Metacognition Strategies Application in Teaching and Learning

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Abstract: Learning strategies are the thoughts and actions that individuals use to accomplish a learning goal. Extensive research has identified the learning strategies used by students of a variety of second and foreign languages and a somewhat smaller body of research has documented the effectiveness of helping less successful lan-guage students improve their performance through learning strategy instruction. This article discusses current issues in language learning strategy research that affect teachers and learners of foreign languages. These issues include: identification procedures of learning strategies, terminology and classification of strategies, the effects of learner characteristics on strategy use, the effects of culture and context on strategy use, explicit and integrated strategy instruction, language of instruction, transfer of strategies to new tasks, and models for language learning strategy instruction. These eight issues are explored through a discussion of existing re-search that illumines the issues. Suggestions are presented for future research on issues that have not yet been thoroughly explored.

key words: Learning strategies, Teaching and Learning, Metacognition

Introduction

Learning strategies are the conscious thoughts and actions that learners take in order to achieve a learning goal. Strategic learners have metacognitive knowledge about their own thinking and learning approaches, a good understanding of what a task entails, and the ability to orchestrate the strategies that best meet both the task demands and their own learning strengths.

An area of basic research in second language acquisition is the identification and description of learning strategies used by language learners and the correlation of these strategies with other learner variables such as proficiency level, age, gender, motivation, and the like (Chamot & El-Dinary, 1999; El-Dib, 2004; Green & Oxford, 1995; Oxford & Burry-Stock, 1995). Current re-search is also investigating the effect of the task itself on the selection and use of learning strate-gies, including the

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influence of the target language (Chamot & Keatley, 2004; Oxford, Cho, Leung & Kim, 2004).

Applied research on language learning strategies investigates the feasibility of helping students become more effective language learners by teaching them some of the learning strategies that descriptive studies have identified as characteristic of the "good language learner" (Rubin, 1975; 1981; Stern, 1975).

This paper first examines a number of current issues in language learning strategy research that have emerged from earlier descriptive and intervention research and discusses how these issues affect teachers and learners of second and foreign languages. Finally, suggestions are made for needed future research in discovering how language learning strategies can assist students in be-coming more effective second language learners.

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2   Issues in language learning strategy research

The preponderance of research on language learning strategies has been descriptive, as re-searchers have sought to discover what learning strategies are reported by learners of different languages. The issues that arise from this body of research are: identification procedures of learn-ing strategies, terminology and classification of strategies, the effects of learner characteristics on strategy use, and the effects of culture and context on strategy use.

While less extensive, strategy intervention research has also suggested important issues related to instruction such as: explicit and integrated strategy instruction, language of instruction, transfer of strategies to new tasks, and models for language learning strategy instruction.

This paper explores these eight issues by examining existing research that illumines the issues and by suggesting research needed on issues that have not been thoroughly explored.

2.1   Identification of language learning strategies

Language learning strategies are identified through self-report. Although self-report may be in-accurate if the learner does not report truthfully, it is still the only way to identify learners' mental processing. As Grenfell and Harris (1999) have so aptly stated:

[…] it is not easy to get inside the 'black box' of the human brain and find out what is going on there. We work with what we can get, which, despite the limitations, provides food for thought […]

(p. 54)

Learning strategies are for the most part unobservable, though some may be associated with an observable behavior. For example, a learner could use selective attention (unobservable) to focus on the main ideas while listening to a newscast and could then decide to take notes (observable) in order to remember the information. In almost all learning contexts, the only way to find out whether students are using learning strategies while engaged in a language task is to ask them. Verbal report data are used to identify language learning strategies because observation does not capture mental processes (Cohen, 1998; O'Malley & Chamot, 1990; Rubin, 1975; Wenden, 1991). Researchers have asked language learners to describe their learning processes and strategies through retrospective interviews, stimulated recall interviews, questionnaires, written diaries and journals, and think-aloud protocols concurrent with a learning task. Each of these methods has limitations, but each provides important insights into unobservable mental learning strategies.

In retrospective interviews, learners are asked to describe what they were thinking or doing during a recently completed learning task (see O'Malley & Chamot, 1990). The limitation is that students may forget some of the details of their thought processes or may describe what they per-ceive as the "right" answer. A stimulated recall interview is more likely to accurately reveal stu-dents' actual learning strategies during a task because the student is videotaped while performing the task, and the interviewer then plays back the videotape, pausing as necessary, and asking the student to describe his or her thoughts at that specific moment during the learning task (see Rob-bins, 1996).

The most frequent and efficient method for identifying students' learning strategies is through questionnaires. The limitations are that students may not remember the strategies they have used in the past, may claim to use strategies that in fact they do not use, or may not understand the strategy descriptions in the questionnaire items. For these reasons, some studies have developed question-naires based on tasks that students have just completed, reasoning that students will be more likely to remember and to report accurately if little time has elapsed   (see Chamot & El-Dinary, 1999; Chamot & Küpper, 1989; Ellis & Sinclair, 1989; Fan, 2003; Kojic-Sabo & Lightbown, 1999; Na-tional Capital Language Resource Center [NCLRC], 2000a, 2000b; O'Malley & Chamot, 1990; Oxford et al., 2004; Ozeki, 2000; Rubin & Thompson, 1994; Weaver & Cohen, 1997). The limita-

16Anna Uhl Chamottions of this approach are that, to date, there has been no standardization of either tasks or follow-up questionnaires, so that it is impossible to make comparisons across studies.

The greatest numbers of descriptive studies have utilized a questionnaire developed by Oxford (1990), the Strategy Inventory for Language Learning (SILL). This instrument has been used ex-tensively to collect data on large numbers of mostly foreign language learners (see Cohen, Weaver & Li, 1998; Nyikos & Oxford, 1993; Olivares-Cuhat, 2002; Oxford, 1990; 1996; Oxford & Burry-Stock, 1995; Wharton, 2000). The SILL is a standardized measure with versions for students of a variety of languages, and as such can be used to collect and analyze information about large num-bers of language learners. It has also been used in studies that correlate strategy use with variables such as learning styles, gender, proficiency level, and culture

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(Bedell & Oxford, 1996; Bruen, 2001; Green & Oxford, 1995; Nyikos & Oxford, 1993; Oxford & Burry-Stock, 1995; Wharton, 2000). Oxford and her colleagues are currently working on a task-based questionnaire to comple-ment the SILL (Oxford et al., 2004).

Diaries and journals have also been used to collect information about language learners' strate-gies. In these, learners write personal observations about their own learning experiences and the ways in which they have solved or attempted to solve language problems (see, for example, Car-son & Longhini, 2002). Student learning strategy diaries have also been used to collect data about pronunciation strategies (Peterson, 2000). As with other verbal reports, learners may not necessar-ily provide accurate descriptions of their learning strategies. Rubin (2003) suggests using diaries for instructional purposes as a way to help students develop metacognitive awareness of their own learning processes and strategies.

Another research tool is the think-aloud individual interview in which the learner is given a learning task and asked to describe his or her thoughts while working on it. The interviewer may prompt with open-ended questions such as, "What are you thinking right now? Why did you stop and start over?" Recordings of think-aloud interviews are analyzed for evidence of learning strate-gies. Verbal protocols have been used extensively in reading research in first language contexts, where they have provided insights not only into reading comprehension processes but also into learners' affective and motivational states (Afflerbach, 2000). The rich insights into language-learning strategies provided through think-aloud protocols tend to reveal on-line processing, rather than metacognitive aspects of planning or evaluating (see Chamot & Keatley, 2003; Chamot, Keatley, Barnhardt, El-Dinary, Nagano, & Newman, 1996; Cohen et al., 1998; O'Malley, Chamot & Küpper, 1989).

The instructional applications of the tools that researchers have used to identify language learn-ing strategies are especially valuable for teachers who wish to discover their students' current learning strategies before beginning to teach learning strategies. For example, teachers can ask students to complete a language task, and then lead a classroom discussion about how students completed the task and point out the learning strategies that students mention. Teachers could also develop a questionnaire appropriate for the age and proficiency level of their students and have students complete it immediately after completing a task. For a more global picture of their stu-dents' learning strategies in general, teachers might want to use the SILL. When strategy instruc-tion is underway and students show evidence that they understand and are using some of the strategies independently, teachers could ask them to keep a diary or journal about their use of strategies in the language class and in other contexts, thus encouraging transfer. Teachers can make their own thinking public by "thinking aloud" as they work on a task familiar to students, commenting on their own learning strategies as they go. All of these approaches can help students develop their own metacognition about themselves as strategic learners.

2.2 Terminology and classification of language learning strategies

Comprehensive classification schemes of learner strategies have been developed to describe the information derived from descriptive studies that seek to chart the subtle permutations and often

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imprecise definitions of learners' self-reported strategies. Earlier researchers used their own obser-vations to describe language learning strategies (Rubin, 1975; Stern, 1975), relied on categories derived from research in first language contexts (O'Malley & Chamot, 1990), or developed a comprehensive list of learning strategies derived from many sources (Oxford, 1990). More re-cently, strategy identification and classification have been data-driven through think-aloud proto-col analysis (Chamot & El-Dinary, 1999; Chamot et al., 1996).

Various classification systems have sought to group individual strategies within larger catego-ries. Strategies were first separated into those that directly affect a specific learning task (such as memory strategies for vocabulary) and those that make a more indirect contribution (such as plan-ning and self-management for any type of task), then further divisions were made by various re-searchers (Chamot, Barnhardt, El-Dinary & Robbins, 1999; Cohen, 1998; O'Malley & Chamot, 1990; Oxford, 1990; Rubin, 1981; Wenden, 1991). Recently Hsiao and Oxford (2002) conducted a comparative study of three classification systems used in the field (O'Malley & Chamot, 1990; Oxford, 1990; Rubin, 1981) and found that the Oxford (1990) system of six basic types of lan-guage learning strategies (Metacognitive, Cognitive, Memory, Compensation, Social, and Affec-tive) was superior in accounting for the variety of strategies reported by language learners.

Language learning strategy classification schemes have generally been developed for research purposes. However, in the discussions surrounding the various ways of naming, describing, and classifying language learning strategies, little attention has been paid to students' learning goals or teachers' instructional goals. These goals can be expected to vary by general purpose in learning or teaching a new language, such as the need for survival communication skills, a foreign language requirement in school, academic study in a second language at different educational levels, passing examinations, traveling to a country where the target language is spoken, advanced transla-tion/interpretation, and the like. The context of learning, shaped by the educational/cultural values of the society in which individuals are studying a new language, combined with language learners' goals together determine the types of learning tasks engaged in and thus the types of learning strategies that can be expected to best assist learning. Therefore, it seems that different sets of lan-guage learning strategies and hence different or modified classification systems can coexist for researchers. For example, in a language class where students are trying to develop basic interper-sonal communication skills (Cummins, 2000) in order to interact with speakers of the target lan-guage, many social (or communication), compensatory, and affective learning strategies would be helpful. But if students are preparing for an examination that focuses on vocabulary and grammar, then memorization strategies can work very well and affective strategies for controlling anxiety can be beneficial.

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And if students are learning a second language in an academic context, a reper-toire of cognitive learning strategies (perhaps combined with affective strategies to develop self-efficacy) will be helpful with academic reading, listening, writing, and speaking tasks.

Overseeing the choice and application of learning strategies is the learner's metacognition or understanding of his or her own thinking and learning processes. A metacognitive model has been developed for organizing learning strategy instruction that includes four recursive (rather than se-quential) processes: planning, monitoring, problem-solving, and evaluating. In this model, teachers select learning strategies to teach depending on the point in a learning task in which students need the most help. For example, students who do not seem to realize that a learning task is not pro-gressing well can be taught to monitor their comprehension, production, or recall so that they can identify difficulties and select problem-solving strategies to address the difficulties (Chamot, 1999; Chamot et al., 1999). A variant of this model has the learner's problem-solving goals at the center of a circular model (NCLRC, 2004a). Surrounding these learner goals are the metacognitive strategies of planning, monitoring, managing learning, and evaluating language learning and learn-ing strategy effectiveness. Task-based learning strategies comprise the outer circle of the model and are grouped into four categories: use what you know, use your imagination, use your organiza-tional skills, and use a variety of resources.

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