52.2)	10 (43.5)	23
	OTHER	5 (22.7)	9 (40.9)	8 (36.4)	22
Total		25 (17)	62 (42.2)	60 (40.8)	147

Respondents experience terms as the most; phrases as the second most, and sentences as the third most difficult aspect of English as an academic language. 22.2 percent of the Xhosa HL group struggles more often with understanding phrases. 50.6 percent of the Xhosa HL group sometimes also find terms used in their academic reading hard to understand. 56.8 percent of the Xhosa HL group, whether often or occasionally, experience sentences in their academic reading that are difficult to understand while 43.2 percent of this HL group claims that this rarely happens to them.

The highest percentages of the Afrikaans HL group sometimes experience terms, phrases and sentences that are difficult to comprehend in academic texts. The Afrikaans HL group also has high percentages of respondents who struggle with understanding terms and phrases very often in academic texts. Large percentages of the English HL group sometimes encounter difficult terms (60.9%), phrases (52.2%) and sentences (52.2%) in academic texts written in their home language. The highest percentage of the other HL group sometimes experience difficulty with understanding terms, phrases and sentences used in academic texts.

Table 5.8: Frequency of struggling with understanding topics and logic

This table presents composite data of question 2.iv. (When reading your academic texts, how often do you struggle with understanding topics/key ideas being discussed?), and question 2.v. (When reading your academic texts, how often do you Struggle with understanding the logic [i.e. how ideas are put together]?).

		You struggle understanding topics being discussed ...?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	14 (17.3)	40 (49.4)	27 (33.3)	81
	AFR	2 (9.5)	15 (71.4)	4 (19)	21
	ENG	2 (8.7)	10 (43.5)	11 (47.8)	23
	OTHER	3 (13.6)	13 (59.1)	6 (27.3)	22
Total		21 (14.3)	78 (53.1)	48 (32.6)	147
		You struggle with understanding the logic?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	13 (16)	42 (51.8)	26 (32.1)	81
	AFR	1 (4.8)	14 (66.7)	6 (28.6)	21
	ENG	2 (8.7)	8 (34.8)	13 (56.5)	23
	OTHER	5 (22.7)	6 (27.3)	11 (50)	22
Total		21 (14.3)	70 (47.6)	56 (38.1)	147

The largest percentages of the Xhosa HL, (49.4%), Afrikaans HL (71.4) and other HL (59.1%) groups sometimes have difficulties understanding the topics/key ideas when reading academic texts. Though there is a high percentage (43.5%) of English HL respondents who sometimes struggle with understanding the topics/key ideas in academic texts, the percentage (47.8%) of English HL respondents who rarely have this problem is even higher. The second

largest percentages of Xhosa HL (33.3%), Afrikaans HL (19%) and other HL (27.3%) groups are of respondents who rarely find topics discussed in academic texts difficult to comprehend.

Understanding the logic in academic texts is also sometimes a problem for the majority of Xhosa HL (51.8%) and Afrikaans HL (66.7) respondents. Although the majority of English HL (56.5%) and other HL (50%) groups rarely struggle with understanding the logic in academic texts, the percentages of English HL (34.8%) and other HL (27.3%) respondents who do is also high.

Table 5.9: Frequency of struggling with understanding examples, tables, maps etc.

The table presents the composite data of question 2.vi. (When reading your academic texts, how often do you struggle with understanding diagrams/graphs/tables/maps/formulae?), and question 2.vii. (When reading your academic texts, how often do you find that the examples used are difficult to understand?).

		You struggle understanding tables, graphs, etc.?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	11 (13.6)	32 (39.5)	38 (46.9)	81
	AFR	3 (14.3)	6 (28.6)	12 (57.1)	21
	ENG	3 (13)	13 (56.5)	7 (30.4)	23
	OTHER	1 (4.5)	10 (45.4)	11 (50)	22
Total		18 (12.2)	61 (41.5)	68 (46.2)	147
		You find examples used are difficult to understand ...?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	6 (7.4)	31 (38.3)	44 (54.3)	81
	AFR	1 (4.8)	5 (23.8)	15 (71.4)	21
	ENG	2 (9.1)	6 (27.3)	14 (63.6)	22
	OTHER	2 (9.5)	7 (33.3)	12 (57.1)	21
Total		11 (7.6)	49 (33.8)	85 (58.6)	145

Understanding items such as graphs, maps and tables that are added to academic texts to enhance understanding is sometimes a problem for 56.5 percent of the English HL group. Although large percentages of the other HL groups rarely struggle with such items, combined percentages of respondents who do very often and those who do sometimes indicate that the comprehension of these items in academic texts is also a problem for many African HL (including isiXhosa) and Afrikaans HL respondents.

The highest percentages of all the HL groups rarely find the examples used in academic texts problematic. When percentages of respondents who do find examples that are used in academic texts difficult to understand or relate to often and sometimes are combined, the Xhosa HL group is affected the most with 45.7 percent, followed by the other HL group with 42.8 percent, then the English HL group with 36.4 percent, and the Afrikaans HL group is the least affected with 28.6 percent.

The data presented in this section indicate that for many respondents with a home language other than English, and even for many English HL respondents, understanding academic texts is not easy – at least not without reading aids.

5.4. The use of reading aids

The tables 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17 and 5.18 present data on the respondents' use of different types of reading aids and strategies.

Table 5.10: Frequency of monolingual and bilingual dictionary use

The table below presents the data of questions 2.viii (When reading your academic texts, how often do you use a monolingual (English) dictionary?) and 2.ix (When reading your academic texts, how often do you use a bilingual (English and home language) dictionary?) on the questionnaire:

		You use a monolingual (English) dictionary,,,?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	27 (33.7)	27 (33.7)	26 (32.5)	80
	AFR	4 (19)	7 (33.3)	10 (47.6)	21
	ENG	7 (30.4)	11 (47.8)	5 (21.7)	23
	OTHER	9 (40.9)	11 (50)	2 (9.1)	22
Total		47 (32.2)	56 (38.3)	43 (29.4)	146
		You use a bilingual (English & home language) dictionary?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	4 (5.1)	22 (27.8)	53 (67.1)	79
	AFR	6 (30)	7 (35)	7 (35)	20
	ENG	4 (17.4)	5 (21.7)	14 (60.9)	23
	OTHER	3 (13.6)	6 (27.3)	13 (59.1)	22
Total		17 (11.8)	40 (27.8)	87 (60.4)	144

Even though the data presented in the previous section indicates to many respondents struggling with understanding academic texts written in English, combined percentages of regular and occasional usage of monolingual (English) and bilingual (English and home language) dictionaries reveal that the Afrikaans HL group is the only HL group that uses bilingual dictionaries (65%) more than monolingual dictionaries (52.3%). A big percentage, 60.4 percent, of respondents hardly uses bilingual dictionaries. 90.9 percent of other HL respondents use monolingual dictionaries while only 40.9 percent use bilingual dictionaries. 78.2% percent of the English HL group use monolingual dictionaries and surprisingly, 39.1 percent use bilingual dictionaries. the reason for the English HL group’s use of bilingual dictionaries maybe because respondents in that group who identify as “African”, “Coloured”, “Indian” or “other” have a good proficiency in a second language. 67.4 percent of the Xhosa HL group use monolingual dictionaries and only 32.9 percent use bilingual dictionaries. Even with the problems that respondents come across when reading academic texts, a large percentage (38.3%) of all respondents only use monolingual dictionaries occasionally while 29.4 percent rarely use monolingual dictionaries.

Table 5.11: Frequency of the Microsoft tool and the internet use

Table 5.11 presents the data of questions 2.x. (When reading your academic texts, how often do you use a Microsoft tool? [Look-up the synonym]) and 2.xi (When reading your academic texts, how often do you use the internet?) on the questionnaire:

		You use a Microsoft tool often?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	37 (47.4)	31 (39.4)	10 (12.8)	78
	AFR	11 (52.4)	8 (38.1)	2 (9.5)	21
	ENG	11 (47.8)	9 (39.1)	3 (13)	23
	OTHER	7 (31.8)	12 (54.5)	3 (13.6)	22
Total		66 (45.8)	60 (41.7)	18 (12.5)	144
		You use the internet often?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	65 (81.2)	14 (17.5)	1 (1.2)	80
	AFR	17 (80.9)	4 (19)	0	21
	ENG	14 (60.9)	9 (39.1)	0	23
	OTHER	17 (77.3)	4 (18.2)	1 (4.5)	22
Total		113 (77.4)	31(21.2)	2 (1.4)	146

87.5 percent of all HL groups are users the Microsoft tool, be it on a regular basis or occasionally. With the exception of the other HL group, all HL groups are regular users of the Microsoft tool. The Afrikaans HL group, reported by 52.4 percent, uses the Microsoft tool the most, followed by the English HL group with 47.8 percent, the Xhosa HL group with 47.4 percent and the other HL group with 31.8 percent. 77.4 percent of respondents are also regular users of the internet. This percentage of regular users when combined with that of occasional users jumps to 98.6 percent, leaving only 1.4 percent of African home language (including isiXhosa) respondents who hardly use the internet when reading academic texts. This popular use of the internet and the Microsoft tool may explain why many respondents do not use dictionaries. It can also be assumed that many of the occasional users of the internet and those who rarely use it do not have enough access to it.

Table 5.12: Frequency of guessing, giving up and asking for help

This table presents the data of questions 2.xii. (When reading your academic texts, how often do you guess the meaning?), 2.xiii (When reading your academic texts, how often do you ask a friend/colleague for help?) and 2.xiv. (When reading your academic texts, how often do you do nothing/give up?) on the questionnaire:

		You guess the meaning...?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	17 (21)	43 (53.1)	21 (25.9)	81
	AFR	4 (19)	9 (42.8)	8 (38.1)	21
	ENG	5 (21.7)	8 (34.8)	10 (43.5)	23
	OTHER	3 (13.6)	11 (50)	8 (36.4)	22
Total		29 (19.7)	71 (48.3)	47 (32)	147
		You give up...?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	2 (2.5)	13 (16)	66 (81.5)	81
	AFR	2 (9.5)	2 (9.5)	17 (80.9)	21
	ENG	0	7 (30.4)	16 (69.6)	23
	OTHER	3 (13.6)	3 (13.6)	16 (72.7)	22
Total		7 (4.8)	25 (17)	115 (78.2)	147
		You ask a friend/colleague for help...?			Total
		OFTEN	SOMETIMES	RARELY	
Home language	XHO	21 (25.9)	37 (45.7)	23 (28.4)	81
	AFR	3 (14.3)	16 (76.2)	2 (9.5)	21
	ENG	4 (17.4)	11 (47.8)	8 (34.8)	23

	OTHER	4 (18.2)	14 (63.6)	4 (18.2)	22
Total		32 (21.8)	78 (53.1)	37 (25.2)	147

The Xhosa HL group, with 74.1 percent, is first in reporting that they often or sometimes have to guess the meaning; the Afrikaans HL group is second with 61.8 percent, the English HL group is third with 56.5 percent and the other HL group is fourth with 63.6 percent. The large percentage (68%) of respondents who admit to guessing the meaning of words, phrases and sentences may be doing so as a result of not having immediate access to resources (like dictionaries, Internet etc.), lecturers, tutors and colleagues. The highest percentages of all HL groups occasionally ask colleagues, tutors and/or lectures for help when they have a problem comprehending academic texts. Overall percentages, i.e. ‘often’ and ‘sometimes’ columns combined, reveal that the Afrikaans HL group (90.5%) relies on asking colleagues, tutors and/or lecturers for help the most. The other HL group is second (81.8%), the Xhosa HL group is third (71.6%) and the English HL group is fourth with 65.2 percent. A great percentage (78.2%) of the HL groups rarely gives up when reading academic texts and struggles with understanding the content.

Now that the general presentation on resources used is finished, the focus shifts to aids for specific issues in academic texts that students have to read.

On the questionnaire, questions 5.1, 5.2, 5.3, 5.4, 5.5 and 5.6, ask for information that respondents have already given in questions 2.i, 2.ii, 2.iii, 2.iv, 2.v, and 2.vii. The reason for this repetition is to confirm the information already given and to hopefully learn of other aids, strategies and actions that respondents often take when struggling to understand items in academic texts written in English.

Table 5.13: Usual reaction to not understanding a word

This table presents the data of question 5.1 (What do you usually do when you do not understand a word?) on the questionnaire:

		What do you usually do when you don't understand a word?					TOTAL
		ASK	INTERNET	TRANSLATE	M. TOOL	DICTIONARY	
Home language	XHO	8 (10.4)	37 (48)	0	0	17 (22.1)	77
	AFR	0	7 (36.8)	1 (5.3)	0	4 (21)	19
	ENG	0	9 (39.1)	0	1 (4.3)	5 (21.7)	23
	OTHER	0	5 (23.8)	0	0	9 (42.8)	21
Total		8 (5.7)	58 (41.4)	1 (0.7)	1 (0.7)	35 (25)	140

		What do you usually do when you don't understand a word?			TOTAL
		GUESS	SKIP/ Guess	DICTIONARY & INTERNET	
Home language	XHO	3 (3.9)	0	12 (15.6)	77
	AFR	0	0	7 (36.8)	19
	ENG	0	3 (13)	5 (21.7)	23
	OTHER	0	0	7 (33.3)	21
Total		3 (2.1)	3 (2.1)	31 (22.1)	140

Except for the other HL group which uses a dictionary, large percentages of the other HL groups use the internet more to look-up difficult terms. Table 5.13 shows the internet and dictionaries as the two most utilized resources for looking-up meanings of difficult words. In Table 5.13, only a small percentage (4.3%) of the English HL group uses the Microsoft tool to look-up difficult terms whereas in table 5.11. 87.5 percent used it regularly or occasionally.

Table 5.14: Usual reaction to not understanding a phrase

The table presents the data of question 5.2 (What do you usually do when you do not understand a phrase?) on the questionnaire

		What do you usually do when you don't understand a phrase?					TOTAL
		ASK	INTERNET	TRANSLATE	GUESS	GIVE UP	
Home language	XHO	16 (20.2)	39 (49.4)	0	9 (11.4)	10 (12.6)	79
	AFR	4 (21)	7 (36.8)	0	3 (15.8)	5 (26.3)	19
	ENG	3 (12.5)	10 (41.7)	0	2 (8.3)	6 (25)	24
	OTHER	9 (42.8)	6 (28.6)	1 (4.8)	4 (19)	1 (4.8)	21
Total		32 (22.5)	62 (43.7)	1 (0.7)	18 (12.7)	21 (14.8)	143

		What do you usually do when you don't understand a phrase?		TOTAL
		ASK/INTERNET	DICTIONARY & INTERNET	
Home language	XHO	0	5 (6.3)	79
	AFR	0	0	19
	ENG	3 (12.5)	0	24
	OTHER	0	0	21
Total		3 (2.1)	5 (3.5)	143

When reading, the majority of 43.7 percent respondents often look up difficult phrases on the internet. The second largest percentage of respondents consults colleagues, tutors and/or lecturers when struggling with comprehending difficult phrases. Though according to table 5.12's data, the Afrikaans HL group relies most on consultations, data in table 5.14 reveals that the other HL group rely the most on asking about difficult phrases from others. 14.8

percent, the third largest percentage of respondents, gives up when experiencing difficulties understanding a phrase. According to the data in table 5.12, 78.2% of the HL groups rarely give up when struggling with understanding the content in academic texts.

Table 5.15: Usual reaction to not understanding a sentence

Table 5.15 below presents the data of question 5.3 (What do you usually do when you do not understand a sentence?) on the questionnaire:

		What do you usually do when you don't understand a sentence?					TOTAL
		ASK	INTERNET	TRANSLATE/GUESS	M.TOOL	GIVE UP	
Home language	XHO	24 (30.8)	13 (16.7)	2 (2.6)	1 (1.3)	31 (39.7)	78
	AFR	8 (44.4)	1 (5.5)	1 (5.5)	0	7 (38.9)	18
	ENG	5 (21.7)	4 (17.4)	1 (4.3)	0	12 (52.2)	23
	OTHER	10 (47.6)	0	1 (4.8)	0	8 (38.1)	20
Total		47 (33.6)	18 (12.8)	5 (3.6)	1 (0.7)	58 (41.4)	129

		What do you usually do when you don't understand a sentence?				TOTAL
		ASK/INTERNET	DICTIONARY /INTERNET	GUESS /INTERNET	ASK/GUESS	
Home language	XHO	2 (2.6)	3 (3.8)	0	2 (2.6)	78
	AFR	0	0	1 (5.5)	0	18
	ENG	1 (4.3)	0	0	0	23
	OTHER	1 (4.8)	0	1 (4.8)	0	20
Total		4 (2.8)	3 (2.1)	2 (1.4)	2 (1.4)	139

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41.4 percent of respondents often skip sentences that they do not understand in their reading materials. This data, again, contradicts the data in table 5.12 that most respondents hardly give up when struggling with comprehending the content in their academic texts. It is only in the other HL group that the majority of 47.6 percent would rather consult friends, tutors and/or lecturers before giving up. Surprisingly, only 12.8 percent of respondents, mostly Xhosa HL with 16.7 percent and English HL with 17.4 percent, often use the internet when there is a sentence that they do not understand in academic texts.

Table 5.16: Usual reaction to not understanding the logic in the text

This table presents the data of question 5.4 (What do you usually do when you do not understand the logic [i.e. how ideas are put together] in the text?) on the questionnaire:

		What do you usually do when you don't understand the logic in the text?				TOTAL
		ASK	INTERNET	GIVE UP	GUESS	

	XHO	51 (65.4)	12 (15.4)	6 (7.7)	4 (5.1)	5 (6.4)	78
Home	AFR	10 (55.5)	8 (44.4)	0	0	0	18
language	ENG	9 (39.1)	12 (52.2)	0	0	2 (8.7)	23
	OTHER	14 (70)	4 (20)	0	1 (5)	1 (5)	20
Total		84 (64.1)	49 (35.2)	6 (4.6)	5 (3.6)	8 (5.7)	139

64.1 percent of respondents often ask friends, tutors and/or lecturers when not understanding the logic in their academic reading materials. African HL (including isiXhosa) And Afrikaans HL respondents prefer this option way more than any other option when struggling with understanding the logic in academic texts. This option is also popular among the English HL respondents but a slight majority of this group, 52.2 percent, usually use the internet. Internet use for the purpose of understanding logic in academic texts is the second popular option for the Xhosa HL (15.4%), Afrikaans HL (44.4%) and other HL (20%) groups. The third largest percentage, 7.7 percent, of the Xhosa HL group often makes no effort to better its understanding of the difficult logic in academic text – all HL groups make efforts when not understanding the logic. Only 3.6 percent of African HL (the Xhosa HL group make up the majority with 5.1%) respondents have to guess the meaning of the logic in academic texts.

Table 5.17: Usual reaction to not understanding key ideas/topic

This table presents the data of question 5.5 (What do you usually do when you do not understand key ideas/topic?) on the questionnaire:

		What do you usually do when you don't understand key ideas/topic?					TOTAL
		ASK	INTERNET	SKIP	GUESS	DICTIONARY	
	XHO	45 (59.2)	19 (25)	2 (2.6)	8 (10.5)	2 (2.6)	76
Home	AFR	12 (63.1)	1 (5.3)	1 (5.3)	4 (21)	1 (5.3)	19
language	ENG	12 (52.2)	7 (30.4)	1 (4.3)	1 (4.3)	2 (8.7)	23
	OTHER	11 (52.4)	5 (23.8)	0	5 (23.8)	0	21
Total		80 (58.4)	32 (23)	4 (2.9)	18 (13.1)	5 (3.6)	139

The majority in all HL groups ask colleagues, tutors and/or lecturers for help they do not understand the key ideas or topics discussed in their academic texts. The internet is the second most popular resource for looking-up the meanings of key ideas/topics for the Xhosa HL (25%) and English HL (30.4%) groups. A much larger percentage, 21 percent, of the Afrikaans HL group prefers guessing better than internet and dictionary use when having difficulties with understanding the meanings of key ideas/topics in academic texts. The other HL group guess the meanings of key ideas/topics just as much as they look them up on the

internet.

Table 5.18: Usual reaction to not understanding the examples.

The table below presents the data of question 5.6. (What do you usually do when you do not understand [or relate to] the examples?) on the questionnaire:

		What do you usually do when you don't understand (or relate to) the examples?					TOTAL
		ASK	INTERNET	DICTIONARY	TRANSLATE	GUESS	
Home Language	XHO	45 (59.2)	13 (17.1)	12 (15.8)	4 (5.3)	2 (2.6)	76
	AFR	12 (63.1)	2 (10.5)	4 (21)	1 (5.3)	0	19
	ENG	11 (52.4)	1 (4.8)	6 (28.6)	1 (4.8)	2 (9.5)	21
	OTHER	12 (57.1)	2 (9.5)	6 (28.6)	1 (4.8)	0	21
Total		80 (58.4)	18 (14)	28 (20.4)	7 (5.5)	4 (2.9)	137

The majority in all HL groups often consult with their colleagues, tutors and/or lectures when struggling to understand or relate to examples used in their academic reading materials. 63.1 percent of the Afrikaans HL group depends the most on these consultations; followed by the Xhosa HL group with 59.2 percent, then by the other HL group with 57.1 percent, and lastly, the English HL group with 52.4 percent.

With the exception of the Xhosa HL group, the second highest percentages in all HL groups use dictionaries to look-up examples that are difficult to understand. The Xhosa HL group's second highest percentage, which is 17.1 percent, looks up such examples on the internet, and its third highest percentage, 15.8 percent, uses the dictionary.

5.5. Satisfaction with reading aids

Items 6a, 6b, 6c, 6d, and 6e on the questionnaire relate to the degree of satisfaction of respondents with reading aids.

Table 5.19: Satisfaction with Monolingual and bilingual dictionary usage.

This table presents the data of items 6a (How satisfied are you with the results when using a monolingual dictionary?) and 6b (How satisfied are you with the results when using a bilingual dictionary?) on the questionnaire. On the questionnaire, there were four categories: "often satisfied", "sometimes satisfied", "rarely satisfied" and "never satisfied". The researcher has merged categories "rarely satisfied" and "never satisfied" in this presentation so as to be consistent and allow for comparisons.

		How satisfied are you with the results when using a monolingual dictionary?			
		OFTEN SATISFIED	SOMETIMES SATISFIED	NEVER SATISFIED	TOTAL
Home language	XHO	35 (44.9)	33 (42.3)	10 (12.8)	78
	AFR	6 (33.3)	8 (44.4)	4 (22.2)	18
	ENG	13 (59.1)	6 (27.3)	3 (13.6)	22
	OTHER	8 (38)	11 (52.4)	2 (9.6)	21
Total		62 (44.6)	58 (41.7)	19 (13.6)	139
		How satisfied are you with the results when using a bilingual dictionary?			
		OFTEN SATISFIED	SOMETIMES SATISFIED	NEVER SATISFIED	TOTAL
Home language	XHO	25 (33.3)	34 (45.3)	16 (21.3)	75
	AFR	12 (66.7)	4 (22.2)	2 (11)	18
	ENG	2 (10)	13 (65)	5 (25)	20
	OTHER	10 (50)	6 (30)	4 (20)	20
Total		49 (36.8)	57 (42.8)	27 (20.3)	133

In table 5.4, 67.4 percent of the Xhosa HL group are reported regular and occasional users of monolingual (English) dictionaries. In table 5.19, the percentages of Xhosa HL respondents who are not always satisfied (42.3%) and those who are never satisfied (12.8%) with the results when using a monolingual (English) dictionary clearly show that monolingual (English) dictionaries are not very helpful to many Xhosa HL students. The same thing can be said about the Afrikaans HL (66.6%) and other HL (62%) groups. The English HL group has the highest percentage of respondents who are often happy with the outcome after using a monolingual (English) dictionary out of all the HL groups. The data presented in table 5.19 shows that 40.9 percent of English HL respondents are sometimes and never satisfied with the results when using monolingual (English) dictionaries.

The highest percentages of the Afrikaans HL (66.7%) and the other HL (50%) groups are often satisfied with the results when using bilingual (English & home language) dictionaries. According to the data in table 5.4, only 5.1 percent of the Xhosa HL group use bilingual (English & home language) dictionaries often. It can be assumed that many of the occasional Xhosa HL users of bilingual (English & home language) dictionaries are part 33.3 percent of the Xhosa HL group that is often satisfied in table 5.19.

Table 5.20: Satisfaction with the Microsoft tool usage.

The table presents the data of items 6c (How satisfied are you with the results when using a Microsoft tool?) on the questionnaire:

		How satisfied are you with the results when using a Microsoft tool?			
		OFTEN SATISFIED	SOMETIMES SATISFIED	NEVER SATISFIED	TOTAL
Home language	XHO	44 (55.7)	26 (32.9)	9 (11.4)	79
	AFR	14 (73.7)	5 (26.3)	0	19
	ENG	14 (63.6)	6 (27.3)	2 (9.1)	22
	OTHER	12 (57.1)	3(14.3)	6 (28.6)	21
Total		84 (59.6)	40 (28.4)	17 (12)	141

For all the HL groups, the percentages of respondents who are often satisfied with the results when using the Microsoft tool is greater than the percentages of respondents who use it regularly. This can be interpreted as meaning that many respondents who use the Microsoft tool occasionally are often satisfied with the results when they do. The other HL group, with 28.6 percent, makes up the majority of respondents who are never with the results when using a Microsoft tool; it is followed by the Xhosa HL group with 11.4 percent, and then by the English HL group with 9.1 percent. All Afrikaans HL respondents often and occasionally find the Microsoft tool very helpful.

Table 5.21: Satisfaction with the internet usage.

This table presents the data of items 6d (How satisfied are you with the results when using the internet?) on the questionnaire:

		How satisfied are you with the results when using the internet?			Total
		OFTEN SATISFIED	SOMETIMES SATISFIED	NEVER SATISFIED	
Home language	XHO	63 (79.7)	16 (20.2)	0	79
	AFR	17 (89.5)	2 (10.5)	0	19
	ENG	21 (91.3)	2 (8.7)	0	23
	OTHER	19 (90.5)	2 (9.5)	0	21
Total		120 (84.5)	22 (15.5)	0	142

Reported in table 5.11, 77.4 percent of the HL groups use the internet often when reading academic texts, and in table 5.21, it is revealed that 84.5 percent of respondents are often satisfied with the results. This 7.1 percentage difference can be interpreted as meaning that even many respondents who occasionally use the internet to enhance their understanding of academic texts are often satisfied when they do. There are no percentages of respondents who are never satisfied reported.

The Xhosa HL group is the only one of the HL groups that has a percentage of respondents, which is 79.7 percent, who are often satisfied with the results when using the internet while reading academic texts that is lower than the percentage of respondents, which is 81.2 percent, who use the internet often. This means that 1.5 percent of the Xhosa HL group that use the internet often is not always satisfied.

The English HL group has the largest percentage difference, which is 30.4 percent, between respondents who use the internet often (60.9%) and those who are often satisfied with it (91.3%). The other HL group's percentage difference between respondents who use the internet often (77.3%) and those who are often satisfied with it (90.5%) is 13.2 percent. The Afrikaans HL group's percentage difference between respondents who use the internet often (80.9%) and those who are often satisfied with it (89.5%) is 9 percent.

Table 5.22: Satisfaction with asking others for help.

This table presents the data of items 6e (How satisfied are you with the results when you ask a friend/tutor/lecture?) on the questionnaire:

		How satisfied are you with the results when you ask a friend/tutor/lecturer?			
		OFTEN SATISFIED	SOMETIMES SATISFIED	NEVER SATISFIED	TOTAL
Home language	XHO	15 (19.2)	51 (65.4)	12 (15.4)	78
	AFR	2 (10.5)	15 (78.9)	2 (10.5)	19
	ENG	3 (13)	16 (69.6)	4(17.4)	23
	OTHER	5 (23.8)	14 (66.7)	2 (9.5)	21
Total		25 (17.7)	96 (68.1)	20 (14.2)	141

Overall, 68.1 percent of respondents who do ask for help when they come across difficult items in their academic readings are not always satisfied with the results. The Xhosa HL group has the second largest percentage of respondents who are never satisfied with the results when they ask for help. The other HL group is the only group that has a percentage of respondents who are often satisfied (23.8%) after asking for help that is greater than the percentage of respondents who ask for help regularly (18.2%, as seen in table 5.12). This means that many of those who do not ask people for help often when reading academic are often satisfied when they do. Out of the 25.9 percent of Xhosa HL respondents who ask people for help often when reading academic texts, 19.2 percent are often satisfied with the results after asking people. It is 10.5 percent of the total 14.3 percent of Afrikaans HL respondents who often ask friends, tutors and/or lecturers to explain difficult items in

academic texts that is often satisfied with the explanations. Of the 17.4 percent English HL respondents who often seek help from others when struggling to understand academic texts, 13 percent are often happy with the responses they get. This data shows that Xhosa HL, Afrikaans HL and English HL respondents who ask others for help often when reading academic texts are not always satisfied.

5.6. Preferred language(s) for processing the information

Table 5.23: Language(s) used when discussing academic work and making notes.

This table presents the data on the language(s) often used by the respondents in their efforts, as individuals and in pairs or groups, to better understand the meanings/messages communicated in academic reading materials. It presents the merged data of questions 3 (When you discuss the content of your academic readings with friends/colleagues, in what language/s do you often have such discussions?) and 4 (When you make notes on the margins of your reading materials or in your exercise book, what language/s do you often use?) on the questionnaire:

		in what language(s) do you often discuss academic readings with friends?						TOTAL
		XHO	AFR	ENG	OTHER & ENG	XHO & ENG & OTHER	AFR & ENG	
Home language	XHO	16 (21)	0	26 (34.2)	1 (1.3)	1 (1.3)	32 (42.1)	76
	AFR	0	8 (40)	4 (20)	0	8 (40)	0	20
	ENG	1 (4.8)	0	19 (90.5)	0	1 (4.8)	0	21
	OTHER	1 (7.7)	0	10 (76.9)	1 (7.7)	0	1 (7.7)	13
Total		18 (13.8)	8 (6.1)	59 (45.4)	2 (1.5)	10 (7.7)	33 (25.4)	130
		in what language(s) do you often make notes on the margins of your readings?						TOTAL
		XHO	AFR	ENG	OTHER	XHO & ENG	AFR & ENG	
Home language	XHO	2 (3)	0	56 (83.6)	1 (1.5)	8 (11.9)	0	67
	AFR	0	3 (17.6)	12 (70.6)	0	1 (5.9)	1 (5.9)	17
	ENG	1 (5.9)	0	16 (94.1)	0	0	0	17
	OTHER	0	0	12 (85.7)	1 (7.1)	1 (7.1)	0	14
Total		3 (2.6)	3 (2.6)	96 (83.5)	2 (1.7)	10 (8.7)	1 (0.9)	115

Although data in table 5.6 show that 52.8 percent of respondents do not have a good proficiency in the English language and 57.1 percent do not find academic texts written English easily understandable, a big percentage of respondents, which is 45.4 percent, still

discuss academic texts with friends in English. The second largest percentage, 42.1 percent, of the Xhosa HL group has such discussions in Afrikaans and English. 21 percent of the Xhosa discuss academic texts in isiXhosa. 40 percent of the Afrikaans HL group usually discuss academic texts in Afrikaans, and another 40 percent often use isiXhosa, English and other. 4.8 percent of the English HL group usually discuss academic texts in isiXhosa, and another 4.8 percent in isiXhosa, English and other.

With regards to the language(s) of preference when own making notes on the margins of academic readings, an overwhelming percentage of respondents, 83.5 percent, uses English. 11.9 percent, the second highest percentage of the Xhosa HL group prefers making own notes isiXhosa and English. The second highest percentages of the other HL group prefers writing own notes in other (7.1%) and in isiXhosa (7.1%). 17.6 percent, the second largest percentage of the Afrikaans HL group, often makes own notes in Afrikaans, and its third highest percentage, which is 5.9 percent, in isiXhosa and English.

5.7 Data analyses

The majority of English HL respondents believe that their proficiency in the English language is good, and say that they often find English-written academic texts easily understandable. Despite available research (CHE_VitalStats_2013:11) claiming that Afrikaans HL students are doing better academically than students with African home languages, the data for this study shows that when compared to the isiXhosa HL and the other HL groups, the Afrikaans HL group has a bigger percentage of respondents with a poor proficiency in English and who find academic texts written in English difficult to understand.

The majority of respondents for whom English is not a home language believe that they have a fair proficiency in English. It is then not a surprise that the majority of Afrikaans HL respondents and a considerable number of respondents with an African HL say that English-written texts are not easily understandable. What is surprising is that the majority of the respondents who have African home languages (including isiXhosa) and many Afrikaans HL respondents find English-written texts easily understandable. These claims contradict the claims made by some scholars (Laufer & Ravenhorst- Kalovski, 2010; Nation, 2006; Schmitt, 2008, 2010; Schmitt & Schmitt, 2012; Kurnia, 2003) that not only do respondents need to know the language of tuition well but a sufficient knowledge of technical and academic data is necessary for coping with academic work. These scholars argue that full understanding of academic texts and keeping up with academia require at least 4,000-5,000 word families and

the mastery of Academic Word List (AWL).

The above claim also contradicts available research (Blacqui re, 1989; Leibowitz, 2001; Perkins 1991; Pretorius, 1995; Vorster & Reagan, 1990; van Rensburg & Weideman, 2002) that claims that English as the medium of tuition is a problem for South African students who do not have it as a home language (Dalvit & De Klerk, 2005; Pretorius, 2000; Cliff, Ramaboa & Pearce, 2007), and that for these students to achieve full reading comprehension, one of the main obstacles that they need to overcome is insufficient vocabulary knowledge (Alqahtani, 2015).

Even with the majority of respondents claiming that academic texts written in English are easily understandable, 40.4 percent is struggling. This study's data shows that the use of English as the dominant medium of teaching and learning is not appropriate for all the HL groups. The percentages of the Xhosa HL, Afrikaans HL and other HL respondents who do not find academic texts easily understandable are two times higher the percentage of the English group – the English has an advantage over the other HL groups.

The data presented in this chapter has revealed that, in all HL groups, high percentages of respondents sometimes and often have difficulties understanding terms, phrases and sentences used in their academic readings. Respondents experience terms as the most; phrases as the second most, and sentences as the third most difficult aspect of English as an academic language. Since the percentage of respondents who rarely come across difficult terms, phrases and sentences is very small, it can be said that even the respondents who claimed to have a good proficiency in the English language and often find English-written texts easily understandable are included in the numbers of respondents who sometimes and often encounter these difficulties. This makes the claim made by respondents that they find English-written texts easily understandable untrue. The data shows that they lack sufficient technical and academic vocabulary needed to fully comprehend academic texts.

Insufficient technical and academic vocabulary also affects the students' understanding of topics discussed in academic texts negatively. The majority of respondents who do not have English as a home language and many English HL respondents often struggle with understanding the topics being discussed in their academic readings. This confirms the importance of technical and academic vocabulary in academic texts. Though general vocabulary covers 80% of academic texts, without sufficient technical and academic vocabulary, even for English HL students, full comprehension of academic texts is

impossible. Insufficient vocabulary is not the reason for all problems that students deal with when reading the academic texts written in English. Understanding the logic, i.e. the flow of ideas and how they link in academic texts, is even a problem for English HL students.

Although many African HL (including isiXhosa) and Afrikaans HL respondents claim that they rarely struggle with understanding tables, graphs, maps etc. in academic texts, the number of those who often and sometimes struggle with this problem is just as big. English HL students usually have an advantage over English second language students because their home language is also the language of tuition – they usually have a better knowledge of the general vocabulary. This study showing that the English HL group struggles with understanding tables, graphs, maps etc. in academic texts the most proves that insufficient vocabulary is not the root of all difficulties that students experience when reading academic texts. Student cannot simply make use of dictionaries and glossaries to enhance their understanding of the text when struggling with understanding tables, graphs, maps etc.

Although the majority does not, many respondents find the examples that are used in academic texts difficult to understand. This problem affects the Xhosa HL group more than the other groups, and the other HL group is the second most affected. One can point to cultural difference being one of the reasons that African students do not relate to examples illustrated by European authors. This puts emphasis on the need to decolonize the curriculum. One would also argue that English as the language of instruction is another reason African HL respondents do not relate to examples used in academic texts. Many African HL students matriculate from under-resourced schools where it is not unusual for the content to be explained in the students' home language. These students are used to teachers reshaping examples to fit a certain context and explaining the examples in their home language.

Even though the majority of respondents sometimes and often struggle with terms, phrases, sentences, topics/key ideas, the logic, examples, tables, maps and graphs when reading academic texts written, the percentages of respondents who hardly make use of dictionaries are surprisingly high. Those who do make use of dictionaries do not use them very often. The reason for this could be that respondents are discouraged by the same shortcomings associated with dictionaries identified by Antia (2017a). While dictionaries may be appropriate for looking up words, some phrases and some topics, they are useless when trying to understand sentences, examples, key ideas discussed and the logic in academic texts. Dictionaries do not explain examples and items added on academic texts (e.g. maps, tables,

graphs etc.) to enhance the readers' comprehension of the text. One cannot rely on general dictionaries for the appropriate context of technical and academic terms and phrases, and for the appropriate context of examples used in academic texts. The fact that respondents with African HL including isiXhosa come across examples that are difficult to relate confirms the need to decolonize the curriculum. Even though specialized dictionaries and online glossaries can provide context-appropriate explanations for terms, key ideas, and phrases in a particular field, they too have several of the shortcomings associated with conventional dictionaries and glossaries.

Another interesting finding is that the majority of respondents with an African HL use monolingual dictionaries (English) more than they do bilingual (i.e. home language and English) dictionaries. The reason for this could be that these respondents do not have access to bilingual (i.e. home language and English) dictionaries – there is a lack of academic materials in African languages (Edward and Ngwaru, 2011). The Xhosa HL group claims it is often satisfied more with the results when using a monolingual dictionary than when using a bilingual dictionary. The Afrikaans HL group uses bilingual dictionaries more than it does monolingual dictionaries and is also often satisfied with the results more. Available research (CHE_VitalStats_2013:11) says that Afrikaans HL students perform better academically than students with African home languages. One can argue that accessing academic information partially in their home language makes the Afrikaans HL group understand the content more than the Xhosa HL group and ultimately perform better academically.

Surprisingly, a dictionary is not the most popular resource for looking-up words and phrases; the internet is. A great majority of respondents uses the internet often when reading their academic texts. It is the second most popular option when respondents do not understand the logic and topics that are discussed in academic readings, and it is third most popular option when respondents do not understand sentences and examples in academic texts. All HL groups are often very satisfied when using the internet. The internet is popular among the HL groups because it offers way more information than most, if not all other, reading aids. The internet is a reservoir of texts that are similar to the one a student is reading. Students can look up something that they do not understand in other texts and/or watch a video that explains what they are struggling with on the internet. Using the right search terms can get students desired information on terms, phrases, tables, graphs and maps, key ideas, (other) examples and the logic used in academic texts.

The Microsoft tool is very popular among the HL groups. Although the majority of respondents use it very often, the percentage of respondents who use it occasionally is very high. The data shows that the majority of respondents are often happy with the results when using the Microsoft tool. What is interesting is that when respondents were asked what they usually do when they come across difficult words, phrases, sentences, examples and topics and logic in academic texts, a very small percentage of respondents mentioned using the Microsoft tool. This may be because the Microsoft tool can only be used to look-up synonyms and antonyms and words.

Many existing tools are not helpful when students encounter difficult sentences, logic, graphs, maps, table and examples used in academic texts. This underscores the need for different kinds of tools.

In the absence of tools that provide solutions to the problems that respondents have when reading academic texts, the majority of respondents, especially the Xhosa HL group, have to guess the meaning of difficult items that they come across in academic texts. The problem with guessing the meaning of any item is that there is a big chance of getting it wrong. The Xhosa HL group has the largest percentage of respondents who guess the meaning of difficult items in academic texts, and the other HL and the Afrikaans HL groups have the second and third highest percentages respectively. These HL groups are more likely to guess the meanings of difficult items in academic texts wrong since the majorities in all three HL groups do not even have a good proficiency in the English language.

Compared to the other three HL groups, the Xhosa HL group has the lowest percentage of respondents who give up when they are struggling with understanding an item in their academic reading materials. This shows that they want to overcome the obstacles impeding their full understanding of academic texts. Although there is no knowing for sure, one can assume that the low percentage of the Xhosa HL group that does give up, mostly sometimes, does so because of the lack of access to helpful reading aids.

A very large percentage of respondents rely on consulting friends, tutors and/or lecturers when struggling with an item in academic text. The Xhosa HL, the Afrikaans HL and the other HL groups depend more on asking for help than the English HL group. This could be because they do not have easy access to affordable helpful reading aids. Another reason could be that when respondents do not really understand the explanation given, they can ask friends, tutors and/or lecturers to elaborate. The problem is that these HL groups rely on an

option (i.e. asking other people for help) that is not very helpful. Large majorities of all HL groups are not always satisfied with the results when they ask for help from friends, tutors and/or lecturers.

The majority of Afrikaans HL respondents discuss the contents in their reading materials in their home language, only some do it in English. Only the third largest percentage of the Xhosa HL group often uses isiXhosa when discussing academic readings with friends. The largest and the second largest of this group often use the combination of Afrikaans and English, and English respectively. An overwhelming majority of all HL groups often use English when making their own notes on the margins of their academic readings. The second largest percentages of respondents with African home languages, including isiXhosa, often make annotations in their home languages. These low percentages in African HL respondents using their home languages when discussing academic texts and making annotations can be blamed on African languages' lack of terminology and academic work written in isiXhosa in the different scientific fields of study. It could also be because these respondents cannot translate the terms and phrases into their home languages, or they only memorize what they have read/heard verbatim - rote learning - instead of internalizing it, which would make it easier to transfer the knowledge into another language. Even though data shows they are struggling with English as a medium of tuition, they use English because they do not have Xhosa equivalent terms and phrases for technical and academic terms and phrases used in their academic readings. They also do not have easy access to bilingual reading aids – dictionaries and online glossaries.

To conclude, academic texts are not as easily understandable as many respondents have claimed. The data presented in this chapter clearly shows that a lot, if not all, respondents often and sometimes find different aspects of academic texts difficult to understand. Much research points to insufficient vocabulary as the (sole) reason readers have difficulties understanding academic texts but this study proves that that is not always the case. As much as students struggle with understanding terms and phrases used in academic texts they also find sentences, examples, key ideas and the logic in academic texts often and sometimes problematic. Unfortunately, many traditional reading aids available to students are not very helpful when students encounter these difficulties in their academic reading materials. Even respondents who rely on asking colleagues, tutors and/or lecturers for assistance when struggling to understand something in their academic reading materials are not always satisfied with the feedback (results) that they receive.

The data also revealed that there are students who are not always satisfied with results when using popular reading aids (i.e. Internet and Microsoft tool). Surprisingly, not many respondents use dictionaries very often and most of those who do are not always satisfied with the results either. It also turns out that large numbers of the HL groups, except the Afrikaans HL group, use English monolingual dictionaries more than bilingual dictionaries. English is also the most used language by respondents when they are discussing academic work with friends and making annotations in the margins of their textbooks.



CHAPTER 6:

Experiencing different resources in reading

6.1. Introduction

This chapter addresses the research objectives on: a) developing a bilingual English-isiXhosa glossary on the basis of a sample of English texts prescribed for students in Psychology; b) creating a database of the glossary within an Active Terminology Recognition software, which presents the glosses as widgets that popup easily when the relevant texts are being read; c) experimentally evaluating the impact of this alternative mode of delivering glosses by having students perform reading comprehension tasks under two conditions: electronically glossed text condition (the alternative proposed) and the use of conventional online resources as well as other strategies they normally use in their reading tasks, and d) eliciting participant views on their experiences of using both the alternative modes proposed.

6.2 Developing a bilingual English-isiXhosa glossary

Based on processes described in Chapter four on methods, items in an English text on Personality in Psychology were identified and equivalents provided. what is interesting is that it was not only terms as would be found in a dictionary that were identified as difficult, but also phrases and other kinds of expressions. Figure 6.1 provides the text with the items identified as difficult to understand.

Figure 1: the text that contains material identified for glossing

Text B

Personality refers to the long-standing **traits** and patterns that propel individuals to consistently think, feel, and behave in specific ways. Our personality is what makes us **unique** individuals. Each person has an **idiosyncratic pattern of enduring**, long-term characteristics and a **manner** in which he or she interacts with other individuals and the world around them. Our personalities are thought to be long term, stable, and not easily changed. The word personality comes from the Latin word persona. **In the ancient world**, a **persona** was a mask worn by an actor. While we tend to think of a mask as being worn to **conceal** one's **identity**, the **theatrical** mask was originally used to either represent or **project** a specific personality trait of a **character**.

DEFENSE MECHANISMS

Freud believed that feelings of anxiety result from the ego's inability to mediate the conflict between the id and superego. When this happens, Freud believed that the ego seeks to restore balance through various protective measures known as defense mechanisms. When certain events, feelings, or yearnings cause an individual anxiety, the individual wishes to reduce that anxiety. To do that, the individual's unconscious mind uses ego defense mechanisms, unconscious protective behaviours that aim to reduce anxiety. When we use defense mechanisms, we are unaware that we are using them. Further, they operate in various ways that distort reality. According to Freud, we all use ego defense mechanisms.

Figure 1 shows the terms and phrases (highlighted) that were identified for glossing in text B.

The material identified for glossing is highlighted in yellow in figure 1. There are 28 identified terms and phrases in the 232-word article. As mentioned before, the glossed terms and phrases were identified by four Xhosa home language students studying Psychology at first year level at the University of the Western Cape. A Xhosa-English bilingual dictionary was used in the process of proposing isiXhosa equivalents though the researcher and his colleague already knew isiXhosa equivalents to identified items such as yearnings, traits, unique, conflict, traits, mediate, to reduce, certain events, feelings, conceal, anxiety and character. A specialized psychology dictionary was used to look-up meanings of items like "personality", "project", "ego", "id", "superego", "anxiety", "conscious", "unconscious", "identity", and "defense mechanism" that are unique to the field of Psychology.

For phrases and expressions such as "pattern of enduring", "In the ancient world", "to restore balance", "through various protective measures", "certain events" and "to reduce", the researcher and his colleague's knowledge of isiXhosa and English languages was used with the help of a dictionary, but most importantly, they applied their knowledge of translating in the process. The Xhosa equivalents were then given to two students to verify; one studying Masters in Linguistics and the studying Masters in isiXhosa.

Table 6.1: IsiXhosa equivalents and definitions of English items, phrases and clauses in the psychology article

English items, phrases and clauses	IsiXhosa equivalents	IsiXhosa definitions
Personality	Isimo	Yingqokelela yeempawu

		yendlela yokuziphatha nokucinga ezahlula ubani kwabanye.
Traits	Iimpawu	Ziimpawu ezohlula ubani kwabanye
Unique	Ukukhetheka	Ukukhetheka; Ungafani nezinye/nabanye
Idiosyncratic		Indlela ekhethekileyo yokucinga okanye yokuziphatha kumntu ngamnye
Manner	Iimo/indlela	Indlela into eyenziwa okanye eyenzeka ngayo.
In the ancient world	Mandulo	
Persona -	Inxenye yesimo	yinxenye yobuntu/yobuni evezwa ngumntu
Conceal	Ukugquma	
Identity	Ubuni/Ubuwena	Uphawu lobuwena bakho (guquguqakayo nokwakhiwa ngokwentlalo) njengomntu
Project (verb) -		Ukuphika izenzo/imizwa enganqwenelekiyo ze utyhole abanye ngazo/ngayo.
Character	Umlinganiswa	Bubuwena kwimeko ethile
Feelings	Imizwa	Indlela ubani aziva ngayo (umzekelo: unemincili, udanile njalo njalo)
Anxiety	Ixhala/ukuxhalaba/inkxalabo	Yimizwa yenkxalabo

		malunga nento ekungekho kuqiniseka ngeziphumo zayo.
Mediate	Ukulawula	Ukungenelelakwingxabano ngenjongo yobuyisa imvisiswano
Conflict	Ingxabano	
To restore balance	Ukubuyisa ulingano	
Defense mechanisms	Iindlela zokuzikhusela/ Iinkqubo zoKhuselo	Zindlela (engacingwanga) umntu azikhusela ngazo kwimizwa neengcinga ezinganqwenelekiyo.
Certain events	Iziganeko ezithile	
Yearnings	Ulangazelelo	Imizwa yokurhalela into ngamandla
Ego		Yinxalenye yengqondo kabani elawula iingcinga nezenzo eziqatshelweyo nezingaqatshelwanga.
Id		Yinxalenye yengqondo kabani apho kuvela iingcinga nezenzo zakhe ezingalawulekiyo.
Superego		Yinxalenye yengqondo kabani esisazela esizigxekayo; ebonisa imigangatho efundwe kuluntu.
Pattern of enduring	Indlela eqhelekileyo yokunyamezela	Indlela eqhelekileyo yokunyamezela
Theatrical	Enxitywa eqongeni/eyaseqongeni	
Through various protective	Ngamanyathelo amaninzi	

measures	okuzikhusela	
Distort reality	Ukuphazamisa inyaniso	Ukunika ingxelo engeyonyani/ebubuxoki ngento.

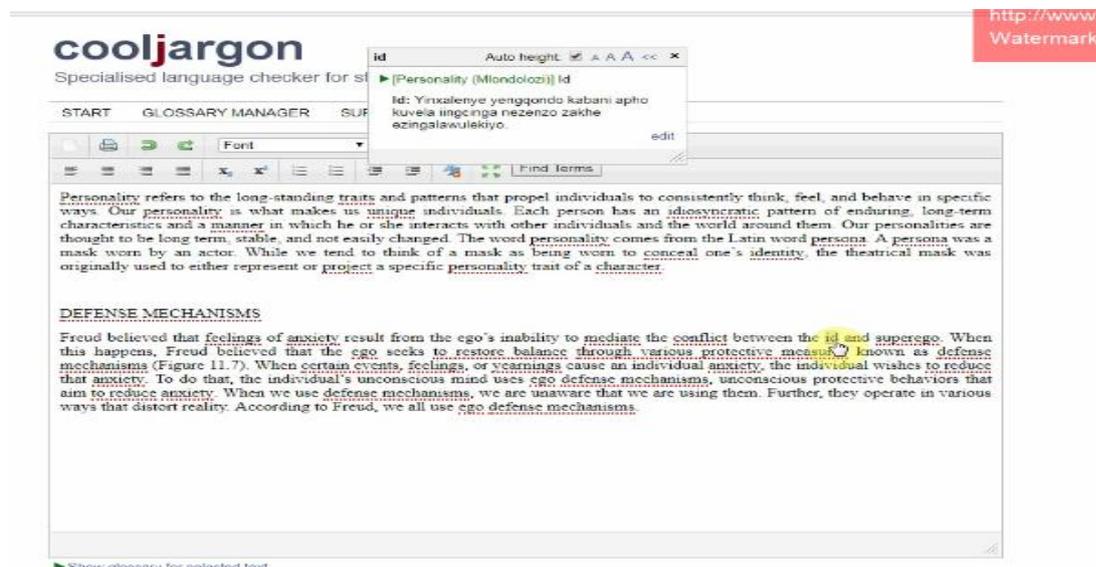
Table 6.1 presents Xhosa equivalents and definitions to the English terms and phrases identified in the psychology text. Xhosa equivalents could not be found for some terms; only definitions in isiXhosa are provided.

Given the work illustrated in table 6.1, the researcher and colleague have made contributions to the use of isiXhosa in mediating knowledge in isiXhosa.

6.3 Creating a database with the bilingual material

The database was created within a software called Cooljargon. For the current study, the researcher used his supervisor's Cooljargon account. Cooljargon is a software that makes it possible to gloss electronic texts. After the researcher had uploaded the English texts on Cooljargon and activated the application, glossed items were underlined. This software allows readers, by simply clicking on a glossed (underlined) term or putting the cursor over it, to access terms, phrases, definitions and even signs and pictures that are embedded in the text. It is important to note that embedded items remain hidden when readers do not click or put a cursor on them. In this way readers who do not wish to access the annotations can continue reading without any disturbances.

Figure 2: a text written in English in the Cooljargon software



In the above figure, figure 2, the reader of the Psychology text that is uploaded in the Cooljargon software has clicked on one of the glossed items (the underlined terms and phrases) in that text and is able to view a Xhosa definition of the term “Id”.

With the database ready, the researcher was prepared to move onto the experiment.

6.4 The experiment: testing research respondents’ comprehension of academic texts when reading monolingually versus when reading bilingually.

The data in this part of the study will be presented according to the participants’ performances in both tests; the time they spent on each test and their movements (back and forth) as seen in the screen recording. Also, information that point to participants reading without understanding will be presented. The researcher strongly believes that misreading (not to be confused with the incorrect pronunciation of) words and phrases, for example misreading the word “constitute” as “contribute”, is a sign that participants do not fully understand what they are reading. The researcher believes that misreading words and phrases affect the participants’ understanding of sentences. Which shows that she did not reach full comprehension of the text the first time The researcher also thinks that when participants have to go back and read text, they did not reach full comprehension of it the first time which means there was a need for a convenient and appropriate reading aid.

The tables 6.2 to 6.9 provide expected answers and answers given by participants to text A and text B’s questions presented in chapter four. Data collected from research participants who accessed the electronic glosses is presented before that of those that did not.

Table 6.2: First research participant’s performance.

The table below presents expected answers to text A and text B’s questions and answers that the first research participant (Male student; majors in Psychology, isiXhosa and Language and Communication Science) gave to text A and text B’s questions. The statuses of the given answers are indicated, in brackets, by a “√” (when correct) and an “X” (when incorrect):

Text A expected Answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. False (X)	1. True	1. True (√)
2. Cultural comparative approach, indigenous	2. The indigenous approach, the cross	2. Ego, and the Id / Superego	2. Ego, and the Id / Superego (√)

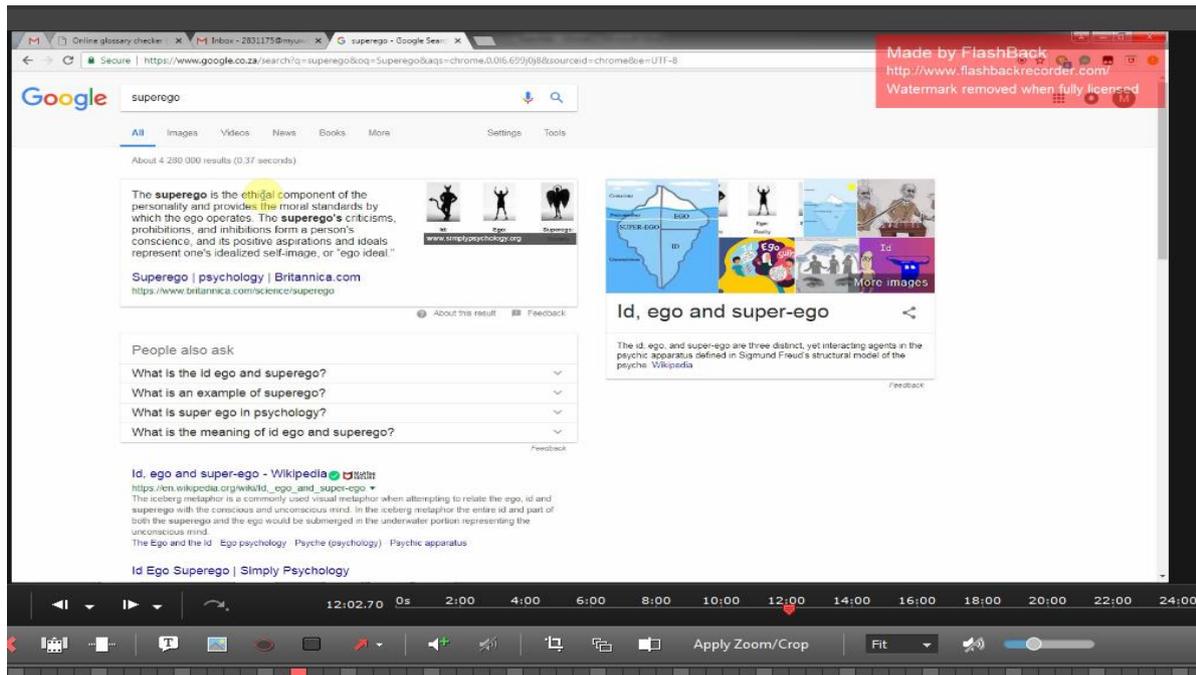
approach and the combined approach	cultural approach, the comparative approach (X)		
3. Cultural comparative approach	3. Cultural comparative approach (√)	3. False	3. False (√)
4. Language, modelling, rewarded and punished.	4. Language, conversations, punished, rewarded (X)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors. Defence mechanisms aim to serve as protective factors that allows the individual to restore balance during times of stress or anxiety.	4. When ego seeks to restore balance through protective measure after its inability to meditate the conflict between the id and super ego. (√)
5. False	5. No, because in Africa we have diverse cultures which	5. False	5. False (√)

	mean that they differ in terms of geographical setting. (√)		
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Table 6.2 shows that the first participant understood text B (glossed text), better than text A (non-glossed text). In text A, this research participant got two out of five questions correct and he got all five questions correct in text B. It took the research participant eight minutes and twenty-eight seconds to finish reading text A and answering its questions. It took him more time to read text B and answer its questions – he finished in nine minutes and nineteen seconds.

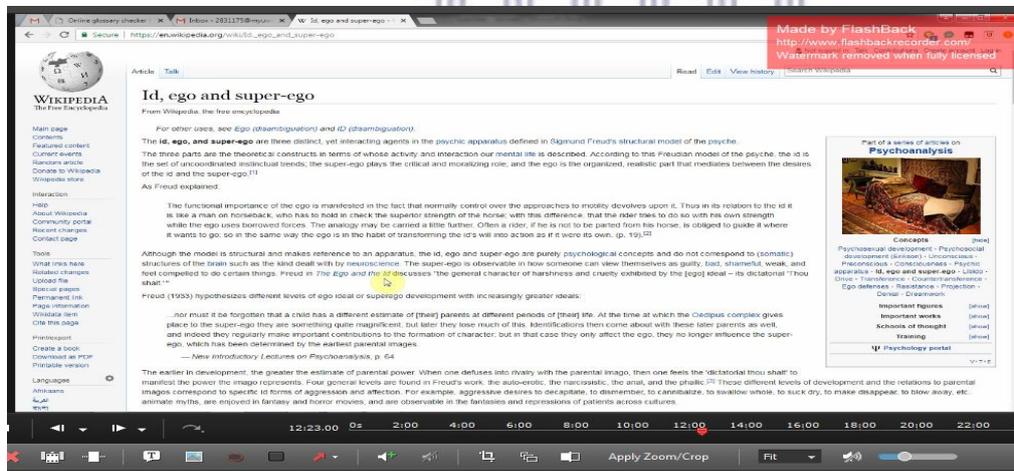
When reading text A (the non-glossed text), the first participant did not look-up any word. The researcher noticed that the research participant misread the word “construct”, the research participant said “contracts”. The research participant went back to the text to look for question 2c’s answer, and then changed question 1’s answer from “true” to “false”. The research participant also appeared to misunderstand what question 5 required (i.e. indicating whether the statement in text A was true or false), his/her response was “no” and then motivated his/her answer. He also did not look-up any term when reading text B (the glossed text) but misread the word “reduce” as “produce”. It was when he was answering question 2 that he/she looked up the terms “Superego” and “Id” on Google.

Figure 3: the research participant's Google search



As shown in figure 3, instead of clicking on the glossed items in text B, the participant chose to look up the term “Superego” on Google when answering one of the glossed text’s questions.

Figure 4 shows Google search of the terms “Id”, “Ego” and “Superego”:



As can be seen in figure 4, the participant searched the meaning of the terms “Id”, “Ego” and “Superego” in Wikipedia, a site that lecturers often advise students not to use because it is not reliable.

He changed the answer for question 2.i) from ‘Ego’ to ‘Id’. When answering question 4 the research participant went back to the text five times but still did not look-up or click on any of the underlined (glossed) terms. This researcher did not use any reading aid while reading text A (non-glossed), as a result his performance was very poor. Although he did not view

any of the glossed items while reading text B, using the internet helped his understanding of the text.

Table 6.3: The seventh research participant's performance.

This table presents expected answers to text A (non-glossed text) and text B's (glossed text) questions and answers that the seventh research participant (female student; Psychology is a minor subject, majors in isiXhosa and English) gave to text A and text B's questions:

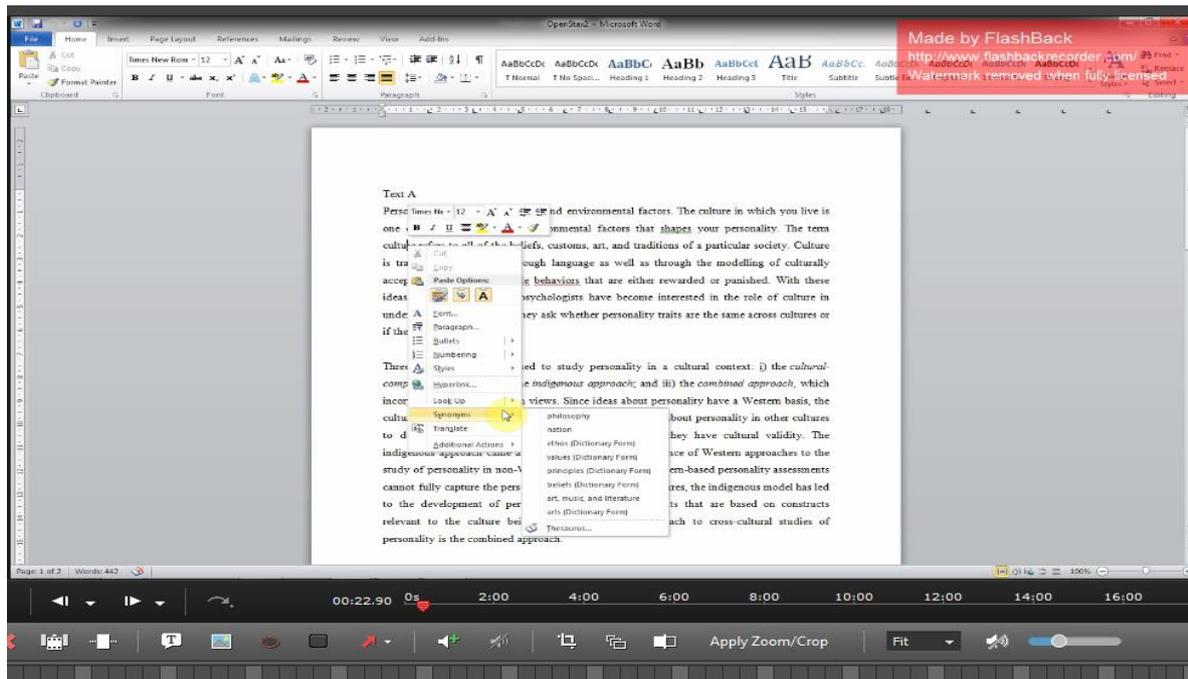
Text A expected answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. True (✓)	1. True	1. True (✓)
2. Cultural comparative approach, indigenous approach and the combined approach	2. Cultural Comparative, Indigenous Approach, Combined approach (✓)	2. Ego, and the Id / Superego	2. Ego, Id, Superego (✓)
3. Cultural comparative approach	3. A varied approach (X)	3. False	3. False (✓)
4. Language, modelling, rewarded and punished.	4. Conversations, modelling, observations, language (X)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors. Defence mechanisms aim to serve as protective factors that allows the individual to restore balance	4. Defense mechanisms can be defined as our unconscious cognitive processes that we use to deal with anxiety (✓)

		during times of stress or anxiety.	
5. False	5. True (X)	5. False	5. False (√)

As can be seen in table 6.3, the seventh participant’s performance shows that she had a better understanding of text B. She answered all five questions in text B (glossed text) correctly. Judging by her poor performance, the research participant did not understand text A (non-glossed text) very well. Only two of text A’s five questions were answered correctly. the participant completed text A’s test in seven minutes and twenty seconds, and text B’s in nine minutes and forty-one seconds.

When reading the non-glossed text (text A), she used the Microsoft tool to look-up the synonym of the term “culture”, said “I still don’t understand...” and then searched its meaning on Google. She also used the Microsoft tool to look-up the synonyms of these three terms: “variations”, “validity”, and “relevant”. The researcher also noticed that the participant went back to reread text A (non-glossed text) two times in order to answer question 2, and once to answer question 5. In text B (glossed text), the participant clicked on the following terms and phrases: “traits”, “personality”, “idiosyncratic”, “persona”, “conceal”, “character”, “anxiety”, “Id”, “superego”, “defense mechanisms”, and “through various protective measures”. To answer question 4 in text B, the participant went back to the text two times and clicked on the phrase “defense mechanism”.

Figure 5: A screenshot of the participant using the Microsoft tool in the non-glossed text.



The participant can be seen in the above figure using the Microsoft tool to look-up the synonym of the term “culture” in text A (non-glossed text).

Figure 6: A screenshot of the participant’s Google search of the word “culture”.

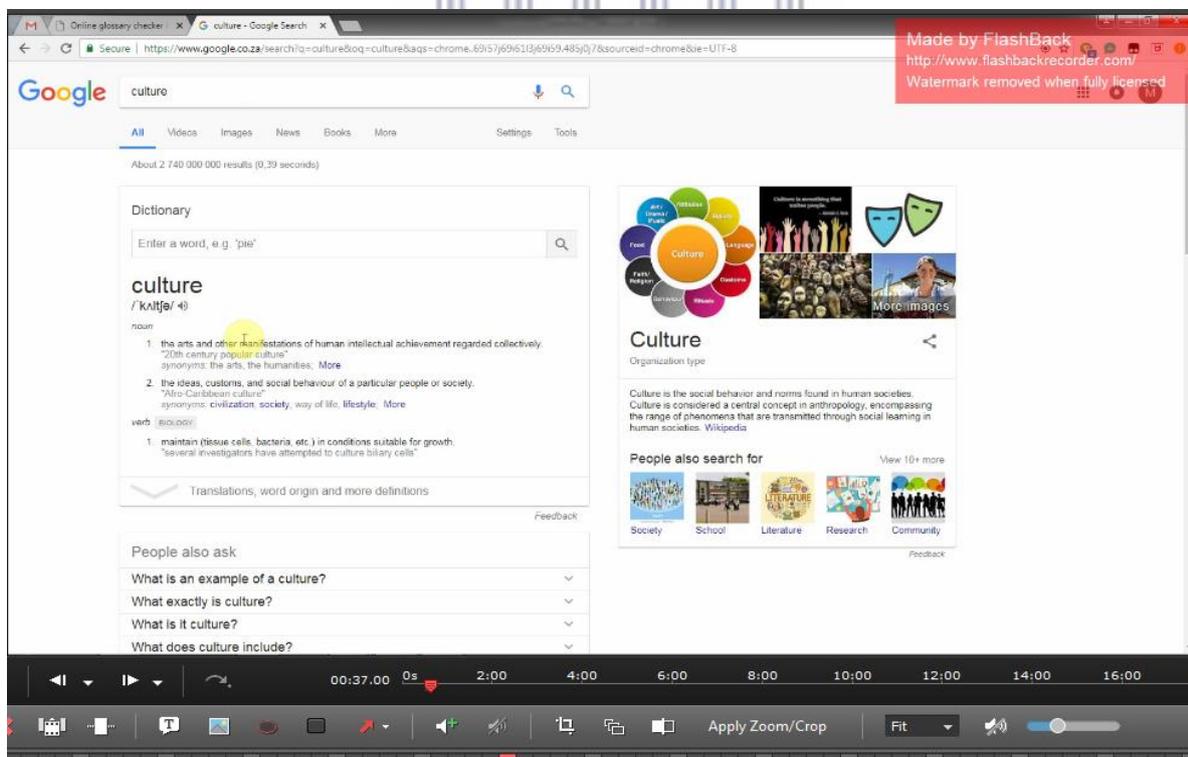
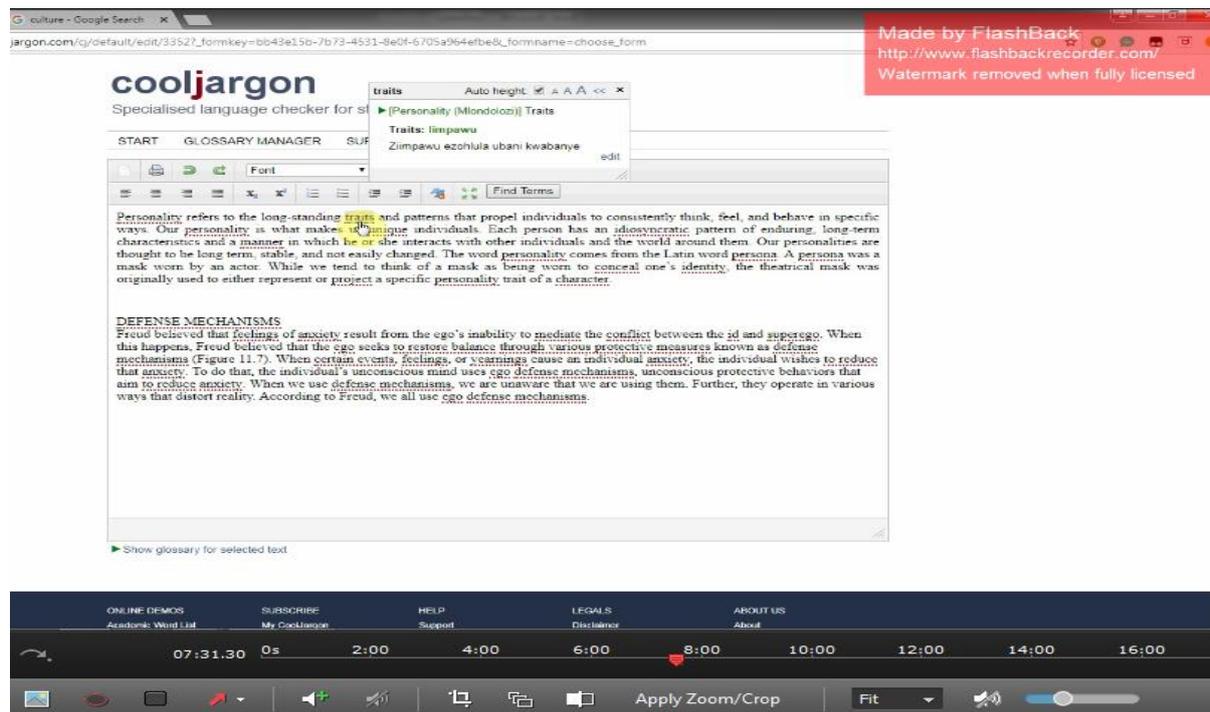


Figure 6 shows that the participant also searched the meaning of the term “culture” on Google after looking-up its synonym using the Microsoft tool as shown in figure 10.

Figure 7: A screenshot of the participant clicking on a glossed term in Cooljargon.



As can be seen in figure 7, clicked on the word “traits” to view its Xhosa equivalent and context-appropriate definition in isiXhosa.

The use of the Microsoft tool clearly did not enhance the participant’s understanding of text A (non-glossed text). She viewed the Xhosa equivalents and definitions provided in isiXhosa when reading text B (glossed text) and her excellent performance proves that this helped her understanding of text B.

Table 6.4: The eighth participant’s performance.

The table below presents expected answers to text A and text B’s questions and answers that the eighth participant (female student; Psychology is a minor subject, majors in isiXhosa and Language and Communication Science) gave to text A and text B’s questions:

Text A expected answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. True (✓)	1. True	1. True (✓)
2. Cultural comparative approach, indigenous approach and the	2. Cultural-comparative approach, indigenous	2. Ego, and the Id / Superego	2. Ego, Id, Superego (✓)

combined approach	approach, combined approach (√)		
3. Cultural comparative approach	3. Cultural-comparative (√)	3. False	3. False (√)
4. Language, modelling, rewarded and punished.	4. Conversations, language, observations, conversations (X)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors. Defence mechanisms aim to serve as protective factors that allows the individual to restore balance during times of stress or anxiety.	4. Are ways that are used unconsciously by the ego to reduce anxiety. (√)
5. False	5. True (X)	5. False	5. False (√)

As seen in table 6.4, the eighth participant performed better in text B's (glossed text) test than in text A's (non-glossed text). In ten minutes and three seconds, she answered all of text B's five questions correctly. In twelve minutes and thirty-four seconds, she answered only three of text A's five questions correctly.

In text A (non-glossed text), the participant used the Microsoft tool to look-up the synonyms of these terms: genetic, modelling, variations, and incorporates. She also used the Microsoft tool to look-up the synonyms of "personality" and "traits" and then Google-searched the meanings of both terms. Other terms and phrases searched on Google by the participant are: "cultural context", "western basis", and "personality constructs". She returned to the text three times in order to answer question 2. When reading text B (glossed text), the participant

clicked on the following terms and phrases: “personality”, “traits”, “idiosyncratic”, “persona”, “project”, “defense mechanism”, “anxiety”, and “mediate”. She went back two times to reread text B (glossed text) and clicked on “defense mechanisms” in order to answer question 4.

Figure 8: A screenshot of two definitions of the word “personality” on Google.

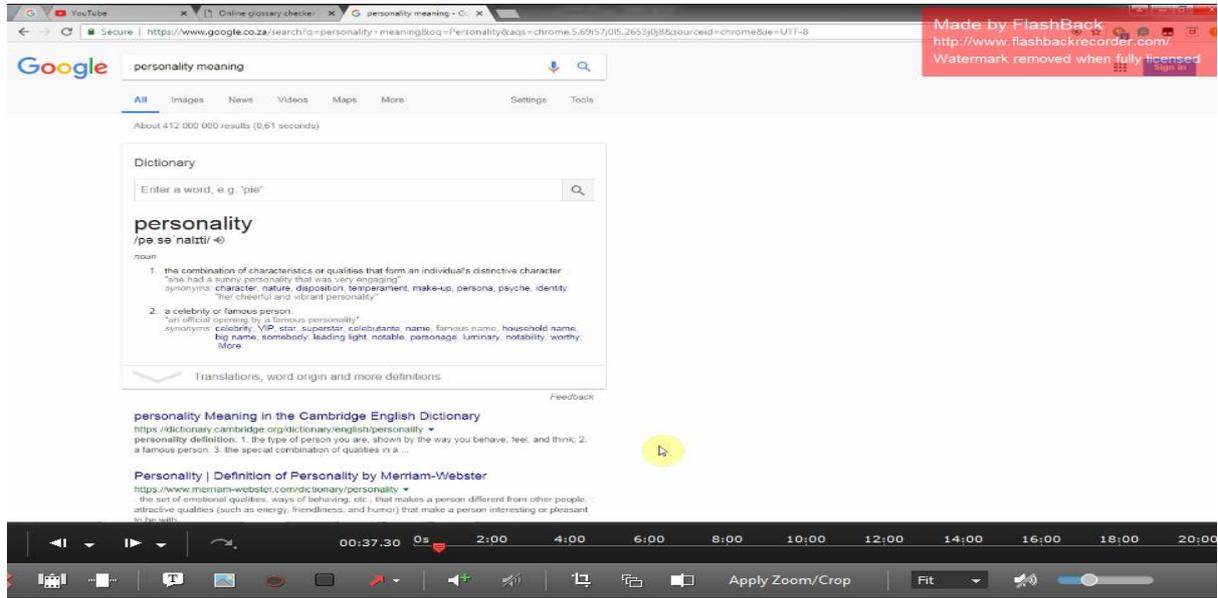
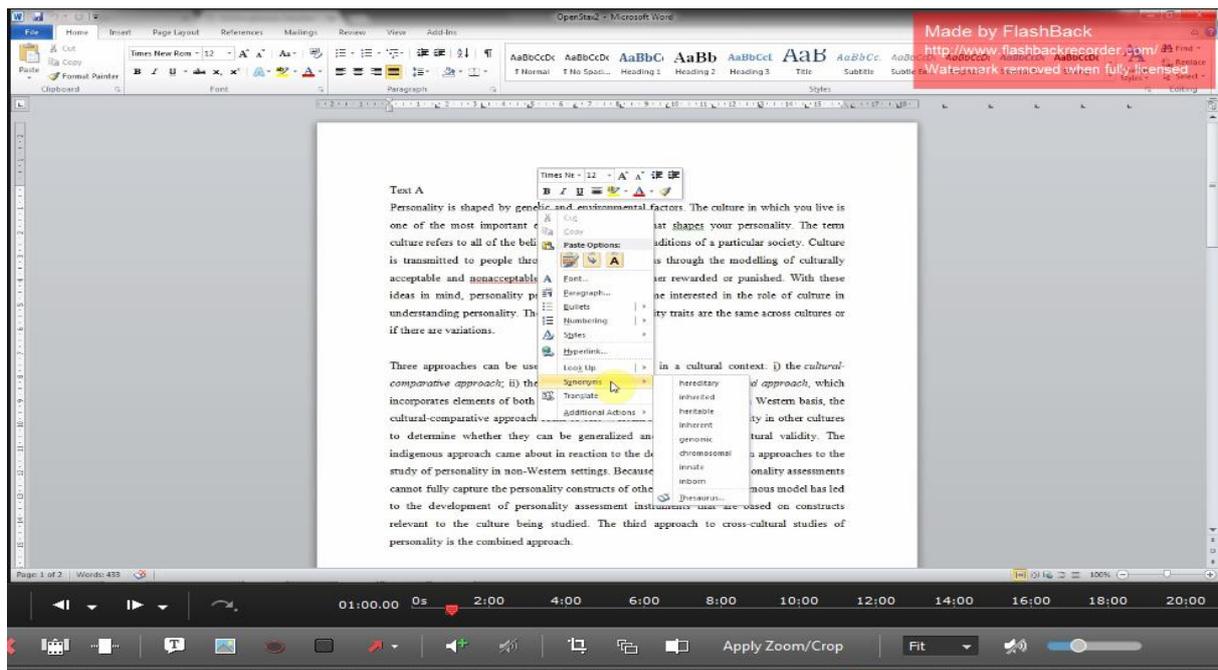


Figure 8 shows that the participant searched for the meaning of “personality” using the search term “personality meaning” on Google where she was exposed to two different definitions of the term.

Figure 9: A screenshot of the participant using the Microsoft tool in the text A (non-glossed text)



As shown in figure 9, the research participant used the Microsoft tool to look-up the synonym of the word “genetic” used in the first sentence in text A (non-glossed text).

This participant used two reading resources when reading text A, (i.e. Google and the Microsoft tool). When she used Google to look-up phrases she was not satisfied with the results. Viewing the embedded Xhosa items in text B (glossed text) resulted in the participants answering all text B’s questions correctly.

Table 6.5: The sixth research participant’s performance.

This table presents expected answers to text A and text B’s questions and answers that the sixth research participant (female student; Psychology is a minor subject, majors in History and Political Science) gave to text A and text B’s questions:

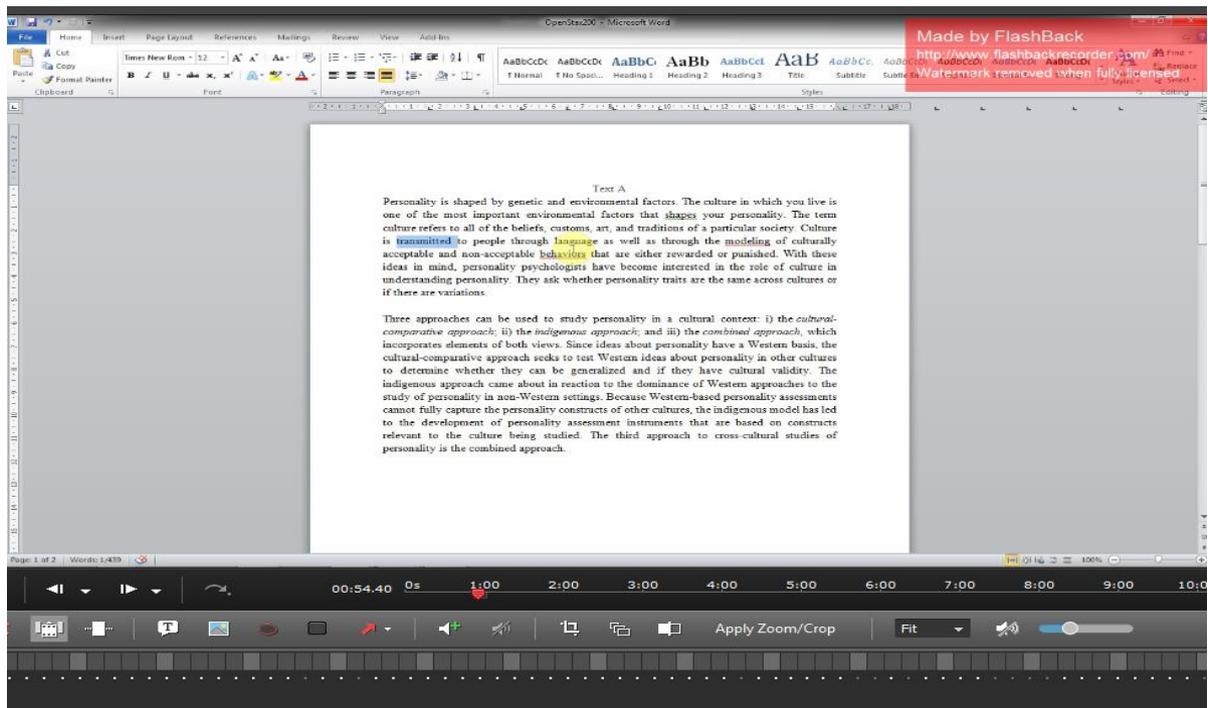
Text A expected answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. True (√)	1. True	1. True (√)
2. Cultural comparative approach, indigenous approach and the combined approach	2. combined, western, non-western (X)	2. Ego, and the Id / Superego	2. Ego, Id, Superego (√)
3. Cultural comparative approach	3. Personality testing approach (X)	3. False	3. True (X)
4. Language, modelling, rewarded and punished.	4. Language, modelling, punished, rewards (X)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors. Defence mechanisms aim to serve as	4. refers to the unconscious mechanism that help people to reduce anxiety. (√)

		protective factors that allows the individual to restore balance during times of stress or anxiety.	
5. False	5. True (X)	5. False	5. False (✓)

As can be seen in table 6.5, the sixth participant performed better in text B (glossed text) than in text A. She was able to answer four of five questions correctly in text B and only one of five questions correctly in text A (non-glossed text). The research participant finished text A's test in six minutes and thirty-nine seconds and text B's in nine minutes and fifty-nine seconds.

All participants were asked to indicate that they find a term, phrase or sentence difficult by circling it with a cursor. In text A (non-glossed text), this participant identified several terms and phrases that she found difficult but did not look any of them up. She identified: "transmitted", "variations", "cultural context", "indigenous approach", "incorporates", "cultural-comparative approach", "generalized", "validity", and "capture". She read "since ideas about personality..." in text A (non-glossed text) as "Since ideas of personality". She also misread the word "constructs" as "constraints". The participant went back to reread text A in order to answer question 2. In text B (glossed text), the participant clicked on the following (glossed and not glossed) terms and phrases: "personality", "individuals" (not glossed), "idiosyncratic", "interacts" (not glossed), "persona", "conceal", "theatrical" (not glossed), "conflict", "protective measures", "defense mechanisms", "unconscious", and "anxiety". The participant went back to reread the glossed text (text B) in order to answer question 4.

Figure 10: A screenshot of the participant identifying difficult terms, phrases and sentences in the non-glossed text.



The participants were asked by the researcher to highlight terms, phrases and sentences that they found difficult to understanding. Figure 10 shows the participant identifying the term “transmitted”.

This participant identified several difficult items in text A (non-glossed text) and even misread some words but still did not use any reading resource. Her poor performance shows she did not understand text A. She took advantage of the Xhosa equivalents and definitions provided in text B (glossed) and correctly answered four out of five of text B’s questions as a result.

Table 6.6: The fifth research participant’s performance.

This table presents expected answers to text A and text B’s questions and answers that the fifth research participant (Male student; majors in Psychology and isiXhosa) gave to text A and text B’s questions:

Text A expected answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. True (✓)	1. True	1. True (✓)
2. Cultural comparative	2. The cultural-	2. Ego, and the Id /	2. Ego, Id,

approach, indigenous approach and the combined approach	comparative approach, the indigenous approach, the combined approach (✓)	Superego	Superego (✓)
3. Cultural comparative approach	3. Cultural comparative approach (✓)	3. False	3. False (✓)
4. Language, modelling, rewarded and punished.	4. Language, modelling, rewarded, punished (✓)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors. Defence mechanisms aim to serve as protective factors that allows the individual to restore balance during times of stress or anxiety.	4. Is the process by which ego is trying to resolve a tension/conflict between Id and superego. Due to anxiety cause by this conflict, ego uses strategies called defence mechanism to reduce anxiety (✓)
5. False	5. True (X)	5. False	5. True (X)

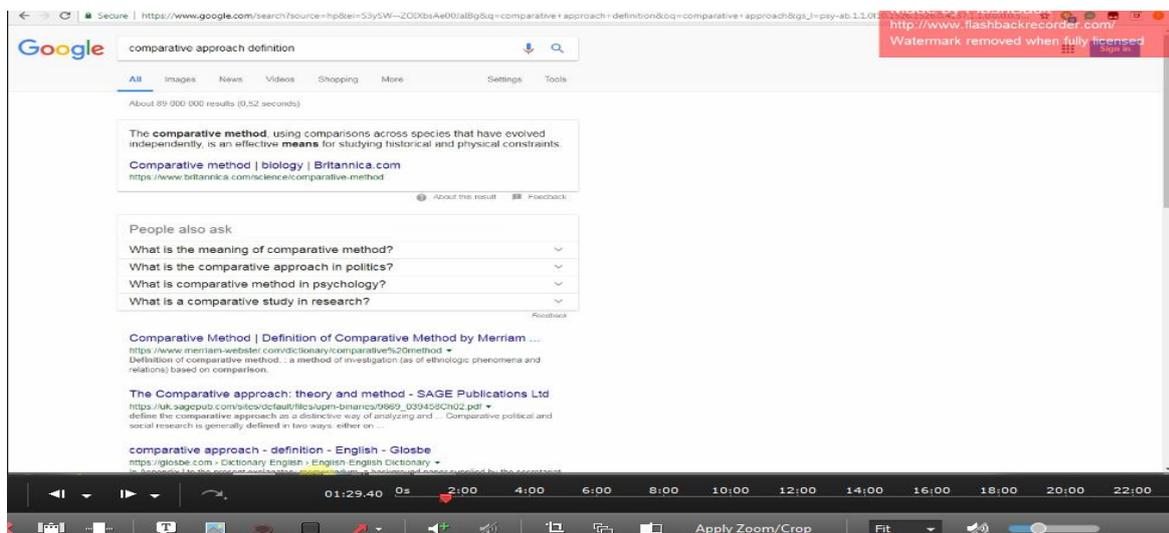
As shown in table 6.6, the fifth research participant got four out of five questions correct in both Text A's (non-glossed text) and text B's (glossed text) tests. He finished text A in ten minutes and fifty-four seconds and text B in ten minutes and twenty-five seconds.

In text A (non-glossed text), the participant looked-up "cultural-comparative approach" on Google. He also looked-up "the combined approach" using the search terms "combined approach in psychology", clicked on two links and then said "sobuya siyijonge" which mean

he will come back to look it up again when he has finished reading the text. He went back to reread text A to answer question 2. He misread a piece of the second sentence (i.e. “generalized and if they have cultural validity”) in the second paragraph in text A, he read “generalized or to have cultural validity”. The participant changed the answer for question 4.i) from “conversations” to “language”. He went to reread the text to answer question 4 – he remembered where he saw the answer for that question.

When reading text B (glossed text), the participant looked-up the term “propel” on Google when he saw it was not glossed. He also clicked on the terms “idiosyncratic”, “conceal” and “yearnings”. The participant went back to reread text B in order to answer question 2. He changed the answer for question 2.iii) from “ego” to “superego”, and the answer for question 5 from “false” to “true”.

Figure 11: A screenshot of the participant’s Google search.



The above figure shows the participant’s search of the comparative approach on Google using the search terms “comparative approach definition”.

Figure 12: a screenshot of the participant using Google

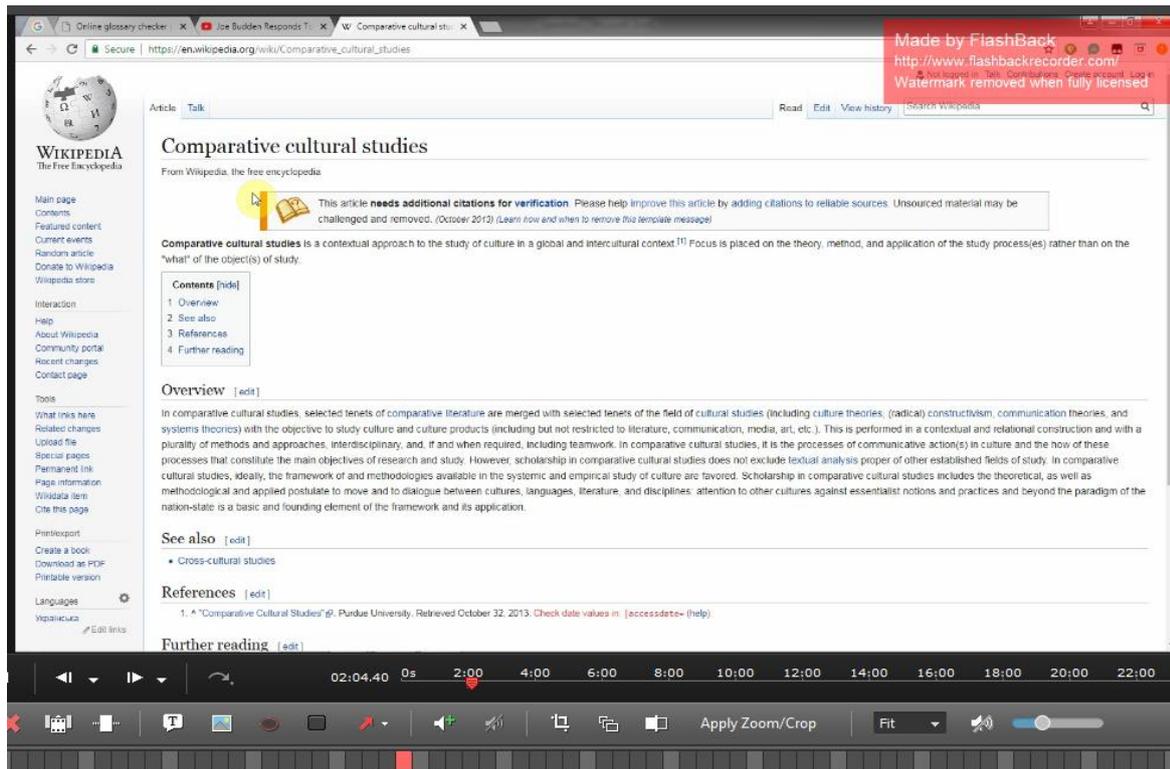
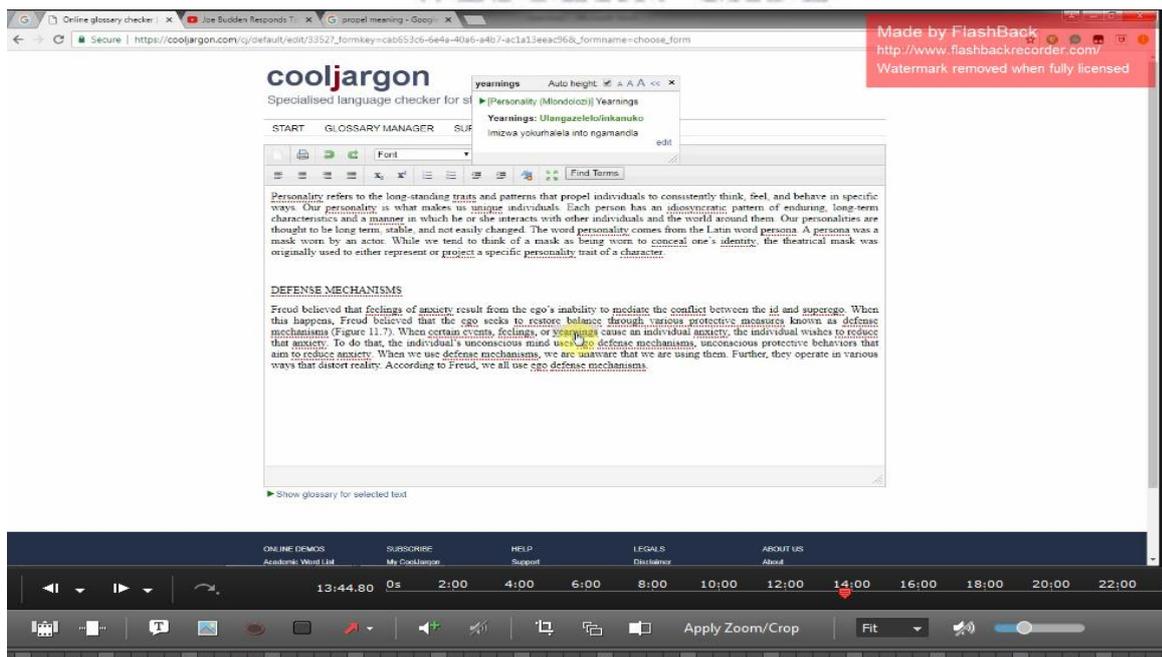


Figure 12 show that the participant viewed “comparative cultural studies” in Wikipedia in an attempt to get a better understanding.

Figure 13: A screenshot of the participant viewing a Xhosa equivalent and definition in the widget.



As can be seen in figure 13, the participant clicked on the term “yearnings” to view its Xhosa equivalent and a definition of the term provide in isiXhosa.

The research participant could have performed even better in text A (non-glossed text) but the internet was not very helpful. Although the participant accessed some terms and definitions in isiXhosa in text B, viewing more Xhosa equivalents and definitions that are important such as “defense mechanism” could have improved the participant’s performance.

Table 6.7: The third research participant’s performance.

The table below presents expected answers to text A and text B’s questions and answers that the third research participant (female student; Psychology is a minor subject, majors in Anthropology and Sociology) gave to text A and text B’s questions:

Text A expected answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. True (√)	1. True	1. True (√)
2. Cultural comparative approach, indigenous approach and the combined approach	2. Cross-cultural approach, Cultural Comparative, Combine Approach (X)	2. Ego, and the Id / Superego	2. Ego, Id, Superego (√)
3. Cultural comparative approach	3. Cultural comparative approach (√)	3. False	3. False (√)
4. Language, modelling, rewarded and punished.	4. Conversation, language, reward, modelling (X)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors.	4. When certain events or feelings contributes in making a person being under the state of feeling overwhelmed and anxiety (X)

		Defence mechanisms aim to serve as protective factors that allows the individual to restore balance during times of stress or anxiety.	
5. False	5. False (✓)	5. False	5. True (X)

As shown in table 6.7, the third participant got three out five questions in both text A (non-glossed text) and text B's (glossed text) tests. It took her longer to complete text B's test. The research participant completed text A's test in nine minutes and forty seconds and text B's test in eleven minutes and nineteen seconds.

When reading the glossed text's (text A) last sentence (i.e. the third approach to cross-cultural studies of personality is the combined approach), the participant placed 'is' in the place of 'of'. The participant skipped question 2c unanswered and went back to answer it after having answered all the other questions. She had to reread text A in order to answer question 2c. She also changed the answer for question 5 from "true" to "false". In text B, the participant misread the term "theatrical", said "theatric" instead. The participant did not click on any of the glossed terms while reading text B. He/she went back to reread text B two times to answer question 4, once to answer question 3 and once to answer question 5.

There are signs (misreading words and rereading) that the participant had a problem understanding text A (non-glossed text); a reading resource could have helped but she did not use any, as a result, she performed poorly in the test. When reading text B (glossed text), she misread a term and went back to reread text B. Again, the researcher believes that these are signs that the participant did not fully understand text B. Viewing items provided in isiXhosa could have enhanced her understanding of text B but she did not click on any of the glossed terms, phrases and sentences.

Table 6.8: The second research participants' performance.

The table below presents expected answers to text A and text B's questions and answers that the second research participants (two female students; one major in Psychology and English, another majors in Psychology and Geography) gave to text A and text B's questions:

Text A expected answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. True (✓)	1. True	1. True (✓)
2. Cultural comparative approach, indigenous approach and the combined approach	2. The cultural comparative approach, The indigenous approach, The combined approach (✓)	2. Ego, and the Id / Superego	2. ego's, id, superego (✓)
3. Cultural comparative approach	3. Cultural comparative approach (✓)	3. False	3. False (✓)
4. Language, modelling, rewarded and punished.	4. Language, modelling, punished, rewarded (✓)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors. Defence mechanisms aim to serve as protective factors that allows the individual to restore balance during times of stress	4. According to Freud defence mechanism is when the ego seeks to restore balance through various protective measures (X)

		or anxiety.	
5. False	5. True (X)	5. False	5. True (X)

As can be seen in table 6.8, a pair of research participants performed better in Text A (non-glossed text) than they did in Text B (glossed text). In eight minutes and forty six seconds, the pair read text A and answered four of five questions correctly. In Text B, the pair got three out of five questions correct in thirteen minutes and twenty seconds.

No words were looked-up when the two participants read in both text A (non-glossed text) and text B (glossed text). Even though they did not look-up any items in text A, there were items that they did not fully understand, items they only had a “clue” of. The participant who read the first paragraph in text A said ‘of’ in the place of ‘about’ in the line “since ideas about personality”. The research participants went back to reread text A three times when answering question 2, once when answering question 3, once when answering question 4, and two times when answering the fifth question. The research participants discussed in isiXhosa when answering questions in text A as well as questions in text B. The researcher noticed that the participants emphasized the pronunciation of some terms in text B as if they were unfamiliar with the terms. When answering the questions in text B the participant went back to the text several times: once to answer question 2, 6 times to answer question 4, and 4 times to answer question 5. When participants were discussing question 4 in text B, the researcher heard one participant say “ndizoyibhala njan xa ndiyibhala” which translates to “how will I put it in writing” in English.

Although this pair of research participants performed good in text A’s (non-glossed text) test, it can be said that they did not fully understand the text. They had to reread the text again and again to answer questions based on it. They also struggled understanding text B, the glossed text (and expressing themselves in English) but did not take advantage of the items made available in their home language. The two participants discussed in isiXhosa, isiXhosa played an important role in their attempt to better understand the meaning of text B. Accessing xhosa equivalentents and definitions, which the two participants did not, could have helped them understand text B more.

Table 6.9: The fourth research participant's performance.

This table presents expected answers to text A and text B's questions and answers that the fourth research participant (female student; majors in Psychology and Geography) gave to text A and text B's questions:

Text A expected answer	Text A Answer given	Text B expected answer	Text B Answer given
1.True	1. True (✓)	1. True	1. True (✓)
2. Cultural comparative approach, indigenous approach and the combined approach	2. cultural-comparative approach, indigenous approach, combined approach (✓)	2. Ego, and the Id / Superego	2. Id, Superego, ego (X)
3. Cultural comparative approach	3. Cultural comparative approach (✓)	3. False	3. False (✓)
4. Language, modelling, rewarded and punished.	4. Conversations, observations, rewarded, punished (X)	4. A defence mechanism as indicated by Freud refers to unconscious mechanisms that we rely on in order to reduce anxiety and assists our intrinsic ability to cope with various stressors. Defence mechanisms aim to serve as protective factors that allows the individual to restore balance during times of stress or anxiety.	4. It is when a certain part of your brain reduces a certain feeling in one's body for example anxiety without the person being aware of it. (X)

5. False	5. False (✓)	5. False	5. False (✓)
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As can be seen in table 6.9, the fourth participant had better results in text A’s (non-glossed text) test than in text B’s (glossed text). She completed text A’s test in five minutes and forty-four seconds and answered four of the five questions correctly. In text B’s (glossed text) test, the participant answered three of the 5 questions correctly. The participant did not look-up any word while reading text A. She went back to look for the answer in the text (A) three times when answering question 2. In text B, he clicked on the terms: idiosyncratic, Id and Superego.

Figure 14: a screenshot of the participant clicking on a glossed term

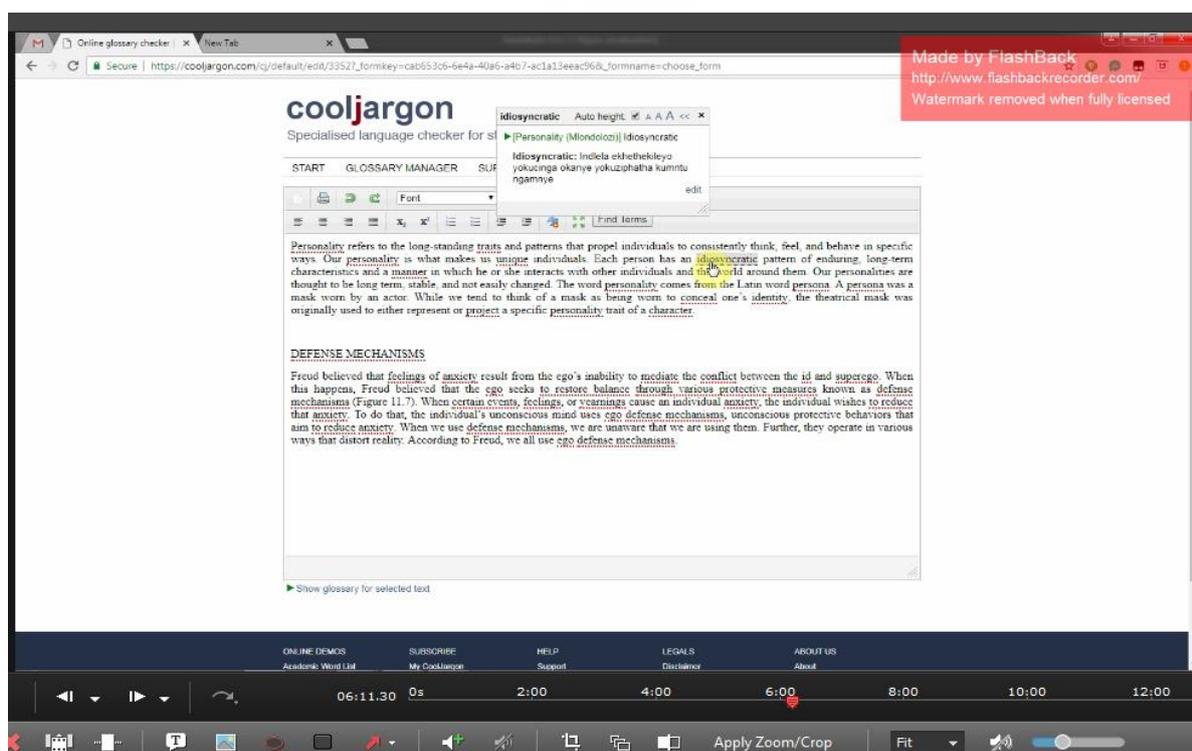


Figure 14 shows the participant viewing the provided Xhosa definition of the term “idiosyncratic” in the widget.

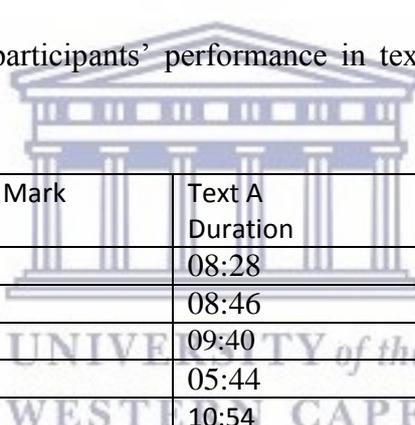
The participant did not understand either one of the two texts that well. Going back to read text A (non-glossed text) at least three times to answer a question based on it is proof of this. Her poor performance in text B’s (glossed text) test shows that she needed to click on several other glossed items to understand the meaning of the text.

In summary, the data presented in the previous chapter proved that students often and sometimes struggle with understanding different parts of academic texts. In this chapter, the researcher addressed the 2nd, 3rd, 4th and 5th study objectives as mentioned in the introduction of this chapter above. The processes through which these objectives are addressed are discussed in chapter four.

Overall, the data presented in this chapter confirms the findings in chapter five that students do (often and sometimes) come across terms, phrases and sentences that are difficult to comprehend in academic texts. Several research participants went back to read the short texts again and again to answer the questions they were asked to answer immediately after reading the texts. A few participants misread some terms. Misreading a word or phrase is believed by the researcher to be a sign that the participant does not understand what he/she is reading.

Table 6.10: All research participants' performances.

This table presents research participants' performance in text A (non-glossed) and text B (glossed):



	Text A Mark	Text B Mark	Text A Duration	Text B Duration
RP1	2/5	5/5	08:28	9:19
RP2	4/5	3/5	08:46	13:20
RP3	3/5	3/5	09:40	11:19
RP4	4/5	3/5	05:44	07:26
RP5	4/5	4/5	10:54	10:25
RP6	1/5	4/5	06:39	09:59
RP7	2/5	5/5	07:20	09:41
RP8	3/5	5/5	12:34	10:03

As can be seen in table 6.10, four out of eight research participants performed better in the glossed text (text B) than in the non-glossed text (A). Of these four participants, only one did not view Xhosa equivalents and definitions, the other three viewed several embedded items in text B. It is also worthy of mentioning that these research respondents who performed really well in text B's test had very poor results in text A's test.

Two out eight participants had the same results in both tests. One of the two participants did use make use of any reading aids in both text and the other clicked on only three glossed items in text B.

There are only two participants who performed better in text A's (non-glossed text) test than in text B's (glossed text). The scores of both participants in both tests are almost the same.

One of these participants did not use any reading resource in both tests and one only clicked three items in text B (glossed text).

A few students used the Microsoft tool and the internet and not all of them found the two resources helpful.

6.5. Interviews

Here, the researcher presents the data obtained from the interviews. All research participants were briefly interviewed immediately after completing the two texts by the researcher to elicit their views on their experiences of using both the alternative mode proposed and the range or other resources and strategies.

Although not all participants viewed Xhosa equivalents and definitions when they were reading the glossed text, most said they would love to have access to their academic reading materials in their home language when asked by the researcher. Many who clicked on the glossed items in text B found the embedded Xhosa equivalents and definitions helpful. One participant said, “indincedile le definition ye-defense mechanisms yesiXhosa ngoba bendizolahleka kule paragraph yokugqibela ngaphandle kwayo” which translates to “the Xhosa definition of defense mechanisms helped, I would not have understood the last paragraph without it”.

Most participants said that they prefer reading with Xhosa annotations because of the immediate access to these items. The participant revealed that even after looking-up a term/phrase on the dictionary or on the internet, he/she still has to translate into isiXhosa. Another participant said that reading with Xhosa annotations is better than reading in English only. The participant explained “akho point uba ungali-understandi igama ngeEnglish uphinde unikwe i-definition ngeEnglish okunzima uba uyi-understande. So xa uyinikwa ithuba ngolwimi lakho yenza izinto way easier ‘cause kulapho uyifumana khona nyani i-understanding”, which translates to “When you do not understand a word, there is no point in having access to a reading resource that offers its definition in English if it is going to be hard to understand. It becomes easier to really understand a word when its definition is offered in your home language”.

Some participants did not use the widget. One participant gave this as the reason for not using the widget: “ingxaki andizithembi ezi translations kuba andiyazi ukuba zenziwe ngubani” which, in English, is translated to “the problem is that I do not trust these translations because

I do not know who made them”. The same participant said that using Google and the Microsoft tool to look-up definitions and synonyms of unfamiliar words in text A improved her understanding of the text.

6.7. Discussion of findings

Xhosa students’ insufficient knowledge of the medium of instruction (discussed in chapter two); their reported percentages of struggles with different aspects of the medium of instruction, their experiences with reading aids and strategies and their levels of satisfaction with the results when those reading aids (discussed in chapter five) all provide the backdrop to discussing the data presented in this chapter.

The study wanted to compare the proposed text-based and technology-supported alternative reading aid to traditional reading aids. Aware of the shortcomings associated with traditional reading aids, the researcher believe that the proposed reading aid can assist readers in ways traditional reading aids cannot and as improve their comprehension of academic texts. The data presented in this chapter has proved that the use of the alternative reading aid enhances readers’ text comprehension. The data shows that four out of eight research participants understood the text they read with glosses better than the text they read with access to traditional reading resources – both Psychology texts were on Personality. Three of these four research participants mentioned above accessed several Xhosa items embedded in text B. table 6.10 shows that the same research participants performed poorly in text A’s test. For this reason, it can be said that the viewing the glosses enhanced the participants’ understanding of the text B.

Two research participants got the same amount of questions correct in both the glossed and the non-glossed texts’ tests, and the other two performed better in the non-glossed text’s test. Two of these four research participants did not click on any of the glossed terms in text B and the other two clicked on three or less glossed terms and phrases. The researcher strongly believes that these research participants would have understood the glossed text better had they accessed the Xhosa items embedded in it.

Most research participants completed text A’s (non-glossed) test faster than text B’s (glossed). This is because most participants did not look-up any words/phrases when reading Text A.

The data presented in chapter five revealed that students sometimes and often encounter not only difficult terms but phrases and sentences as well in their academic reading materials. This data is confirmed by the struggles with terms and phrases that the research participants encountered in the experiment. Terms and phrases looked-up by research participants include: “cultural-comparative approach”, “the combined approach”, “idiosyncratic”, “genetic”, “modelling”, “incorporates”, “personality”, “traits”; “cultural context”, “western basis”, “personality constructs”, “superego”, “persona”, “anxiety”, “defense mechanisms” and “Id”. Some of the terms and phrases looked-up by participants during the experiment are unique to the field of psychology. As mentioned in the introduction section of this study, these academic and technical words and phrases are very important for understanding academic texts.

In text A (non-glossed text), the internet and the Microsoft were the only reading resources used by participants looked-up difficult terms and phrases. The data presented in chapter five revealed that most students use the two reading resources. Two participants even used the internet when reading text B (glossed text) while most accessed the Xhosa items embedded in the text. In chapter five, it was also revealed that many are not always satisfied with the results when they use the internet and the Microsoft tool. The researcher heard one participant searching the meaning of a phrase on Google say, “sobuya siyijonge” which translates to “we will search for it again later”. A participant looking-up a synonym of a word using the Microsoft tool was heard saying, “I still don’t understand”.

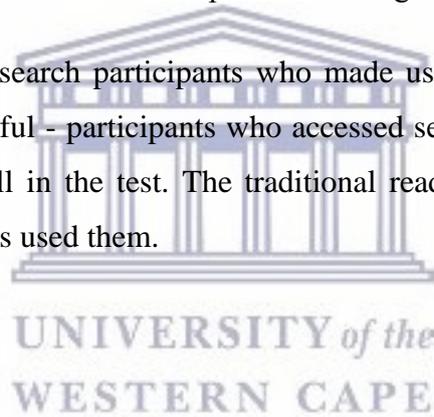
Dictionaries and other conventional reading aids do not help when students struggle with understanding academic and technical terms, phrases, sentences, examples and the logic in academic texts. When using conventional reading aids, there is no guarantee that users will find the results that they desire or if they will even understand what they find - comprehension of some definitions provided depend on the reader’s prior understanding of several other terms (Tono, 2001; Antia, 2017a; Shen, 2013; Knight, 1994). In the experiment, this was confirmed when the fifth research participant had to move on after looking-up “cultural-comparative approach” and “the combined approach” on Google and was not satisfied with the results.

The shortfalls of conventional reading aids result in readers guessing the meaning difficult items they encounter in their academic readings. In chapter five, it was revealed that 74.1 percent of Xhosa HL respondents often and sometimes guess the meaning when reading

academic texts. This is confirmed by the number of students who admitted to making guesses during the experiment. In the interview, the two participants who worked together admitted to having only a “clue” (and not the knowledge) of what some terms they did not look-up mean. Some research participants even admitted to not having knowledge of some words like “indigenous” and “variations”, that they did not look-up. They also guessed “idiosyncratic” and “yearnings” based on how the terms are used in the text. The fourth participant guessed the meaning of “cultural-comparative approach” instead of looking it up because, according to the participant, it did not affect his/her understanding of the text. When reading text A, the sixth participant guessed that to “transmit” is to “transport”.

Insufficient knowledge of the English language affected not only research participants’ intake of academic information but how they wanted to express their knowledge as well. The pair, when discussing question 4 in text B, was heard by the researcher saying “ndizoyibhala njan xa ndiyibhala” which translates to “how will I put it in writing” in English.

In conclusion, most of the research participants who made use of the proposed alternative reading aid found it very helpful - participants who accessed several Xhosa items embedded in text B performed very well in the test. The traditional reading resources were not very helpful when some participants used them.



CHAPTER 7:

Conclusion and recommendations

Scholars such as Butler and van Dyk (2004), Edward and Ngwaru (2011) Nkomo and Madiba (2011) have written about English as a medium of instruction being a major challenge for university students who have home languages other than English in South Africa. The medium of instruction, being such a problem, ultimately affects the academic performance of many students. Some South African universities have created multilingual online glossaries/dictionaries in efforts to help student who are struggling with learning in English.

Unfortunately, the modes of delivering glossaries made available by these universities are associated with a few problems (Antia, 2017a, Nkomo & Madiba, 2011). Because of the shortcomings associated with these multilingual online glossaries/dictionaries, the researcher wanted to explore an alternative way of delivering glossaries. The study proposes electronic glossing and studies the effects of multilingual glosses on non-English home language students of psychology at the University of the Western Cape. The objectives of the proposed study were as follow:

1. To collect baseline data on isiXhosa students' experience of reading academic texts in English.
2. To develop a bilingual English-isiXhosa glossary on the basis of a sample of English texts prescribed for students in Psychology.
3. To create a database of the glossary within an Active Terminology Recognition software, which presents the glosses as widgets that popup easily when the relevant texts are being read.
4. To experimentally evaluate the impact of this alternative mode of delivering glosses by having students perform reading comprehension tasks under two conditions: electronically glossed text condition (the alternative proposed) and the use of conventional online resources as well as other strategies they normally use in their reading tasks.
5. To elicit participant views on their experiences of using both the alternative mode proposed and the range or other resources and strategies.

With regards to the first study objective, i.e. collecting baseline data on students' experience of reading academic texts in English, 147 students from across faculties at the University of the Western Cape responded to a questionnaire administered by the researcher on campus. The respondents have different home languages and their study levels range from first-year to postgraduate levels. The data collected using this questionnaire revealed that the majority of English second language respondents believe their proficiency in English is only fair but claim that they often find academic texts easily understandable. The data obtained from the questionnaire proved that all students, even the English home language respondents, struggle with understanding academic texts written in English.

The majority of the home language groups sometimes and often have difficulties understanding terms, phrases and sentences used in their academic readings. Many respondents often struggle with understanding tables, graphs, maps, example, the logic used and the topics discussed in their academic readings. Even with the majority of respondents sometimes and often struggling difficulties when reading academic texts written in English, dictionaries are hardly used. Respondents who do make use of dictionaries use them occasionally. The reason for not using dictionaries often could be that respondents are discouraged by the same shortcomings associated with dictionaries identified by Antia (2017a). The data also revealed that the majority of African home language and English home language respondents use monolingual (English) dictionaries more than they do bilingual (i.e. home language and English) dictionaries. Maybe this is due to a lack of academic materials in African languages. The majority of the Afrikaans HL group uses bilingual dictionaries and are often satisfied with the results, academically perform better than students with African home languages (CHE_VitalStats_2013:11).

The internet is the most popular reading resource used by students and all home language groups are often very satisfied when using the internet. Students look up even the meaning of examples, key ideas and the logic used in academic texts on the internet. The Microsoft tool is also a very popular reading resource that students are often satisfied with the results when using.

Most respondents also rely on guessing the meaning of items in academic texts and stand a good chance at being wrong. Another large percentage of respondents, especially English

second language speakers, rely on consulting friends, tutors and/or lecturers when struggling with items in academic texts and say that they are not always satisfied with the outcome.

Except for the Afrikaans home language group, the majority of other respondents discuss the contents in their reading materials in English. There is a low percentage of the Xhosa HL group that often use isiXhosa when discussing academic readings with friends. Though the majority of all HL groups often use English when making notes on the margins of their academic readings, the percentage of respondents with African home languages (including isiXhosa) that often use their home languages is also high. One can argue that the African languages' lack of terminology and academic work written in isiXhosa in the different scientific fields of study is the reason why an overwhelming percentage of Xhosa respondents does not use isiXhosa when making annotations and discussing academic information with friends/colleagues. They do not have the knowledge of scientific terms and phrases in isiXhosa.

Regarding the second study objective, i.e. developing a bilingual English-isiXhosa glossary on the basis of a sample of English texts prescribed for students in Psychology, the researcher gave one of the two Psychology texts, the one he had decided to gloss, to four first-year Psychology students who are Xhosa home language speakers to identify difficult terms, phrases, sentences and any other difficulties. All the students went to high schools located in black townships where learners are partially taught in their home languages. The researcher also tested their knowledge of some of the items that they did not identify as difficult in the text and found that there were unidentified items the students did not quite understand. The researcher worked with two colleagues who have worked in similar projects before in developing the Xhosa terms, phrases and definitions for the English terms identified in that text.

The third study objective was for the researcher to create a database of the glossary within an Active Terminology Recognition software, which presents the glosses as widgets that popup easily when the relevant texts are being read. The researcher uploaded the text he chose to gloss on Cooljargon (the widget). The Cooljargon software allowed the researcher to embed the Xhosa terms, phrases and definitions he had developed with his colleagues in the English text. When respondents read the text uploaded on Cooljargon, they were able to access the embedded items

The fourth study objective was to experimentally evaluating the impact of this alternative mode of delivering glosses by having students perform reading comprehension tasks under two conditions: electronically glossed text condition (the alternative proposed) and the use of conventional online resources as well as other strategies they normally use in their reading tasks. The data presented in chapter six confirms the findings in chapter five that students do (often and sometimes) come across terms, phrases and sentences that are difficult to comprehend in academic texts. Research participants looked-up and identified difficult items (by highlighting them) they came across in both the non-glossed and the glossed texts. Rereading the texts multiple times to answers questions based on the short also showed the participants' lack of understanding. A few participants misread some terms which the researcher believes is a sign that the participant did not understand a term and most likely the whole sentence.

The study wanted to compare the proposed text-based and technology-supported alternative reading aid to traditional reading aids. Most research participants completed the non-glossed text's test faster than glossed text's test. This is because most participants did not look-up any words/phrases when reading Text A. The data presented in this chapter has proved that the use of the alternative reading aid enhances readers' text comprehension. Fifty percent of research participants understood the glossed text better than the non-glossed text. Three of the four research participants who performed better in text B's (glossed) test compared to text A's (non-glossed) viewed several embedded items in text B, also the research respondents who performed really well in text B's test had very poor results in text A's test. Clearly, viewing the glosses enhanced the participants' understanding of the text B.

Two out eight participants had the same results in both tests and the other two performed better in text A's (non-glossed text) test than in text B's (glossed text). Two of these four research participants did not click on any of the glossed terms in text B and the other two clicked on three or less glossed terms and phrases. The researcher believes that this affected the participants' understanding of text B.

While many of the participants who accessed Xhosa items embedded in the widget found them helpful, a few students were not satisfied with the results when they used the Microsoft tool and the internet.

With regards to the last study objective, i.e. eliciting participant views on their experiences of using both the alternative mode proposed and the range or other resources and strategies, the

researcher the participants immediately after they had finished writing the two tests. The interview data revealed that most participants would choose the option to access academic texts in their home languages. Many participants said the glossed items helped enhance their understanding of text B. One participant revealed that he/she usually translate the information received from using conventional reading resources into isiXhosa.

Some participants did not use the widget. One of them did not trust the embedded items in the widget.

Almost all research participants expressed willingness to receive academic information at least partially in their home language. When asked, they said accessing academic information in their home language would enhance their understanding of the academic readings they often have to read. The researcher agrees that the use of English and a home language would result in students performing better academically. Many Xhosa HL speakers in Cape Town are used to using isiXhosa and English interchangeably. Being forced to access the subject matter in a second language, which is English, impacts negatively on the academic performance of many Xhosa HL speakers as this study has shown.

Unfortunately, the use of English and isiXhosa to access information academic information does not guarantee Xhosa HL speakers that accessing the information will be easy. Available multilingual reading aids are also associated with a number of shortcomings. The researcher believes that the best way to make information available in both English and isiXhosa is through electronically glossing academic readings. Accessing the glossed terms and phrases in the electronically glossed texts enhanced the performance of the research participants. The researcher recommends electronic glossing as the way to make bilingual reading easy, which will ultimately enhance multilingual readers' comprehension of academic texts.

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APPENDIX

The research questionnaire consisted of seven questions – question 2 and 5 had 14 and 6 sub-questions respectively. The questionnaire required respondents to state their home language(s), faculty of study, year level and major subjects. It was used to collect quantitative data on UWC students.

Figure 1: the questionnaire

Questionnaire on multilingual electronic glossing: implementing and evaluating an alternative reading aid for students at the University of the Western Cape.

My name is Mlondolzi Pute. I am a Masters Student in Linguistics. My research seeks to implement and evaluate an alternative reading aid for students at the University of the Western Cape. I would be grateful if you would complete the following questionnaire:

Home language:
 Faculty:
 Majors:
 Year level:

1. Do you often find academic readings written in English easily understandable? Yes / No

2. When reading your academic texts, how often do you:

	Often	Sometimes	Rarely
i) Come across terms that are not easy to understand?			
ii) Come across phrases (i.e. groups of words) that you are not familiar with?			
iii) Find that there are whole sentences that are not easy to understand?			
iv) Struggle with understanding topics/key ideas being discussed?			
v) Struggle with understanding the logic (i.e. how ideas are put together)?			
vi) Struggle with understanding diagrams/graphs/tables/maps/formulae?			
vii) Find that the examples used are difficult to understand?			
viii) Use a monolingual dictionary?			
ix) Use a bilingual dictionary?			
x) Use a Microsoft tool? (look up the synonym)			
xi) Use the internet?			
xii) Guess the meaning?			

xiii) Ask a friend/colleague for help?				
xiv) Do nothing/ give up?				

3. When you discuss the content of your academic readings with friends/colleagues, in what language(s) do you often have such discussions?

4. When you make notes on the margins of your reading materials or in your exercise book, what language(s) do you often use?

5. What do you usually do when:

5.1. You do not understand a word?

5.2. You do not understand a phrase?

5.3. You do not understand a sentence?

5.4. You do not understand the logic (i.e. how ideas are put together) in the text?

5.5. You do not understand the topic/subject matter/ key ideas?

5.6. You do not understand (or relate to) the examples?

6. How satisfied are you with the results when using:

	Often satisfied	Sometimes satisfied	Rarely satisfied	Never satisfied
Monolingual dictionary				
Bilingual dictionary				
Microsoft tool				
Internet				
Ask a friend/colleague				

7. Circle to indicate your English language proficiency: Good Fair Poor

Figure 3: interview questions

<p>1. How did you find reading text A with access to traditional reading aids compared to reading text B with immediate access to embedded Xhosa terms, phrases and definitions?</p> <p>2. Were there any difficulties you encountered while reading text A? If yes, which reading</p>
--

aids did you use?

3. Do you think the reading aid(s) enhanced your understanding of text A?

4. Did you click on any of the glossed terms and phrases in text B? If yes, did you find the Xhosa items helpful?

5. If you did not click on any of the glossed terms and phrases in text B, why?



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