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# Multiple Intelligences and Underachievement: Lessons From Individuals with Learning Disabilities

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*The field of learning disabilities, like education in the main, is undergoing calls for reform and restructuring, an upheaval brought on in great part by the forces of opposing paradigms—reductionism and constructivism. In reexamining our past, we must begin to address the failures of traditional deficit models and their abysmally low "cure" rate. Several new theories have arisen that challenge traditional practices in both general and special education classrooms. Particularly influential has been the work of Howard Gardner, whose theory of multiple intelligences calls for a restructuring of our schools to accommodate modes of learning and inquiry with something other than deficit approaches. At least some current research in the field of learning disabilities has begun to focus on creativity and nontraditional strengths and talents that have not been well understood or highly valued by the schools. In this article, we briefly summarize the findings in our search for the talents of students labeled learning disabled, evidence of their abilities, implications of these for the schools, and a beginning set of practical recommendations.*

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The schools allow millions of imaginative kids to go unrecognized and let their gifts remain untapped simply because educators focus too much attention on numbers, words, and concepts, and not enough on images, pictures and metaphors. Many of these children may be ending up in learning disability classes and many more may be wasting away in regular classrooms, at least in part because nobody has been able to figure out how to make use of their talents in a school setting. (Armstrong, 1987, p. 85)

**I**n their provocative book, *Cradles of Eminence*, Victor and Mildred Goertzel (1962) explored common bonds and recurring themes in the lives of 400 eminent twentieth-century men and women. Their research revealed that clearly 60% of the 400 held a strong dislike for school and had serious problems while there. Primary in the list of dissatisfactions with school

were the curricula, followed closely by their problems with "dull, irrational, or cruel teachers" (p. 241). Many of the 400 were themselves thought dull because of their general lack of interest in schoolwork. Goertzel and Goertzel noted that many of these intellectually capable children who failed in school did so because they limited their interests to particular subjects and neglected others altogether. Others managed only to irritate their teachers with their originality and imagination.

Today, many of those individuals would no doubt be referred and perhaps assigned to learning disabilities (LD) programs or remedial instruction. This is due in great part to the widespread use of, and frequent overreliance on, IQ measures in determining school placements. Even the performance components of respected tests such as the *Wechsler Intelligence Scale for Children-Revised* are laden with

the need for metalinguistic thought and reasoning. Examinees engaged in the block design, object assembly, or picture completion subtests, for example, can be observed "thinking in language" as they approach the tasks (e.g., whispering, talking to themselves, using body language that suggests inner conversation). This preoccupation with verbal and logico-mathematical ability has generally diverted our attention from other aspects or kinds of intelligence that reside within every child.

Following Alfred Binet's groundbreaking work, concern about the effects of intelligence testing on our views about creativity has been a perennial topic of debate in education and psychology. Binet's testing met with a backlash of skepticism and a wave of alternative intelligence measures—measures of talents, creativity, and even imagination. Simpson (1922), for example, argued the need for "tests designed to give us more direct and dependable information upon this essential element of progress—creative imagination" (p. 5). He developed several creativity tests himself. Subsequent research by Andrews (1930) resulted in the creation of three "tests of imagination," which were used with preschoolers. In 1931, McCloy and Meier constructed a "re-creative imagination" test.

In a set of related studies among college students, Welch (1946) found no

statistical basis for equating intelligence with imagination. Despite the high intelligence of students in his studies, they displayed a lack of imaginative thinking. These results were consistent with findings by Dearborn (1898) in his pioneering research among college students.

In more recent research, Torrance (1967, 1991), Guilford (1968), Welsh (1975), and Barron (1968, 1991) have studied aspects of originality, fluency, flexibility, and problem-solving ability as indicators of creativity. Such traits provide both a broad, enhanced picture of an individual's abilities and valuable feedback about the act of learning itself. In 1962, Getzels and Jackson wrote, "Once we accept the notion, however provisionally, that creativity and intelligence as measured by the I.Q. are not synonymous—an almost limitless number of exciting problems present themselves for systematic study" (p. viii).

There have always been questions as to the efficacy of true intelligence measures and subsequent concerns about basing our instructional approaches solely on them—as if problems in short-term memory or auditory discrimination, for example, predict lack of success in all areas of one's life (Coles, 1987). At least some current research in the field of learning disabilities has begun to focus on creativity and nontraditional strengths and talents that have not been well understood or highly valued by the schools. In this article, we briefly summarize the findings in our search for the talents of students labeled learning disabled, evidence of their *abilities*, implications of these for the schools, and a beginning set of practical recommendations.

### Past Is Present

Ironically, much of the existing research on the talents and strengths of individuals with learning disabilities has appeared not in learning disabilities journals, but, rather, in journals

devoted to study of the gifted. In 1989, a group of researchers (Boodoo, Bradley, Frontera, Pitts, & Wright) at Texas A & M University sent survey forms to all 353 special education centers in Texas, to find out "whether any LD students were enrolled in gifted programs, the characteristics of such children, who nominated these children, and the reasons why they were/were not admitted to the gifted program" (p. 112). A second survey was sent to 444 directors of gifted and talented (GT) programs across the state, requesting information about districts' definitions of giftedness, the types of gifted programs that were available, and the eligibility criteria used for placement of students in GT programs. Of the 180 responses received, 91% of the districts reported no gifted-learning disabled (GLD) students, 91% did not respond to questions about special aptitude characteristics, 3% did not specify the special aptitude characteristics, and 3% felt the GLD have no special aptitude. Twenty-three percent of the districts nominated students with above-average aptitude for the gifted program. However, the authors noted that "the separation of SPED [special education] and GT programs and the fact that LD children have reading problems were other reasons given for not admitting LD students to GT programs" (p. 119). Surveys from directors of GT programs also contained comments to the effect that "LD children cannot be in a gifted program and that students with high aptitude are not LD" (p. 119). Such misconceptions seem to permeate our education system at all levels, due in great part to a general lack of knowledge and direct experience with those individuals who have been labeled by the schools as learning disabled. We suspect that many administrators, district personnel, and even some teachers know students only by numerical representations or categorical labels—rather than by their unique human qualities and gifts.

At the conclusion of her editorship of the *Learning Disability Quarterly*,

Poplin (1984) noted that "the horrifying truth is that in the four years I have been editor of the LDQ only one article has been submitted that sought to elaborate on the talents of the learning disabled (Tarver, Ellsworth, & Rounds, 1980)" (p. 133). Even though our learning disability journals have carried almost no information on the capabilities of students with learning disabilities, special educators have always begun with the assumption that these students were average or above in "intelligence" and/or that there were tremendous discrepancies between their school achievement and their intelligence.

According to Poplin (1993), learning disabilities literature can be divided into roughly three broad philosophical and pedagogical domains: (a) remedial education, characterized by schools' efforts to "fill in" missing knowledge and skills (e.g., remedial reading, remedial math); (b) intervention, characterized by efforts of research and "specialists" within the schools to identify methods that presumably help the learner circumvent or better deal with a "learning problem" (e.g., computer-assisted instruction, cognitive strategies approach, resource specialist programs); and (c) compensatory education, which is characterized by efforts to "equalize" educational opportunity among all learners in the schools (e.g., Head Start, Title 1, Sheltered English, and bilingual programs).

Somehow, the field of learning disabilities has evolved into a deficit-driven enterprise, much as have the fields of compensatory, remedial, and even, in some cases, bilingual and English-as-a-Second-Language (ESL) education. (The fact that we have often assigned "remedial" strategies to non-remedial second-language learners is a political, as well as pedagogical, problem [see Benesch, 1988; Sleeter, 1986].) In "special" programs, educators look for students' deficits in their research, in their diagnoses, in their assessments, and throughout the school day. Once these are found, they define their roles as remediators of deficits.

The students' days are then structured to be filled with activities based on their weaknesses rather than their strengths. Poor readers, for example, are frequently assigned multiple sessions of reading instruction (e.g., regular class, special class, and even after-school and summer tutoring clinics). In addition, remediation is defined reductionistically, with the large and inherently interesting tasks, such as reading, broken down into small, often disconnected and uninteresting tasks. The small reductionistic skills are selected for instruction, as is true in most special programs (Sooho, 1991). The data on this form of remedial instruction are well known and do not support the notion that such approaches are widely or even mildly successful in affecting the lives of students with learning disabilities.

Many of us know individuals with learning disabilities from our classrooms, and, regardless of what they look like in the research journals, we know they have incredible talents generally undervalued or not well represented in our curricula. The curricula, even most art and music curricula, require linguistic intelligence (largely reading and some writing) for access to all knowledge and/or proof of knowledge. So the student who knows more about ants than anyone in the class, perhaps even more than the teacher, may fail the second grade science test on ants. The adolescent who knows much about the politics of power may fail political science. Knowing this, special educators are left with a number of dilemmas, including the issue that we do not understand the talents of students with learning disabilities or how we might use these talents in their education. Quinn (1984), Moss (1989), Weinstein (1994), and Stolowitz (1995) have all documented the painful results of our not understanding or nurturing the strengths of students with learning disabilities. In recent years, however, some research has begun to examine—even emphasize—what learners can *do*, rather than what they cannot.

### Multiple Intelligences: Avenues to Success

There is a growing body of research and discussion, most notably in Gardner's (1983) work, that strongly suggests the need to revise our views about intelligence and our roles as educators. Gardner's groundbreaking work has advanced our knowledge beyond simplistic and naive definitions of intelligence. His theory of multiple intelligences offers a more holistic accounting of individual potential and talents.

According to Gardner (1983, 1993), each person possesses at least seven kinds of intelligence (linguistic, logico-mathematical, musical-rhythmic, visual-spatial, bodily-kinesthetic, interpersonal, and intrapersonal), and the degree to which each develops is dependent upon many variables. The most important, however, is freedom to pursue the intelligences. Because schools are deficit driven, they generally devalue or ignore intelligences other than the logico-mathematical and linguistic. This perspective is based on the seemingly fallacious assumption that one's general success in all areas is somehow predicated on one's development in these *two* areas (Gardner, 1983, 1993). Although the notion of a general intelligence measure has been widely replaced by verbal and performance composite measures in recent years, there is still a fascination with numerical representations of individuals' abilities in our schools. We continue to use them to segregate populations and to dictate special curricula. Grouping for instruction exists primarily as a function of time, economics, and student ability (verbal and mathematical), rather than of individual talents, strengths, or interests.

The kinds of schools Gardner (1993) advocated exist only as pilot programs, such as "Project Spectrum," which is a preschool collaboration between Harvard and Tufts universities; these programs allow students to demonstrate their particular strengths and interests through their play activities,

number games, creative movement exercises, and storytelling activities. Another collaborative project, between the Educational Testing Service and the Pittsburg Public School System (ARTS PROPEL), involves junior and senior high school students whose latent abilities are assessed from project- and process-based portfolios in music, creative writing, and visual arts. Students are taken into the community every day, and every day the community is brought into the school. The same is true at the Key School, an Indianapolis public school where video documentation of every student's projects, teacher observations, and personal preferences form the basis for the apprenticeships he or she selects at the end of third grade.

There is, however, no wide-scale plan at the national, state, or local level for nurturing the various intelligences. We know a lot about what students do not know because we look for it directly throughout the day. We persevere on the things *we* want them to know and generally ignore things *they* want to know, forgetting that only when they are immersed in their own personal interests and passions are they honing their strengths and talents. As Gardner (1983, 1993) submitted, schools should be a place where learners go to nurture their personal intelligences, a place rich with choice, opportunity, and an accessible and varied curriculum. Eisner (1988), too, lamented that "as long as schools operate on an essentially linguistic modality that gives place of privilege to a kind of literal, logical, or mathematical form of intelligence, schools limit what youngsters can learn" (p. 37).

We have no statistics on student possibilities that are *not* nurtured in our schools; we cannot reconstruct what might have evolved. Nor do we have much information on the students' talents or interests, what is truly important to them, or what they truly know. Conversely, we know a tremendous amount about what *educators* think is important to know and do. Despite the dialectic on "restructuring," state- and

district-level discussion seems to focus more on the politics of reason and economics than on institutional change, more on *teaching* than on *learning*.

Teachers who look for points of overlap or connections between their students' interests and the dictates of district-imposed curricula, however, may find surprisingly rich and interesting projects in which to immerse all their students, projects that nurture several or all of the multiple intelligences. Conversely, teachers who presume that all their students' learning begins with what they (teachers) do and how they think learning takes place, express a general belief that students are incapable of identifying their own right ways of learning and knowing. In reading and written language, for example, Leland and Harste (1994) submitted that "a good language arts program is one that expands the communication potential of all learners through the orchestration and use of multiple ways of knowing for purposes of ongoing interpretation and inquiry into the world" (p. 339). If we do not believe that students have multiple ways of knowing, it is because we have not looked for evidence of it, and it is a fallacious assumption to believe that creative problem solving is necessarily a by-product of good teaching.

In his study of six child prodigies, Feldman (1986) concluded that the creative powers of individuals stretch beyond the traditional classroom's ability to accommodate them. He asserted that creativity such as that of Mozart and Mill and the pure genius of an Einstein arise in their own time as a matter of the combined forces of their own talents and the zeitgeist of the age in which they live and operate. In light of the lessons learned from our past and the prodigies and geniuses it has produced, we should create every opportunity in the lives of individuals in our charge to allow *all* their unique gifts and talents to come forth. Because we cannot calculate or predict the advent of geniuses in our midst, schools should abound with opportunities for talents or genius to materialize, as

if the time is always right for such things to happen.

Such reasoning presents several dilemmas for the schools. First, they must reexamine their primary role in the personal lives of their inhabitants, versus their role as impersonal agents of change. Schools must reexamine the reasons and procedures by which students are segregated into categories. Moreover, they must acknowledge the fallacies and limitations of testing and the fallacious assumption that remediating academic deficits is preparation for life. We must also set aside purely reductionist assumptions, at least temporarily, if we are to let an array of alternative views emerge. Inviting peers from other disciplines to tinker with the problem says much about the value we place on objectivity in our quest to understand learning disabilities, and much about our integrity in general.

### Evidence of Abilities: A Summary of Research

To begin to address some of the dilemmas and issues raised by educators with respect to the abilities of students with LD, several studies have been conducted over the past decade. Although our current diagnosis, assessment, and instructional practices remain oriented toward locating and curing deficits rather than capitalizing on talents, our cure rate has been abysmally low (Coles, 1987; Poplin, 1988a, 1988b), suggesting that it might be time to rethink our direction. Propitiously, Gardner's pivotal work on multiple intelligences emerged to lend more structure and impetus to research in the field of learning disabilities. Below, we summarize some findings from relevant research and the issues they raise for both general and special educators.

In 1988, Baum and Owen conducted a study of 112 elementary school students (Grades 4 through 6) to "investigate what characteristics distinguish High Ability/LD students from learning disabled students with average

cognitive ability and from high ability students" (p. 321). The researchers examined six types of motivational and cognitive predictor variables (Self-Efficacy for Academic Tasks, Creative Potential, Interests, Disruptive Behavior, Self-Concept, Attributions for Academic Success or Failure) using a variety of tests, for example, the Self-Efficacy for Academic Tasks (Owen & Baum, 1985); the Group Inventory for Finding Talent (Rimm, 1976); the Williams Scale (Williams, 1980a, 1980b); and the Torrance Tests of Creative Thinking (Torrance, 1972). Among other findings, the high ability/LD group performed higher than other groups at tasks involving problem solving and abstract thinking. Owen and Baum reported that "in nonacademic settings, they have been observed to be creative and productive. They can show extraordinary abilities and are highly motivated when completing challenging tasks based on their own interests" (p. 321). Clearly 36% of the students labeled LD "simultaneously demonstrated traits of gifted behavior" (p. 324). Rather than further dichotomizing instruction for the gifted and for the high ability/LD students, Owen and Baum argued the need for the *same* kinds of challenging learning experiences—experiences based on their common creative and intellectual characteristics.

In a subsequent study, Minner (1990) asked 197 teachers of gifted students in four midwestern states to read vignettes describing hypothetical gifted students with and without learning disabilities from varying socioeconomic backgrounds. Although most of the teachers had little knowledge or training in the area of learning disabilities, results from this research revealed that teachers of gifted students were "less inclined to refer learning disabled and poor children than identically described children without those particular traits" (p. 37). The author noted that this research supported similar findings from a former study (Boodoo et al., 1989) indicating that general classroom teachers are also less in-

clined to refer such students for possible placement in gifted programs. Such attitudes leave entire segments of school populations unserved by appropriately challenging programs.

In our search of the past literature on learning disabilities for indications of talents and strengths, four areas emerged: conceptual writing, divergent thinking, computer aptitude, and musical ability. Researchers interested in exploring strengths and talents among students with LD typically have begun their study with the assumption that such students have many talents that remained unrecognized by the schools and/or the students themselves. Many researchers (e.g., Hearne, Poplin, Schoneman, & O'Shaughnessy, 1988; Kerchner & Kistinger, 1984; Tarver, Elsworth, & Rounds, 1980) also held that special educators' jobs had historically been defined as a deficit-driven enterprise, and that this course had caused us to miss many important aspects of students' lives.

In 1980, Poplin, Gray, Larsen, Banikowski, and Mehring published an article suggesting that the writing difficulties of students with learning disabilities lay more in the mechanical aspects of writing than in the conceptual ones. Using a test that separated these areas, Poplin et al. found that students who had learning disabilities, particularly in the early grades, did not differ from their nondisabled peers in thematic maturity or vocabulary, but had problems in spelling, grammar, and punctuation. However, as these students progressed through school, they lost their edge in the conceptual areas. Researchers hypothesized that this, in part, might be related to the emphasis on mechanical skills dominant in typical remediation programs. Atwell (1988) lent more support for that hypothesis with her documentation of the progress of a student with learning disabilities in a whole language program.

Kerchner and Kistinger (1984) looked at several groups of students with learning disabilities, some in traditional remediation programs and one

group in a process-writing program that used word processing as well. Those students who received process writing instruction versus traditional remediation made significantly more academic progress during the year, further suggesting that skills remediation may not be the answer. Additionally, Kerchner and Kistinger noted that by drawing illustrations *prior* to writing, some of the students showed improvement in both organization and elaboration of their themes (see also DuCharme, 1990, on young children's use of drawing in writing).

By 1984, some researchers, interested in frequent reports by teachers that their students with LD were often mechanically talented (e.g., Poplin, Drew, & Gable, 1984), had begun to explore how these talents might relate to computer aptitude. A test was subsequently developed that could assess computer aptitude without requiring complex linguistic skills: the Computer Aptitude, Literacy, and Interest Profile (CALIP; Poplin, Drew, & Gable, 1984). Using the CALIP, Hearne et al. (1988), in their study of a matched group of junior high students with and without learning disabilities, found that the students with LD had computer aptitudes equivalent to those of their nondisabled counterparts. Results also indicated that no significant difference existed in computer aptitude scores between male and female participants in the sample. What is most significant here is the idea that learning disabilities may not automatically preclude a learner's success at programming or other complex computer tasks. Moreover, areas in which students with LD can excel might prove to be excellent avenues to academic success.

In 1980, Tarver et al. conducted a comparative study of divergent thinking skills among students with learning disabilities and their non-learning disabled (NLD) peers at the first-, third-, fifth-, and seventh-grade levels. Using the Torrance Test of Creativity and the Alternative Uses Test, they sought to examine both figural and verbal cre-

ativity. The Torrance test asks the child to complete an incomplete figure and make it tell an interesting story, all within 10 minutes. Results of the Figural Creativity subtest indicated that the students with LD were higher than their NLD counterparts in originality, and that the NLD students were significantly higher in elaboration. The results of the verbal creativity comparisons indicated that the NLD students scored higher on five of the six measures. Tarver et al. concluded that the students with LD showed ability in the area of "originality/uniqueness" (p. 13). They also suggested that lack of motivation or persistence may have contributed to the lower elaboration scores for students with LD.

In a more recent study, applying a different measure of divergent thinking, Stone, Poplin, Johnson, and Simpson (1992) looked for differences in divergent thinking and feeling in 60 matched elementary school students with LD and NLD peers from 10 schools in the southern California area. Using the Test of Divergent Thinking and the Test of Divergent Feeling, the researchers found no differences between scores for the students with LD and their NLD counterparts. In fact, results suggested that the students with LD actually scored higher on both the Titles and the Elaboration subtest, as well as showing better total test performance. Stone et al. pointed out that while divergent thinking is characteristic of creativity, it is not necessarily characteristic of success in school.

In a concurrent two-facet study among the same sample, Stone et al. (1993) examined the musical and visual-artistic talents of students with LD as compared with their NLD peers. Utilizing the Barron-Welsh Art Scale-Revised and the Welsh-Barron Figure Perception Test, Stone et al. asked students to state whether they liked or disliked a series of pictures. Responses were recorded and compared to scaled scores obtained from responses by artists and nonartists in the standardization sample. Results revealed no significant differences between scores

earned by the students with LD and their NLD counterparts.

The second facet of the study compared students with LD and their NLD peers on the Seashore Measures of Musical Talent. Six areas of musical ability were explored: pitch, loudness, rhythm, time, timbre, and tonal memory. Students were presented with pairs of sounds, tones, and rhythm patterns, and with tone lengths and sequences of notes. They were asked to make judgments about them, and responses were converted to scaled scores. Again, results indicated no significant differences between students with LD and their NLD peers in this sample.

In related studies utilizing the Test for Creative Thinking-Drawing Production, Stone et al. (1990) found that the average of combined scores on the Humor subtest for elementary students with LD were significantly higher than the average for their general education peers ( $p < .05$ ). Ziv (1988) distinguished humor from other forms of creativity, although the forms are positively correlated. He submitted that even though humor is a cognitive process, it is more adequately described as "cognitive playfulness" (p. 109), which is an indicator of creativity. Bleedom (1988) described the intricacy of humor as the process of bringing together different ideas from two distinct planes, which then interplay in the mind to form a relationship. That process, identified by Koestler (1964) as *bisociation*, is creativity. Again, those of us who know these students from our own classrooms can attest to their leaps of insight, use of double entendres and parody, and creative solutions to both textbook and teacher-posed problems, despite confidential records that reflect intellectual and academic inadequacies. The research findings of Jellen and Urban (1988), Ziv, and Bleedom might then suggest humor as one productive line of inquiry into the strengths (cognitive and otherwise) of students with LD, and humor's role in subsequent pedagogical considerations.

Authors of studies reported here are quick to point out limitations of their research, but it should be noted that until relatively recently there has been a lack of both interest and instruments for productive research in these areas. The creation in recent years of such instruments as the CALIP, the Krantz Talent Identification Instrument (Krantz, 1982), and the Multi-Dimensional Screening Device, along with multimodal approaches to assessment (e.g., Gardner, 1993; Lazear, 1992), suggests a growing interest in nontraditional strengths and talents. The concurrent dialectic on constructivism (see, e.g., the entire Fall 1994 issue of *The Journal of Special Education*) and critical pedagogy offers perhaps even greater evidence of interest in "ways of knowing" other than the linguistic and logico-mathematical, which have dominated our research to date.

### Implications

Taking these studies together, one sees many implications for developing new instructional strategies for individuals with LD and, potentially, implications for a whole host of students who fail to achieve in today's schools. It seems we must admit that being learning disabled in the schools today says much about our obsession with teaching and assessing solely through written language. If music, art, and divergent thinking were valued, would we not have a different group of students labeled learning disabled (see Sleeter, 1986, and Coles, 1987)? Are other remedial students also plagued by our overemphasis on written language and intelligence testing? Are second-language learners also placed at a significant disadvantage because of our holding all content ransom for skills in written English? Research clearly documents an overrepresentation of non-English-speaking students in learning disabilities programs and remedial programs (Barken & Bernal, 1991). Barken and Bernal suggested that IQ measures (widely used in stu-

dent placement) serve to eliminate many able learners from gifted programs, "a disproportionate number of whom are students from nonmainstream cultures. These children, if they are 'identified' at all, are typically admitted only after they have mastered English and can receive instruction in an all English classroom" (p. 144). Many cultures, such as the Hmong, have stronger oral traditions than written ones, and some have no written language at all. In our new restructuring efforts, is there a way we can honor oral traditions as well as written ones?

Certainly, in our traditional teaching and assessment practices we validate the skills of convergent thinkers. Getzels and Jackson noted this in 1962, Torrance in 1967. Even our new definitions of critical thinking rarely take into account the creative divergent thinker, who is more likely to come up with a number of interesting solutions to a problem than to logically and narrowly focus his or her analyses. Is divergent thinking characteristic of a host of remedial students? Is divergent thinking a gift of some of our second-language learners as well? The work of Ramirez and Castaneda (1974) suggested that Latino learners might be gifted in some of these areas. It seems we must work hard to make sure our curricula and instruction are responsive to multiple ways of thinking and to multiple talents.

Key findings from intelligence research (e.g., Feldman, 1986; Gardner, 1983, 1993; Sternberg, 1988) suggest the need for several changes in traditional assessment and instructional practices in our schools, particularly as they are used to identify and segregate special populations. There seems to be a need to expand our study of learning disabilities, for example, to include other voices. Heshusius (1988) has urged that

social scientists (and special educators) open up their self-imposed boundaries of scientific inquiry, and invite the arts and humanities in to provide a broader vision

within which to ask questions and formulate answers. Including such insights in special education would restore the importance of recognizing and justifying appropriate values as *a way of knowing*. (pp. 62-63)

## Theory Into Practice

A whole host of new instructional approaches should help the divergent and multiply talented learner, especially the learner for whom traditional language instruction and school requirements are problematic. Both whole language and interdisciplinary curricula, for example, emphasize the "whole" of what is to be learned and encourage multiple ways of conceptualizing, organizing, and demonstrating knowledge; divergent thinkers should be far more successful with interdisciplinary instruction that brings diverse information to bear on single topics, particularly topics of special interest to the learner.

In their discussion of multiple ways of knowing, Leland and Harste (1994) appealed to semiotic theory for support of multiple modes of individual inquiry: "According to semiotic theory, they [ways of knowing] are sign systems which we have created to express meaning and to mediate our world. These sign systems include art, music, mathematics, drama and language; they offer different perspectives" (p. 339). Different perspectives offer different ways of framing questions and conducting inquiry. If learners are allowed to frame problems in their own way, perhaps they might better identify their own unique means of making sense of the world around them. Consider, for example, the student who experiences a sudden flash of understanding about multiplication right in the middle of a poetry lesson. For all the teacher's efforts to teach the concept of "times" during math class, it took the interplay of language, meter, rhyme, and repetition to create within the child an epiphany, in which all past knowledge was suddenly transformed and a revised worldview was

created. Although poetry provided the unique framework this student needed to construct the concept of multiplication, no doubt countless other students routinely make such connections between seemingly dissimilar pieces of information and among disciplines to construct meanings in areas other than the one presently being studied.

Cooperative learning also offers students a way to think through curriculum issues in their own way and to understand one another's thought processes and insights, rather than just the teacher's. The emphasis on active learning should aid students who seem to thrive on activity and suffer in passive classrooms. In addition to these current activities, other specific suggestions fall into two general areas: teacher preparation and instructional practices. However, paramount to the success of any set of plans for improvement is the assurance of strong commitment along all lines of the educational hierarchy.

### Teacher Preparation

1. Teachers are potentially powerful catalysts for transformation in our schools. They bring to the classroom their own unique talents and intelligences. Teacher education and staff development should encourage the existing multiple talents and strengths of teachers to be integrated into the curriculum. Teacher preparation programs should develop artistic, musical, and kinesthetic talents of teachers *at all levels*, to encourage the cultivation of these in their own students.

2. All teachers should be encouraged to use, in the general classroom, the same kinds of divergent thinking strategies that are often learned and practiced only in gifted programs. A project approach, for example, engages both teachers and learners in stimulating work (experiential) for authentic purposes (functional, relevant, meaningful). Students are immersed in the exploration of language, the arts and humanities, the study of mathematical principles, and scientific

inquiry. They must read, write, revise, edit, translate, calculate, predict, construct, and perform to degrees far superior to those fostered by textbook curricula. Because student-selected projects *begin* with high levels of interest and commitment, they frequently reflect students' personal strengths rather than deficits. Teachers, too, are honing their own learning, planning, and instructional skills.

3. We must question more seriously the reductionistic practice of breaking down tasks and knowledge for every student having problems. Perhaps it is the narrow definitions we give to the phenomena of learning and knowing that cause many of our students to look "deficient." The array of skills required to demonstrate learning and success outside the schools often differs fundamentally from those required for school success. This is certainly evident to such highly successful individuals as Bruce Jenner, Cher, Tom Cruise, and any number of other prominent persons from all walks of life who had difficulties in the traditional classroom and were identified as having learning problems.

4. Teachers of art, music, drama, dance, and physical education must take a leading role in helping other teachers integrate these disciplines into traditional academic subject areas. If we accept that the act of learning is the construction of new meanings from both familiar and unfamiliar information, then it is incumbent upon us to help students explore problems, issues, and questions from the unique perspectives offered by the various disciplines. Through team-teaching, mentor-teacher, and other incentive programs, districts and schools can foster an atmosphere of professional sharing that offers opportunities to grow in areas other than the purely academic. Art, music, or athletic ability may well be the most marketable skills for future employment that some students with LD take with them when they leave us.

5. We must constantly critique our overdependence on assessments of all

our students' deficits and our under-emphasis on their talents and varied intelligences. Such thinking is at the very heart of constructivists' appeals for holistic assessments. In contemplating what constructivism has added to traditional educational assessment, Meltzer and Reid (1994) noted several new characteristics, including that assessment is becoming more holistic, dynamic, and multidimensional. This stands in sharp contrast to Meltzer and Reid's criticisms of traditional psychometric testing, which they say has failed to (a) consider the influence of motivation, personality, and social factors on learning; (b) consider the processes and strategies learners use to approach problems; and (c) distinguish between learners' performance measures and their potential to change and grow.

### *Instructional Practices*

1. As an approach, interdisciplinary education seeks to explore broad concepts or ideas across many disciplines, for the purpose of better understanding both the concepts and their applications and meanings across the various disciplines. Teachers sometimes give priority to the disciplines themselves, however, and their eagerness to "stretch" learning across all subject areas is sometimes counter-productive, particularly when the concept or idea is of little interest to the students (Leland & Harste, 1994). Alternatively, Leland and Harste suggested that curricula organized around guiding inquiry questions framed by students themselves encourages them to explore their personal relationships to the topic, to use the various disciplines as heuristic devices for discovering more about the topic, and to come to recognize the unique perspective each discipline presents to them. "In the final analysis," wrote Gerber (1994),

curricula are social constructs, consensual theories of learning and learner, that impinge upon and constrain all students' opportunities to construct their own

knowledge. For that reason alone, *the curriculum must be critically examined and distinguished from the simple sum of knowledge domains (e.g., reading, writing, mathematics) it purports to portray.* (p. 372)

For students whose school problems are created by their problems with reading and writing, inquiry presents opportunity for both broad and deep-level learning, as well as ways of demonstrating it.

2. Programs for the individuals with learning disabilities and remedial students should seriously question the use of traditional techniques that simply maintain student status and matching delivery models. We must begin to offer activities that draw on students' talents in other intellects. Individualized Education Programs should include somewhere in their goals and objectives opportunities for learners to nurture their strengths and talents. Language objectives, for example, might be embedded in an art project or studied within the context of an inquiry-based social studies project. Written properly, such objectives are certainly observable, measurable, and perhaps immensely more appealing to the student (and the teacher) than when presented in reduced, segmented, and decontextualized instruction. Student interests and talents might well serve as the content for teaching the skills required by the curriculum.

3. Although whole language has been instrumental in helping learners (including students with LD) see themselves as readers and writers, Leland and Harste (1994) urged that we extend this principle across other disciplines. "Specifically, we need to ask, 'How can we set up classroom environments that support children in thinking like artists? . . . like mathematicians? . . . like musicians? . . . like dramatists?'" (p. 341). Such "thinking in sign systems" is particularly encouraging for students with LD, who often remain ignorant of spheres of knowledge outside the curriculum in which they are forced to operate. Creating such environments can help

students with learning disabilities to more accurately appraise their own talents and interests—one of the most promising starting points for teachers.

4. We must provide students who have difficulty with test taking with alternative ways of "proving" knowledge, such as demonstrations, performances, oral reports, and projects (in many forms). Just as knowledge is multidimensional, so too should be our ways of demonstrating it. Additionally, such alternative forms of evaluation/assessment can provide insights into why and how specific skills and knowledge have not been acquired. Piaget (1926) was more interested in errors children made than in their correct responses. The errors revealed more about the ability of the mind to grasp, organize, and integrate information into existing structures. Rarely do we find classroom teachers creating situations to study student failure, and yet the information to be gained from such study is valuable, if not essential, in planning individualized instruction. How we assess a learner's understanding should be a negotiated process.

5. Bilingual and English-as-a-Second-Language programs should seriously question reductionistic, remedial-like approaches, which emphasize deficits and serve to further stigmatize these students in our schools. The curricula for these learners can be infused with other intellectual and artistic pursuits that nurture multiple intelligences.

### **Conclusion**

In conclusion, we need to consider the proposition that individuals with LD may well be, in large part, simply a group of students whose talents mismatch the primary values and expectations of the schools. Given the research findings presented in this article and other current studies, we suggest that learning disabilities may be socially and culturally determined, based on the values structured into the requirements of a deficit-driven educational system.

Old paradigms do not retire gracefully, and the avatars of new ones are often scorned and savaged. . . . Many educators are still confident that the old paradigm will solve the problems that beset us, sort out the puzzles that perplex us, and place stubborn "anomalies" into context. There is, to be sure, some self-interest evident both in educators' devotion to an input-based conception of the enterprise that employs them and in their resistance to paying the consequences for poor results. In this sense, the old paradigm is manifestly more comfortable and less demanding than the new. (Finn, 1990, pp. 589-590)

The field of learning disabilities, like education in the main, is undergoing upheaval, a shifting in the landscape of educational thought brought on by the forces of opposing paradigms—the mounting tension between traditions of reductionism and eclecticism and the equally compelling force of constructivism. Evidence of this tension can be found in the ongoing, and sometimes heated, dialectic among representatives from many fields of thought and reported in topical issues of professional journals, such as the Fall 1994 issue of *The Journal of Special Education*. The editors of that special issue, Harris and Graham (1994), noted that

many of the concepts underlying the constructivist reform of educational practice today have a long and distinguished history. . . . Current instructional approaches with constructivist roots include whole language, cognitive strategies instruction, cognitively guided instruction, scaffolded instruction, literacy-based instruction, directed discovery, and many more. (p. 233)

We would certainly add to that list evolving assessment and instructional approaches from both semiotic and multiple intelligences theory. These roots of constructivism are taking hold, and they challenge traditional pedagogy that has in many ways failed students with LD in both general and special education classrooms. What truly propels and advances us, according to Gerber (1994), is the infusion of challenging new views, such as con-

structivism. The new paradigm brings with it other ways of critiquing our past research and progress, framing questions and problems, and identifying new lines of inquiry. We are left to contemplate the field of learning disabilities (and perhaps the existence of learning disabilities as a verifiable phenomenon) in the greater context of its history in special education—a field both guided and constricted by social and political forces over which the schools that serve these individuals exercise limited control.

Nonetheless, the paradigm of power influences educational decision making and the belief system adopted by the schools. Although the schools still operate in a paradigm structure that is deficit driven, students caught up in the physical and pedagogical manifestations of our rhetoric probably care little about definitions and the elusive constructs we build to study their disabilities. Moreover, they continue to learn things—many things—that are important and useful to them. We see evidence of this both inside and outside the schools. Some of us still shake our heads in awe at the wonderful things our students with LD can do, things that defy the results from their psychological and academic testing. While certainly the research must continue, especially to test the hypothesis that other special learners show similar profiles, there are a number of things we can do now to make sure our newly restructured schools will be restructured for everyone. Most important, the schools must meet the unique needs of students whose strengths and talents lie outside the narrow view of knowledge as being purely linguistic.

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