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Learning Strategy Research — Where Are We Now?

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ABSTRACT

Learning strategy research has been very prolific and much has been written about the field and its importance to language learning. This paper traces the history and development of learning strategy research by anchoring it in the field of cognitive psychology in the early years from 1970 to 1990 before reviewing the varied and descriptive nature of the research from the 1990 to the present time. The review highlights that learning strategy research is becoming more diversified and also more revealing in its findings. This needs to be taken as a positive movement because of the holistic picture of the learner and learning that is emerging which, in turn, can help teachers review their pedagogical practices to enhance learning.

INTRODUCTION

Much has been written, rewritten, and discussed about learning strategies and their importance to language learning in the last few decades. It is undeniable that learning strategy research has been largely developmental and as such, much of the early work is not well grounded in any theoretical base. Research in learning strategies has been concentrated in describing the different types of strategies (Rubin, 1975; Bialystok, 1978; Cohen & Aphek 1981) and how frequently these are employed by learners of different proficiency levels (O'Malley, Chamot, & Stewner-Manzanares, 1985). This paper explores learning strategy research in second language acquisition and cognitive psychology to illustrate the common elements between these two fields for theory building.

Research in the fields of second language acquisition and cognitive psychology on the influence of learning strategies on learning was conducted individually without any interaction between the two fields in the 1970s. The research done in the area of second language acquisition was largely descriptive and mostly inconclusive, while the research in cognitive psychology on the effectiveness of training learners to acquire and use strategies was experimental and co-relational. By the 1980s, the latter work made evident a number of interesting conclusions about learning strategies. These were a system of classifying and defining learning strategies; descriptive information on applying strategies for different students and tasks; and the effectiveness of strategy training. Second language acquisition was also grappling with these topics but the area of strategy training had not yet fully filtered into the research.

However, neither field had a clear theoretical understanding of why learning strategies were effective in learning or what the links were between cognitive processes and strategies use.

To draw the parallels between these two fields, this historical discussion will begin with a review of the work done by cognitive psychologists and then see how much of it is applicable to the work done in the area of language learning.

RESEARCH IN LEARNING STRATEGIES IN THE 1970s

Studies in Cognitive Psychology

In cognitive psychology, studies of learning strategies with L1 learners have concentrated on determining the effects of strategy training on different kinds of tasks and learners. One of the earliest works to consider is that of Dansereau (1978) who helped to categorize learning strategies into two - those that operate directly on materials (primary strategies) and those that operate on the individual to help establish a suitable learning atmosphere (support strategies). To assist the learners and make the training more effective, Dansereau devised a training system based on findings from the educational and psychological research of that time, to assist learners with alternative learning procedures and help them interact more effectively with academic and technical materials.

Wesche (1975) studied the learning behaviors of successful adult language learners in the Canadian civil service and discovered that there was more variety and quality of learning behaviors by those who improved quickly. A very important finding here was the notion that a learner can display a complexity of behaviors at any one time to undertake learning. Interestingly enough, this has been seen again and again in many studies involving second language learners (Sarig, 1987; Nambiar, 1996; Mah, 1999). Sarig (1987) worked with students whose L1 was Hebrew and compared their strategy use when reading in Hebrew and when reading in English. The study revealed that a fifth of all strategy use reported by the students were combinations of cognitive strategies, metacognitive strategies, or both, cognitive and metacognitive strategies. Nambiar (1996) and Mah (1999) also found that Malaysian undergraduates used strategies in combination, especially from the cognitive and metacognitive strategy groups. This is an important finding because it helps us understand why some learners are more successful at completing a language task compared to others.

Weinstein (1978) studied the effects of a diversified elaboration skill-training program on the learning and retention efficiency of ninth graders. This work provided evidence that a general learning strategies program can be developed and implemented to provide learners with a set of procedures to maximize acquisition, retention, and retrieval of material. Rigney (1978) went one step further and showed how it is possible to increase the effectiveness of learning by showing how learners can control the kinds of information processing they do while acquiring, retaining, retrieving information and performance during learning. This, Rigney claimed, could be accomplished by simply teaching learners effective processing strategies.

Research done in cognitive psychology has also shown that successful learners have effective ways of processing information and that these 'strategies' can be taught to other learners. What is not clear from the literature on cognitive psychology research however is why these strategies are effective in the learning process and what the link is between strategies and mental processes.

Studies in Second Language Acquisition

In the area of second language acquisition research, learning strategies emerged from a concern for identifying the characteristics of successful learners (Rubin, 1975; Stern, 1975). One of the earlier works to consider is that of Rubin (1975) who set out to identify the strategies of successful learners so that these could be made available to less successful learners. Among the factors considered were psychological, communication, social and cognitive strategies. Rubin's work was viewed with great interest because it paralleled the development in cognitive literature on the mental processes of the good learner. Both Rubin's and Stern's work produced lists of learning strategies but these were for the most part intuitive lists.

Wong-Fillmore (1976) identified the social strategies used by successful language learners, thereby drawing a relationship between strategies that contribute indirectly to learning and learning strategies. Observing Mexican and American children, Wong-Fillmore found that by using a few well-chosen formulas, these learners could converse with each other and thereby learn new material. The work was beneficial in highlighting the effectiveness of training in using learning strategies.

Using Stern's list of 10 strategies necessary for second language competence and interviews with good language learners, Naiman, Frolich, Stern, and Todesco (1978) set out on more empirical work. Naiman et al. (1978) uncovered five major strategies that good language learners do:

1. Active involvement in learning by identifying and determining the learning environment
2. Awareness of language as a system
3. Awareness of language as a means of communication and interaction
4. Acceptance of the affective demands of L2 and coping with it
5. Extension and revision of L2 system by inferencing and monitoring.

Though the lists of strategies suggested by Rubin (1975) and Naiman et al. (1978) are not theoretically grounded, the studies were nonetheless useful as both identified strategies used by good language learners. It is worth noting here that Naiman et al. were the first researchers to empirically validate the effectiveness of strategies.

Bialystok (1978) distinguished between language use and language form better known as functional practice strategies and formal practice strategies respectively in her model of second language learning. Functional practicing and inferencing and formal practicing and monitoring strategies were all seen as "optimal means of exploiting available information to improve competence in a second language" (p. 71). In addition, Bialystok talked about explicit and implicit linguistic knowledge and general knowledge because the type of strategy used was dependent on the type of knowledge necessary for the task. This was one of the earliest researches to include the cognitive component in understanding how learners process information.

Hosenfeld, Arnold and Kirchofer (1981) using 'think-aloud' protocols reported on the reading strategies of successful and unsuccessful second language learners and, more specifically, on a metacognitive strategy in which good learners evaluate their thinking using logic. Hosenfeld et.al (1981) were some of the first SLA researchers who attempted to train learners in the use of efficient reading strategies.

Cohen and Apeh (1981) researched the strategies learners used while learning vocabulary as well as the role of mnemonic associations in vocabulary retention. Using mostly classroom observations, they deduced that students basically tried to memorize words resulting in the identification of 11 categories of associations used. In addition, their work revealed strategies that hindered learning; these were poor memory techniques, poor inductive inferencing strategies, and poor deductive reasoning.

In sum, the research done in the area of learning strategies in second language acquisition from the 1970s to the early 1980s contributed greatly to our understanding of how strategies enhance and support language learning. Most of these studies have examined strategy use among good language learners in formal learning settings. Furthermore, most of these studies were done among adult language learners, with the exception of Wong-Fillmore's (1976) study on Mexican children. While studies among adult learners have been based mostly on self-report data, those with the children have been on observations. Thus, it remains unclear whether the differences in strategy use are a result of age or of methodology employed. Nonetheless, these studies on the good language learner have been most useful in providing later researchers with keen insights into the behaviors of successful language learners.

RESEARCH IN LEARNING STRATEGIES IN THE 1980s

Studies in Cognitive Psychology

Research in the 1980s concentrated on the effects of strategy training on different learners and tasks especially with reading comprehension and problem solving (Brown, Bransford, Ferrara, & Campione, 1983; Chipman, Segal, & Glaser, 1985). One important finding was that learning strategies could be placed within an information-processing model. It was around this time that O'Malley et al., (1985) worked on their tripartite model comprising metacognitive, cognitive and social affective strategies in second language learning.

Among the earliest cognitive psychologists to consider the social nature to learning was Slavin (1980) who found that students who were trained to use cooperative learning strategies did better than those who were not provided with such training. Cooperative strategies have also been used in a number of reading comprehension activities and the results have also been positive in that they do enhance the learning (Dansereau, Larson, & Spurlin, 1983). This has some resemblance to the affective component described in second language learning (Naiman, 1978; Rubin & Thompson 1982).

Brown and Palinscar (1982) recognized that "an ideal training package would consist of both practice in the use of tasks-appropriate strategies, instruction concerning the significance of those activities, and instruction concerning the monitoring and control of strategy use" (p. 7). They attempted to separate cognitive strategies from the metacognitive strategies. Cognitive strategies were more concerned with individual tasks and required the material to be manipulated or transformed to enhance understanding. Metacognitive strategies were strategies concerned with the planning for the learning, monitoring of understanding, and evaluation of one's own learning. Brown et al. (1983) went on to state that students needed both cognitive and metacognitive strategies to maximize their learning potential.

Weinstein and Mayer (1986) believed that information processing could help us understand the role of learning strategies in the learning process. They suggested a four stage

encoding process involving selection, acquisition, construction, and integration. The process of selection and acquisition centers on the gathering of knowledge while construction and integration focuses on what knowledge is acquired and how it is organized. The authors claim that learning strategies are used intentionally by learners to facilitate their learning. This suggests that learning strategies “affect learners’ motivational or affective state, or the way in which learner selects, acquires, organizes or integrates new knowledge” (p. 315).

Research done in cognitive psychology in the 1980s helped ground the work in the information processing framework and this was an important contribution for language learning in particular (see O’Malley et al., 1985). The distinction between the different groups of strategies was also helpful in that it helped researchers to identify and classify strategies into categories rather than simply a list, as was done in the 1970s.

Studies in Second Language Acquisition

This era of research in cognitive psychology threw light on the distinction between cognitive, metacognitive, and social or affective strategies. In the field of second language acquisition the same type of work was done with language learners. Wenden’s (1983, 1986) work has advanced our understanding of the importance of metacognition in second language learning, especially in terms of what learners know about the way they learn and how they plan for learning. Concentrating on self-directed learning among adult foreign language learners and using interviews the researcher concluded that there are eight questions learners could pose to themselves to determine their learning processes. These questions centered around knowing about learning, planning, monitoring, and self-evaluation, all of which match Brown and Palinscar’s (1982) categorization of metacognitive strategies. This is clearly an insight into the influence cognitive psychology had in learning strategies in language learning.

O’Malley et al. (1985) provided the first clear distinction between metacognitive and cognitive strategies by working with beginning and intermediate level ESL learners to assess their strategy use for oral language tasks. Using self-reports by students they distinguished between cognitive, metacognitive, and social strategies and outlined the first taxonomy of learning strategies. Many of the strategies reported in their study matched those identified in the work done in first and second languages (Bialystok, 1981; Brown & Palinscar, 1982; Slavin 1980; Naiman et al., 1978; Rubin, 1981; Wittrock, 1983).

After considering the earlier work on strategy research, Oxford (1990) presented a system of strategies that support each other and can be associated with each other. Oxford suggested that strategies be grouped into two—direct and indirect strategies—not unlike Dansereau’s (1978) primary and support strategies or Rubin’s (1981) direct and indirect strategies. Direct strategies are made up of memory, cognitive, and compensation strategies while indirect strategies comprise social, affective, and metacognitive strategies. These are further divided into nineteen sets, each set being further subdivided into specific behaviors. There are about 62 behaviors in this system to help explain how learners learn and this is wherein the problem lies. With so many behaviors, it is difficult to decide which are most important to learning. In addition, there is a tendency to find overlapping behaviors, which cannot be attributed to any particular theory of learning.

This comprehensive classification system has provided the foundation for the Strategy Inventory for Language Learning (SILL). This inventory has been employed in numerous studies across the world to validate the effectiveness of learning strategies to language learning. It is

estimated that the SILL has been used in major studies around the world and involved 10,000 language learners (Kaylani, 1996). In addition, it has been translated into more than 20 languages (Oxford, 2001).

The work of Cohen (1998) who made a distinction between language learning and language use strategies is also valuable here. Cohen described language-learning strategies as strategies for identifying material to be learned, drawing differences between it and other material, grouping it for easier learning, working on the material repeatedly, and committing the material to memory when it cannot be acquired naturally. Language use strategies, on the other hand, are made up of retrieval, rehearsal, cover, and communication strategies.

Retrieval strategies are strategies that are used to source material stored in the memory (e.g., using mnemonics to help remember keywords). *Rehearsal* strategies are strategies for rehearsing target language structures (e.g., practice how to use a form of the tenses so as to be able to use it for an exam). *Cover* strategies are used by learners to give the impression that they are in control of their learning when they are not. These are similar to compensation strategies in that they compensate for gaps in the target language knowledge helping learners not to appear unprepared or foolish. *Communication* strategies are used to convey messages to the learner (Cohen, 1998).

Much of the work done in the 1980s in learning strategy research was in helping to identify good learning strategies and ultimately compile a list of such strategies. If we look closely at the parallels between the work done in cognitive psychology and learning strategies, we may postulate that some of the work done with learning strategies in the area of language learning also has some theoretical base in cognitive theory. Despite the vast research conducted on identifying strategies and compiling lists of characteristics of good language learners, there remains a need to see if there were indeed any similarities or differences in these characteristics when taken beyond the native speaking English world.

RESEARCH IN LEARNING STRATEGIES IN THE 1990s

This period in learning strategy research focused on the variables affecting the choice of learning strategies among various group learners. Variables like proficiency, learning environment, ethnicity, age, gender, learning styles, motivation, and beliefs were the more researched topics in learning strategy work.

Proficiency and Learning Strategies

Much of the work with this variable has shown that there is a relationship between learning strategies and proficiency and this could very well be a bi-directional relationship. It appeared to be a question of whether the level of proficiency determined the learning strategy use or whether the learning strategy use determined the level of proficiency.

Dreyer and Oxford (1996) found a very high correlation between language proficiency and strategy use among Afrikaans. Proficient learners used the cognitive strategy of using mental processes, the compensation strategy of compensating for missing knowledge, and the metacognitive strategy of organizing and evaluating learning significantly more than less proficient learners. The use of social strategies was more common among the less proficient learners.

Park (1997) explored the relationship between strategy use and proficiency in a Korean context and found a significant linear relationship between the two. Phillips (1991) argues that intermediate learners used more strategies than advanced and low proficiency students indicating a curvilinear relationship between these two variables. There was no clear indication of level of proficiency to strategy categories although the study did report a correlation between level of proficiency and individual strategies.

Sheorey (1999) examined learning strategy use among a group of Indian college students learning English in their native land to explore if there were differences in the strategy use among these students to variables like self-reported English proficiency, high school medium of instruction (English or vernacular and gender). Sheorey surmised that learners with high proficiency in English tended to use strategies more frequently. Bremner (1999) investigated the strategy use of a group of undergraduates in Hong Kong and found significant levels of association between cognitive strategies and proficiency among proficient learners. Less proficient learners on the other hand tended to use more affective strategies.

Kayad (1999) investigated the correlation between proficiency level and learning strategies use among university undergraduates in Malaysia and found that there existed a pattern of strategy use, which suggested that second language proficiency level has an effect on the use of strategies. In this study, proficient learners reported using cognitive strategies for listening, reading and writing more than less proficient learners. Using strategies for active, naturalistic use of English (watching TV or movies in English, reading for pleasure, writing in English) is according to Green and Oxford (1995) strongly related to a high level of proficiency. The less proficient learners, on the other hand, used more affective strategies and compensation strategies and the metacognitive strategy of thinking about their progress in learning. These strategies are useful in supporting learning but may not be directly involved in actual learning. This finding parallels that in Nambiar (1996) and Sarjit Kaur and Salasiah (1998).

Nambiar (1996) investigated learning strategies use among beginning, intermediate, and advanced learners in a Malaysian tertiary setting to explore the relationship between strategy use and proficiency and discovered that although the three groups used similar strategies, their manipulation of the strategies were different. The advanced learner was very confident in the choice of strategy and did not use compensation strategies like 'guessing' and social strategies like 'asking for help' to complete the language activity. Both the intermediate learners and the beginners used the affective strategies when they had difficulty understanding the task. In this case what they did was to try and mask their anxiety by laughing it off. The advanced learner used the affective strategy only as a form of encouragement to take risks wisely and as a reward when accurate in answers.

Sarjit Kaur and Salaisah (1998) examined learning strategies among Malay students at a tertiary institute and found that these learners favor compensation and affective strategies to other strategies. Just like the learners in Nambiar's (1998) study and the Indonesian learners in Davis and Abas (1991) and Nuril Huda (1998,) these Malay students tended to use compensation and affective strategies because they were not proficient in the English language and preferred to guess their answers. In addition, they tended to seek comfort in affective strategies, and this was an indication of their anxiety in language learning. Kayad (1999) reports that the less proficient learners used 'less challenging strategies' or strategies that did not require much linguistic knowledge to help them in their learning (p. 232).

Bruen (2001) worked with 100 Irish college students and, using the SILL and interviews, found that learners with higher proficiency used more strategies and used them in a more

structured and purposeful way. Peacock and Ho (2003) used the SILL and semi-structured interviews with 1,000 Chinese EFL students in Hong Kong and found that many cognitive and metacognitive strategies were significantly and positively associated with proficiency. Similarly, Lai (2005) investigated strategy use and proficiency among learners in Taiwan and found that proficiency level has a significant effect on strategy choice and use. The more proficient learners used more strategies especially metacognitive and cognitive strategies.

Gan, Humphreys, and Hamp-Lyons (2004) examined strategy use among successful and unsuccessful EFL students in China and found that successful students use more strategies and also more sophisticated strategies than unsuccessful students. Similarly, Lan and Oxford (2003) also surveyed strategy use among Taiwanese 6th graders learning EFL and found that students with high proficiency levels used strategies significantly more than medium proficiency students who, in turn, used more strategies than less proficiency students.

It is interesting to note here that the level of proficiency does indeed influence the strategy employed by the individual learner but it is not the only factor to consider. The review above indicates that cognitive and metacognitive strategies are popular with proficient learners who use them purposefully. These strategy groups are used by learners to retrieve information, to create mental linkages, and analyze and reason while learning. They are equally necessary skills to perform successfully in learning. Generally, however, it would appear that the less proficient the learner is the more s/he would rely on strategies that would help raise his/her level of confidence in the learning. Strategies would include affective, social and compensation strategies (Dreyer & Oxford, 1996; Nambiar, 1996; Kayad, 1998; Bremner, 1999, Lai, 2005, Park, 2005). It is important to reiterate here that the studies mentioned above have all found that proficiency does influence the learning strategies a learner employs in learning.

Learning Environments and Learning Strategies

Most learning strategy research has been done with learners from mainstream school and university settings and as such the findings are also applicable to these environments. There are however different settings where the learning conditions are varied because of a host of difficulties like classes being too large (LoCastro, 1994), input-poor environments, or even insufficient and untrained teachers (Kouraogo, 1993). It has been hypothesized that learning environment does influence the use of learning strategies although no definite conclusions have been made on the extent of the influence (Oxford, 1990; Rubin, 1975; Nuril Huda, 1998).

LoCastro (1994) examined the strategies successful Japanese learners of English used to learn language in a large class environment. Using group interviews and the SILL, the study found that when the students were in junior and senior high school, they were mainly interested in passing the examination and employed memorization strategies to do this. In addition, they all looked to the teacher for motivation because of the large class size. Interestingly, this idea that the teacher is an important motivator in the classroom has emerged even in this study and many studies involving Asian students. In university settings, however, the learners were motivated to learn English because they saw it as a language of international communication: their passport to go abroad.

Kouraogo (1993) discusses language learning strategies in input-poor environments, which he defines as “language learning contexts where learners have little opportunity to hear or read the language outside or even inside the classroom” (p. 167). Citing the examples of learning EFL in Burkina Faso and French in US high schools, Kouraogo posits a lack of motivation and a

real opportunity to practice the language as major problems that may be found in many parts of the world and argues that conscious learning is a crucial factor in these contexts needing attention.

Mah (1999) investigated the learning strategies used by students from two different learning environments in Malaysia—one where the medium of instruction was Bahasa Melayu and the other where the medium of instruction was Mandarin. Mah's study found that the cultural background of the learner does determine to some extent the use of learning strategies. The study found that the students did use different strategies although the number of respondents was too few for any conclusive findings. As expected, rote learning and memorizing were popular with the learners from the Mandarin speaking school background. This is because rote learning is heavily practiced in these schools where learners are required to memorize times tables, vocabulary, and stock phrases for communication. This study suggests that the learner's learning environment, both formal and informal, both in school and out of school, does affect the learning of the language and, even more importantly, what strategies are used and how they are used.

The environment in which the learner learns does influence how the learner learns a language. As discussed above, learners desire to learn a language is related to the value attached to learning that language in society (Mah, 1999), how motivated they are (Lo Castro, 1994), and what opportunities to practice are readily available to them (Kouraogo, 1993).

Ethnicity and Learning Strategies

Ethnicity is a variable that can influence a language learner's choice of strategies (Hess & Azuma, 1991; Hofstede, 1986; Reid, 1995) and has figured in much research in learning strategies. Work done with Hispanic learners, for example, was popular in the United States because of the increasing numbers of Latinos who migrated to the country. The one striking finding that stood out from the research done with the Hispanics is that the level of proficiency does affect the learner's choice of strategies. Green (1991) and Green and Oxford (1993) found that learners with a high level of proficiency used strategies more often than students with low proficiency.

Egyptian learners, it was found could be trained to use strategies (Aliweh, 1989) and they preferred metacognitive and memory strategies to cognitive strategies (Touba, 1992). Work done with Thai learners also revealed that strategies were associated with proficiency (Mullins, 1992). Davis and Abas (1991) inform us that Indonesian learners prefer using all the learning strategies except affective strategies while Nuril Huda (1998) posits on the importance of culture in learning strategy use. Malaysian learners like Indonesian learners also tend to avoid affective strategies because they do not feel comfortable expressing their feelings and as such are inhibited in some ways.

Sheorey (1999) found that Indian learners concentrated on strategies they perceived useful to help them succeed in examinations; culture and educational background was an important determinant here. Conversely, Chinese learners favor compensation strategies to affective strategies according to Bedell (1993). It was also found that academic major did influence learning strategies with those from humanities and social sciences using more strategies than those from the sciences (Chang, 1990). Among the Japanese learners, ethnicity seems to be a factor in determining learning strategy use (Phillips, 1991) while metacognitive strategies appear to be popular with Korean students (Oh, 1992). Park (2005) investigated the

profile of strategy use among Korean high school students and found they were moderate strategy users who preferred to use compensation strategies and memory strategies.

Closer to home, it was found that the more proficient Singapore learners used many strategies frequently compared to the less proficient learners. It was also established that many compensation strategies were popular with both proficient and less proficient learners suggesting that these strategies may be instrumental in learning (Wharton, 2000, Lu, 2007). Similarly, Yang (1993) posits that compensation strategies were rated highly with Taiwanese undergraduates. Lan (2005) also found that EFL learners in Taiwan reported using compensation strategies more frequently than any other strategy type.

The discussion on ethnicity and learning strategies above shows that the work is still uncoordinated and in a state of early infancy. A great deal remains to be done to help put into motion a concerted effort to study how different ethnic groups vary, if they do at all, in their strategy use. The review of studies presented here does not offer any conclusive findings, but it does make clear that ethnicity is a consideration in learning strategy use.

Age and Learning Strategies

Learners of different ages approach language learning in different ways owing their significance to psychological and social differences between them. Age is an important factor to consider but it is often overlooked in strategy research. Most learning strategy studies have been with adolescents, especially undergraduates as well as adults (Oxford, 1996). Most learning strategy studies with children have made use of observational data while those with adults relied on self-report data. With observations social strategies tend to be most prominent while studies with adults emphasize cognitive and metacognitive strategies. What causes this difference is not clear because it could be either the age of the respondents or the methodology used.

Gunning (1997) found that successful beginning level ESL learners actually displayed a different pattern of strategy use from unsuccessful learners. Successful learners were also seen to be better in selecting strategies that were more effective and appropriate than unsuccessful learners. This is expected because if a learner chose effective strategies, the chances of success in learning are enhanced and this is a common finding even in studies involving adult learners.

Purdue and Oliver (1999) worked with bilingual primary school-aged children to explore the relationship between affective factors and learning strategies. It was found that this group preferred to use cognitive strategies while social strategies were not very popular. DeKeyser (2003) hypothesizes that children and adults use different mechanisms for learning. Griffiths (2003) conducted a study in New Zealand using the SILL with 348 students from a wide age range from 21 different countries and found a significant difference between frequency of strategy use between advanced level and elementary level students.

Age does appear to have an influence on how learning strategies are used by learners but the findings from the studies reviewed do not point to any clear indication of how age impacts the use of strategies.

Gender and Learning Strategies

Men and women have distinct characteristics, which they bring into the classroom, and this relationship between gender and learning has been the focus of many studies and, although

they may have not all been conclusive, there have been some interesting revelations (Oxford, 1996).

Oxford and Nyikos (1989) carried out a large study with foreign language students on the influence of gender on strategy use. A factor analysis showed that female students displayed a greater use of form rule-related practice strategies, general study strategies, and conversational input elicitation strategies. Bedell (1993) studied the effects of gender on learning strategy choice among students from secondary and tertiary institutions in China using a translated version of the SILL. This study found that women used certain strategies and categories of strategies more frequently but, overall, their strategy use was no significantly greater than that of the men. Bedell claims that within a homogenous group of learners, gender can be an influencing factor on strategy choice and use.

All these studies on gender and learning strategies hint at the same thing. That is, females generally use more strategies than males (Green, 1991; Watanabe, 1990; Noguchi, 1991; Zoubir, Shaw, & Oxford, 1995; Dreyer & Oxford, 1996; Abou Baker El-Dib, 2004; Lu, 2007). Oxford (1996) cautions that “it might be that males and females are different in how they report their strategies retrospectively but are not in reality all that different when they actually use the strategies” (p. 248).

Learning Styles and Learning Strategies

Learning styles refer to the specific cognitive, affective, and physiological traits that determine how a learner processes information. These specific characteristics distinguish one learner from another which explains why some learners are visually or auditory oriented, reflective or impulsive and vary in their tolerance to ambiguity. The learning styles of an individual will help determine to some extent the strategies employed in language processing (Cohen, 1998; Fan, 2003; Oxford, 2003).

Rossi-le (1989) found that how a learner uses learning strategies is related to his/her learning style. A visual learner, it was claimed, tended to depend heavily on visualization strategies. Ehrman and Oxford (1990) worked with adult language learners and found that learning style has a strong influence on the way learners use strategies and how they advance in their language learning. They claim that a greater understanding of learning styles would enable trainers to better deal with different learners to enhance learning performance.

Nuril Huda (1998) investigated the relationship between reflectivity-impulsivity and learning strategies choice. This study found only a partial support for the idea that reflectivity-impulsivity influences a learner's choice of learning strategies. Dreyer (1999) studied the relationship between learning styles and strategies of ESL students at a university in South Africa. Early results indicate that learning style does determine the type of learning strategies the students use.

A learner's ability and willingness to work is very much determined by his/her learning style and the learning strategies s/he employs to help him/her cope within various instructional methodologies. Understanding a learner's individual style preferences can help teachers to orient their L2 instruction and also apply appropriate strategy training.

Motivation and Learning Strategies

There seems to be a strong correlation between motivation and learning strategy use with highly motivated students using more strategies than students who are not highly motivated. Oxford and Nyikos (1989) found that of all the variables they studied, motivation proved to have the most powerful influence on the use of learning strategies. Highly motivated learners tended to use more strategies from formal rule-related practice strategies, functional practice strategies, general study strategies, and conversational strategies. Wharton (2000), investigating strategy use among foreign language learners in Singapore, also found like Oxford and Nyikos that motivation had a significant effect on the use of language learning strategies.

Kaylani (1996) found that male students in Jordan tended to be more integratively motivated while females were instrumentally motivated. This was seen to be at odds with the idea that the males were under pressure to gain admission into a university by passing English, establish a career for them and, thereby, become respected members of their society. The Jordanian females, however, saw proficiency in English as giving her status for marriage and employability later. Park (2005) also found that for Korean high school students, extrinsic motivation was stronger than intrinsic motivation, and those with higher motivation also possessed a richer repertoire of strategies which they employed more frequently. Lu (2007) investigated strategy use and learning motivation among ESL students in the United States and found that these students were more instrumentally motivated. Lu also concluded that female students use strategies more frequently than male students when learning English.

It is generally accepted that highly motivated learners employ more strategies frequently than less highly motivated learners (Oxford & Nyikos, 1989; Ehrman & Oxford, 1990). If motivation is seen as part of the make-up of the individual learner together with attitudes, confidence levels and learning styles, then it is natural to consider it as important in helping learners to attain success in language learning. The more motivated the learner is, the more effective and efficient his/her strategy use will be; that is, his/her goals will determine the learning strategy use as evidenced in Kaylani's (1996) work.

Beliefs and Learning Strategies

All learners have strong beliefs about how languages are learned and this will determine their strategy use because research has shown that their strategy use is consistent with the beliefs they have about learning.

Yang (1999) investigated how learner beliefs about language learning are related to their learning strategy use and found that learners' self-efficacy beliefs about learning English did influence their use of functional practice strategies. For spoken English, their beliefs about the value and nature of learning was in turn related to the use of formal oral practice strategies. Yang proposes a cyclical relationship between beliefs and strategy use in her study.

Hong (2006) compared strategy use and beliefs about language learning among monolingual Korean and bilingual Korean-Chinese university students. Using the SILL and BALLI Bilinguals, it was found that learners had stronger beliefs about learning and, thus, reported a higher use of learning strategies.

Yu (2007) surveyed learning beliefs and learning strategies used by third-year college students in China and found that the students had very strong form-focused beliefs and disagreed with the use of the mother tongue to learn language. The study revealed significant correlations between beliefs and strategy use among these students.

Mokhtari (2007) examined learning strategies and beliefs about language learning among a group of 166 university students learning Persian (a less commonly taught language) in three settings in the United States using the SILL and BALLI (Beliefs about Language Learning Inventory). This study provides an empirical description of the language learning beliefs and strategies in learners of Persian because the stronger the beliefs about learning, the higher the use of strategies.

Yin (2008) explored the relationship among 1,201 Chinese university students' use of language learning strategies, attitudes, motivations, beliefs about language learning, and English language proficiency. Findings suggest that ability beliefs and motivational orientations were powerful sources of influence on learners' use of learning strategies which accounted for a significant variance in proficiency among the learners.

The studies reviewed here explored the relationship between beliefs and strategy use with some claiming cyclical relationships between the two variables (Yang, 1999); higher use of strategies among learners with stronger beliefs (Hong, 2006; Yu, 2007; Mokhtari, 2007); and how even with the use of other variables, beliefs are still powerful influences on strategy use (Yin, 2008). It is therefore accurate to argue that learner beliefs comprise a strong influence on the type and range of strategies learners use to help them in their learning.

CONCLUSION

The researchers of the 1970s and the 1980s highlighted the importance of learning strategies to language learning and helped pave the way for later research. The 1970s work was tied closely to cognitive psychology and the later research distinguished different groups of strategies. The work in the 1980s simply forged ahead with lists of strategies used by successful learners and did not ground the work in theory. Researchers in the 1990s made profitable use of such reliable strategy lists and set out to conduct research investigating the factors that impacted the use of learning strategies.

The essentialist nature of the research conducted in this period, 1990 to 2008, and the nature of variables examined—proficiency, learning environment, ethnicity, age, gender, learning styles, motivation, and beliefs—reveal that learning strategy research is becoming more diversified and more revealing in its findings. The analysis indicates that the level of proficiency of a learner does influence learning strategy use while environment helps determine how a learner learns and what strategies are employed to enhance learning.

There appears to be a cyclical relationship between strategy use and beliefs with more positive beliefs leading to higher success in learning. In the same way, motivation and strategy use are also linked because increased levels of motivation result in greater learning success and better strategy use. An understanding of learning styles is seen as important to strategy use because learners learn differently. An awareness of this will no doubt help teachers plan instruction accordingly. The analysis further reveals that variables like age, ethnicity, and gender are not clear indicators of strategy use although they may be considerations of strategy use.

What is important in this analysis is that there is so much more to learning strategies in the form of variables that learners bring and an understanding of these variables will definitely inform the teaching and learning. The holistic picture of the learner and learning that is developing with strategy research is helping educators and researchers redefine the pedagogy employed in the classroom to enhance the teaching-learning process.

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