# Fourteen Features of a Language Learner Strategy

by

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This paper presents a model of "Language Learner Strategies in a Cognitive Framework" (see Figure 1).

Within the model, strategies are not given an all encompassing definition, something which I deem to be virtually impossible both semantically and within our current knowledge of conscious, sub-conscious and neurological mental activity. Instead a series of features of a strategy are proposed. Through the model, every effort will be made to avoid semantic inter-changeability and circularity of argument. Although the features of strategies occupy the largest part of the description of the model, they will be examined in their position in the model's structure.

## Sub-conscious Mental Activity

At the lowest level in the model is to be found what would normally be described as subconscious mental activity or sub-conscious cognition. This sub-conscious mental activity interacts with neurological processes and results in changes over which the language learner or user exerts virtually no control. Examples of these are activation of nodes in the brain, activation of propositional networks, abstraction of linguistic information (Norman & Rumelhart, 1975), inhibition of neural pathways (Baddeley, 1997), creation of logogens (pools of strong connections in long term memory) through multiple modalities, lexical storage (Baddeley, 1986), language-specific tagging of lexical items (Libben, 2000), and restructuring of mental models of the rule system at a biological or representational level (McLaughlin, 1990). These processes will at one time have been affected by conscious strategy deployment in working memory (and indeed may be once again), but in long term memory *itself* are largely not under the control of the individual[i] (Cowan, 1999). Whilst it is as yet unclear how working memory deals with sub-conscious activity and its role in activating proceduralized knowledge, and there is no precise distinction between conscious and unconscious learning, there is a growing consensus that working memory, focal awareness, attention, control, and consciousness are, at least, complementary concepts if not essentially the same (Ellis, 2001; Schmidt,1990).

## Learner Strategies

Learner strategies are the next level in the framework and they interact with cognitive processes and with sub-conscious mental activity (see discussion). I propose that learner strategies are operationalized in working memory (Myake and Shah, 1999 for an overview of different models of working memory) with the central executive exerting control over their deployment. As a result, they are to be classified as conscious mental activity. Such a classification is supported by my proposition (below) that strategies must contain not only an action but a goal (or an intention) and a learning situation. Thus whilst a mental action might be subconscious, an action with a goal/intention and related to a learning situation can only be conscious.

Because LS play such a central role as intermediaries between sub-conscious mental activity, and cognitive processes and have the *potential* to be applied to different learning situations, the quest for a single all encompassing definition is unlikely to achieve its aim. I will therefore propose a number of *features* that are required in order to identify and describe a strategy.

1) In order to avoid the dilemma of size and abstractness, the description of a strategy should be irreducible. In other words, it should not be possible to describe a strategy by referring to a number of subordinate strategies. A strategy's description should be at the lowest level of articulation within the boundaries of conscious cognition (see figure 1). In order to achieve this level of articulation a strategy should be described in terms of "thinking" rather than "doing". Thus the model situates strategies in the domain of cognitive behaviour not overt motor behaviour.

2) A strategy's description requires the specification of a clear *goal or goals or intentions*. This proposition has substantial theoretical and empirical evidence in the literature of the psychology of motivation (see Weiner, 1992 or Dörnyei, 2001 for a review). Human action is normally considered to be directed by purpose and dependent on the pursuance of goals. According to Locke (1996), for goals to be effective motivators for action, they: a) have to be established through the free choice and commitment of the individual; b) must be specific and explicit; c) they have to appear attainable (op.cit.: 118). The orientation of the goal also determines the effort with which a learner in an academic setting engages with an action (for a review see Ames 1992). If the goal has a *mastery orientation* the learner focuses on the learning itself. If the goal has a *performance orientation* the goal's focus is on one's ability and self-worth. In the latter case, the learner focuses on getting good grades or even simply getting through the task for the sake of saving face. At the extreme ends of a continuum, and in formal L2 classroom situations, LS become oriented either towards task-achievement or towards self-directed learning. Combinations of strategies can be deployed in order to satisfy a teacher's requirements, or they can be deployed in order to satisfy the learner's own learning goals (Entwhistle, 1988). The two are not mutually exclusive but they can conflict in certain learning environments. Erler (2003) found that young learners of French were deploying a number of strategies related to reading merely to satisfy the task requirements set by the teacher rather than to improve their reading. Therefore, a key component of a strategy should be the explicitness of its goal-orientation. This is all the more so given that strategies are often spoken about in the same context as self-determination and self-regulated learning (Dickinson, 1988; Pintrich, 1995; Wenden, 1995). The literature on strategies has been less than forthcoming in specifying how the goal orientations are shared among the participants (usually teacher and learners) and regarding the attainability of the learning goal (see for example Nunan, 1997).

3) Learner strategies are both *situation-specific and transferable* to other situations but their transferability needs to be articulated. This logically has to be the case otherwise their potential for learning is diminished. On the one hand a learner needs to be able to consciously apply a strategy to a cognitive process such as "memorization" (Oxford 1990; Nunan 1997), thereby strengthening the metacognitive link between the strategy

and the achievement of vocabulary recall. On the other hand the strategy is given greater robustness if it contributes to a parsimonious framework that can be applied to a number of learning situations. As Anderson J.R. (2000) proposes, it is likely that strategies are transferred to similar tasks by a procedure involving pattern-matching through which the learner perceives similarities between the new task and former tasks where strategies were applied. However, I would argue on the basis of additional features described below, that a pattern-matching procedure is not sufficient. *Evaluation* of strategy effectiveness is likely to be undertaken against a background of the relative effectiveness of strategy *clusters* (see below).

4) A *mental action* is a necessary component of a strategy (although not a sufficient one). Strategies are not simply knowledge but contain a *mental action* that can be described. It is almost self-evident that the action component of a strategy ought to be describable by someone, especially a teacher or researcher. Yet, many proposed strategies in the literature from "rehearsing and memorizing" to reviewing by "re-reading texts" are inexplicit about the action component in the strategy.

5) Thus, (taking into account 1-4), a strategy proposed to a learner, by a researcher or a teacher, must conform to the algorithm: IF in a learning situation X, AND when the learning goal is Y, THEN try mental action Z. Previous strategy applications (e.g. O'Malley and Chamot, 1990 modeled on Anderson's, 2000 production rules) are similar to this but retain the ambiguity of learning situation, intention and learning goal.

6) A strategy can have different levels of *correspondence*. It is possible that a single strategy may be observable in overt behaviour. For example, "underlining words I don't know in a reading text" may have a direct correspondence with the cognitive (unobservable) strategy "decide whether this word looks familiar by looking at its shape". In most cases, it is much more likely, however, that the correspondence between strategy and overt behaviour is indirect. What we observe as and call a strategy is usually the product of a combination of strategies interacting in working memory. "Scanning an entry in a dictionary", would be an observable motor action (not a strategy) that may in fact contain a number of cognitive and metacognitive strategies, for example "recalling prior experiences of coming across the word", "evaluating fitness of match related to personal schema". Cohen (2003) identifies no less than 10 strategies related to looking up vocabulary in an L2-L1 dictionary during a reading task, and even some of these can be further reduced.

7) The strategy will be at different levels of *automaticity* in different learners (McLaughlin, 1987; and DeKeyser, 2001 for a review) or of *proceduralization* (Anderson, J.R. 2000). Automaticity also relates to a strategy's specificity or transferability. It may be that, through repeated practice and confirmation of effectiveness, a particular action Z becomes automatic in learning situation X. In this situation, three factors may require the strategy to be brought back into selective attention. Firstly, the learning goal may change. For example a student may embark on a course of academic writing having previously learnt the L2 in a speaking and listening based course. Clearly, for this student, a strategy such as "avoid thinking in L1" will need

to be re-evaluated against the new learning goals. The student will have to evaluate whether academic writing is best achieved by avoidance of L1 mental resources. Secondly, the learning outcomes may appear unsatisfactory to the learner or to the teacher, and the learner will therefore need to bring back the strategy into selective attention each time situation X and learning goal Y are applicable in order for it to be re-evaluated. Thirdly, a strategy will need to be brought back into selective attention when a new learning situation presents itself, though the goal has not changed, and the learner will need to evaluate the transferability of the strategy. Thus we can posit a further orientation polarity (see figure 1): declarative to procedural.

8) The strategy must be *separable* from the content component of the language itself. For example, making a decision to deploy a clarification strategy must operate independently of learning the expression "do you mean X?". This clear separation is not always made salient in the literature (for an example, see Ozeki 2000). Similarly, prompting yourself about the fact that English takes a subject pronoun when you are a LI speaker of Italian must operate independently of learning the English subject pronouns. Again this might seem obvious but it is remarkable how often the demarcation line between acquiring strategic knowledge and acquiring linguistic knowledge becomes blurred. For example in a study by Ayaduray and Jacobs (1997) the language needed to ask "higher order" questions blurs into the deployment of the strategy of deciding to ask higher order questions. Similarly in a study by Aziz (1995) the language needed for note-taking blurs into strategies related to note-taking.

9) A strategy's *potential for leading to learning* must be proposed, even if only at the level of hypothesis. This, as was noted above, is a controversial aspect of the learner strategy literature and needs some further exemplification. As we have noted above, there is some evidence of an association between strategy use and language learning success. The limitations for practice, however, are two-fold. Firstly, the direction of causality between strategy use and language proficiency is unresolved. Secondly, it is as yet unclear *how* many of the proposed strategies lead to the acquisition of linguistic material. "Putting a word into a sentence so as to remember it" is a strategy cited by a number of authors when discussing the practicalities of strategy instruction (Oxford 1990; Grenfell & Harris 1999; Nation 2001). But how does putting the word in a sentence help the learner remember it? In other words, the interaction between the cognitive strategy and the sub-conscious mental activity (as in Figure ) is, in most cases, presented more as an act of faith than a set of logical propositions. Some strategies, it is true, lend themselves to transparency in their interaction with sub-conscious mental activity. For example the theoretical justification of the keyword strategy (Avila & Sadoski 1996; Beaton et. al. 1995; Lawson & Hogben 1998) is provided by a rational account of how a link is produced between a new L2 word and an L1 word via the generation of a keyword which is a combination of sound and image. Given that retrieval of the L2 word operates in reverse order, the interface between a strategy and implicit processes is explained logically. We are at least in a position to predict its effect on long term memory. Similarly, in a language use situation, we are given insights into how strategies can be deployed in order to lighten the processing load on working memory. A few examples are: the strategy of "using the L1 in reading an L2 text" (Kern, 1994) in order to maintain

concentration; the strategy of "externalizing inner speech whilst engaged in collaborative writing in L2" (Antòn & di Camilla, 1998) in order to talk through a problem; the strategy of "predicting likely content through use of schemata when listening" (Rost, 1990) in order not to be overloaded by unnecessary and fleeting detail. Although we are still only just beginning to explore these relationships, teachers and researchers alike should not be afraid to ask "how exactly is this strategy supposed to lead to learning?". A theoretical account of the relationship between strategies and learning outcomes needs to be backed up by empirical evidence. A general explanation of how a strategy may lead to learning is provided in the account of *processes* (below).

10) A strategy may not be deployable by all learners. I will term this a *strategic deficiency feature*. An obvious example of this is where the lack of phonemic correspondence between languages makes strategy deployment extremely difficult. An L1 speaker of English cannot easily deploy the keyword strategy when trying to memorise a Chinese word because of lack of phonemic correspondence. But there are less obvious examples. In order to illustrate this I want to propose that we need an additional orientation of strategies (see figure). Although strategies are always operationalized in working memory, they are oriented either towards addressing long term memory concerns, usually in the domain of language learning, or they address working memory limitations, usually in the domain of language use. We have cited some studies in point 9 which have found evidence that strategies relate to working memory limitations. If, as has been suggested by a number of L1 studies, there is an association between variability in working memory limitations and non-word repetition skills (Montgomery, 1995; Adams & Gathercole, 2000), and between working memory limitations and L2 vocabulary acquisition (Service, 1992; Gathercole & Baddeley, 1993), then it is possible that individual or whole clusters of strategies are unavailable for some learners in particular tasks.

11) Some strategies require appropriate levels of *linguistic knowledge* in order to be deployed. This links to the previous feature in that it can lead to an inability to deploy a strategy. Hence, during some cognitive processes, being below a certain linguistic threshold, short-circuits the deployment of a strategy (Clarke, 1979; Lee & Shallert, 1997; Taillefer, 1996) as in the case of the transferability of L1 reading strategies to the comprehension of L2 written texts. Thus while the *learning* of a strategy and the *learning* of a related language item need to be kept separate in a discussion of features, the *deployment* of a strategy may be entirely dependent on *knowing* the relevant language item.

12) For a strategy to be effective in promoting learning or improved performance it must be combined with other strategies either simultaneously or in sequence thus forming *strategy clusters*. As strategies are related to real learning contexts and, often, to specific tasks, they are deployed in clusters appropriate (in effective learners) to those contexts and tasks (Macaro 2001; 2003). We cannot talk of the effectiveness of individual strategies, only of effective strategy clusters. I discuss below, in relation to processes, the types of clusters normally associated with accessing L2 text and with the formulation process in writing. Another example of a strategy cluster might be looking up a new L2

word in a L1-L2 dictionary when writing. Here such strategies as the following will be deployed: “remember prior problems with dictionary use”; “predict what problems I might encounter this time”; “think about what part of speech I am looking for”; “look at all definitions given”; “compare collocations in L2 and L1”; “remember to copy word correctly”; “check that it makes sense in the sentence generated”. This cluster might, in turn, be combined with another cluster of strategies pertaining to memorising the new word for future use. Single strategies may be ineffective if deployed without care. For example, Porte (1995) found that a “sub-vocalizing” strategy was counter-productive in a sentence copying task for some subjects. As the subjects moved from looking at text on a computer screen (which then disappeared) to writing the text down on paper they sub-vocalized the text thereby losing the accuracy of the graphic form through (among other things) L1 interference. Macaro (2001) found that applying personal schemata was ineffective, among some young learners, in a reading task, because they did not combine and evaluate this with evidence available later in the text.

13) Strategy clusters include and are *evaluated via a metacognitive strategy* or series of metacognitive strategies. Metacognitive strategies are attached to strategy clusters in order to regulate conscious cognitive activity (Schraw and Moshman, 1995). In the dictionary cluster described in the previous point, metacognition would monitor and evaluate the cognitive strategies being deployed. Thus a classification of strategies that retains its explicatory power is cognitive versus metacognitive (O’Malley and Chamot, 1990) and it is retained in the model. Strategies are either directly at the interface with the processes involved in perception, decoding, processing, storage and retrieval. Or, they are indirectly involved with language, functioning as mechanisms which oversee cognitive strategies via planning, monitoring and evaluating for effectiveness. However, I want to propose that metacognitive strategies subsume *affective strategies* (recognised as a different category by O’Malley and Chamot, 1990) as the latter require knowledge of oneself as a learner through recurrent monitoring of one’s learning. Affective strategies, therefore, are part of the recursive use of metacognitive strategies to evaluate past cognitive strategies in learning situations. I also propose that s*ocial strategies* are clusters of cognitive and metacognitive strategies. If a student of a L2 seeks out interaction with native speakers of that language in order to improve his or her learning, perhaps overcoming fear and shyness, they are not, in effect doing anything other than deciding on a plan of action based on a cluster of strategies. This notion needs to be explored a little further. Plans, I want to argue, are constructed through individual learner’s metacognitive theories. According to Schraw and Moshman (1995) metacognitive theories integrate metacognitive knowledge and experiences and permit the learner’s own explanation and prediction of cognitive behaviour. However, according to the sources of the metacognitive theory (cultural, individual or peer constructed) and their theory types (tacit, explicit but informal, explicit and formal) they will vary in their effectiveness when implemented (op.cit.: 358). I therefore propose that a *Strategic Plan* (Figure 1) may arise from some clusters of strategies which have formed some kind of metacognitive theory. Conti (2001:7), proposes a list of 11 “feedback handling strategies that students in his study used when receiving teacher feedback on their essays. They include strategies such as “making a written note of the error and the correction”, “thinking about the causes of the mistake/error”, “asking teacher for clarification”. Although these are expressed in

behavioural terms rather than cognitive terms, their cognitive correspondences would appear to constitute a strategic plan that can be evaluated by the learner. We should remember that a single strategy in that plan, can result in a setback. Only if one has a backup strategy or cluster of different strategies, can one be assured of successful goal-achievement. This is what Klohs (1994:6), for example, appears to be alluding to in her "four steps" for the effective deployment of mnemonic strategies.

14) Clusters of strategies interact with cognitive processes. It is to these to which we now turn.

## Cognitive Processes

*Cognitive Processes,* like LS, operate at the explicit cognitive level and consist of different cognitive and metacognitive strategies in interaction with one another. Processes bring about a transformation of language in some way, in long term memory. The cognitive processes we are dealing with here are, therefore, conscious although they may operate so quickly as to appear unconscious (see discussion). These processes can involve any transformation of language from one *state* to another and/or from one *stage* to another. The difference between state-like and stage-like processes is that, in the former, intermediate states of language transformation are usable by the L2 learner, whereas all the stages in a transformation need to be achieved for certain processes to be achieved or completed. This distinction is explored below. It is through cognitive processes that most learning takes place and it is through processes (not single strategies) that task achievement can be converted into more permanent learning.

We will examine examples of cognitive processes in order to try to illustrate these points. Reading in the L2 involves two interactive state-like processes: *top-down and bottom up processes* (Stanovich, 1980; Kember & Gow, 1994; Grabe and Stoller, 2002) of which the latter includes *sentence processing* (Harrington 2001). Each of these processes is made up of a cluster of a minimum of two strategies which, by interacting, complement or confront each other. Strategies interacting in these processes would include application of prior knowledge, the application of common sense or logic, segmenting strings of linguistic units, use of adjacent text, word level and below word level decoding. These processes are used to attempt to transform language from a state in which it is not understood into different states or levels of understanding, elaboration, and integration into existing schemata. Each state provides the L2 user with *some* operational power. *Memorization* of L2 vocabulary also passes through a number of states. For example Paribakht and Wesche (1993) propose a linear accretion from a state when the word is not familiar to a state when the learner uses the word with semantic appropriateness and grammatical accuracy in a sentence. Nation (1990) proposes states in more random accretion which allows for an unknown word to be, nevertheless, spelled correctly.

Written *formulation* (Author 2003; de Larios et. al. 1999; referred to as "translation" by Flower and Hayes 1981, and "running tests of appropriateness" or "problem translation" by Bereiter & Scardamalia 1987) is a stage-type process. It involves passing from an

ideational stage to a stage where ideas begin to have linguistic form before moving on to further *necessary* stages. Strategies involved in the process of formulation are likely to include: retrieval of language chunks; evaluations of these chunks; attempts to restructure these chunks; word-for-word translations at the phrasal level. *Monitoring* of written formulations (the next stage in the overall performance of writing after initial formulation) might involve predictions about the success of word-for-word translations and the assessment of final productions.

If cognitive processes involve transforming language in some way from one state or stage to another, how does this account for processes involving recognition or judgments? For example, what strategies might be involved in the process of making a *grammaticality judgement* (Green & Hecht, 1992; Robinson, 1996)? In judging a sentence grammatically correct or incorrect one is matching an existing hypothesis with what is being presented. It is in that process of matching that a transformation takes place. In other words, the form of a sentence passes from a hypothetical stage that it is grammatical to one that it contains a violation of a rule. Indeed, Robinson (1996) (inadvertently) identifies a number of strategies that contribute to this cognitive process: hypothesise that the sentence is correct; scan the sentence; match evidence in long term memory with parsed elements of the sentence; find (or not find) evidence of ungrammaticality; confirm or disconfirm hypothesis about the sentence. It is in cognitive processes that there is an interaction between increasing knowledge of the language and the development of skills. For example, in the case of reading comprehension, vocabulary and writing, it is at the interface between state-like and stage-like processes that long-term learning occurs as numerous studies attest (Prince, 1996; Watanabe 1997; Fukkink and de Glopper, 1998 for a meta-analysis).