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Learning and Teaching Styles In Foreign and Second Language Education

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ABSTRACT *The ways in which an individual characteristically acquires, retains, and retrieves information are collectively termed the individual's* learning style. *Mismatches often occur between the learning styles of students in a language class and the teaching style of the instructor, with unfortunate effects on the quality of the students' learning and on their attitudes toward the class and the subject. This paper defines several dimensions of learning style thought to be particularly relevant to foreign and second language education, outlines ways in which certain learning styles are favored by the teaching styles of most language instructors, and suggests steps to address the educational needs of all students in foreign language classes.*

Students learn in many ways—by seeing and hearing; reflecting and acting; reasoning logically and intuitively; memorizing and visualizing. Teaching methods also vary. Some instructors lecture, others demonstrate or discuss; some focus on rules and others on examples; some emphasize memory and others understanding. How much a given student learns in a class is governed in part by that student's native ability and prior preparation but also by the compatibility of his or her characteristic approach to learning and the instructor's characteristic approach to teaching.

The ways in which an individual characteristically acquires, retains, and retrieves information are collectively termed the individual's *learning style.* Learning styles have been extensively discussed in the educational psychology literature (Claxton & Murrell 1987; Schmeck 1988) and specifically in the context of language learning by Oxford and her colleagues (Oxford 1990; Oxford et al. 1991; Wallace and Oxford 1992; Oxford & Ehrman 1993), and over 30 learning style assessment instruments have been developed in the past three decades (Guild & Garger 1985; Jensen 1987).

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Serious mismatches may occur between the learning styles of students in a class and the teaching style of the instructor (Felder & Silverman 1988; Lawrence 1993; Oxford et al. 1991; Schmeck 1988), with unfortunate potential consequences. The students tend to be bored and inattentive in class, do poorly on tests, get discouraged about the course, and may conclude that they are no good at the subject of the course and give up (Felder & Silverman 1988; Godleski 1984; Oxford et al. 1991; Smith & Renzulli 1984). Instructors, confronted by low test grades, unresponsive or hostile classes, poor attendance, and dropouts, may become overly critical of their students (making things even worse) or begin to question their own competence as teachers.

In this paper, we will explore the following questions:

1. Which aspects of learning style are particularly significant in foreign and second language education?

2. Which learning styles are favored by the teaching styles of most language instructors?
3. What can be done to address the educational needs of *all* students in foreign and second language classes?

Dimensions of Learning Style

In the sections that follow, we describe five dichotomous learning style dimensions derived from work of Felder et al. (1988, 1993), indicating the ways in which the educational needs of students with strong preferences for certain poles of the dimensions are not met by traditional approaches to language instruction. The concluding section offers a summary of suggestions for meeting the needs of those students.

The proposed learning style dimensions may be defined in terms of the answers to the following five questions:

1. What type of information does the student preferentially perceive: sensory—sights, sounds, physical sensations, or *intuitive*—memories, ideas, insights?
2. Through which modality is sensory information most effectively perceived: *visual*—pictures, diagrams, graphs, demonstrations, or verbal—written and spoken words and formulas?
3. How does the student prefer to process information: *actively*—through engagement in physical activity or discussion, or *reflectively*—through introspection?
4. How does the student progress toward understanding: *sequentially—in* a logical progression of small incremental steps, or *globally—in* large jumps, holistically?
5. With which organization of information is the student most comfortable: *inductive*— facts and observations are given, underlying principles are inferred, or *deductive*—principles are given, consequences and applications are deduced?

Sensing and Intuitive Learners

In his theory of psychological types, Jung (1971) introduced *sensation* and *intuition* as the two ways in which people tend to perceive the world. Sensing involves observing, gathering data through the senses; intuition involves indirect perception by way of the subconscious—accessing memory, speculating, imagining. Everyone uses both faculties constantly, but most people tend to favor one over the other. The strength of this preference has been assessed for millions of people using the *Myers-Briggs Type Indicator* (MBTI) (Myers & McCaulley 1985; Myers and Myers 1980), and the different ways in which sensors and intuitors approach learning have been characterized (Lawrence 1993). Sensor–intuitor differences in language learning have been explored by Moody (1988) and Ehrman and Oxford (1990).

Sensors tend to be concrete and methodical, intuitors to be abstract and imaginative. Sensors like facts, data, and experimentation; intuitors deal better with principles, concepts, and theories. Sensors are patient with detail but do not like complications; intuitors are bored by detail and welcome complications. Sensors are more inclined than intuitors to rely on memorization as a learning strategy and are more comfortable learning and following rules and standard procedures. lntuitors like variety, dislike repetition, and tend to be better equipped than sensors to accommodate new concepts and exceptions to rules. Sensors are careful but may be slow; intuitors are quick but may be careless.

Moody (1988) administered the MBTI to 491 college language students at the first- and second-year levels. Fifty-nine percent of the students were intuitors, substantially more than the 40 percent found for a sample of 18,592 general college students (Myers & McCaulley 1985). This pattern is not altogether surprising if one presumes that a substantial number of the students were either majoring in a language or taking the courses as electives. As Moody notes, language is by its nature symbolic, which would tend to make it more attractive to intuitors than to the more concrete and literal-minded sensors.

Ehrman and Oxford (1990) studied learning strategies and teaching approaches

preferred by sensors and intuitors in an intensive language training program. The sensors used a variety of memorization strategies like internal drills and flash cards, liked class material that might better be described as practical than fanciful, and liked highly structured and well organized classes with clear goals and milestones for achievement. Intuitors preferred teaching approaches that involved greater complexity and variety, tended to be bored with drills, and were better able than sensors to learn independently of the instructor's teaching style.

Basic language instruction that involves a great deal of repetitive drill and memorization of vocabulary and grammar (the sort of teaching style often found in pre-college and community college classes) is better suited to sensors than intuitors. If there is too much of this sort of thing without a break, the intuitors—who constitute the majority of the class, if Moody's results are representative—may become bored with the subject and their course performance may consequently deteriorate. On the other hand, strongly intuitive language instructors may tend to move too quickly through the basic vocabulary and rules of grammar in their eagerness to get to "the more interesting material"—grammatical complexities, nuances of translation, linguistic concepts, and cultural considerations. While the intuitive students may enjoy these topics, overemphasizing such material may result in insufficient grounding in the building blocks of the language. The sensors, in particular, may then start to fall behind and do poorly on homework and tests.

Effective instruction reaches out to all students, not just those with one particular learning style. Students taught *entirely* with methods antithetical to their learning style may be made too uncomfortable to learn effectively, but they should have at least *some* exposure to those methods to develop a full range of learning skills and strategies (Smith & Renzulli 1984). To be effective, language instruction should therefore contain elements that appeal to sensors and other elements that appeal to intuitors. The material presented in every class should be a blend of concrete information (word definitions, grammatical rules) and concepts (syntactical and semantic information, linguistic and cultural background information), with the percentage of each being chosen to fit the level of the course (beginning, intermediate, or advanced) and the age and level of sophistication of the students.

Visual and Verbal Learners

We propose to classify the ways people receive sensory information as *visual, verbal,* and *other* (tactile, gustatory, olfactory). *Visual learners* prefer that information be presented visually—in pictures, diagrams, flow charts, time lines, films, and demonstrations—rather than in spoken or written words. *Verbal learners* prefer spoken or written explanations to visual presentations. The third category (touch, taste, smell) plays at most a marginal role in language instruction and will not be addressed further.

This categorization is somewhat unconventional in the context of the learning style literature (e.g., Barbe & Swassing 1979; Dunn, Dunn, & Price 1978), in which sensory modalities are classified as visual, auditory, and kinesthetic. Since the five human senses are seeing, hearing, touching, tasting, and smelling, we suggest that "kinesthetic" does not properly belong on a list of sensory input modalities. A student's preference for motion or physical activity of some sort during the learning process belongs in a separate learning style category: our proposed system and Kolb's (1984) model place it in the active/reflective dimension, and the familiar model based on Jung's typology (Lawrence 1993) includes it in the extravert-introvert dimension.

The distinction between the visual-auditory and visual-verbal classifications has to do with whether reading prose is more closely related to seeing pictures (which leads to the visual-auditory contrast) or to hearing speech (visual-verbal). Three mechanisms have been proposed for the process of extracting lexical significance from written words (Martin 1978): *direct access* (the reader jumps directly from the

printed form of the word to its lexical meaning), *indirect access* (the printed words are translated internally into sounds before information about their meaning can be located in lexical memory), and *dual encoding* (lexical memory can be reached either directly or indirectly). An extensive body of research supports a form of the dual encoding hypothesis. Direct access is possible when words are familiar or when artificial conditions imposed in a research setting make speech encoding inefficient; however, when material is unfamiliar or difficult, lexical memory is speech-accessed (Crowder & Wagner 1992). The implication is that expository prose of the sort one finds in books and on classroom chalkboards is much more likely to be speech-mediated than directly accessed when silently read, and so belongs in the verbal rather than the visual category.

Most people extract and retain more information from visual presentations than from written or spoken prose (Dale 1969), while most language instruction is verbal, involving predominantly lectures, writing in texts and on chalkboards, and audiotapes in language laboratories. Given the preference of most students for visual input, one would expect the last of these modes of presentation in particular to be unpopular, an expectation borne out in research cited by Moody (1988). When community college students were asked to rank-order 13 instructional modes, including lectures, discussion, slides, field trips, and audiotapes, audiotapes ranked at or near the bottom for the overwhelming majority of students surveyed.

Recent studies of learning styles in foreign language education (e.g., Oxford & Ehrman 1993) consistently place reading in the visual category, implying that instructors can meet the needs of visual learners solely by relying on written instructional material. Certainly visual learners learn better if they see *and* hear words in the target language, but so do auditory learners: presenting the same material in different ways invariably has a reinforcing effect on retention. The challenge to language instructors is to devise ways of augmenting their verbal classroom presentation with nonverbal visual material—for example, showing photographs, drawings, sketches, and cartoons to reinforce presentation of vocabulary words, and using films, videotapes, and dramatizations to illustrate lessons in dialogue and pronunciation.

Active and Reflective Learners

The complex mental processes by which perceived information is converted into knowledge can be conveniently grouped into two categories: *active experimentation* and *reflective observation* (Kolb 1984). Active processing involves doing something in the external world with the information—discussing it or explaining it or testing it in some way—and reflective processing involves examining and manipulating the information introspectively. An *active learner* is someone with more of a natural tendency toward active experimentation than toward reflective observation, and conversely for a *reflective learner.*

Active learners learn well in situations that enable them to do something physical and reflective learners learn well in situations that provide them with opportunities to think about the information being presented. The more opportunities students have to both participate and reflect in class, the better they will learn new material and the longer they are likely to retain it (KoIb 1984; McCarthy 1987). Language classes in which all students are relegated to passive roles, listening to and observing the instructor and taking notes, do little to promote learning for either active or reflective learners. Language classes should therefore include a variety of active learning experiences, such as conversations, enactment of dialogues and minidramas, and team competitions, and reflective experiences, such as brief writing exercises and question formulation exercises.

Small-group exercises can be extremely effective for both active and reflective learners (Johnson et al. 1991). Pose a question or problem ("Translate this sentence." "What's wrong with what I just wrote?" "How many synonyms

for 'happy' can you think of in 30 seconds' at question do you have about what we

covered today?") and have students come up with answers working in groups of three, with one group member acting as recorder. Such exercises engage all the students, not just the small minority who typically participate in class, and are a rich source of responses and material for subsequent discussion. The exercises also relieve the monotony of continuous lectures. In our experience, as little as five minutes of group work in a 50-minute period can be enough to maintain the students' attention for the entire class.

Group work must be used with care, however: simply telling students to work together on problems or projects can do more harm than good. Most references on cooperative learning (e.g., Johnson et al. 1991) point out that students often respond negatively to group work at first, and that the benefits of the approach are fully realized when the group work is structured to assure such features as positive interdependence, individual accountability, and appropriate uses of teamwork and interpersonal skills. Reid (1987) studied students from a variety of ethnic backgrounds and found that every background expressed a minor or negative preference for group work, with English speakers giving it the lowest rating. When language students have been taught cooperative skills, however, they showed positive results in both language skill and altruism (Gunderson & Johnson 1980; Jacob & Mattson 1987).

Sequential and Global Learners

Sequential learners absorb information and acquire understanding of material in small connected chunks, and *global learners* take in information in seemingly unconnected fragments and achieve understanding in large holistic leaps. Before global learners can master the details of a subject they need to understand how the material being presented relates to their prior knowledge and experience, a perspective that relatively few instructors routinely provide. Consequently, strongly global learners may appear slow and do poorly on homework and tests until they grasp the total picture, but once they have it they can often see connections that escape sequential learners. On the other hand, sequential learners can function with incomplete understanding of course material, but they may lack a grasp of the broad context of a body of knowledge and its interrelationships with other subjects and disciplines.

Many authors who have done research on cognitive or learning styles have noted the importance of this dichotomous pairing, and various terms have been used to describe categories that appear to have points in common with what we term the sequential and global categories: *analytic* and *global* (Kirby 1988; Schmeck 1988); *field-independent* and *field-dependent* (Witkin & Goodenough 1981); *serialistic* and *holistic* (Pask 1988); *left-brained* and *right-brained* (Kane 1984); *atomistic* and *holistic* (Marton 1988); *sequential* and *random* (Gregorc 1982). Luria's (1980) working brain model postulates successive and simultaneous modes of processing, and Pask (1988) similarly distinguishes between *stringing* and *clumping* modes of coding information and structuring responses. Schmeck (1988) believes that the analytic/global dimension encompasses all other cognitive styles, a belief shared by Oxford et al. (1991).

Oxford (1990) proposes that this learning style dimension can be tapped through studies of brain hemisphericity. She cites studies of Leaver (1986) suggesting that left-brain (sequential) thinkers deal more easily with grammatical structure and contrastive analysis, while right-brain (global) thinkers are better at learning language intonation and rhythms. Sequential learners gravitate toward strategies that involve dissecting words and sentences into component parts and are comfortable with structured teaching approaches that stress grammatical analysis; global learners prefer holistic strategies such as guessing at words and searching for main ideas, and may respond well to relatively unstructured approaches like community language learning that might not appeal to sequential learners.

Inductive and Deductive Learners: **A Perspective on the Language**

Learning/Acquisition Dichotomy

Induction is a reasoning progression that proceeds from particulars (observations, measurements, data) to generalities (rules, laws, theories). *Deduction* proceeds in the opposite direction. In *inductive presentation* of classroom material, one makes observations and infers governing or correlating principles; in *deductive presentation* one starts with axioms, principles, or rules, deduces consequences, and formulates applications. As with the previous dimensions, students may have moderate or strong preferences for one or the other presentation mode; in particular, they may prefer deductive presentation because of its relatively high level of structure.

A large percentage of classroom teaching in every subject is primarily or exclusively deductive, probably because deduction is an efficient and elegant way to organize and present material *that is already understood.* However, there is considerable evidence that incorporating a substantial inductive component into teaching promotes effective learning. Inductive reasoning is thought to be an important component in academic achievement (Ropo 1987). Current cognitive research emphasizes the importance of prior knowledge in learning (Glaser 1984); introducing new material by linking it to observed or previously known material is essentially inductive. The benefits claimed for inductive instructional approaches (e.g., discovery or inquiry learning) include increased academic achievement and enhanced abstract reasoning skills (Taba 1966), longer retention of information (McConnell 1934; Swenson 1949), and improved ability to apply principles (Lahti 1986).

Insofar as foreign languages are concerned, we propose that the distinction between induction and deduction is akin to the distinction between language acquisition and learning. To acquire a language means to pick it up gradually, gaining the ability to communicate with it without necessarily being able to articulate the rules. Individuals absorb what they can from the abundant and continuous input that bombards them; they cannot grasp all they hear, but each day increases their ability to understand, retain, and use in conversation what they have taken in. Throughout the process they gain in their ability to transfer strategies, make assumptions about the new language system, formulate and test rules, and either keep or abandon them. They continue this process (most of which is subconscious) until they fossilize, which they may do as soon as they feel they have learned what they need to in order to communicate in the language (Coulter 1983). In its progression from specifics to generalizations, acquisition is an inductive process.

On the other hand, language learning is a largely conscious process that involves formal exposure to rules of syntax and semantics followed by specific applications of the rules, with corrective feedback reinforcing correct usage and discouraging incorrect usage. The flow of the learning process from general to specific suggests its characterization as a deductive process.

Three well-known approaches illustrate deductive and inductive approaches to language instruction. The first is the *grammar-translation method,* rooted in the formal teaching of Latin and Greek that prevailed in Europe for many centuries (Rivers 1968). This method involves the translation of literary texts followed by explanation (in the students' native language) of rules of grammar. As Corder notes, grammar-translation is "the most deductive approach" (Allen & Corder 1975, 13). A later approach is the *direct method,* in which classes are taught entirely in the target language; grammar is taught inferentially and plays a secondary role to oral communication. This approach, which was in vogue in many countries throughout the nineteenth century (Allen & Corder 1975, 18), is almost purely inductive.

The third approach is the *audio-oral method,* according to which language is a set of habits with vocabulary being of secondary concern. In this method, which was influenced by behavioral psychology and structural linguistics, students learn by repeating structural patterns and eventually automatize the structures, aided by positive reinforcement provided by the teacher. This approach combines acquired verbal skills (inductive)

with learned reading and writing skills (deductive), with emphasis on the former. As Allen and Corder point out, "Advocates of the oral method .have assumed that language learning is an inductive rather than a deductive process." (Allen & Corder 1975, 46). Many common instructional techniques (e.g., the silent way, suggestopaedia, community language learning, the total physical response, the communicative approach) essentially fall into this category, although all may involve some deductive elements.

A long-standing controversy in language education has to do with whether languages can be acquired in the classroom or only learned. Brown (1980, 7), McLaughlin (1987, 20), and Gregg (1987) believe that both learning and acquisition may go on in classrooms. Krashen and Terrell (1983, 18) hold that acquisition can only occur in natural settings, but later admit that "despite our conclusion that language teaching is directed at learning and not acquisition, we think that it is possible to encourage acquisition very effectively in the classroom" (Krashen & Terrell 1983, 27). We agree, and believe that the key question facing language educators is, what classroom conditions and procedures facilitate the occurrence of language acquisition?

An important consideration in attacking this question has to do with the use to which an acquired or learned language is likely to be applied. By its very nature, language acquisition is more likely to manifest in oral fluency than in correct utilization of the written language and conversely for language learning. Complete command of a language thus involves both acquisition—an inductive process, required to speak fluently—and learning—a deductive process, required to write grammatically. The two processes are not competitive but complementary, just as inductive and deductive reasoning are essential and coequal components of the scientific method. By analogy, it would appear that an ideal classroom setting for teaching a foreign language would be one that stimulates and facilitates both inductive and deductive learning processes, both acquisition and learning. We return to this theme in the concluding section of the paper.

Validity and Utility of the Proposed Learning Style Classification Scheme

Several critical points can legitimately be raised regarding the proposed learning style categories. The categories are by no means comprehensive: no finite number of dimensions could ever encompass the totality of individual student differences, and components of other learning style models in the references cited in the introductory section also play important roles in determining how students receive and process information. Moreover, the dimensions have not been shown to be fully independent, and validated instruments to assess individual preferences on all of them do not exist. Finally, the teaching style with which students feel most comfortable may not correspond to the style that enables them to learn most effectively. (The same point could be made with respect to all other learning style models.)

Having said all that, we would add that these disclaimers do not limit the usefulness of this or any other model. Although it can be helpful for an instructor to know the distribution of learning styles in a class, the point is not to place all students into one or another style category and to teach each student exclusively according to his or her preferred style. Even if this formidable goal could be achieved it would not be desirable, for reasons to be discussed. Rather, the goal is a balanced teaching style, in all classes at all levels. Our hypothesis is that language instructors who adapt their instruction to address both poles of each of the five given dimensions should come close to providing an optimal learning environment for most (if not all) students in a class.

A Multistyle Approach To Foreign Language Education

27 Studies show that matching teaching styles ω learning styles can significantly enhance

academic achievement, student attitudes, and student behavior at the primary and secondary school level (Griggs & Dunn 1984; Smith & Renzulli 1984), at the college level (Brown 1978; Charkins et al. 1985), and specifically in foreign language instruction (Oxford et al. 1991; Wallace & Oxford 1992). This is not to say that the best thing one can do for one's students is to use their preferred modes of instruction exclusively. Students will inevitably be called upon to deal with problems and challenges that require the use of their less preferred modes, and so should regularly be given practice in the use of those modes (Hunt 1971; Friedman and Alley 1984; Cox 1988). However, Smith and Renzulli (1984) caution that stress, frustration, and burnout may occur when students are subjected over extended periods of time to teaching styles inconsistent with their learning style preferences.

A point no educational psychologist would dispute is that students learn more when information is presented in a variety of modes than when only a single mode is used. The point is supported by a research study carried out several decades ago, which concluded that students retain 10 percent of what they read, 26 percent of what they hear, 30 percent of what they see, 50 percent of what they see and hear, 70 percent of what they say, and 90 percent of what they say as they do something (Stice 1987). What must be done to achieve effective foreign language learning is to balance instructional methods, somehow structuring the class so that all learning styles are simultaneously—or at least sequentially—accommodated (Oxford 1990). The approach recommended in this paper is designed to meet this goal.

The prospect of tailoring language instruction to somehow accommodate 32 (2^5) different learning styles might seem forbidding to instructors. This reaction is understandable. Teaching styles are made up of the methods and approaches with which instructors feel most comfortable; if they tried to change to completely different approaches they would be forced to work entirely with unfamiliar, awkward, and uncomfortable methods, probably with disastrous results from the students' point of view. Fortunately, instructors who wish to address a wide variety of learning styles need not make drastic changes in their instructional approach. The way they normally teach addresses the needs of at least five of the specified learning style categories: regular use of at least some of the instructional techniques given below should suffice to cover the remaining five.

- *Motivate learning.* As much as possible, teach new material (vocabulary, rules of grammar) in the context of situations to which the students can relate in terms of their personal and career experiences, past and anticipated, rather than simply as more material to memorize *(intuitive, global, inductive).*

- *Balance concrete information* (word definitions, rules for verb conjugation and adjective-noun agreement) *(sensing) and conceptual information* (syntactical and semantic patterns, comparisons and contrasts with the students' native language) *(intuition) in every course at every level.* The balance does not have to be equal, and in elementary courses it may be shifted heavily toward the sensing side, but there should periodically be *something* to capture the intuitors' interest.

- *Balance structured teaching approaches that emphasize formal training (deductive, sequential) with more open-ended unstructured activities that emphasis conversation and cultural contexts of the target language (inductive, global).*

- *Make liberal use of visuals.* Use photographs, drawings, sketches, and cartoons to illustrate and reinforce the meanings of vocabulary words. Show films, videotapes, and live dramatizations to illustrate lessons in texts (*visual, global.)*

- *Assign some repetitive drill exercises to pro-*

e practice in basic vocabulary and grammar (sensing) but don't overdo it (intuitive).

- *Do not fill every minute of class time lecturing and writing on the board.* Provide intervals—however brief—for students to think about what they have been told; assign brief writing exercises *(reflective).* Raise questions and problems to be worked on by students in small groups; enact dialogues and mini-dramas; hold team competitions *(active).*

- *Give students the option of cooperating on at least some homework assignments (active).* Active learners generally learn best when they interact with others; if they are denied the opportunity to do so they are being deprived of their most effective learning tool.

- *Balance inductive and deductive presentation of course material.* Instruct some or all of the class in the language being taught, to facilitate language acquisition and develop skill in oral communication *(inductive).* In parallel, provide explicit instruction in syntax and semantics to facilitate formal language learning and develop skill in written communication and interpretation *(deductive).*

Instructors confronted with this list might feel that it is impossible to do all that in a course and still cover the syllabus. Their concern is not unreasonable: extensive use of some of the recommended approaches—particularly those involving opportunities for student activity during class—could indeed add to the time it takes to present a given body of material. The idea, however, is not to adopt all the techniques at once but rather to pick several that look feasible and try them on an occasional basis; keep the ones that work; drop the others; and try one or two more later in the course or in the next course. In this way a teaching style that is both effective for students and comfortable for the instructor will evolve naturally, with a potentially dramatic effect on the quality of learning that subsequently occurs.

REFERENCES

Allen, J.P.B., and S.P. Corder, eds. 1975 *Papers in Applied Linguistics.* II. London Oxford University Press.

Barbe, W.B., R.H. Swassing, and M.N. Milone. 1981. *Teaching through Modality Strengths: Concepts and Practices.* Columbus, OH: Zaner-Bloser.

Bonwell, C.C., and J.A. Eison. 1979. *Active Learning: Creating Excitement in the Classroom.* ASHE-ERIC Higher Education Report No. 1. Washington, DC: George Washington University.

Brown, D. 1980. *Principles of Language Learning And Teaching.* Englewood Cliffs, NJ: Prentice-Hall.

Brown, R. 1978. "The Effects of Congruency Between Learning Styles and Teaching Styles on College Student Achievement." *College Student Journal* 12 : 307-309.

Charkins, R.J., D.M. OToole, and J.N. Wetzel. 1985. "Linking Teacher and Student Learning Styles with Student Achievement and Attitudes." *J Economic Education,* Spring 1985: 111-120.

Claxton, CS., and P.H. Murrell. 1987. *Learning styles: Implications for Improving Educational Practice.* ASHE-ERIC Higher Education Report No. 4, Washington, DC: George Washington University.

Coulter, S.P. Cited in Robinett, B.W., and J. Schachter. 1983. *Second Language Learning: Contrastive Analysis, Error Analysis, and Related Aspects.* Ann Arbor: University of Michigan Press, 179.

Cox, V. 1988. "Some Implications of Cognitive Science, Cognitive Psychology, and Human Information Processing for Engineering Education of the Future: Problem Solving, Cognition and Metacognition." *1988 ASEE Annual Conference Proceedings.* Portland, OR: American Society for Engineering Education.

Crowder, R.G., and R.K. Wagner. 1992. *The Psychology of Reading,* 2nd Edition. New York: Oxford University Press, Ch. 9.

Dale, E. 1969. *Audio-Visual Methods in Teaching,* 3rd Ed. New York, Holt, Rinehart and Winston.

Ehrman, M., and R. Oxford. 1990. "Adult Language Learning Styles and Strategies in an Intensive Training Setting." *The Modern Language Journal,* 74: 311-327.

Felder, R.M. 1989. "Meet Your Students. I.

Stan and Nathan." *Chemical Engineering Education* 23: 2, 68-69.

_____ 1993. Reaching the Second Tier: Learning and Teaching Styles in College Science Education." *J Coll. Sci. Teaching* 23: 286-290.

Felder, R.M., and L.K. Silverman. 1988. "Learning and Teaching Styles in Engineering Education." *Engineering Education* 78: 674-681.

Friedman, P., and R. Alley. 1984. "Learning/Teaching Styles: Applying the Principles." *Theory into Practice,* 23, 1: 77-81.

Glaser, R. 1984. "Education and Thinking: The Role of Knowledge." *American Psychologist* 39: 93-104.

Godleski, ES. 1984. "Learning Style Compatibility of Engineering Students and Faculty." *Proceedings, Annual Frontiers in Education Conference*. ASEE/IEEE, Philadelphia, 362.

Gregg, K.R. 1987. "Krashen's Monitor and Occam's Razor." *Applied Linguistics,* 5: 79-100.

Gregorc, AF. 1982. *An Adult's Guide to Style.* Maynard, MA: Gabriel Systems.

Griggs, SA., and R.S. Dunn. "Selected Case Studies of the Learning Style Preferences of Gifted Students." *Gifted Child Quarterly* 28, 3:115-119.

Guild, P.B., and S. Garger. 1985. *Marching to Different Drummers.* Alexandria, VA: Association for Supervision and Curriculum Development.

Gunderson, B., and D. Johnson. 1980. "Building Positive Attitudes by Using Cooperative Learning Groups." *Foreign Language Annals 13:* 39-43.

Hunt, D.E. 1971. Matching Models in Education: The Coordination of Teaching Methods with Student Characteristics. Toronto: Institute for Studies in Education.

Jacob, E., and B. Mattson. 1987. *Using Cooperative Learning with Language Minority Students: A Report from the Field.* Washington: Center for Language Education and Research (CLEAR) Project, Center for Applied Linguistics. (Cited in Ehrman an Oxford, 1990.)

Jensen, G.H. 1987. "Learning Styles," in *Applications of the Myers-Briggs Type Indicator in Higher Education,* J.A. Provost and S. Anchors, Eds. Palo Alto: Consulting Psychologists Press, 181-206.

Johnson, D.W., R.T. Johnson, and K.A. Smith. 1991. *Cooperative Learning: Increasing College Faculty Instructional Productivity.* ASHE-ERIC Higher Education Report No. 4. Washington, DC: George Washington University.

Jung, C.G. 1971. *Psychological Types.* Princeton, NJ: Princeton University Press.

Kane, M. 1984. "Cognitive Styles of Thinking And Learning: Part One." *Academic Therapy 19(5):* 527.

Kirby, J.R. 1988. "Style, strategy, and skill in reading." In Schmeck (1988), Ch. 9, 53-82.

KoIb, D. 1984. *Experiential Learning: Experience as the Source Of Learning and Development.* Englewood Cliffs, NJ: Prentice-Hall.

Krashen, S., and T.D. Terrell. 1983. *The Natural Approach: Language Acquisition in the Classroom.* Oxford: Pergamon Press.

Lahti, A.M. 1956. "The Inductive-Deductive Method and the Physical Science Laboratory.' *J Experimental Education* 24:149-163, cited in McKeachie, W.J. 1986. *Teaching Tips,* 8th ed. Lexington, MA: Heath, 168.

Lawrence, G. 1993. *People Types and Tiger Stripes: A Practical Guide to Learning Styles,* 3rd edition. Gainesville, FL: Center for Applications of Psychological Type.

Leaver, B.L. 1986. "Hem isphericity of the Brain and Foreign Language Teaching." *Folio Slavica* 8: 2- 15.

Luria, A.R. 1980. *Higher Cortical Functions in Man,* 2nd ed. New York: Basic Books.

Martin, M. 1978. "Speech Recoding in Silent Reading.' *Memory and Cognition* 6:108-114.

Marton, F. 1988. "Describing and Improving Learning." In Schmeck (1988), Ch. 3, 229-274.

McCarthy, B. 1987. *The 4MAT System: Teaching to Learning Styles with Right/Left Mode Techniques.* Barrington, IL: EXCEL, Inc.

M Connell, T.R. 1934. "Discovery Versus Authoritative Identification in the Learning of Children." *Studies in Education* 2, 5:13-60.

McLaughlin, B. 1987. *Theories of Second*

Language Learning. London: Edward Arnold Publishers.

Moody, R. 1988. "Personality Preferences and Foreign Language Learning." *The Modern Language Journal* 72: 389-401.

Myers, lB., and M.H. McCaulley. 1985. *Manual: A Guide to the Development and Use of the MyersBriggs Type Indicator.* Palo Alto, CA: Consulting Psychologists Press.

Myers, lB., and P.B. Myers. 1980. *Gifts Differing.* Palo Alto, CA: Consulting Psychologists Press.

Oxford, R.L. 1990. 'Missing Link: Evidence from Research on Language Learning Styles and Strategies," in *Georgetown University Round Table on Languages and Linguistics 1990.* Washington, DC: Georgetown University Press.

Oxford, R.L., and M.E. Ehrman. 1993. "Second Language Research on Individual Differences." *Annual Review of Applied Linguistics* 13: 188-205.

Oxford, R., M. Ehrman, and R. Lavine. 1991. "Style Wars: Teacher-Student Style Conflicts in the Language Classroom," in S. Magnan, ed., *Challenges in the 1990's for College Foreign Language Programs.* Boston: Heinle and Heinle.

Pask, G. 1988. 'Learning strategies, teaching strategies, and conceptual or learning style." In Schmeck (1988), Ch. 4, 83-100.

Reid, J.M. "The Learning Style Preferences of ESL Students." *TESOL Quarterly* 21:87-111.

Rivers, W.M. 1968. *Teaching Foreign Language Skills.* Chicago: Univ. of Chicago Press, 14.

Ropo, E. 1987. "Skills for Learning: A Review of Studies on Inductive Reasoning." *Scandinavian Journal of Educational Research* 31: 3 1-39.

Schmeck, R.R., ed. 1988. *Learning Strategies and Learning Styles.* New York: Plenum Press.

Smith, L.H., and J.S. Renzulli. 1984. "Learning Style Preferences: A Practical Approach For Classroom Teachers." *Theory into Practice* 23: 44-50.

Stice, J.E. 1987. 'Using KoIb's Learning Cycle To Improve Student Learning." *Engineering Education* 77: 29 1-296.

Swenson, E.J. 1949. "Organization and generalization *as* factors in learning, transfer, and retroactive inhibition." *Learning Theory in School Situations.* Minneapolis: Univ. of Minnesota Press.

Taba, H. 1966. *Teaching Strategies and Cognitive Functioning in Elementary School Children*. U.S.O.E. Cooperative Research Project No. 2404. San Francisco: San Francisco State College.

Wallace, B., and R.L. Oxford. 1992. "Disparity in Learning Styles and Teaching Styles in the ESL Classroom: Does This Mean War?" *AMTESOL Journal* 1: 45-68.

Witkin, H.A., and DR. Goodenough. 1981. *Cognitive Styles: Essence and Origins. Field Dependence and Field Independence.* New York: International Universities Press.