Tortoise's slow-but-sure strategy:
A case study of undergraduate nurses' beliefs, reported use and actual use of vocabulary learning strategies.

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Abstract

This case study investigates what first-year EAL[1] nursing students believe about vocabulary learning, what strategies they report using, whether there are patterns in their actual use of vocabulary learning strategies as they read technical texts, whether there are discrepancies between reported and actual use of particular strategies and which types of words caused universal difficulties. An affective interview, a background interview, three observations using think-aloud protocol, a stimulated recall session, receptive vocabulary tests and receptive and productive medical vocabulary tests were used to provide evidence of reliability (Bachman, 2004). Although beliefs were relatively homogeneous, different patterns of strategy use emerged depending on whether learners had studied in a NZ high school, and whether learners were immigrants or international students. Feedback from tutors indicated that despite their EAL background these learners were passing their coursework well.

Introduction

Chung and Nation (2003) found that technical words make up a significant component of academic texts, and that learners need to apply effective strategies to master this technical vocabulary. Although familiarity with a particular subject text genre contributes to success (Coady & Nation, 1988; De Groot, Dannenburg & Van Hell, 1994; Parry,1993), a minimum 95% knowledge of running words in a text is a prerequisite to effective use of contextual clues (Nation, 2001). Huckin and Bloch (1993) note that reading the textbook is a potent secondary source for information missed in a lecture, and that "lack of vocabulary knowledge is the largest obstacle for second-language readers to overcome" (p.154). A rich receptive knowledge of a word and transition to confident productive use requires both intentional focus and incidental exposures to a word in different contexts (Gu, 2003b; Nation, 2001; Schmitt, 2000a). This study set out to investigate the beliefs of first year EAL nursing students about vocabulary acquisition, to observe which strategies they actually use, and to note any correlations with their vocabulary competence and educational background.

Literature review

Although teachers can contribute to the repertoire of effective strategies (Nation, 2001; Robinson, 1993), successful language learners are distinguished by autonomy, reflection and metacognitive assessment of this process as they skilfully choose, use and monitor vocabulary learning strategies (VLS)[2] depending on the purpose, task and context (Gu, 2003b; Rivers, 2001). Studies consistently

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[1] English as an additional language
[2] Vocabulary learning strategies

show that good learners flexibly use a wide range of strategies, whereas poor learners use fewer strategies in less effective ways.

Gu and Johnson (1996) identified groups of strategies under beliefs about vocabulary learning[3], guessing from background or immediate context, dictionary use for looking up or understanding a word or for extension, a slew of memorisation strategies, note-taking on meaning or usage and lastly metacognitive strategies like self-initiation and selective attention. Schmitt and Schmitt (1993) described two other metacognitive strategies – perseverance and avoidance - and Schmitt (1997) noted social strategies of asking people for meaning or a translation.

Perceived usefulness of strategies
The first step in using vocabulary learning strategies is recognizing and valuing particular strategies. Fan (2003), Schmitt (1997) and Schmitt and Schmitt (1993) all investigated this area with EFL[4] students and found that the bilingual dictionary was rated most useful for discovering meaning, and that various forms of repetition were preferred for consolidating knowledge. However, limiting oneself to these strategies and focussing only on the target word and its immediate context were linked to poor success in an ESL context (Padron & Waxman, 1988; Porte, 1988).

Use of strategies
Self-reported strategy use in EFL contexts did not necessarily correspond to avowed preferences for particular strategies. Fan (2003), in Hong Kong, found that the most used strategy was guessing, followed by using linguistic clues, dictionary use, asking someone and repetition. Schmitt (1997), in Japan, found that although dictionary use was the most-used strategy for new words, guessing from context and asking classmates were close behind and written and verbal repetition were used often.

Some earlier studies (Ballard & Clanchy, 1991; Chern, 1993; Schmitt & Schmitt, 1993) assumed that Asian students used rote learning and would need coaching to be more analytical and critical in their study. However, later studies (Gu, 2002; Gu, 2003a; Gu, Hu & Zhang, 2005; Gu & Johnson, 1996; Huckin & Bloch, 1993) showed that Chinese students were using a wider range of strategies than previously supposed, and that even memory strategies were processed more deeply.

In Gu and Johnson's (1996) study, a self-report questionnaire was completed by 850 non-English major Chinese undergraduates. Meaning-focused strategies were used more than rote strategies. The most proficient learners used a wide range of strategies, particularly metacognitive strategies. A study of 645 Chinese undergraduates by Gu (2002), showed that women consistently used more strategies than men, and that arts students focused more on global context strategies while science students focused on analytical strategies. Use of immediate context clues was more marked than using dictionaries or repetition. This pattern of strategy use was not significantly different to that exhibited in other cultural groups.

Kojic-Sabo and Lightbown (1999) used a self-report questionnaire with 74 ESL[5] and 62 EFL adult students. ESL students scored higher in independence whereas EFL students scored higher in use of review strategies. Studies using ESL participants (Chern, 1993; Huckin & Bloch, 1993; Nassaji, 2003; Sanaoui, 1995) revealed much more use of background knowledge, reference to the immediate context and independent strategies. This is unsurprising given that ESL learners live and learn in an English-speaking environment where they must continually assess the interest, relevance and meaning of words they encounter.

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[3] Beliefs – "memorisation is important", "words should be learned in context (bottom-up)", "words should be learned before use (top-down)"
[4] English as a foreign language. Learners study English while living in a non-English-speaking environment.

[5] English as a second language. Learners are studying English while living in an English-speaking environment.

Qualitative studies examined detail of the affective responses of students to different vocabulary learning strategies and their actual use. Numbers of participants in these studies were smaller, and included ESL learners. Most of these studies also used some form of receptive vocabulary test and in some cases a proficiency test to measure productive language use. They relied on coding observed behaviour to give a comprehensive description.

Five of the studies (Chern, 1993; Gu, Hu & Zhang, 2005; Huckin & Bloch, 1993; Lawson & Hogben, 1996; Nassaji, 2003;) relied on an introspective 'think-aloud' protocol, where participants completed a vocabulary task, usually decoding new words encountered in an unfamiliar text, learning a list of new words or translating, while verbalizing their thought processes. In all instances participants were trained in the think-aloud procedure prior to the target session. Other researchers (Chern, 1993; Gu, 2003b; Huckin & Bloch, 1993; Parry, 1993) used case studies, while Porte (1988) used interviewing and Sanaoui (1995) used ethnographic interviewing in combination with journaling.

In both qualitative and quantitative studies of vocabulary learning, a trend was apparent, ranging from a preference for memorisation/repetition strategies evident in EFL, IFL[6] or recent migrant ESL participants, to extensive use of context and metacognitive strategies in ESL participants who were studying in English at a tertiary level. It was also apparent that good learners flexibly used a wide range of strategies, while poor learners used a narrower range inflexibly.

This study set out to discover which strategies first year EAL nursing students valued, reported using and actually used to cope with their academic reading. Although self-report questionnaires have been used extensively in this field, the case study using a think-aloud protocol was chosen as the most suitable methodology to explore affective responses and observe actual practice. Authentic texts were used to gain insight into which words were most likely to cause difficulty. Background information was collected to explore any correlations with proficiency and strategy choice.

Methodology

Participants
Participants were five ESL women of varying ages, ethnicities, backgrounds and residency, recruited from a regular study group of first year nurses.

Instruments
The case study methodology was chosen as most appropriate to yield a substantial description of each person's beliefs and approaches to learning without "placing preconceived notions on the data" (Adams, Fujii and Mackey, 2005, p. 84), given the small size of the accessible sample population. Reliable and valid triangulation of findings was ensured by combining a background information interview, diagnostic vocabulary tests administered at the beginning and end of the research period, an affective self-report interview, three observational tasks at three-weekly intervals, during which both audiotapes and notes were recorded, and a brief stimulated recall session two weeks after the last observational task (Bachman, 2004; Holliday, 2004; Huckin & Haynes, 1993).

Interviews
Two interviews – a background interview (see Appendix A) and an affective interview (see Appendix B) – formed part of the first session with participants. A structured interview was considered to be a more authentic task than filling out a questionnaire (Adams, Fujii & Mackey, 2005). The background interview questions covered age, languages spoken, read and written in, educational level in their own country, years of EFL, years of ESL and years of study using the medium of English.

The affective interview elicited self-reported beliefs and practices of vocabulary strategies. Questions were pared to a minimum to counteract fatigue, and were based on Fan (2003), Gu and Johnson (1996), Kojic-Sabo and Lightbown (1999), Schmitt (1997) and Schmitt and Schmitt (1993).

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[6] Italian as a foreign language.

Task

The observational task consisted of reading a set passage from a current textbook, highlighting challenging words and using a think-aloud protocol to verbalize the strategies that were being used. This procedure took place on three separate occasions, using a different text each time, to confirm any patterns in individual participants.

Text

Passages from a recommended text *Human anatomy and physiology* (Marieb, 1998) were chosen for the three tasks. Participants read a clear copy with original formatting intact. The texts came from the chapter introductions, and contained much simpler language than that of the body of each chapter. Analysis of the difficulty of these passages showed that the Academic Word List items (Coxhead, 2000) in the passages ranged from 12.17% to 13.64%, technical words ranged from 19.91% to 23.77%, and the combinations of these in individual texts ranged from 32.82% to 35.94%.

Think-aloud protocol

An introspective think aloud protocol was used during the three observational tasks to glean what students were actually thinking and doing as they encountered unfamiliar vocabulary. The assumptions were that talking about a task while doing it does not influence the completion of the task and that responses do not include automatic, sub-conscious thought (Zimmerman, 1987). Simultaneous protocols where learners are asked to verbalize their thoughts are a good investigative tool (Adams et al., 2005) with which to "get beyond performance analyses to process analyses" (Haastrup, 1991, p.38). As the researcher was also observer and interviewer, and is not fluent in any of the first languages of the participants, all of the sessions were in English.

Although the nature of the task and the fact of being observed were unfamiliar, the observer was well-known to the participants. Participants quickly became habituated to the tiny microphone used to record the think aloud commentary. Interaction only occurred at a participant's request. These precautions were intended to reduce the observer's paradox (Labov, 1972).

Retrospection was not deliberately included in the design of the observational task, although participants usually commented after each task, most commonly on the retarding effect on comprehension of having to read and think aloud. This perceived unnaturalness of the think aloud procedure is mentioned by Adams et al. (2005). Participants tended to verbalize less as they became absorbed in the task.

Diagnostic tests

The *Vocabulary Levels Test: Version 2* (Schmitt, Schmitt & Clapham, 2001) was used in both pre-test and post-test. Two different versions of a medical receptive[7] vocabulary test were used, both covering the same 36 word parts and affixes. A medical productive[8] test was used only as a post-test to confirm how well known the most common 12 of the 36 word parts were.

Stimulated Recall

Participants expressed interest in discussing their results. They had the opportunity to discuss their completed profiles and clarify points arising from the interview and observations two weeks after the last task. These sessions were also recorded.

Procedures

Diagnostic pre-tests had already been administered in a class context in early June, and the five participants completed post-tests immediately after the last observational interview in late September.

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[7] Designed by the writer to capture the slightest knowledge of the target word parts.
[8] Designed by the writer to test the quality of recall of the target word parts.

At the initial individual session, participants first answered background questions. The responses to these questions were clarified and recorded by the researcher. The researcher then demonstrated the think aloud procedure using a text in French, during which all unknown words were highlighted and an attempt was made to demonstrate the full range of potential strategies, including asking the participants for help.

Following this demonstration, participants then did the first observational task. They had been encouraged to bring their favourite aids, and to feel free to ask the researcher questions in English. Highlighters and hard copies of English/English, Mandarin/English, two different Arabic/English and, for the third session Khmer/English were provided.

The affective interview followed, after a short break accompanied by refreshments. The objective was to both relax participants and to minimize the effect of interference between the observational task and affective interview.

The researcher took notes as well as audio-taping each session, and each participant's highlighted and annotated text was collected at the end of each session. The second and third sessions occurred three and six weeks respectively after the initial session. The second session involved only a think aloud task, and the third session involved a think aloud task followed by the diagnostic post-test. Participants were reminded to think aloud, but no repeat training occurred in the second and third sessions. Participants were given the opportunity of commenting on their profiles in a stimulated recall session two weeks after the final observation and testing.

Transcripts were collated into five parallel student transcripts and coded. A colleague also coded one of these task transcripts to check rater reliability.

Analyses

Coding
Each text was analyzed using Range (Nation & Heatley, 2004), and coded for 1K[9], 2K[10], AWL[11] and technical vocabulary. VLS codes were based on categories from Gu and Johnson (1996), Kojic-Sabo and Lightbown (1999), Schmitt (1997) and Schmitt and Schmitt (1993). However other refinements and distinctions arose from the first round of observations and affective questions, and these were incorporated into the coding system to more closely reflect the data (Adams et al., 2005). A full set of strategies and their codes is in Appendix C.

Inter-rater reliability check
A trial of inter-rater reliability showed a 76.5% degree of conformity in the affective interview, and a 75% degree of conformity in the first observational task. Differences were mainly attributable to the nuances discerned by the observer.

Results

Participant profiles

Nia
Nia had studied EFL for 320 hours before emigrating to NZ. She spent 2000 hours studying ESL in a NZ high school, before 1500 hours of study using English as a medium at a tertiary institution.

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[9] First thousand common words
[10] Second thousand common words
[11] Academic word list – the 570 common headwords which occur across every discipline of academic writing.

Affective responses

Nia emphatically believed that vocabulary learning is an individual process, was relaxed about the gradual acquisition of words and had a clear rationale for studying technical and colloquial words. She would persevere, often reading at the expense of eating.

Her favourite strategies were guessing from context, background knowledge and linguistic clues and asking a Kiwi friend. At home she used hard-copy English/English, bilingual and technical dictionaries, but didn't take them to class as they were too heavy. The frustration of learning vocabulary was apparent "I use a dictionary when I don't know the words and there's no-one to ask or I'm too angry to ask".

Nia's productive medical vocabulary score indicated secure knowledge of 67%. The combination of 93.3% at 2K level, 91.7% in the Academic Word List and 94.4% in the medical receptive test enabled Nia to cope relatively confidently with her academic reading. She had gained 3.7%, 22.2%, 26.9% and 41.7% respectively between pre and post-tests. A table of the proficiency scores for all participants is in Appendix D.

Observations

Over the three observations, Nia guessed about a quarter of the words using linguistic clues, and another quarter using wider context. Before moving on to the next sentence, she would usually ask for confirmation or meaning, and sometimes consult an English/English dictionary. She was interested in the nuances of meaning and usage, and reintegrated the meaning back into the context. This reflected the 'in-class' pattern she reported in her affective interview.

Ney

Prior to emigrating to NZ, Ney studied EFL for 200 hours. On arrival in NZ, she studied ESL for 1200 hours and used English as the medium for study for 1000 hours in a NZ high school setting. She then studied a further 1500 hours using English as the medium in a tertiary institution.

Affective responses

Ney believed words should be acquired in context as an "every day life process". She used immediate clues, guessing from wider context. In class, she preferred the multilingual electronic translator or asking someone "if it is urgent." She was keen to browse in the Mandarin/English bilingual dictionary (not her L1[12]) and English technical dictionaries.

Ney's combination of strong (93.3%) 2K and (86.7%) 3K levels compensated to some degree for a lower (72.2%) AWL score. Her receptive medical vocabulary knowledge was sound at 91.7% and her productive medical vocabulary score was 75%. She made modest gains of 21.7%, 8.3%, 0% and 10% in 2K, 3K, AWL and receptive medical words respectively. She copes well with her course reading, although she reported difficulty with academic words and colloquial language.

Observations

Ney attacked each word before moving on. Over 60% of the time she used linguistic clues, and a third of the time used wider context clues. Although she did sometimes ask directly for the English meaning, she was more likely to ask for confirmation of a guess or a hint. In some cases she reread the whole sentence in order to guess, or had a guess then looked up the word in an English/English dictionary. She noticed word parts, adverbial and adjectival endings, whether a word was colloquial or academic and used lookup strategies. Although dictionaries were used sparingly, in line with self-reported behaviour, she would often use the dictionary more than once for a word, digging deep into words and integrating meaning. There were no annotations.

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[12] First language

Alisa
Alisa had only studied EFL for 160 hours before emigration. She studied ESL as an adult in NZ for 4400 hours and then studied using English as the medium for 740 hours in a tertiary institution.

Affective responses
Alisa believed in both acquiring words in context and in putting words to use. She studied six days a week, read medical romances every evening and watched English movies on her days off study "to get listening practice". She enthusiastically collected words, repeating and rewriting them several times.

Although she preferred an electronic L1 bilingual translator with English/English as a back-up, she admitted that "although the electronic dictionary is very quick it is sometimes not correct." Academic words were identified as the most difficult although "they're no problem to use."
New words were guessed from context and from linguistic clues. Notes on meaning and use were in L1 and sometimes in English. She planned her vocabulary learning and was aware of the gradual acquisition process.

Alisa's diagnostic tests showed 100% mastery of 2K and receptive medical vocabulary, 93.3% in 3K, 97.2% in AWL and 75% productive use of medical vocabulary. This vocabulary profile meant that she coped competently with her academic tasks. She had made gains of 15.4%, 33.3%, 29.6% and 20% in 2K, 3K, AWL and medical receptive vocabulary.

Observations
Alisa brought her L1 translator. She read the entire passage, making preliminary guesses using linguistic clues and background clues. Rereading the word was sufficient to trigger a solution for many words. Guesses were refined on a second pass, using the L1 translator and checking back into context (sometimes a couple of times) or occasionally asking for confirmation.

Jay
Jay was the only true 'international' participant. She had done 1198 hours of EFL, 1000 hours of ESL as an adult in a language academy in NZ, and studied for 1500 hours in the medium of English in NZ in a tertiary institution.

Affective responses
Jay paid attention to recurrent and bionursing words. In the lecture context, she filtered the relevance of words using her translator, and was relaxed that the meaning of the word would become clear in context in classes other than bionursing. Although the translator was convenient and fast, she acknowledged that it was "fast, not deep" compared with the English/English dictionary. She browsed dictionaries and utilized incidental opportunities for vocabulary expansion, read fiction, and watched TV episodes and movies several times over.
The connection between correct pronunciation, spelling and remembering or encoding a word was vital. She used word cards and labelling and also visualized and rehearsed target items before sleep. However, she had realized the value of some notes on usage as well.

Jay scored 63.3% on 2K, 80% on 3K, 47.2% on AWL and 83.3% on receptive medical words after gains of 11.8%, 50%, 21.4% and 20% respectively. Her medical productive result of 16.7% indicated a less secure grasp of these words. This combination of scores corroborates her report that "Technical vocabulary is the most difficult. Medical words are pretty hard."

Observations
Jay brought her translator. She first guessed from the sentence context and used word parts and grammatical clues. Occasionally she asked for the correct pronunciation or for confirmation. She divided the text into sections of one to three paragraphs, corresponding roughly to headings in the text, and never went past the end of a section without checking any unknowns, although she could still "catch the main idea." On her second pass over each section, there was a pattern of translator use

followed by a note on meaning in her L1. Towards the end of the passage, initial use of translator and L1 glossary occurred much more frequently.

Affo
Affo had studied EFL for 640 hours prior to emigration. She studied ESL in adult classes for 4250 hours in NZ, and then studied 3000 hours using English as a medium in a tertiary setting.

Affective responses
Affo was concerned with correct pronunciation and its relationship to recognizing, remembering, spelling and encoding a new word. She was selective in which words to focus attention on "It's important if it is in the subject." Rereading sentences was useful. She preferred "a good English/English dictionary like Oxford Advanced" and linguistic clues such as word parts. Notes about correct usage were as important as meaning. Regular use was important. She devoted time to learning new vocabulary "I do work so many times with it…It's very hard work."

Affo's perfect mastery of medical receptive vocabulary was confirmed by her excellent 83.3% medical productive result, and probably is due to her familiarity with the medical field, having worked in a medical setting in NZ for five years. However the underlying 86.7% 2K, 70% 3K and 72% AWL scores after gains of 30%, 50%, 18.2% and 28.6% explain why she found academic vocabulary difficult and academic reading so time-consuming.

Observations
Affo read through to the end of the passage, highlighting words, and guessing mainly using linguistic cues. On her second pass over the passage, she used an English/English dictionary on all unknowns, linguistic clues on some words and some rereading. On her third pass over the passage, she used an L1 bilingual dictionary on the remaining unknowns and asked for meaning of the remainder as a last resort. She reported that she habitually followed this procedure "It takes me a long time to study, honestly." The use of looking up strategies worked well on inflections, but less well on alternative meanings, especially when the L1 dictionary was "not good enough to understand the subject."

The universally difficult items

Each participant had a different set of unfamiliar words. However, the set of universally difficult items - words that every participant found difficult - were all technical words, defined in this study as words not in the first two thousand or academic word lists. Three of these words - *concrete*, *architecture* and *sophisticated* - were in the three thousand word list. Two of the words – *sustaining* and *spectrum* were in the four thousand word list. *Garbage* was in the six thousand word list. *Turbine* was in the seven thousand word list. *Tangible* and *torrent* were in the eight thousand word list, and *elusive* and *amoebas* were not in any list.

In context, the five adjectives *concrete, sustaining, sophisticated, tangible* and *elusive* were redundant to the passage. Both technical words *spectrum* and *amoebas* had definitions in preceding or following sentences. The last four words, *architecture, garbage, turbine* and *torrent* were all used in illustrative metaphors that were not directly relevant to the anatomy and physiology context.

More confident readers tended to make a contextual guess or read on to the end of the passage to give context a chance. In the process, they decided whether it was important to confirm guesses by using their favourite dictionary or asking. This particular selection of universally unknown words was interesting because participants moved rapidly through the word-solving process compared to time spent using a larger number of strategies on some of the other words in the texts which fewer participants found difficult. This is probably due to the redundancy around these eleven particular words.

DISCUSSION

This study set out to investigate what first-year EAL nursing students believed about vocabulary learning, which strategies they reported using, whether there were patterns in their actual use of vocabulary learning strategies as they read technical texts, and whether there were discrepancies between reported and actual use of particular strategies. Although participants were relatively homogeneous in their beliefs, they showed individual styles in their reported and actual strategy use. There was some overlap in patterns of strategy use.

Beliefs
Beliefs clearly related to the students' context as ESL, English as the medium of instruction undergraduates. They were relaxed about the fact that words would arise several times in real life, and were confident to judge whether a word deserved attention. Their favoured strategies comprised focused attention on potentially useful items such as medical word parts and academic word lists, browsing in medical dictionaries and checking up on interesting words in case they were encountered again. Belief in memory strategies was conspicuously absent.

Reported use
All participants espoused selective attention, use of word-based strategies such as word parts, and use of background knowledge. They all took advantage of opportunities to expand their vocabulary, in conversations, films, TV, recreational reading, dictionary browsing and word-smithing. Alisa noticed collocations and good medical writing exemplars and used these to write appropriately for the genre. Baker (1988) had previously noted this successful writing strategy.

Reported use of English/English and bilingual dictionaries was even, except for a preference for the bilingual translator in the case of the international student. The two older participants reported heavy use of repeating strategies, and the international participant used word cards extensively. All reported taking notes of both meaning and use, with a preference for use. They were concerned with correct pronunciation, reflecting the importance of oral skills in Lepetit and Cichocki's (2002) survey of intending health professionals. The two NZ high school experienced participants strongly advocated social strategies.

Contrasting patterns of use
Participants showed distinctly individual patterns of strategy preference and use. However, there was a marked contrast in style between participants who had experienced the NZ high school environment and those who had not.
Nia and Ney, the NZ high schooled participants, were interested in colloquial vocabulary, curious about the details of unfamiliar words, and were more likely to stop and explore each new word than to read on. They guessed from background knowledge twice as often and asked for meaning, confirmation and hints a third of the time as opposed to hardly or not at all for the others. Their scores for use of immediate context clues were similar to the other group.

In contrast, the two older participants, Alisa and Affo, read to the end of the passage 81% of the time before checking in their preferred dictionaries on a second pass. They both checked for inflections when they used dictionaries for about a third of the words. Guesses were almost exclusively from immediate context clues and averaged 40% of unknown words. They used multiple strategies on words. Despite these similarities, their dictionary techniques differed. Alisa used her bilingual dictionary on all of her unknown words, and then checked an English/English dictionary for 5% of these words on a second pass. Affo used the English/English dictionary for 60% of unknown words, and then checked a third of these in her bilingual dictionary on a second pass.
The remaining participant, Jay, the only international student, tended to read sections of text, and then use her electronic translator to check about 60% of the unknown words. She did not use an English/English dictionary at all. Only 5% of her guesses used background knowledge, and she guessed about a quarter of all unfamiliar words using immediate context clues.

Similar patterns of use

All participants used the successful strategy of rereading whole sections of text rather than repeating a word, thus enabling chunking of meaning (Nassaji, 2003) and noticed and delved into salient words. These factors correlate with higher retention rates (Fraser, 1999; Kramsch, 1979).

The stimulated recall sessions revealed that participants were reluctant to ask for meaning or clarification in front of the whole class, although they all considered that pursuing a tutor for this purpose after class was acceptable.

Correlation with proficiency

Participants who scored more than 85% in the 2K, 3K and medical receptive tests found reading much easier than those who scored less than 85% in the 2K and 3K levels, even where their medical receptive scores were comparable. Lee and Muncie (2006) noted that the use of the first two thousand words remained stable, and that 29% of new vocabulary was retained, 14 days after explicit focus. This certainly applies to this group, who had concentrated on medical and academic word list words over the previous three months, and made substantial gains in these words. However, the difference between receptive and productive use of this vocabulary was more marked in the individuals who were less secure at the 2K and 3K level.

Conclusion

The pattern emerging from this study is that vital words tend to be amplified or signalled in the text, and thus become self-explanatory. Although adjectives were difficult to decode, they were rarely crucial to the comprehension of the passage. The most problematic area was the use of metaphors that were unrelated to the topic or the background of the participants.

One striking observation was how time-consuming the task of reading a textbook was for students. Participants commonly read a passage at least twice, and often used more than two strategies to decode problematic words. They often found their bilingual dictionaries inadequate for the task. This affected the older students more, as their dictionary use was heavier, compared to the NZ high-school educated students who relied heavily on context clues and asking people for definitions or hints.

In Æsop's fable of the tortoise and the hare, the tortoise accepts the hare's challenge to race, the hare complacently naps and the tortoise wins by dint of steady perseverance and self-awareness (Jacobs, 1894). Although these participants never expected to out-sprint native-speakers in the academic stakes, it has transpired that their blend of perseverance and skilful use of vocabulary learning strategies has enabled them to more than hold their own. As learning advisors, we can recommend that they also relax a little, secure in the knowledge that important words will be signalled, adjectives are often redundant and irrelevant metaphors can be safely disregarded.

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Appendix A: Questionnaire - Part 1 Background information

What is your age?

Under 20 ☐   20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐

What is your first language?

What other languages do you speak?

What other languages do you read?

What other languages do you write?

What is your highest level of study in your own country?

How many years of study have you done in English?

Appendix B: Questionnaire - Part 2 – Affective questions

What do you believe is the best way to learn vocabulary?

Which ways do you think people should use?

How many hours do you spend reading your textbooks?

How many hours do you spend reading other kinds of books or magazines?

Which words do you find difficult?

How do you decide if is important or not to know a new word?

What do you do when you meet a new word?

What clues from the word itself and the words around it do you use to guess the meaning of a new word?

When do you use a dictionary?

What sort of dictionary do you use?

Do you read a dictionary for fun?

What sort of notes do you make about the meaning of a new word?

What sort of notes do you make about the use of a new word?

What ways do you use to make sure you remember a new word?

How do you plan your vocabulary learning?

Appendix C:

Table 1: *Codes, amplifications and sources*

BEL-WMEM	Words should be memorized.	Gu & Johnson (1996)
BEL-WBUP	Words should be acquired in context: bottom up	Gu & Johnson (1996)
BEL-WTDN	Words should be studied and put to use: top down	Gu & Johnson (1996)
BEL-INDV	People learn vocabulary in individual ways	Silvester(2006)
META-SI	Metacognitive regulation: self-initiation	Gu & Johnson (1996) Kojic-Sabo & Lightbown (1999)
META-PERS	Metacognitive regulation: perseverance	Schmitt & Schmitt (1993)
META-SA	Metacognitive regulation: selective attention	Gu & Johnson (1996)
META-SAAV	Metacognitive regulation: avoidance	Schmitt & Schmitt (1993)
META-PL	Metacognitive regulation: plan learning	Silvester(2006)
META-DF	Metacognitive regulation: read dictionary for fun	Silvester(2006)
GUESS-BKWC	Guess using background knowledge/wider context	Gu & Johnson (1996)
GUESS-BKRP	Read to end of paragraph then guess	Silvester(2006)
GUESS-BKRE	Read entire passage then guess	Silvester(2006)
GUESS-LCIC	Guess using linguistic cues/immediate context	Gu & Johnson (1996)
GUESS-LCRS	Read to end of sentence then guess	Silvester(2006)
DICT-COMP	Dictionary strategies for comprehension	Gu & Johnson (1996)
DICT-EXT	Extended dictionary strategies	Gu & Johnson (1996)
DICT-LUP	Looking up strategies	Gu & Johnson (1996)
DICT-L1BI	L1 bilingual dictionary	Silvester(2006)
DICT-LOBI	Other bilingual dictionary	Silvester(2006)
DICT-EE	English/English dictionary	Silvester(2006)
DICT-EET	English/English technical dictionary	Silvester(2006)
DICT-TEL1	Technical English to L1 dictionary	Silvester(2006)
SOC-EEM	Ask someone for English meaning	Schmitt (1997)
SOC-TEL1	Ask someone for L1 translation	Schmitt (1997)
SOC-CONF	Ask someone to confirm a guess	Silvester(2006)
SOC-HINT	Ask someone for a hint	Silvester(2006)
SOC-AE	Ask someone to pronounce the word so you can auditorily encode it.	Silvester(2006)
MEM-RWL	Memory rehearsal – using word lists	Gu & Johnson (1996)
MEM-ROR	Memory rehearsal – oral repetition	Gu & Johnson (1996)
MEM-RVR	Memory rehearsal – visual repetition	Gu & Johnson (1996)
MEM-ASEL	Memory – association/elaboration	Gu & Johnson (1996)
MEM-IMAG	Memory- imagery	Gu & Johnson (1996)
MEM-VISE	Memory –visual encoding	Gu & Johnson (1996)
MEM-AUDE	Memory – auditory encoding	Gu & Johnson (1996)
MEM-WSTR	Memory – word structure	Gu & Johnson (1996)
MEM-SEME	Memory – semantic encoding	Gu & Johnson (1996)
MEM-CONE	Memory – context encoding	Gu & Johnson (1996)
MEM-ACTI	Memory – activation	Gu & Johnson (1996)
NOTE-MEAN	Notes- on meaning	Gu & Johnson (1996)
NOTE- USAGE	Notes- on usage	Gu & Johnson (1996)
VOC-ACAD	Academic words	Silvester (2006)
VOC-TECH	Technical words	Silvester (2006)
VOC-CQ	Colloquial words	Silvester (2006)

Appendix D:

Table 2: *Proficiency test results*

	Nia	Ney	Alisa	Jay	Affo
2K pre-test %	90	76.7	86.7	56.7	66.7
2K post-test %	93.3	93.3	100	63.3	86.7
% gain	3.7	21.7	15.4	11.8	30
3K pre-test %	60	80.0	70	53.3	46.7
3K post-test %	73.3	86.7	93.3	80	70
% gain	22.2	8.3	33.3	50	50
AWL pre-test %	72.2	72.2	75	38.9	61.1
AWL post-test %	91.7	72.2	97.2	47.2	72.2
% gain	26.9	0	29.6	21.4	18.2
Receptive medical vocabulary pre-test	66.7	83.3	83.3	69.4	77.8
Receptive medical vocabulary post-test	94.4	91.7	100	83.3	100
% gain	41.7	10	20	20	28.6
Productive medical vocabulary %	66.7	75	75	16.7	83.3