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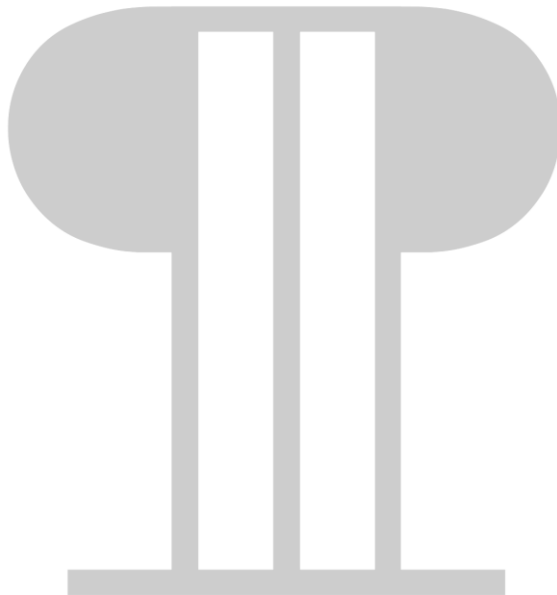
Research and Reality:

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An Investigation of the Gap Between SLA and Lexical CALL Research and the Current

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Abstract

By comparing current second language acquisition (SLA) theory and lexical computer-assisted language learning (CALL) theory with recent reviews of CALL software packages and technical capabilities, a gap is identified between ~~research-theory~~ and reality. This gap can be explained by the limitations of current computing technologies ~~when compared with~~ to the requirements of best-practice vocabulary acquisition theories. It is ~~suggested-argued~~ that these computing limitations should be worked with, rather than against, and that CALL is best considered ~~should be thought of as a potential partial feature of a support for~~ vocabulary instruction, rather than a ~~possible~~-complete vocabulary instruction method.

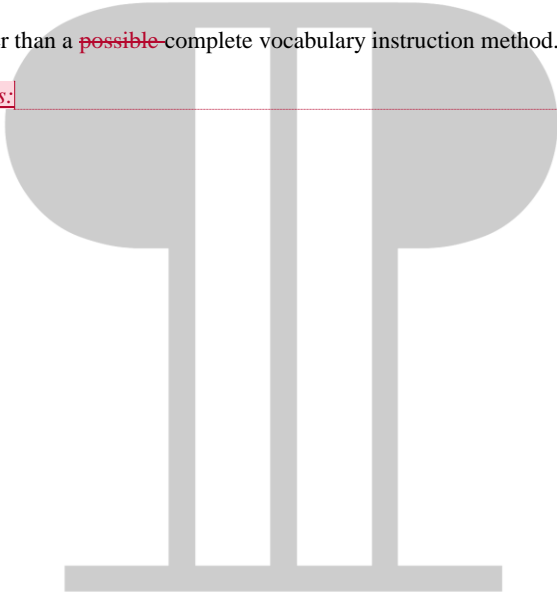
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Research and Reality: An Investigation of the Gap Between SLA and Lexical CALL

Research and the Current State of Vocabulary Instruction in CALL

Introduction

Vocabulary instruction is ~~absolutely~~ vital for second language development, and vocabulary acquisition has featured prominently in second language acquisition (SLA) research. This prominence has transferred into lexical computer-assisted language learning (CALL) research, but ~~unfortunately, has is yet to have had any significantly impact influence~~ on CALL instructional software or activities. Indeed, ~~as shall be shown,~~ there is a significant gap between research theory and reality. ~~By identifying Here,~~ this gap and ~~the its underlying~~ reasons ~~for it, this paper does not seek~~ are identified, not to ~~suggest inform a suggested future~~ plans of action, but ~~rather to raise consciousness~~ emphasise that ~~more does in fact needs~~ to be done.

Second Language Acquisition Research

Lexical acquisition is cumulative and ~~much~~ more complicated than simple rote ~~memorization memorisation~~ (Swan, 1996). Henriksen, drawing on the active-passive continuum of Bialystok and Sharwood-Smith (1985), defined acquisition as ~~taking place occurring~~ along a group of three continua: the first, from partial to precise knowledge; the second, encompassing depth of knowledge, including control of paradigmatic and syntactic features; and the third, from receptive to productive knowledge (~~as cited in~~ Laufer & Hulstijn, 2001).

It is generally agreed that explicit vocabulary instruction is vital for improving the rate and quality of vocabulary acquisition (Ellis, 2001; Laufer, 2006; Norris & Ortega, 2000). While incidental learning, ~~such as for example~~ through reading, is also useful, it is a slow ~~and~~ uncontrolled process (Horst, Cobb & Meara, 1998; Waring & Takaki, 2003), heavily

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dependent on the number of repetitions and quality of the context in which words are presented (Waring & Takaki, 2003; Webb, 2007; Webb, 2008). The best choice is a combination of the two, leading to a more complete knowledge of lexical items, as in Nation's (2001) taxonomy of 'knowing a word'.

Task type ~~too also has an effect on~~ influences the extent to which lexical knowledge is internalized. It is commonly held that receptive tasks produce stronger gains along the receptive continuum, while productive tasks result in increased productive knowledge (Griffin & Hartley, 1996; Webb & Kagimoto, 2009). However, while productive tasks ~~typically~~ produce improved post-test results across both productive and receptive knowledge (Joe, 1995, 1998; Keating, 2008), when time on task is ~~taken into consideration~~ considered, there is no significant difference between the effects of the two task types (Keating, 2008; Kim, 2008). Conversely, ~~there is some evidence, however,~~ that deeper processing creates more memory traces, and leads to improved long-term retention of lexical information (Craik & Lockhart, 1972; Craik & Tulving, 1975). What is certain is that ~~in order~~ for lexical knowledge to facilitate input comprehension, ~~a large number of~~ many words must be known. Laufer (2003) puts this number at ~~three thousand~~ 3000 word families, or approximately ~~five thousand~~ 5000 lexical items. Strategies are also important. Learners have been shown to use more strategies for vocabulary learning than for any other aspects of language (Chamot, 1987), ~~with and~~ these strategies becoming ing more complex as proficiency and general familiarity with strategies increases (Schmitt, 1997).

CALL Research

Explicit Vocabulary Instruction; – Concordancers, Glosses, Dictionaries and Multimedia Enhancements

To date, ~~the majority of~~ most CALL research has focused on the extent to which concordancers (Chan & Liou, 2005; Yelland & Masters, 2007), glosses (Hulstijn, Hollander

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& Greidanus, 1996; Nagata, 1999) and electronic or online dictionaries (Cummins, 1998b; Horst & Cobb, 2001; Hulstijn, 1993; Knight, 1994; Laufer & Hill, 2000) can aid vocabulary

acquisition. There has also been significant work on multimedia enhancements for vocabulary retention (Al-Seghayer, 2001; Chun & Plass, 1996; Jones, 2004). Results have been positive, with such technologies proving advantageous for vocabulary acquisition.

Reading hypertexts with access to electronic dictionaries, for example, has ~~demonstrated a great capacity been found~~ to assist incidental vocabulary learning without interfering with the reading process (Li, 2009). Concordancers have been reported ~~as to be being~~ beneficial for student's development of responsibility for their own learning, and their ability to ~~independently~~ identify collocation patterns independently (Chambers, 2005), while also contributing to learners' consciousness of descriptive rather than prescriptive language (Yelland & Masters, 2007). ~~Yet~~ However, as remarked by Sun (2003) ~~remarks~~, concordancers can be difficult to use, particularly for lower-proficiency students. To negate this difficulty, Scaffolding may be able to negate this difficulty, however might be useful (Chang & Sun, 2009).

Increasing Opportunities for Vocabulary Exposure:— Computer-mMediated Communication

CALL has also been found to have advantages for the negotiation of meaning, with Levy ~~and~~ Stockwell (2006) reporting that students ~~using~~ used comprehension checks, clarification requests, confirmation checks, code-switching, self-corrections, requests, word invention, approximation, communication and compensatory strategies as part of computer-mediated communication (CMC) tasks. ~~The majority of~~ Most of this negotiation surrounded lexical confusion, a phenomenon ona confirmed by multiple CMC-related studies (Blake, 2000; Fernandez-Garcia & Martinez-Arbelaiz, 2003; Pellettieri, 2000; Tudini, 2003). This suggests

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that CMC should be employed in tasks ~~that aimed at facilitate-facilitating~~ the negotiation of vocabulary.

Advantages of CALL-Based Vocabulary Exercises

Nesselhauf ~~and&~~ Tschichold (2002) identify the inherent advantages of CALL in ~~that it can-providing~~ immediate and direct feedback and ~~givegranting~~ learners a high degree of autonomy in ~~terms-oftheir~~ choice of topic, exercise, and pace. Further~~more~~, CALL can increase motivation, and reduce anxiety. In his 2004 experimental study of the effects of pre-teaching vocabulary through CALL vocabulary activities as homework, Allum found that **80 per cent%** of students agreed that ~~computer exercises made me-[them]~~ do more homework than usual~~”, which-This~~ corresponded to a consistent increase in student homework completion over the course of the study.

What ~~About Strategies?about Strategies?~~

In a 2009 study of vocabulary learning strategy use on a web-based reading supported by an online dictionary, Li found significant differences in ~~the~~ complexity of strategy use when compared to ~~a~~ paper-based task, even when students used electronic dictionaries. Students working in the CALL condition engaged in higher~~-~~order cognitive strategies ~~such as summarising and manipulating phrases~~, which are commonly held to result in deeper semantic processing and better vocabulary retention (Li, 2009). ~~These included summarizing and manipulating phrases and words (Li, 2009).~~ The students also freely discussed ~~the~~ readings, ~~which involved~~, repeating and quoting from the text, ~~and~~ summariz~~ing~~ and translating, ~~which. A~~ according to Stahl ~~and&~~ Clark (1987), ~~this~~ is one of the most effective ways to learn vocabulary. ~~An important reason for this~~ The use of more complex vocabulary-learning strategies by the students in the CALL condition in Li's (2009) study can be attributed to ~~was~~ the dramatically reduced reading time afforded by having comprehensible definitions ~~on-handimmediately~~ available. ~~After having acquired~~ Provided they have sufficient

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comprehension of the ~~material~~text, students ~~were able to~~can analyze sentences and paragraphs to infer the meaning of unfamiliar words (Nation, 1990). ~~This In~~ Li's (2009) study, students' enhanced access to meaning in the CALL condition would have ~~resulted in~~ increased their confidence, ~~while~~and their rapid word decoding ~~would have resulted in~~ well-organized reading and improved motivation.

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CALL Reviews

Vocabulary Teaching Programs

Nesselhauf and Tschichold (2002) analysed a selection of vocabulary software packages, specifically focusing on the effectiveness of the collocation instruction offered by each. They were extremely disappointed. They found that, as observed by Clifford ~~and~~& Granoien (2008), the primary use of today's computer software is based on "assumptions of teaching that are at least two decades and more old" (p. 38). Nesselhauf and Tschichold (2002) found that the knowledge needed for actual production of vocabulary items — that is specific details of meaning and usage — ~~were~~was not practiced, and that frequently, all that was required was passive recognition. Presenting words in context was often neglected; and interaction was limited. They concluded that there was a "wide gap..." between these programs and the academic literature on computer assisted vocabulary learning " (Nesselhauf & Tschichold, 2002, p. 271).

Developments in Technology

~~Bush (2008) is similarly bleak i~~ In his review of the developments in CALL ~~developments~~ over the preceding 25 years, ~~which appeared in an anniversary issue of the CALICO journal.~~ He, Bush (2008) pointeds out that, ~~despite having been the ambitions of CALL, namely the individualization of instruction and the speeding up of acquisition, have been~~ prominent in the CALL-related literature for decades (Bunderson & Abboud, 1971; Suppes, 1966), the ambitions of CALL—namely, the individualisation of instruction and the

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~~acceleration of acquisition—had not yet. As yet, however, neither has been conclusively effectively realized. He remarks that~~Specifically, despite improvements in computer-processing potential and the availability of technology, the textbook remained the focal point for most language lessons. ~~Likewise, Bush (2008) found that CALL software development, Bush states, had~~s not kept pace with developments in technology, ~~with and~~ the current capabilities of ~~the~~ available software and hardware configurations severely limited the extent to which CALL ~~can~~ could be used as a language learning tool.

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The Gap Between Research and Reality

The gap between research and reality ~~can therefore be seen as~~ is partly technological, with commercial software unable to create the conditions required for optimal vocabulary acquisition. Clifford ~~and~~ Granoien (2008), ~~writing from an for example, assume the~~ interactionist perspective, ~~claiming-claimed~~ that ~~in order-~~ for a CALL program to support language acquisition and proficiency, it must be capable of interacting with the learner; of recording, analyzing, and interpreting learner output; and of providing feedback for correction, all in a context of meaningful tasks with authentic output. ~~Of course, as yet, technology is not up to this task. Although, it should be mentioned, While CMC goes some way to partially~~ fulfilling these criteria by potentially providing access to more knowledgeable interlocutors, ~~overall, current technology does not allow all these criteria to be met.~~

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Teacher preparedness is also ~~an issue~~ problematic. Kessler (2007) highlighted the lack of CALL preparation courses ~~as part of in~~ teacher education programs. Where such courses exist, ~~they are~~ participants often viewed ~~them~~ as unsatisfactory ~~by participants~~ (Kessler, 2006). ~~Likewise, t~~ Teachers ~~might may~~ lack, not only ~~the~~ technical know-how, but ~~also the~~ linguistic capabilities to perform complicated tasks such as ~~selecting the selection of~~ useful collocations for use in concordancers. ~~This is not to single out non-native speaking~~

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~~instructors. As~~ Gabrielatos (2005) ~~has~~ identified ~~is~~, ~~this collocation selection and concordancer use is not only difficult for non-native English-speaking instructors; it is can~~ ~~not also be un~~ problematic for teacher-trained native English speakers. Finally, access issues also ~~plague affect~~ the implementation of research-~~inspired~~ CALL technologies. Zhao (2005) identified ~~is~~ the serious problems of inadequate access to and use of computers in education, ~~and particularly in~~ language classrooms ~~in particular~~.

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Explaining the Ggap

Capabilities of Current Technologies:— Interaction and Feedback

The gap between research and reality can be explained by comparing the requirements of vocabulary-~~related~~ SLA theory with the capacities of current technologies. As previously stated, explicit instruction is considered the best option for learning vocabulary, although. However, practice opportunities within rich and varied contexts need to be provided to facilitate a more ~~complete~~ comprehensive, multi-layered understanding of word meaning and usage, ~~thereby facilitating enabling~~ meaningful production (Nation, 2001). ~~However, in order~~ ~~for~~ this to occur, learners must have access to useful feedback, which in ~~turn the CALL~~ context requires ~~software~~ to be sufficiently flexible ~~enough~~ to recognize input and its acceptable variants ~~on input~~. It must be sensitive to errors of punctuation, spelling and syntax and ~~be able to provide feedback which that~~ addresses specific parts of word knowledge, rather than summarily labelling something ~~as as~~ correct or incorrect. Teachers can do this in an instant; ~~computers, currently, cannot~~. This problem extends to productive output, which is also viewed as essential to acquisition (Swain & Lapkin, 1995). Without feedback, noticing cannot take place and gaps in knowledge cannot be identified. While CMC potentially goes ~~some way to affording provides~~ students ~~the chance~~ access to ~~receive~~ usable feedback as part of authentic communication tasks, there is the problem of lack of access to native speakers

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(or even more proficient non-native speakers) who are willing and able to provide such feedback (Bush, 2008).

Capabilities of Current Technologies:– Usability

Available technologies also have their problems. Concordancers, for example, are difficult for students to use, ~~having~~ typically having been designed for sophisticated users (Peachey, 2005). Where classroom time restrictions allow, ~~t~~Teachers ~~can~~ could offer training for their students; ~~although this brings into play classroom time restrictions,~~ or they could ~~they can~~ attempt to construct or adapt their own concordancers, ~~—~~ a daunting task for most teachers (Gabrielatos, 2005). The difficulty of designing effective programs can be seen both in the cost of those available; and in the many prototypical programs; seen in research studies; ~~which that~~ never ~~make it into~~ enter the mainstream. In the case of the latter, ~~t~~The time and effort required to bring these programs to market is unlikely to make them cost effective.

Whatever the reason, the technologies currently available are rarely in keeping with current SLA theories or best vocabulary-learning practice; ~~and while~~ those that are, namely concordancers, are not; ~~in their current state,~~ currently accessible to all language proficiency levels; without extensive training and scaffolding on the teacher's part.

Conclusion

~~Thus,~~ ~~t~~The gap between research and reality ~~can be seen as the result of~~ stems from technology's present lack of capacity to ~~conform to~~ meet the demands of ~~current~~ SLA theory.

~~While this problem is not easily solved,~~ ~~i~~It is important to be conscious of technology's ies limitations; ~~in order to~~ when identifying in what capacity technology CALL can be used in

CALL vocabulary instruction. ~~It is not useful to consider~~ ~~v~~Vocabulary ~~as is not~~ wholly learnable through CALL technologies; ~~although,~~ CALL may be useful for developing some aspects of word knowledge; ~~may be amenable to~~ CALL instruction. However, CALL cannot ~~but form~~ but should be part of a holistic strategy for word-knowledge building and

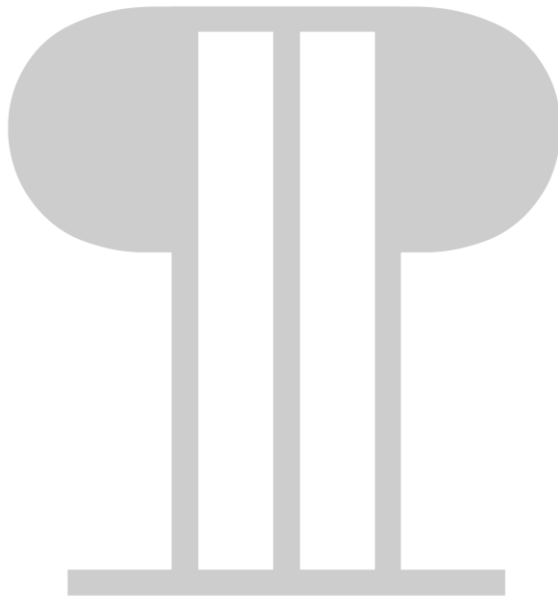
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strengthening. ~~Perhaps w~~With this in mind, CALL designers can focus on improving access to what is possible, rather than pursuing the currently impossible.



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~~Bibliography~~References

Allum, P. (2004). Evaluation of CALL: Initial vocabulary learning. *ReCALL*, 16(2), 488–

501. <https://doi.org/10.1017/S0958344004001624>~~doi:10.1017/S0958344004001624~~

Al-Seghayer, K. (2001). The effect of multimedia annotation modes on L2 vocabulary

acquisition: A comparative study. *Language Learning & Technology*, 5(1), 202–232.

Retrieved from <http://lt.msu.edu/vol5num1/alseghayer/default.html>

Bialystok, E., & Sharwood-Smith, M. (1985). Interlanguage is not a state of mind: An

evaluation of the construct of second language acquisition. *Applied Linguistics*, 6,

101–117. <https://doi.org/10.1093/applin/6.2.101>~~doi:10.1093/applin/6.2.101~~

Blake, R. (2000). Computer-mediated communication: A window on L2 Spanish inter

language. *Language Learning and Technology*, 4(1), 120–136. Retrieved from

<http://lt.msu.edu/vol4num1/blake/default.html>

Bush, M. D. (2008). Computer-assisted language learning: From vision to reality?

CALICO Journal, 25(3), 443–470. Retrieved from

https://calico.org/html/article_711.pdf

~~Chamot, A. (1987). The learning strategies of ESL students. In A. Wenden & J. Rubin (Eds.),~~

~~*Learner strategy in language learning* (pp. 71–83). Englewood Cliffs, NJ: Prentice~~

~~Hall, Inc.~~

Chambers, A. (2005). Integrating corpus consultation in language studies. *Language*

Learning & Technology, 9(2), 111–125. Retrieved from

<http://lt.msu.edu/vol9num2/chambers/default.html>

Chamot, A. (1987). The learning strategies of ESL students. In A. Wenden & J. Rubin (Eds.),

Learner strategy in language learning (pp. 71–83). Englewood Cliffs, NJ: Prentice

Hall.

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Chan, T. P., & Liou, H. C. (2005). Effects of web-based concordancing instruction on EFL students' learning of verb-noun collocations. *Computer Assisted Language Learning*, 18, 231–251.

<https://doi.org/10.1080/09588220500185769>~~doi:10.1080/09588220500185769.~~

Chang, W. L. & Sun, Y. C. (2009). Scaffolding and web concordancers as support for language learning. *Computer Assisted Language Learning*, 22(4), 283–302.

<https://doi.org/10.1080/09588220903184518>~~doi:10.1080/09588220903184518.~~

Chun, D. M., & Plass, J. L. (1996). Effects of multimedia annotations on vocabulary acquisition. *Modern Language Journal*, 80, 183–198.

<https://doi.org/10.2307/328635>~~Retrieved from http://www.jstor.org/stable/328635.~~

Commented [CE39]: Please note that DOIs are always preferred to URLs. I have revised this for you.

Clifford, R., & Granoien, N. (2008). Application of technology to language acquisition processes: What can work and why. In M. V. Holland & F. P. Fisher (Eds.), *The Path of Speech Technologies in Computer Assisted Language Learning: From research to practice* (pp. 25–43). London, ~~UK~~England: Routledge Language Learning.

Commented [CE40]: Please do not use abbreviated country names in an APA Style reference list.

Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, 11, 671–684.

[https://doi.org/10.1016/S0022-5371\(72\)80001-X](https://doi.org/10.1016/S0022-5371(72)80001-X)~~doi:10.1016/S0022-5371(72)80001-X.~~

Craik, F. I. M., & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology: General*, 104, 268–294.

<https://doi.org/10.1037/0096-3445.104.3.268>~~doi:10.1037/0096-3445.104.3.268.~~

Cummins, J. (1998). e-Lective language learning: Design of a computer-assisted text-based ESL/EFL learning system. *TESOL Journal*, 7(3), 18–21.

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Ellis, R. (2001). Introduction: Investigating form-focused instruction. *Language Learning*, 51

(~~Supplement 1~~), 1–46. <https://doi.org/10.1111/j.1467-1770.2001.tb00013.x>~~doi:10.1111/j.1467-1770.2001.tb00013.x~~.

Commented [CE41]: Please note the correct presentation of supplement numbers in APA Style.

Fernandez-Garcia, M. & Martinez-Arbelaiz, A. (2003). Learners' interactions: a comparison of oral and computer-assisted written conversations. *ReCALL*, 15(1), 113–136.

<https://doi.org/10.1017/S0958344003000910>~~doi:10.1017/S0958344003000910~~.

Gabrielatos, C. (2005). Corpora and language teaching: Just a fling or wedding bells? *Teaching English as a Second or Foreign Language*, 8(4). Retrieved from <http://tesol.org/ej32/a1.html>.

Griffin, G. F. & Harley, T. A. (1996). List learning of second language vocabulary. *Applied Psycholinguistics*, 17, 443–460. <https://doi.org/10.1017/S0142716400008195>~~doi:10.1017/S0142716400008195~~.

Horst, M., & Cobb, T. (2001). Growing academic vocabulary with a collaborative online database. In B. Morrison, D. Gardner, K. Keobke, & M. Spratt (Eds.), *ELT perspectives on IT & multimedia* (pp. 189–225). ~~Hung Hom, Hong Kong: Hong Kong Polytechnic University.~~

Commented [CE42]: Please note that in APA Style you must include the city and the country name for all publishers outside the US. I have checked this for you.

Horst, M., Cobb, T. & Meara, P. (1998). Beyond a clockwork orange: Acquiring a second language through reading. *Reading in a Foreign Language*, 11, 207–223. Retrieved from <http://nflrc.hawaii.edu/rfl>.

Hulstijn, J. H. (1993). When do foreign-language learners look up the meaning of unfamiliar words? The influence of task and learner variables. *The Modern Language Journal*, 77(2), 139–147. <https://doi.org/10.2307/328937>~~Retrieved from http://www.jstor.org/stable/328937~~.

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- Hulstijn, J. H., Hollander, M., & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign language students: The influence of marginal glosses, dictionary use, and the reoccurrence of unknown words. *The Modern Language Journal*, 80(3), 327–339. <https://doi.org/10.2307/329439> Retrieved from <http://www.jstor.org/stable/329439>.
- Joe, A. (1995). Text-based tasks and incidental vocabulary learning: A case study. *Second Language Research*, 11, 149–158. <https://doi.org/10.1177/026765839501100206> ~~doi:10.1177/026765839501100206~~.
- Joe, A. (1998). What effects do text-based tasks promoting generation have on incidental vocabulary acquisition? *Applied Linguistics*, 19, 357–377. <https://doi.org/10.1093/applin/19.3.357> ~~doi:10.1093/applin/19.3.357~~.
- Jones, L. (2004). Testing L2 vocabulary recognition and recall using pictorial and written test items. *Language Learning & Technology*, 8(3), 122–143. Retrieved from <http://lt.msu.edu/vol8num3/jones/default.html>.
- Keating, G. D. (2008). Task effectiveness and word learning in a second language: The involvement load hypothesis on trial. *Language Teaching Research*, 12(3), 365–386. <https://doi.org/10.1177/1362168808089922> ~~doi:10.1177/1362168808089922~~.
- Kim, Y. (2008). The role of task-induced involvement load and learner proficiency in L2 vocabulary acquisition. *Language Learning*, 58(2), 285–325. <https://doi.org/10.1111/j.1467-9922.2008.00442.x> ~~doi:10.1111/j.1467-9922.2008.00442.x~~.
- Knight, S. (1994). Dictionary use while reading: The effects on comprehension and word inference ability. *The Modern Language Journal*, 78(3), 285–299. <https://doi.org/10.2307/330108> Retrieved from <http://www.jstor.org/stable/330108>.

Laufer, B. (2003). Vocabulary acquisition in a second language: Do learners really acquire most vocabulary by reading? *Some empirical evidence. Canadian Modern Language Review*, 59(4), 567–587. <https://doi.org/10.3138/cmlr.59.4.567>

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Laufer, B. (2006). Comparing focus on form and focus on formS in second language vocabulary learning. *The Canadian Modern Language Review*, 63, 149–166. <https://doi.org/10.3138/cmlr.63.1.149> [doi:10.1353/cml.2006.0047](https://doi.org/10.1353/cml.2006.0047).

Laufer, B., & Hulstijn, J. H. (2001). Incidental vocabulary acquisition in a second language: The construct of task induced involvement. *Applied Linguistics*, 22, 1–26. <https://doi.org/10.1093/applin/22.1.1> [doi:10.1093/applin/22.1.1](https://doi.org/10.1093/applin/22.1.1).

~~Laufer, B. (2006). Comparing focus on form and focus on formS in second language vocabulary learning. *The Canadian Modern Language Review*, 63, 149–166. <https://doi.org/10.3138/cmlr.63.1.149> [doi:10.1353/cml.2006.0047](https://doi.org/10.1353/cml.2006.0047).~~

Levy, M. & Stockwell, S. (2006). *CALL Dimensions: Options and Issues in Computer-Assisted Language Learning*. Mahwah, NJ: Routledge. <https://doi.org/10.4324/9780203708200>

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Li, J. (2009). The evolution of vocabulary learning strategies in a computer-mediated reading environment. *CALICO Journal*, 27(1), 118–146. <https://doi.org/10.11139/cj.27.1.118-146>

Retrieved from https://calico.org/html/article_783.pdf.

Nagata, N. (1999). The effectiveness of computer-assisted interactive glosses. *Foreign Language Annals*, 32(4), 469–479. <https://doi.org/10.1111/j.1944-9720.1999.tb00876.x> [doi:10.1111/j.1944-9720.1999.tb00876.x](https://doi.org/10.1111/j.1944-9720.1999.tb00876.x).

Nation, I. S. P. (1990). *Teaching and Learning Vocabulary*. Boston, MA: Heinle & Heinle.

Commented [CE46]: Please note that APA Style requires the state abbreviation after the city of publication.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. New York, NY: Cambridge University Press. <https://doi.org/10.1017/cbo9781139524759>.

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- Nesselhauf, N., & Tschichold, C. (2002). Collocations in CALL: An investigation of vocabulary-building software for EFL. *Computer Assisted Language Learning*, 15(3), 251–279. <https://doi.org/10.1076/call.15.3.251.8190>~~doi:10.1076/call.15.3.251.8190.~~
- Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, 50, 417–528. <https://doi.org/10.1111/0023-8333.00136>~~doi:10.1111/0023-8333.00136.~~
- Peachey, N. (2005). *Concordancers in ELT*. Retrieved from <http://www.teachingenglish.org.uk/think/articles/concordancers-elt>
- Pellettieri, J. (2000). Negotiation in cyberspace: The role of chatting in the development of grammatical competence. In M. Warschauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice* (pp. 59–86). Cambridge, England: Cambridge University Press. <https://doi.org/10.1017/cbo9781139524735.006>
- Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt, N., and M. McCarthy, M., (Eds.), *Vocabulary: Description, Acquisition and Pedagogy* (pp. 199–227). Cambridge, England: Cambridge University Press.
- Stahl, S. A., & Clark, C. H. (1987). The effects of participatory expectation in classroom discussion on learning of science vocabulary. *American Educational Research Journal*, 24(4), 541–555. <https://doi.org/10.3102/00028312024004541> Retrieved from <http://www.jstor.org/stable/1163179>.
- Sun, Y. C. (2003). Learning process, strategies, and web-based concordancers: A case study. *British Journal of Educational Technology*, 34(5), 601–613. <https://doi.org/10.1046/j.0007-1013.2003.00353.x>.
- Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied Linguistics*, 16(3), 371–391. <https://doi.org/10.1093/applin/16.3.371>~~doi:10.1093/applin/16.3.371.~~

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- Swan, M. (1996). *Language teaching* ~~is a~~ *teaching language*. Keele, England: International Association of Teachers of English as a Foreign Language.
- Tudini, V. (2003). Using native speakers in chat. *Language Learning and Technology*, 7(3), 141–159. Retrieved from <http://lilt.msu.edu/vol7num3/tudini/default.html>.
- Waring, R. & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, 15, 1–27. Retrieved from <http://nflrc.hawaii.edu/rfl/>.
- Webb, S. (2007). The effects of repetition on vocabulary knowledge. *Applied Linguistics*, 28(1), 46–65. <https://doi.org/10.1093/applin/aml048> Retrieved from <http://applied.oxfordjournals.org>
- Webb, S. (2008). The effects of context on incidental vocabulary learning. *Reading in a Foreign Language*, 20(2), 232–245. Retrieved from <http://nflrc.hawaii.edu/rfl/>.
- Webb, S. & Kagimoto, E. (2009). The effects of vocabulary learning on collocation and meaning. *TESOL Quarterly*, 43(1), 55–77. <https://doi.org/10.1002/j.1545-7249.2009.tb00227.x> Retrieved from <http://www.ingentaconnect.com>.
- Yelland, N. & Masters, J. (2007). Rethinking scaffolding in the information age. *Computers & Education*, 48(3), 362–382. <https://doi.org/10.1016/j.compedu.2005.01.010> ~~doi: 10.1016/j.compedu.2005.01.010.~~
- Zhao, J. (2005). *Computer sSupported cCollaborative lLearning*. Shanghai, China: Shanghai Education Publishing Co.

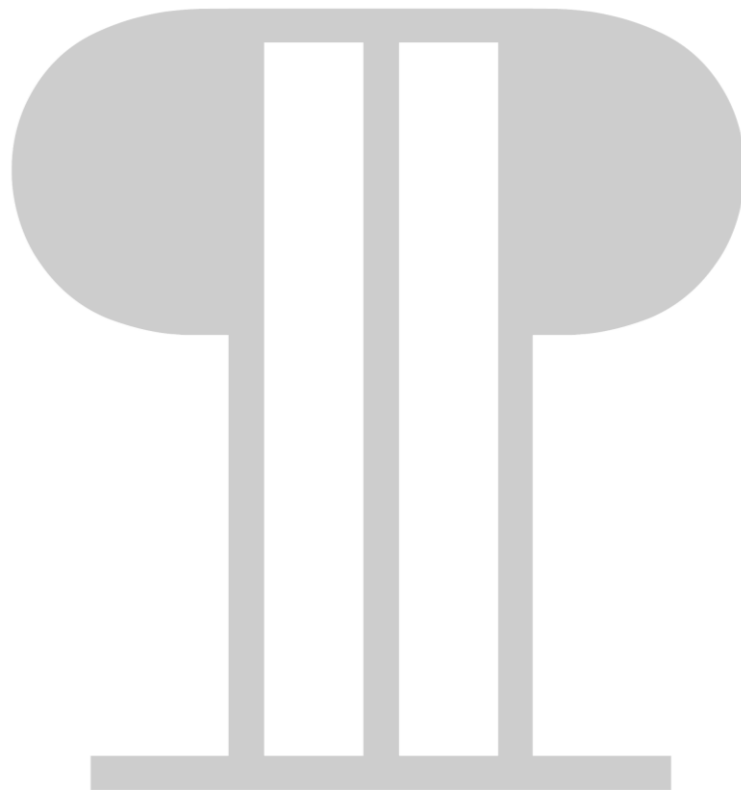
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Research and Reality: An Investigation of the Gap Between SLA and Lexical CALL

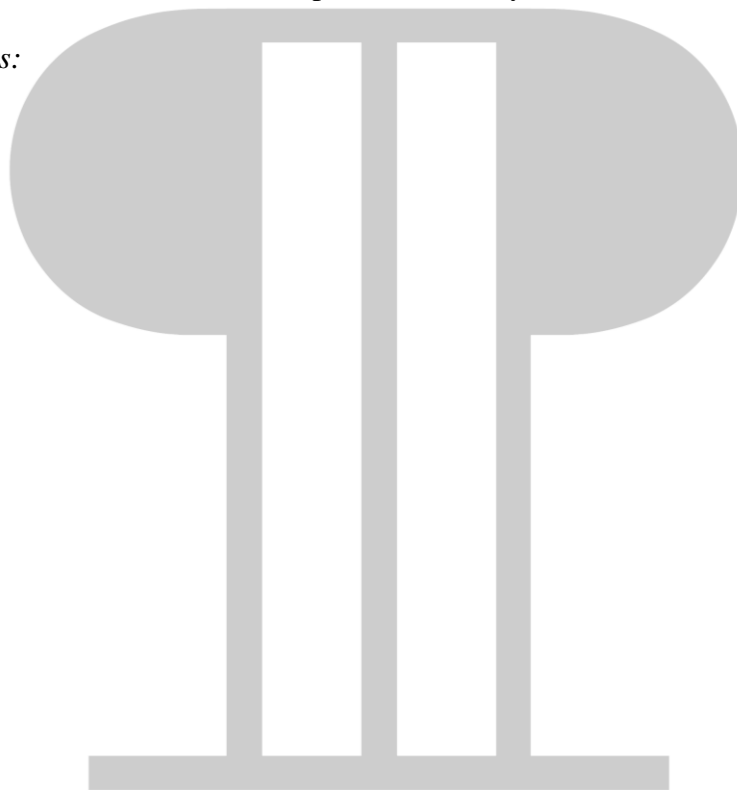
Research and the Current State of Vocabulary Instruction in CALL



Abstract

By comparing current second language acquisition (SLA) theory and lexical computer-assisted language learning (CALL) theory with recent reviews of CALL software packages and technical capabilities, a gap is identified between theory and reality. This gap can be explained by the limitations of current computing technologies compared to the requirements of best-practice vocabulary acquisition theories. It is argued that these computing limitations should be worked with, rather than against, and that CALL is best considered a support for vocabulary instruction, rather than a complete vocabulary instruction method.

Keywords:



Research and Reality: An Investigation of the Gap Between SLA and Lexical CALL

Research and the Current State of Vocabulary Instruction in CALL

Vocabulary instruction is vital for second language development, and vocabulary acquisition has featured prominently in second language acquisition (SLA) research. This prominence has transferred into lexical computer-assisted language learning (CALL) research, but is yet to significantly influence CALL instructional software or activities. Indeed, there is a significant gap between theory and reality. Here, this gap and its underlying reasons are identified, not to inform a suggested plan of action, but to emphasise that more needs to be done.

Second Language Acquisition Research

Lexical acquisition is cumulative and more complicated than simple rote memorisation (Swan, 1996). Henriksen, drawing on the active–passive continuum of Bialystok and Sharwood-Smith (1985), defined acquisition as occurring along a group of three continua: the first, from partial to precise knowledge; the second, encompassing depth of knowledge, including control of paradigmatic and syntactic features; and the third, from receptive to productive knowledge (as cited in Laufer & Hulstijn, 2001).

It is generally agreed that explicit vocabulary instruction is vital for improving the rate and quality of vocabulary acquisition (Ellis, 2001; Laufer, 2006; Norris & Ortega, 2000). While incidental learning, such as through reading, is also useful, it is a slow and uncontrolled process (Horst, Cobb & Meara, 1998; Waring & Takaki, 2003), heavily dependent on the number of repetitions and quality of the context in which words are presented (Waring & Takaki, 2003; Webb, 2007, 2008). The best choice is a combination of the two, leading to a more complete knowledge of lexical items, as in Nation's (2001) taxonomy of 'knowing a word'.

Task type also influences the extent to which lexical knowledge is internalised. It is commonly held that receptive tasks produce stronger gains along the receptive continuum, while productive tasks result in increased productive knowledge (Griffin & Harley, 1996; Webb & Kagimoto, 2009). However, while productive tasks produce improved post-test results across both productive and receptive knowledge (Joe, 1995, 1998; Keating, 2008), when time on task is considered, there is no significant difference between the effects of the two task types (Keating, 2008; Kim, 2008). Conversely, there is some evidence that deeper processing creates more memory traces and leads to improved long-term retention of lexical information (Craik & Lockhart, 1972; Craik & Tulving, 1975). What is certain is that for lexical knowledge to facilitate input comprehension, many words must be known. Laufer (2003) put this number at 3000 word families, or approximately 5000 lexical items. Strategies are also important. Learners have been shown to use more strategies for vocabulary learning than for any other aspect of language (Chamot, 1987), and these strategies become more complex as proficiency and general familiarity with strategies increases (Schmitt, 1997).

CALL Research

Explicit Vocabulary Instruction: Concordancers, Glosses, Dictionaries and Multimedia Enhancements

To date, most CALL research has focused on the extent to which concordancers (Chan & Liou, 2005; Yelland & Masters, 2007), glosses (Hulstijn, Hollander & Greidanus, 1996; Nagata, 1999) and electronic or online dictionaries (Cummins, 1998; Horst & Cobb, 2001; Hulstijn, 1993; Knight, 1994; Laufer & Hill, 2000) can aid vocabulary acquisition. There has also been significant work on multimedia enhancements for vocabulary retention (Al-Seghayer, 2001; Chun & Plass, 1996; Jones, 2004). Results have been positive, with such technologies proving advantageous for vocabulary acquisition. Reading hypertexts with access to electronic dictionaries, for example, has been found to assist incidental vocabulary

learning without interfering with the reading process (Li, 2009). Concordancers have been reported to be beneficial for students' development of responsibility for their own learning and their ability to identify collocation patterns independently (Chambers, 2005), while also contributing to learners' consciousness of descriptive rather than prescriptive language (Yelland & Masters, 2007). However, as remarked by Sun (2003), concordancers can be difficult to use, particularly for lower-proficiency students. To negate this difficulty, scaffolding might be useful (Chang & Sun, 2009).

Increasing Opportunities for Vocabulary Exposure: Computer-mediated

Communication

CALL has also been found to have advantages for the negotiation of meaning, with Levy and Stockwell (2006) reporting that students used comprehension checks, clarification requests, confirmation checks, code-switching, self-corrections, requests, word invention, approximation, communication and compensatory strategies as part of computer-mediated communication (CMC) tasks. Most of this negotiation surrounded lexical confusion, a phenomenon confirmed by multiple CMC-related studies (Blake, 2000; Fernandez-Garcia & Martinez-Arbelaz, 2003; Pellettieri, 2000; Tudini, 2003). This suggests that CMC should be employed in tasks aimed at facilitating the negotiation of vocabulary.

Advantages of CALL-Based Vocabulary Exercises

Nesselhauf and Tschichold (2002) identify the inherent advantages of CALL in providing immediate and direct feedback and granting learners a high degree of autonomy in their choice of topic, exercise and pace. Further, CALL can increase motivation and reduce anxiety. In his 2004 experimental study of the effects of pre-teaching vocabulary through CALL vocabulary activities as homework, Allum found that 80 per cent of students agreed that 'computer exercises made [them] do more homework than usual'. This corresponded to a consistent increase in student homework completion over the course of the study.

What About Strategies?

In a 2009 study of vocabulary learning strategy use on a web-based reading supported by an online dictionary, Li found significant differences in the complexity of strategy use when compared to a paper-based task, even when students used electronic dictionaries. Students working in the CALL condition engaged in higher-order cognitive strategies such as summarising and manipulating phrases, which are commonly held to result in deeper semantic processing and better vocabulary retention (Li, 2009). The students also freely discussed the readings, which involved repeating and quoting from the text, and summarising and translating. According to Stahl and Clark (1987), this is one of the most effective ways to learn vocabulary. The use of more complex vocabulary-learning strategies by the students in the CALL condition in Li's (2009) study can be attributed to the dramatically reduced reading time afforded by having comprehensible definitions immediately available. Provided they have sufficient comprehension of the text, students can analyse sentences and paragraphs to infer the meaning of unfamiliar words (Nation, 1990). In Li's (2009) study, students' enhanced access to meaning in the CALL condition would have increased their confidence, while their rapid word decoding would have resulted in well-organised reading and improved motivation.

CALL Reviews

Vocabulary Teaching Programs

Nesselhauf and Tschichold (2002) analysed a selection of vocabulary software packages, specifically focusing on the effectiveness of the collocation instruction offered by each. They were extremely disappointed. They found that, as observed by Clifford and Granoien (2008), the primary use of today's computer software is based on 'assumptions of teaching that are at least two decades and more old' (p. 38). Nesselhauf and Tschichold (2002) found that the knowledge needed for actual production of vocabulary items—that is

specific details of meaning and usage—was not practiced, and that frequently, all that was required was passive recognition. Presenting words in context was often neglected and interaction was limited. They concluded that there was a ‘wide gap ... between these programs and the academic literature on computer assisted vocabulary learning’ (Nesselhauf & Tschichold, 2002, p. 271).

Developments in Technology

In his review of the developments in CALL over the preceding 25 years, Bush (2008) pointed out that, despite having been prominent in the CALL-related literature for decades (Bunderson & Abboud, 1971; Suppes, 1966), the ambitions of CALL—namely, the individualisation of instruction and the acceleration of acquisition—had not yet been effectively realised. Specifically, despite improvements in computer-processing potential and the availability of technology, the textbook remained the focal point for most language lessons. Bush (2008) found that CALL software development had not kept pace with developments in technology, and the capabilities of the available software and hardware configurations severely limited the extent to which CALL could be used as a language learning tool.

The Gap Between Research and Reality

The gap between research and reality is partly technological, with commercial software unable to create the conditions required for optimal vocabulary acquisition. Clifford and Granoien (2008), writing from an interactionist perspective, claimed that for a CALL program to support language acquisition and proficiency, it must be capable of interacting with the learner; of recording, analysing and interpreting learner output; and of providing feedback for correction—all in a context of meaningful tasks with authentic output. While CMC partially fulfils these criteria by potentially providing access to more knowledgeable interlocutors, overall, current technology does not allow all these criteria to be met.

Teacher preparedness is also problematic. Kessler (2007) highlighted the lack of CALL preparation courses in teacher education programs. Where such courses exist, participants often view them as unsatisfactory (Kessler, 2006). Teachers may lack not only the technical know-how, but also the linguistic capabilities to perform complicated tasks such as the selection of useful collocations for use in concordancers. As Gabrielatos (2005) has identified, collocation selection and concordancer use is not only difficult for non-native English-speaking instructors; it can also be problematic for teacher-trained native English speakers. Finally, access issues also affect the implementation of research-inspired CALL technologies. Zhao (2005) identified the serious problems of inadequate access to and use of computers in education, particularly in language classrooms.

Explaining the Gap

Capabilities of Current Technologies: Interaction and Feedback

The gap between research and reality can be explained by comparing the requirements of vocabulary-related SLA theory with the capacities of current technologies. As previously stated, explicit instruction is considered the best option for learning vocabulary. However, practice opportunities within rich and varied contexts need to be provided to facilitate a more comprehensive, multi-layered understanding of word meaning and usage, enabling meaningful production (Nation, 2001). For this to occur, learners must have access to useful feedback, which in the CALL context requires software to be sufficiently flexible to recognise input and its acceptable variants. It must be sensitive to errors of punctuation, spelling and syntax and able to provide feedback that addresses specific parts of word knowledge, rather than summarily labelling something as correct or incorrect. Teachers can do this in an instant; computers, currently, cannot. This problem extends to productive output, which is also viewed as essential to acquisition (Swain & Lapkin, 1995). Without feedback, noticing cannot take place and gaps in knowledge cannot be identified. While CMC

potentially provides students access to usable feedback as part of authentic communication tasks, there is the problem of lack of access to native speakers (or even more proficient non-native speakers) who are willing and able to provide such feedback (Bush, 2008).

Capabilities of Current Technologies: Usability

Available technologies also have their problems. Concordancers, for example, are difficult for students to use, typically having been designed for sophisticated users (Peachey, 2005). Where classroom time restrictions allow, teachers could offer training for their students; or they could attempt to construct or adapt their own concordancers—a daunting task for most teachers (Gabrielatos, 2005). The difficulty of designing effective programs can be seen both in the cost of those available and in the many prototypical programs seen in research studies that never enter the mainstream. In the case of the latter, the time and effort required to bring these programs to market is unlikely to make them cost effective. Whatever the reason, the technologies currently available are rarely in keeping with current SLA theories or best vocabulary-learning practice; while those that are, namely concordancers, are not currently accessible to all language proficiency levels without extensive training and scaffolding on the teacher's part.

Conclusion

The gap between research and reality stems from technology's present lack of capacity to meet the demands of SLA theory. It is important to be conscious of technology's limitations when identifying in what capacity CALL can be used in vocabulary instruction. Vocabulary is not wholly learnable through CALL technologies. CALL may be useful for developing some aspects of word knowledge, but should be part of a holistic strategy for word-knowledge building and strengthening. With this in mind, CALL designers can focus on improving access to what is possible, rather than pursuing the currently impossible.

References

- Allum, P. (2004). Evaluation of CALL: Initial vocabulary learning. *ReCALL*, 16(2), 488–501.
<https://doi.org/10.1017/s0958344004001624>
- Al-Seghayer, K. (2001). The effect of multimedia annotation modes on L2 vocabulary acquisition: A comparative study. *Language Learning & Technology*, 5(1), 202–232.
Retrieved from <http://llt.msu.edu/vol5num1/alseghayer/default.html>
- Bialystok, E. & Sharwood-Smith, M. (1985). Interlanguage is not a state of mind: An evaluation of the construct of second language acquisition. *Applied Linguistics*, 6, 101–117. <https://doi.org/10.1093/applin/6.2.101>
- Blake, R. (2000). Computer-mediated communication: A window on L2 Spanish inter language. *Language Learning and Technology*, 4(1), 120–136. Retrieved from <http://llt.msu.edu/vol4num1/blake/default.html>
- Bush, M. D. (2008). Computer-assisted language learning: From vision to reality? *CALICO Journal*, 25(3), 443–470. Retrieved from https://calico.org/html/article_711.pdf
- Chambers, A. (2005). Integrating corpus consultation in language studies. *Language Learning & Technology*, 9(2), 111–125. Retrieved from <http://llt.msu.edu/vol9num2/chambers/default.html>
- Chamot, A. (1987). The learning strategies of ESL students. In A. Wenden & J. Rubin (Eds.), *Learner strategy in language learning* (pp. 71–83). Englewood Cliffs, NJ: Prentice Hall.
- Chan, T. P. & Liou, H. C. (2005). Effects of web-based concordancing instruction on EFL students' learning of verb-noun collocations. *Computer Assisted Language Learning*, 18, 231–251. <https://doi.org/10.1080/09588220500185769>

- Chang, W. L. & Sun, Y. C. (2009). Scaffolding and web concordancers as support for language learning. *Computer Assisted Language Learning*, 22(4), 283–302.
<https://doi.org/10.1080/09588220903184518>
- Chun, D. M. & Plass, J. L. (1996). Effects of multimedia annotations on vocabulary acquisition. *Modern Language Journal*, 80, 183–198. <https://doi.org/10.2307/328635>
- Clifford, R. & Granoien, N. (2008). Application of technology to language acquisition processes: What can work and why. In M. V. Holland & F. P. Fisher (Eds.), *The path of speech technologies in computer assisted language learning: From research to practice* (pp. 25–43). London, England: Routledge Language Learning.
- Craik, F. I. M. & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, 11, 671–684.
[https://doi.org/10.1016/s0022-5371\(72\)80001-x](https://doi.org/10.1016/s0022-5371(72)80001-x)
- Craik, F. I. M. & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology: General*, 104, 268–294.
<https://doi.org/10.1037//0096-3445.104.3.268>
- Cummins, J. (1998). e-Lective language learning: Design of a computer-assisted text-based ESL/EFL learning system. *TESOL Journal*, 7(3), 18–21.
- Ellis, R. (2001). Introduction: Investigating form-focused instruction. *Language Learning*, 51 (Suppl. 1), 1–46. <https://doi.org/10.1111/j.1467-1770.2001.tb00013.x>
- Fernandez-Garcia, M. & Martinez-Arbelaz, A. (2003). Learners' interactions: A comparison of oral and computer-assisted written conversations. *ReCALL*, 15(1), 113–136.
<https://doi.org/10.1017/s0958344003000910>
- Gabrielatos, C. (2005). Corpora and language teaching: Just a fling or wedding bells? *Teaching English as a Second or Foreign Language*, 8(4). Retrieved from <http://tesl-ej.org/ej32/a1.html>

- Griffin, G. F. & Harley, T. A. (1996). List learning of second language vocabulary. *Applied Psycholinguistics*, 17, 443–460. <https://doi.org/10.1017/s0142716400008195>
- Horst, M. & Cobb, T. (2001). Growing academic vocabulary with a collaborative online database. In B. Morrison, D. Gardner, K. Keobke & M. Spratt (Eds.), *ELT perspectives on IT & multimedia* (pp. 189–225). Hung Hom, Hong Kong: Hong Kong Polytechnic University.
- Horst, M., Cobb, T. & Meara, P. (1998). Beyond a clockwork orange: Acquiring a second language through reading. *Reading in a Foreign Language*, 11, 207–223. Retrieved from <http://nflrc.hawaii.edu/rfl>
- Hulstijn, J. H. (1993). When do foreign-language learners look up the meaning of unfamiliar words? The influence of task and learner variables. *The Modern Language Journal*, 77(2), 139–147. <https://doi.org/10.2307/328937>
- Hulstijn, J. H., Hollander, M. & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign language students: The influence of marginal glosses, dictionary use, and the reoccurrence of unknown words. *The Modern Language Journal*, 80(3), 327–339. <https://doi.org/10.2307/329439>
- Joe, A. (1995). Text-based tasks and incidental vocabulary learning: A case study. *Second Language Research*, 11, 149–158. <https://doi.org/10.1177/026765839501100206>
- Joe, A. (1998). What effects do text-based tasks promoting generation have on incidental vocabulary acquisition? *Applied Linguistics*, 19, 357–377. <https://doi.org/10.1093/applin/19.3.357>
- Jones, L. (2004). Testing L2 vocabulary recognition and recall using pictorial and written test items. *Language Learning & Technology*, 8(3), 122–143. Retrieved from <http://llt.msu.edu/vol8num3/jones/default.html>

- Keating, G. D. (2008). Task effectiveness and word learning in a second language: The involvement load hypothesis on trial. *Language Teaching Research*, 12(3), 365–386.
<https://doi.org/10.1177/1362168808089922>
- Kim, Y. (2008). The role of task-induced involvement load and learner proficiency in L2 vocabulary acquisition. *Language Learning*, 58(2), 285–325.
<https://doi.org/10.1111/j.1467-9922.2008.00442.x>
- Knight, S. (1994). Dictionary use while reading: The effects on comprehension and word inference ability. *The Modern Language Journal*, 78(3), 285–299.
<https://doi.org/10.2307/330108>
- Laufer, B. (2003). Vocabulary acquisition in a second language: Do learners really acquire most vocabulary by reading? Some empirical evidence. *Canadian Modern Language Review*, 59(4), 567–587. <https://doi.org/10.3138/cmlr.59.4.567>
- Laufer, B. (2006). Comparing focus on form and focus on formS in second language vocabulary learning. *The Canadian Modern Language Review*, 63, 149–166.
<https://doi.org/10.3138/cmlr.63.1.149>
- Laufer, B. & Hulstijn, J. H. (2001). Incidental vocabulary acquisition in a second language: The construct of task induced involvement. *Applied Linguistics*, 22, 1–26.
<https://doi.org/10.1093/applin/22.1.1>
- Levy, M. & Stockwell, S. (2006). *CALL dimensions: Options and issues in computer-assisted language learning*. Mahwah, NJ: Routledge. <https://doi.org/10.4324/9780203708200>
- Li, J. (2009). The evolution of vocabulary learning strategies in a computer-mediated reading environment. *CALICO Journal*, 27(1), 118–146. <https://doi.org/10.11139/cj.27.1.118-146>

- Nagata, N. (1999). The effectiveness of computer-assisted interactive glosses. *Foreign Language Annals*, 32(4), 469–479. <https://doi.org/10.1111/j.1944-9720.1999.tb00876.x>
- Nation, I. S. P. (1990). *Teaching and learning vocabulary*. Boston, MA: Heinle & Heinle.
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. New York, NY: Cambridge University Press. <https://doi.org/10.1017/cbo9781139524759>
- Nesselhauf, N. & Tschichold, C. (2002). Collocations in CALL: An investigation of vocabulary-building software for EFL. *Computer Assisted Language Learning*, 15(3), 251–279. <https://doi.org/10.1076/call.15.3.251.8190>
- Norris, J. M. & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, 50, 417–528. <https://doi.org/10.1111/0023-8333.00136>
- Peachey, N. (2005). *Concordancers in ELT*. Retrieved from <http://www.teachingenglish.org.uk/think/articles/concordancers-elt>
- Pellettieri, J. (2000). Negotiation in cyberspace: The role of chatting in the development of grammatical competence. In M. Warschauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice* (pp. 59–86). Cambridge, England: Cambridge University Press. <https://doi.org/10.1017/cbo9781139524735.006>
- Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition and pedagogy* (pp. 199–227). Cambridge, England: Cambridge University Press
- Stahl, S. A. & Clark, C. H. (1987). The effects of participatory expectation in classroom discussion on learning of science vocabulary. *American Educational Research Journal*, 24(4), 541–555. <https://doi.org/10.3102/00028312024004541>

- Sun, Y. C. (2003). Learning process, strategies, and web-based concordancers: A case study. *British Journal of Educational Technology*, 34(5), 601–613.
<https://doi.org/10.1046/j.0007-1013.2003.00353.x>
- Swain, M. & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied Linguistics*, 16(3), 371–391. <https://doi.org/10.1093/applin/16.3.371>
- Swan, M. (1996). *Language teaching is teaching language*. Keele, England: International Association of Teachers of English as a Foreign Language.
- Tudini, V. (2003). Using native speakers in chat. *Language Learning and Technology*, 7(3), 141–159. Retrieved from <http://llt.msu.edu/vol7num3/tudini/default.html>
- Waring, R. & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, 15, 1–27. Retrieved from <http://nflrc.hawaii.edu/rfl>
- Webb, S. (2007). The effects of repetition on vocabulary knowledge. *Applied Linguistics*, 28(1), 46–65. <https://doi.org/10.1093/applin/aml048>
- Webb, S. (2008). The effects of context on incidental vocabulary learning. *Reading in a Foreign Language*, 20(2), 232–245. Retrieved from <http://nflrc.hawaii.edu/rfl>
- Webb, S. & Kagimoto, E. (2009). The effects of vocabulary learning on collocation and meaning. *TESOL Quarterly*, 43(1), 55–77. <https://doi.org/10.1002/j.1545-7249.2009.tb00227.x>
- Yelland, N. & Masters, J. (2007). Rethinking scaffolding in the information age. *Computers & Education*, 48(3), 362–382. <https://doi.org/10.1016/j.compedu.2005.01.010>
- Zhao, J. (2005). *Computer supported collaborative learning*. Shanghai, China: Shanghai Education.