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Technology-Mediated L2 Strategy Instruction and Its Potential to Enhance Evaluation and Research

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Abstract

This paper discusses the potential of technology-mediated forms of L2 strategy instruction (SI) to not only facilitate SI but to enhance evaluation of SI interventions and L2 strategy research more generally. It uses results from a recent empirical study to show how computer-based forms of SI may offer remedies for problematic features of evaluation, including access to process data showing how learners actually perform strategy-related tasks, the timing and frequency of collection of learner perception data, and most importantly, data about task perception and meta-cognitive monitoring, which can position L2 strategies within frameworks for self-regulated learning. The underlying premise of this article is the need to revitalize the field of L2 learner strategies with new methods for evaluation and research that can better capture the complex nature of L2 strategy use.

Keywords

Evaluation, L2 Strategy Instruction, Research Design, Self-Regulated Learning, Technology

Disciplines

Bilingual, Multilingual, and Multicultural Education | Curriculum and Instruction | Educational Assessment, Evaluation, and Research

Comments

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Technology-Mediated L2 Strategy Instruction and Its Potential to Enhance Evaluation and Research

Jim Ranalli, TESL/Applied Linguistics, Iowa State University, Ames, Iowa, USA

ABSTRACT

This paper discusses the potential of technology-mediated forms of L2 strategy instruction (SI) to not only facilitate SI but to enhance evaluation of SI interventions and L2 strategy research more generally. It uses results from a recent empirical study to show how computer-based forms of SI may offer remedies for problematic features of evaluation, including access to process data showing how learners actually perform strategy-related tasks, the timing and frequency of collection of learner perception data, and most importantly, data about task perception and metacognitive monitoring, which can position L2 strategies within frameworks for self-regulated learning. The underlying premise of this article is the need to revitalize the field of L2 learner strategies with new methods for evaluation and research that can better capture the complex nature of L2 strategy use.

Keywords: Evaluation, L2 Strategy Instruction, Research Design, Self-Regulated Learning, Technology

1. INTRODUCTION

This article discusses the potential benefits of conducting and evaluating L2 strategy instruction, and of researching L2 strategy use more generally, via the computer. The underlying premise is the deflated state of L2 strategy research at present. After a promising start in the 1980s, the field flourished in the 1990s, producing a large body of research, including descriptive, taxonomic, and experimental studies. In recent years, however, disputes have

arisen over difficulties in defining the construct of a strategy and the methods with which it can meaningfully be operationalized and studied (Dörnyei, 2005; Macaro, 2006).

The particular challenges of strategy instruction (SI), representing the practical application of descriptive L2 strategy research in order to enhance learning, were illustrated in a recent meta-analysis of L2 SI studies (Plonsky, 2011), which found a small to medium overall effect size for SI, with effectiveness moderated by a number of contextual, treatment, and outcome

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variables. This review of SI research provided further support for the view that “there is still much work to be done on strategy instruction in order to prove to learners, teachers, and the wider SLA research community that such an undertaking in the classroom is worthwhile” (Cohen & Macaro, 2007, p. 284). It also reiterated problems with the quality of L2 strategy research noted previously by other scholars (Chamot, 2005; Hassan et al., 2005).

Nevertheless, many researchers and practitioners have the sense that strategies remain an important focus for understanding achievement (or the lack thereof) in L2 learning. What is needed is a way to revitalize the field and make it relevant again. According to one prominent strategy researcher,

...many both inside and outside the learner strategy tradition feel we have reached a crossroads. Since we have already established that frequent use of a large repertoire of strategies is positively related to learning results, we need more research investigating the real picture, which is more complex ... We also need more rigorous research designs and practices, and more tangible and useful applications for teachers and learners (Gu, 2007, p. vi).

In this paper, I will discuss the role of computer technology in contributing to these efforts. Specifically, I attempt to extrapolate from the results of a recent evaluation of a particular project (Ranalli, 2013b) to wider implications about the potential for technology-mediated SI to contribute to this revitalization, by showing how computer-based interventions can facilitate both scaffolding of, and research into, the development of L2 learners’ strategic abilities.

2. TECHNOLOGY IN STRATEGY-RELATED L2 RESEARCH

The L2 literature contains few examples of computers used to deliver SI, and those studies that exist are of an exploratory nature insofar

as they lack controls (Bull & Ma, 2001; Chang, 2005; O’Bryan & Hegelheimer, 2007), combine computer-based SI with face-to-face training (Dreyer & Nel, 2003; Tsai & Talley, 2013), or evaluate SI in terms of learner and teacher perceptions rather than learning outcomes (Huang, 2013). More common in the literature are descriptive studies exploring learners’ use of strategies in technology-mediated environments (e.g., Chapelle & Mizuno, 1989; Huang, Chern, & Lin, 2009; Jamieson & Chapelle, 1987; Li, 2009; Pujolá, 2002; Ulitsky, 2000).

This lack may be attributed to the fact that many strategies address aspects of language learning in which technology may play no role, or that would be difficult to address in computer-based instruction because of their open-ended nature (e.g., guessing meaning from context). Some strategies, however – particularly those involving the acquisition of specific skills, which will require sufficient amounts of practice accompanied by immediate, individualized feedback (DeKeyser, 2007) – may be ideally suited to the medium.

Regardless, language learning is migrating increasingly into technology-based environments, from different forms of computer-mediated communication (CMC), to online language resources such as dictionaries and corpora, to tools for automated writing evaluation (AWE). These innovations hold much promise but also bring with them challenges, including the potential for cognitive overload and the related need for training to facilitate learners’ effective use of them. CALL researchers have called for instruction to help learners make more strategic and self-directed use of such resources (Hauck & Hampel, 2008; Hubbard, 2004, 2013; Winke & Goertler, 2008).¹ L2 strategy researchers, however, have so far not embraced this migration and its implications for their work, with a few notable exceptions (Cohen, 2007; Cohen & Ishihara, 2005).

This lack of interest can be contrasted with the situation in educational psychology, where numerous projects involve computer-mediated environments designed to both scaffold and investigate the way learners adopt goals and

strategies vis-à-vis particular tasks, as well as to monitor and adapt strategy use as tasks unfold. The recent expansion of interest in this area was demonstrated in a 2010 special issue of the journal *Educational Psychologist* focusing on the measurement of learners' metacognitive and cognitive processes in computer-based learning environments. Many such studies have been conducted within the theoretical framework of self-regulated learning (SRL), and the connection between strategy instruction and SRL will be discussed.

In this paper, then, I will focus on three important ways in which conducting strategy instruction in technology-mediated environments can enhance the evaluation of L2 SI initiatives and, more generally, L2 strategy research. Because this is an area with few exemplars, I focus on aspects of my own evaluation study to illustrate my points. Before describing the enhancements, I will first provide some background on the study.

3. EVALUATION OF ONLINE SI: THE CASE OF THE VVT COURSE

The focus of my evaluation was an online SI course called VVT (for *Virtual Vocabulary Trainer*), which was developed to teach college-level ESL writing students an integrated form of dictionary skills and language awareness of features of "word combinability," i.e., transitivity, complementation and grammatical collocation (Lew, 2011). Specifically, the goal was to teach students how to use learner's dictionaries to identify and correct errors such as *Traffic jams result of (from) having too many cars*, which appear to be common in ESL and EFL college student writing (Chan, 2010). These features were grouped under the umbrella term *word patterns*, following Hunston's concept of Pattern Grammar (Hunston, 2002; Hunston & Francis, 2000).

Providing learners of English with information about such patterns was an original purpose of learner dictionaries, but such dictionaries are

often misused or underused by their intended audience for a variety of reasons, including lack of understanding about features of vocabulary depth of knowledge (Ranalli & Nurmukhadev, 2014).

The VVT course consisted of a series of multimedia tutorials including short but informationally dense videos interspersed with text-based exercises, which together aimed at developing both *declarative knowledge* about learner dictionaries and about word patterns – their forms, how frequent they are in English, and how they help determine which sense of a word is intended – as well as *procedural knowledge* in terms of learners' abilities to parse sentences syntactically to identify potential patterns, and to perform fast, efficient searches in online learner dictionaries so as to reduce cognitive load. The course is described in detail in Ranalli (2013a).

The evaluation attempted to demonstrate the feasibility of technology-mediated SI through a study of the efficacy of the VVT course. Efficacy was investigated via an experiment contrasting an explicit strategy instruction condition with a comparison condition that involved learners in repeated dictionary consultations for usage information but no instruction. Both conditions were administered online through a learning management system (LMS), in which 64 ESL students enrolled in a developmental writing course at a large U.S. university were assigned randomly to treatment and comparison groups.

The online task used as a pre- and post-test measure of strategy performance required participants to complete 10 sentence correction tasks, each involving a different pattern error, and to choose among a selection of online dictionaries to assist them in doing so. Figure 1 shows a screenshot of the online task, which was called the Pattern Identification and Correction Test (PICT).

The evaluation study, which is described in detail in Ranalli (2013b), yielded large effect sizes for mean changes in the within-group differences between the SI group from pre- to post-test Cohen's $d = 1.4$, and in the differ-

Figure 1. Screenshot of an item from the pattern identification and correction test (Ranalli, 2013b)

In the sentence below, there is a problem with the **pattern** of one of the **content words**. (*Content words* include nouns, verbs, adjectives and adverbs.) You must identify which word is being used incorrectly, and then rewrite the sentence in the space provided to make it correct. You can **COPY** and **PASTE** the sentence into the editing box to save time. You should **NOT** change the content word itself in any way. Instead, focus on the words surrounding it. You may need to add, delete or change the surrounding words. Do **NOT** change the meaning of the sentence.

Use one of these dictionaries, or any other online dictionary, to help you. You may **NOT** use handheld electronic dictionaries/translators, paper dictionaries, mobile phones, or any resource besides online dictionaries.



Taiwan has earned a great reputation in economic progress.

ences between the SI and comparison groups at post-test (Cohen’s $d = 1.34$).

Aspects of the evaluation study will now be used to illustrate three key features of online SI that, I argue, could enhance the evaluation of future SI initiatives as well as L2 strategy research more generally. These are 1) more rigorous and ecologically valid research designs; 2) finer grained collection and analysis of learner perception data; and 3) the use of trace data, which can position strategy use in a wider theory of self-regulated learning and, in the process, help move the field forward.

4. THREE BENEFITS OF TECHNOLOGY-MEDIATED SI

4.1. More Rigorous and Ecologically Valid Research Designs

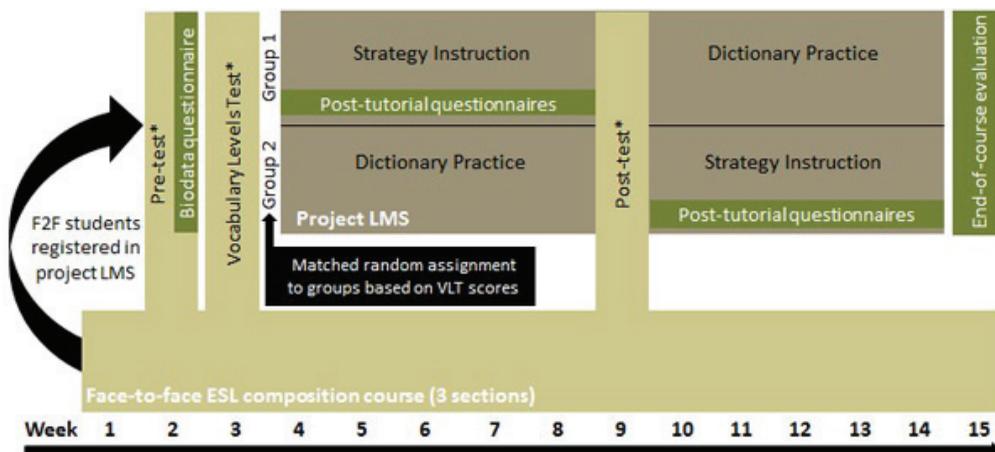
A major challenge of conducting SI evaluation is that researchers generally have had to choose between laboratory and classroom settings, which involves significant tradeoffs affecting research quality and ecological validity (i.e., the notion that research should try to resemble as closely as possible the characteristics of the real-world context to which the researcher hopes to generalize). Laboratory settings allow for random

assignment to groups and greater control over instructional variables. Yet laboratory-based SI interventions can always be criticized in that participants may lack real-world motivation profiles and goals for language learning. For their part, classroom-based studies often must make use of intact classes, thus reducing the chances of obtaining representative samples. Furthermore, incorporating SI into an existing course of instruction is likely to introduce numerous extraneous variables, not least of which are instructors who, while entrusted with carrying out a SI intervention, are likely to have many other priorities besides strictly adhering to research protocols.

Online strategy instruction can avoid the need for such tradeoffs. In Ranalli (2013b), the participants were recruited from three intact sections of the writing course in question, which were being taught by two different instructors. However, because the strategy instruction was delivered through an LMS with grouping functionality, the participants could be pooled and then randomly assigned to groups, as illustrated in Figure 2.

The participants were divided into the SI group and a dictionary training (i.e., comparison) group based on matched random assignment. They first took an online version of the Vocabulary Levels Test (Nation, 1990) in the LMS, the results of which were used to divide

Figure 2. Group assignment and data collection procedures used in Ranalli (2013b)



them into ranked pairs, after which a member of each pair was randomly assigned to either group. (This was to control for vocabulary size, which had correlated significantly with SI learning outcomes in a pilot study.)

As Figure 2 shows, the actual experiment took place in Weeks 4 through 8, and then after the post-test in Week 9, the groups were switched so all participants could benefit from the VVT instruction. These activities took place concurrently with those in the face-to-face writing course. Thus, the participants were students on an actual course, with real-world goals and motivations, but the grouping and administration of conditions were controlled, which strengthened the claim that the gains observed among the treatment group were attributable to the SI intervention.

4.2. Finer-Grained and Less Biased Learner Perception Data

The second innovation concerns data about learners' perceptions of a SI intervention and the way it is collected. These perceptions are important because learners' attitudes toward strategy instruction can influence the outcomes (Chamot, 1993; Rees-Miller, 1993); and yet, in strategy instruction studies, perception data is often not reported. In cases where it is, the data

is often summative, collected via interviews or questionnaires at the end of the intervention (e.g., Siegel, 2012).

Without a doubt, a summative view is important for evaluating how learners look upon strategy instruction after the fact, and the attitudes they take away from the experience. Ranalli (2013b) also reported the findings of a summative questionnaire, including both closed- and open-ended items, which were generally favorable. For example, 84 percent of the sample either agreed or strongly agreed that they would pay more attention to lexical patterns when writing as a result of the instruction, but only 59 per cent agreed or strongly agreed that the tutorials increased their interest in learning vocabulary.

A problem with relying only on summative, end-of-intervention perceptions, however, is a higher likelihood of bias affecting responses. In a study of student ratings of face-to-face instruction involving undergraduates at a Canadian university, Leventhal, Turcotte, Abrami, and Perry (1983) found primacy and recency effects such that students who had positive experiences at the end of a series of lectures gave a high rating, despite overall negative views of a lecturer's abilities, whereas students in a positive-final condition overcame largely negative perceptions on the final rating. The

study also showed that students gave higher evaluations if they started off with a negative impression that later improved than if they had maintained a positive impression throughout.

Another issue with summative evaluations is specificity of learners' memories of the experience. The longer and more complex the SI intervention, the more challenging it will be for students to recall specific aspects of the training and how valuable or effective they perceived them to be.

In online environments, these problems can be overcome by the addition of more specific questionnaires timed to coincide with certain events in the instruction. The questionnaires can be short, easy to complete, and thus mostly unobtrusive. Because students are asked to respond to particular SI components immediately after completing them, primacy/recency effects are minimized. Furthermore, because the evaluation of individual components is distributed in time, users are less likely to suffer survey fatigue and thus to answer disingenuously.

In the VVT course, the LMS was configured to take student users to a brief online form immediately after they had completed their first attempt at each tutorial (Figure 3). These post-tutorial questionnaires contained Likert-scale items asking users to evaluate the tutorial in terms of how interesting, how challenging and how useful it was. In addition, there was an optional, open-ended item inviting them to express an opinion about the tutorial, suggest improvements, or report technical problems. This information was also used in the iterative development of the online materials and for technical support.

The post-tutorial questionnaire data provided a valuable additional window on learners' perceptions of the training. In reporting the results in Ranalli (2013b), this data was pooled and averaged across all tutorials to provide the charts in Figure 4, showing overall high ratings for interest, challenge and usefulness. Needless to say, such an approach would be more difficult, and thus perhaps impractical, to implement in face-to-face SI interventions.

4.3. Trace Data to Allow for Connections to Self-Regulated Learning Theory

The third and final benefit of basing SI in technology-mediated environments involves the ability to capture traces of student behavior and use them to make well-grounded inferences about strategy use and related learning phenomena, which is essential for construct validity.

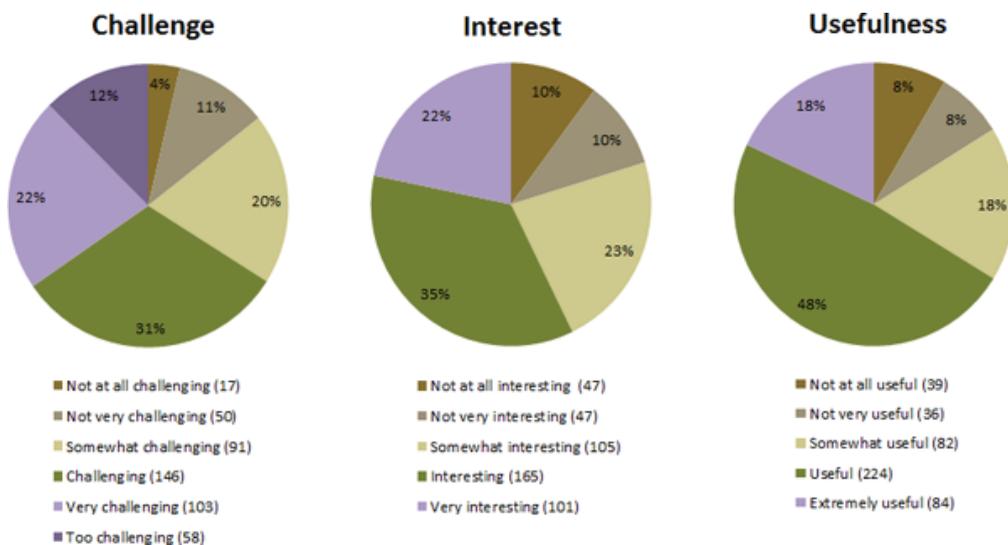
My study, like many SI studies, involved a comparison of pre- and post-test scores on a performance measure, but in investigating strategies, such scores are by themselves inadequate. Strategies, in essence, are choices among options, and in responding to tasks (such as those used in a pre- or post-test), learners generally have alternatives in terms of how they respond to them. To be able to claim that a SI intervention has had the desired effect, a researcher should not only point to scores on a criterion measure but be able to demonstrate empirically how such scores were achieved.

In L2 strategy research, this has typically been accomplished through the use of think-alouds or other forms of verbal protocol. Such protocols are invaluable for providing insights into how learners experience tasks and what they focus their conscious attention on, but they have also been criticized as potentially influencing task outcomes because of the attentional resources they require, and those of a retrospective nature are prone to distortions of memory (Schellings & Hout-Wolters, 2011). In addition, verbal protocols are difficult to conduct on a large scale.

An alternative to learners' verbal reports is data representing traces of their activities in computer-based learning environments. While such data has gained increasing currency in strategy-related research among educational psychologists (Lajoie & Azevedo, 2006), it has gone largely ignored by L2 strategy researchers, meriting hardly a mention in a recent survey of work in the field (Cohen & Macaro, 2007).

In the VVT study, trace data was collected in the form of screen-recordings of the participants' use of online dictionaries during the

Figure 4. Perception ratings pooled from 465 submitted post-tutorial questionnaires from Ranalli (2013b)



strategy use, particularly in the area of CALL (see, for example, Chapelle & Mizuno, 1989; Jamieson & Chapelle, 1987), but these studies typically aim at purposes other than advancing the L2 strategy research agenda. There is no reason, however, that trace data collected in technology-mediated learning environments cannot be used in addressing some of the major questions in L2 strategy research.

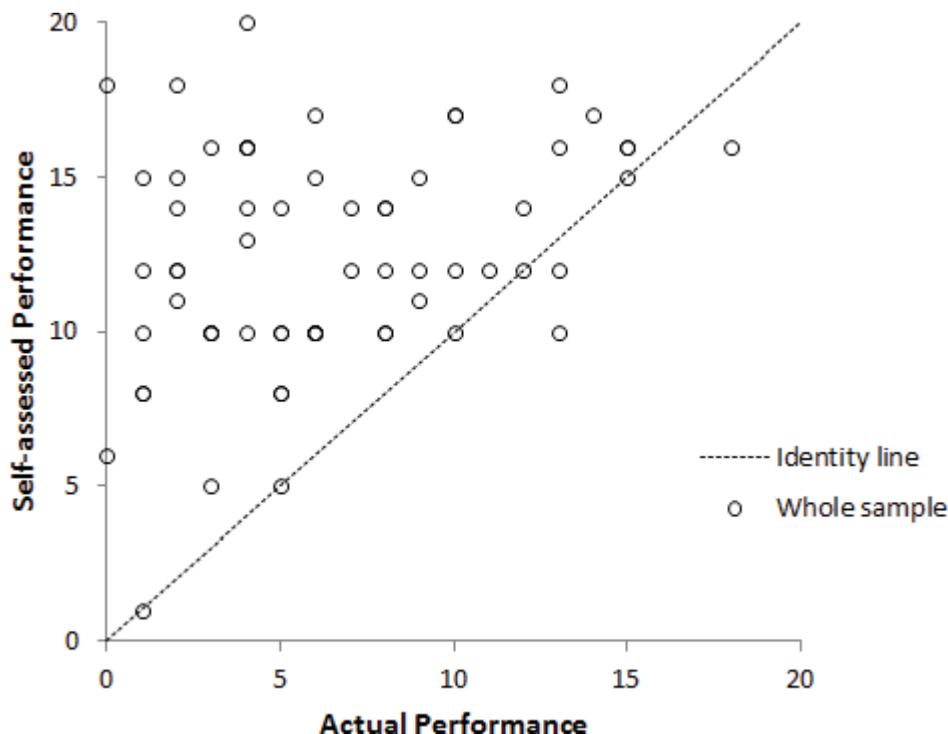
One such question deals with the mismatch that has been documented between the demands of some L2 learning tasks and the “unsuccessful” strategies that some learners adopt in addressing them. Some early strategy research painted unsuccessful learners as simply inactive or unaware of useful strategies, but later studies showed that such learners may exhibit use of the same strategies as their more successful counterparts, with their difficulties instead arising from a misalignment between a particular strategy and the demands of a particular task, or in terms of a learner’s ability to use a strategy adaptively (Tseng, Dörnyei, & Schmitt, 2006; Vann & Abraham, 1990).

In educational psychology, researchers have been studying this problem from the point of view of self-regulated learning (SRL), using

process models like that of Winne and Hadwin (1998). Such models have been developed to theorize how learners engage metacognitively, motivationally, and behaviorally in learning tasks, and to position strategy use in relation to other important individual and contextual factors. Winne and Hadwin’s model in particular has been employed in designing computer-based learning environments to both scaffold and investigate self-regulated learning of school subjects such as biology (see, for example, Greene & Azevedo, 2009; Winne & Hadwin, 2013). I have argued that it can also be used to model strategic behavior in L2 learning (Ranalli, 2012).

One feature that distinguishes Winne and Hadwin’s model from other SRL models is the initial stage called Definition of Task, in which a learner forms an internal representation of the task at the beginning of a learning event. This (potentially idiosyncratic) task definition then influences the learner’s planning and goal setting in the second stage; that is, how he or she will approach the task and the standards to be used in evaluating progress. The selected strategies (also called tactics) are enacted in the third stage. The learner then monitors the

Figure 5. Self-assessed performance as a function of actual performance at pre-test for the whole sample in Ranalli (2013b)



unfolding task and, if the task products do not match standards adopted in the second stage, he or she may adapt strategy use, revise goals, or possibly abandon the task altogether.

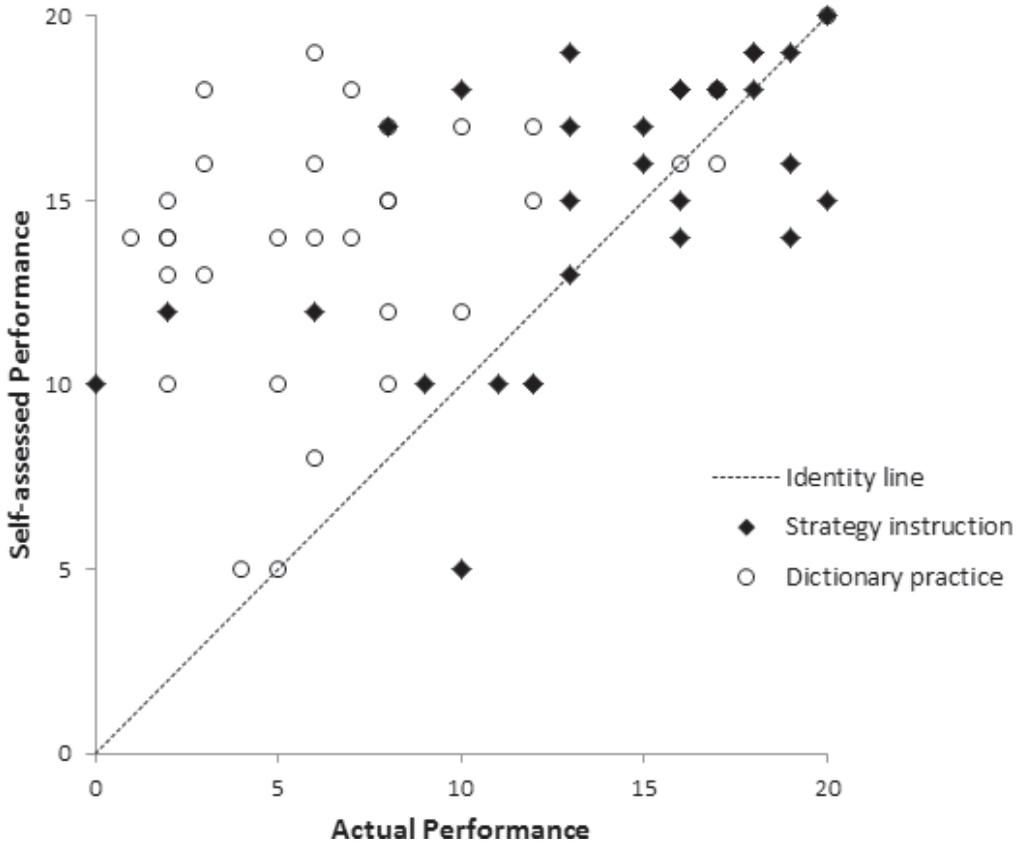
If a learner's task definition is flawed – perhaps because the task is complex, or involves skill or knowledge prerequisites that the learner lacks, or both – he or she may be unable to adopt appropriate goals, standards, and strategies. As a result, the learner will not only have trouble completing the task successfully, but also monitoring and evaluating their progress accurately.

In the VVT study, the participants were asked to self-assess their performance immediately after completing the pattern identification and correction task by estimating their final score out of 20 possible points. As shown in Figure 5, the sample was generally miscalibrated at pre-test, with the exception of a few cases that fall along the identity line (where actual

performance equals self-assessed performance). Most participants fell into the top left quadrant, meaning their scores were below fifty per cent but they estimated to have performed than that, a pattern which is representative of people lacking skills or knowledge in a particular domain (Kruger & Dunning, 1999). This has implications for strategy use insofar as an inability to recognize problems with one's approach to a task undercuts the ability to modify that approach adaptively toward success.

Beyond documenting improvements as a result of strategy instruction, this trace data also allows conjectures about important aspects of strategy use in terms of SRL, particularly strategy-task misalignment. A strategy of relying on existing knowledge rather than learner dictionaries, which results in suboptimal performance, yet which a learner does not detect as suboptimal, suggests a problem with his or her task definition. On the other hand, a

Figure 6. Self-assessed performance as a function of actual performance at post-test for groups in Ranalli (2013b)



significant post-test increase in use of the appropriate type of dictionary among the strategy instruction group suggests more accurate task definition, which the calibration data in Figure 6 corroborates.

Specifically, there is more clustering of this group around the identity line, and more instances of slight underestimation of performance, which is characteristic of people who are skilled or knowledgeable in a particular domain (Kruger & Dunning, 1999). This suggests the learners in the SI group not only acquired helpful new behaviors, but also forms of knowledge that allowed them to define the task appropriately, which is a prerequisite to appropriate application of their new strategic abilities.

Thus, computer traces of strategic behavior, interpreted within a conceptual framework that connects strategy use to prerequisite processes, can provide insights not only into the value of technology-mediated forms of SI, but may be used to address key issues in the wider field of L2 strategy research.

5. CONCLUSION

The goal of this article is to both inspire strategy researchers and technology-oriented L2 practitioners to consider experimenting with technology-mediated strategy instruction by discussing the benefits that may accrue to evaluation and research. Curricular innovations require quality evaluations in order to convince

stakeholders of their value and to justify what may be a considerable outlay of time and effort on the part of individuals and groups. Language learning takes place in circumstances of competing interests, so those attempting to introduce innovations have the onus placed on them to show that their proposed interventions are worthwhile.

The evaluation of innovation is a significant challenge for teachers and curriculum developers (Chapelle, 2007). Chapelle notes that the types of CALL evaluations that most successfully assess the value of innovation are those in which particular elements of the instruction are taught completely through technology. Because they can isolate the effects of the innovation, they “have the most to offer the larger goal of evaluation” (Chapelle, 2007, p. 34). Assuming technology-mediated strategic targets can be identified, computer-based SI has the potential to help learners develop expertise in useful learning approaches, to help programs incorporate strategy instruction without supplanting other important activities, and to help L2 strategy research address important questions in the field, thus contributing to its much-needed revitalization.

6. NOTES

1. A distinction can be made between what I call technology-mediated strategy instruction and what has been called learner training for CALL (Hubbard, 2004, 2013). With technology-mediated SI, the emphasis is on addressing challenges identified in the learner strategy literature related to researching strategies and strategy instruction, with the goal of moving the field of learner strategies forward. In the latter case, the emphasis is on preparing learners for the challenges of learning via technology, with emphasis on enabling learners to take better advantage of the affordances of CALL. Despite these different emphases, considerable overlap can be seen between them.
2. Perhaps a more common and familiar form of trace data is time-stamped keystrokes and mouse clicks collected in computer log files. In Ranalli (2013b), log files were unavailable because learners were using externally hosted dictionary websites.

REFERENCES

- Bull, S., & Ma, Y. (2001). Raising learner awareness of language learning strategies in situations of limited resources. *Interactive Learning Environments*, 9(2), 171–200. doi:10.1076/ilee.9.2.171.7439
- Chamot, A. U. (1993). Student responses to learning strategy instruction in the foreign language classroom. *Foreign Language Annals*, 26(3), 308–320. doi:10.1111/j.1944-9720.1993.tb02288.x
- Chamot, A. U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics*, 25, 112–130. doi:10.1017/S0267190505000061
- Chan, A. Y. W. (2010). Toward a Taxonomy of Written Errors: Investigation Into the Written Errors of Hong Kong Cantonese ESL Learners. *TESOL Quarterly*, 44(2), 295–319. doi:10.5054/tq.2010.219941
- Chang, M.-M. (2005). Applying self-regulated learning strategies in a web-based instruction—An investigation of motivation perception. *Computer Assisted Language Learning*, 18(3), 217–230. doi:10.1080/09588220500178939
- Chapelle, C. A. (2007). Challenges in evaluation of innovation: Observations from technology research. *Innovation in Language Learning and Teaching*, 1(1), 30–45. doi:10.2167/illt041.0
- Chapelle, C. A., & Mizuno, S. (1989). Students' strategies with learner-controlled CALL. *CALICO Journal*, 7(2), 25–47.
- Cohen, A. D. (2007). Becoming a strategic language learner in CALL. *Applied Language Learning*, 17(1-2), 57–71.
- Cohen, A. D., & Ishihara, N. (2005). *A web-based approach to strategic learning of speech acts*.
- Cohen, A. D., & Macaro, E. (2007). *Language learner strategies: Thirty years of research and practice*. Oxford: Oxford University Press.

- DeKeyser, R. M. (2007). Skill acquisition theory. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition* (pp. 97–114). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Dreyer, C., & Nel, C. (2003). Teaching reading strategies and reading comprehension within a technology-enhanced learning environment. *System*, 31(3), 349–365. doi:10.1016/S0346-251X(03)00047-2
- Greene, J. A., & Azevedo, R. (2009). A macro-level analysis of SRL processes and their relations to the acquisition of a sophisticated mental model of a complex system. *Contemporary Educational Psychology*, 34(1), 18–29. doi:10.1016/j.cedpsych.2008.05.006
- Gu, P. Y. (2007). Foreword. In A. D. Cohen & E. Macaro (Eds.), *Language learner strategies: Thirty years of research and practice* (pp. vii–viii). Oxford: Oxford University Press.
- Hassan, X., Macaro, E., Mason, D., Nye, G., Smith, P., & Vanderplank, R. (2005). Strategy training in language learning: A systematic review of available research. *Research Evidence in Education Library*, from <http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=296>
- Hauck, M., & Hampel, R. (2008). Strategies for online learning environments. In S. Hurd & T. Lewis (Eds.), *Language learning strategies in independent settings* (pp. 283–302). Bristol, England: Multilingual Matters.
- Huang, H.-C. (2013). Online reading strategies at work: What teachers think and what students do. *ReCALL*, 25(03), 340–358. doi:10.1017/S0958344013000153
- Huang, H.-C., Chern, C.-L., & Lin, C.-C. (2009). EFL learners' use of online reading strategies and comprehension of texts: An exploratory study. *Computers & Education*, 52(1), 13–26. doi:10.1016/j.compedu.2008.06.003
- Hubbard, P. (2004). Learner training for effective use of CALL. In S. Fotos & C. Browne (Eds.), *New perspectives on CALL for second language classrooms* (pp. 45–68). Mahwah, NJ: Lawrence Erlbaum Associates.
- Hubbard, P. (2013). Making a case for learner training in technology enhanced language learning environments. *CALICO Journal*, 30(2), 163–178. doi:10.11139/cj.30.2.163-178
- Hunston, S. (2002). Pattern grammar, language teaching, and linguistic variation: Applications of a corpus-driven grammar. In R. Reppen, S. M. Fitzmaurice, & D. Biber (Eds.), *Using corpora to explore linguistic variation* (pp. 167–183). Amsterdam: John Benjamins. doi:10.1075/scl.9.11hun
- Hunston, S., & Francis, G. (2000). *Pattern grammar: A corpus-driven approach to the lexical grammar of English*. Amsterdam: John Benjamins. doi:10.1075/scl.4
- Jamieson, J., & Chappelle, C. A. (1987). Working styles on computers as evidence of second language learning strategies. *Language Learning*, 37(4), 523–543. doi:10.1111/j.1467-1770.1987.tb00583.x
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77(6), 1121–1134. doi:10.1037/0022-3514.77.6.1121 PMID:10626367
- Lajoie, S. P., & Azevedo, R. (2006). Teaching and learning in technology-rich environments. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (2nd ed., pp. 803–821). Mahwah, NJ: Erlbaum.
- Leventhal, L., Turcotte, S. J., Abrami, P. C., & Perry, R. P. (1983). Primacy/recency effects in student ratings of instruction: A reinterpretation of gain-loss effects. *Journal of Educational Psychology*, 75(5), 692–704. doi:10.1037/0022-0663.75.5.692
- Lew, R. (2011). Studies in dictionary use: Recent developments. *International Journal of Lexicography*, 24(1), 1–4. doi:10.1093/ijl/ecq044
- Li, J. (2009). The evolution of vocabulary learning strategies in a computer-mediated reading environment. *CALICO Journal*, 27(1), 118–146. doi:10.11139/cj.27.1.118-146
- Macaro, E. (2006). Strategies for language learning and for language use: Revising the theoretical framework. *Modern Language Journal*, 90(iii), 320–337. doi:10.1111/j.1540-4781.2006.00425.x
- Nation, I. S. P. (1990). *Teaching and learning vocabulary*. Massachusetts: Newbury House.
- O'Bryan, A., & Hegelheimer, V. (2007). Integrating CALL into the classroom: The role of podcasting in an ESL listening strategies course. *ReCALL*, 19(2), 162–180. doi:10.1017/S0958344007000523

- Plonsky, L. (2011). The effectiveness of second language strategy instruction: A meta-analysis. *Language Learning*, 61(4), 993–1038. doi:10.1111/j.1467-9922.2011.00663.x
- Pujolá, J.-T. (2002). CALLing for help: Researching language learning strategies using help facilities in a web-based multimedia program. *ReCALL*, 14(02), 235–262. doi:10.1017/S0958344002000423
- Ranalli, J. (2012). Alternative models of self-regulation and implications for L2 strategy research. *Studies in Self-Access Learning Journal*, 3(4), 357–376.
- Ranalli, J. (2013a). Designing online strategy instruction for integrated vocabulary depth of knowledge and web-based dictionary skills. *CALICO Journal*, 30(1), 16–43. doi:10.11139/cj.30.1.16-43
- Ranalli, J. (2013b). Online strategy instruction for integrating dictionary skills and language awareness. *Language Learning & Technology*, 17(2), 75–99.
- Ranalli, J., & Nurmukhadev, U. (2014). Learner dictionaries. In C. A. Chapelle (Ed.), *The Encyclopedia of Applied Linguistics*. Malden, MA: Wiley-Blackwell. doi:10.1002/9781405198431.wbeal1418
- Rees-Miller, J. (1993). A critical appraisal of learner training: Theoretical bases and teaching implications. *TESOL Quarterly*, 27(4), 679–689. doi:10.2307/3587401
- Schellings, G., & Hout-Wolters, B. (2011). Measuring strategy use with self-report instruments: Theoretical and empirical considerations. *Metacognition and Learning*, 6(2), 83–90. doi:10.1007/s11409-011-9081-9
- Siegel, J. (2012). Second language learners' perceptions of listening strategy instruction. *Innovation in Language Learning and Teaching*, 7(1), 1–18. doi:10.1080/17501229.2011.653110
- Tsai, Y.-R., & Talley, P. C. (2013). The effect of a course management system (CMS)-supported strategy instruction on EFL reading comprehension and strategy use. *Computer Assisted Language Learning*, 1–17. doi:10.1080/09588221.2013.818554
- Tseng, W. T., Dörnyei, Z., & Schmitt, N. (2006). A new approach to assessing strategic learning: The case of self-regulation in vocabulary acquisition. *Applied Linguistics*, 27(1), 78–102. doi:10.1093/applin/ami046
- Ulitsky, H. (2000). Language learner strategies with technology. *Journal of Educational Computing Research*, 22(3), 285–322. doi:10.2190/VLTU-CCXF-NFYL-277H
- Vann, R. J., & Abraham, R. G. (1990). Strategies of unsuccessful language learners. *TESOL Quarterly*, 24(2), 177–198. doi:10.2307/3586898
- Winke, P. M., & Goertler, S. (2008). Did we forget someone? Students' computer access and literacy for CALL. *CALICO Journal*, 25(3), 482–509.
- Winne, P. H., & Hadwin, A. F. (1998). Studying as self-regulated learning. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Metacognition in educational theory and practice* (pp. 277–304). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Winne, P. H., & Hadwin, A. F. (2013). nStudy: Tracing and supporting self-regulated learning in the Internet. In R. Azevedo & V. Aleven (Eds.), *International handbook of metacognition and learning technologies*. New York: Springer.

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