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connectedness, and self-organizing systems (Beale 1997, 9-32). This perspective is reflected in the scientific fields of physics, chemistry, biology, psychology, and neurophysiology as well as education where new holistic paradigms are replacing earlier more linear and mechanistic ones.

## **MONOGRAPH PURPOSE AND ORGANIZATION**

This monograph draws together knowledge from both the educational and the development literature on accelerating learning for the benefit of development and education practitioners. For those administering foreign aid programs and their colleagues in developing countries working in Ministries of Education, regional and district educational offices, and school offices and classrooms, this monograph provides:

- A clarification of accelerated learning concepts; why and how they work;
- An enriched understanding of teaching improvements proposed and begun; and
- A sense of connection with a growing movement for deep educational reform in both developed and developing countries.

Chapter II summarizes how accelerated learning is defined in education and developing world literature and offers a consolidated

definition for development practitioners. Chapters III and IV provide reviews of the major principles and practices of accelerated learning from these two perspectives. The principles lay the theoretical framework while the strategies and practices offer concrete plans and examples of techniques for classroom use. Chapter V discusses the commonalities and uniquenesses among the principles and practices and presents an educational framework for accelerated learning programs in developing countries. Chapter VI includes descriptions of field-based applications of accelerated learning principles and practices. Final chapters provide measures of success and concluding thoughts. References and an annotated bibliography of the author's suggestions for further reading are provided at the end.

## **A NOTE ON TERMINOLOGY**

We draw the reader's attention to clarifications in terminology in several areas that are mentioned throughout this text. First, in educational literature, the following definitions usually apply and will be used in this monograph:

- Approach - An overarching framework that guides thinking and acting.
- Principle - A fundamental motivating precept, tenet, or belief on which actions are based.
- Strategy - A plan to achieve a goal based on an approach.







by cognitive psychologists and educators. Fueled by the goal of improving student achievement, these researchers have documented a variety of factors that provide a learning environment that effectively raises student achievement levels (Marzano 2003; Marzano et al. 2001).<sup>2</sup>

While AL-E could be considered a subset of effective teaching and learning, it is actually a separate approach because of its basis in brain research. Both approaches outwardly manifest some principles, strategies, and practices in common. Yet there are some differences. Effective schools are focused more on the school and the creation of school climate, or environment, to improve student learning. AL-E focuses more on the student as a human being and how he/she learns and thinks.

As explained by Laura Erlauer (2003), AL-E is based on a paradigm shift from the way teaching and learning has been thought of before. “Accelerated learning involves a radical change in how and what students are taught and in the context in which they are taught. [AL-E] involves holding different assumptions about students, the role of adults in the school and classroom, effective educational practices, the value of change, and appropriate communication and discourse” (Erlauer 2003, 9). Because AL-E takes ideas from the effective schools movement yet puts them within a brain-based, holistic, integrative, natural learning paradigm, it offers a different and compelling perspective.

A working definition of AL-E that distinguishes it from effective schooling is: “an

approach to learning that creatively engages the mind, body, and emotions of students and orchestrates their multi-faceted systems of learning capacities.”

### **DEFINITION OF ACCELERATED LEARNING IN DEVELOPMENT LITERATURE (AL-D)**

It is somewhat difficult to pin down exactly what is meant in the development literature by accelerated learning (AL-D). It is sometimes used synonymously with high quality schooling, meaning schooling that improves student achievement. Usually AL-D links learning with “pressing development needs and local, regional, or national strategic priorities—literacy, vocational training, or micro-enterprise development” (Intili and Kissam 2004, 9).

In other sources, the term is used in contexts where children’s schooling has been interrupted—by social upheaval, natural disasters, or their dropping out for a while. In these contexts, the pace of learning is quickened to cover a set curriculum faster than formal schools normally do, in order to catch students up to their age-appropriate grade level. Generally, in AL-D literature there is the aspect of speed, so a definition of accelerated learning might be “to engage in an academic program that progresses faster than usual” (American Heritage Dictionary).

Development practitioners recognize that it is not sufficient or wise to simply cover the established curriculum more quickly. Therefore, they advocate and use one or both of the following strategies: (1)

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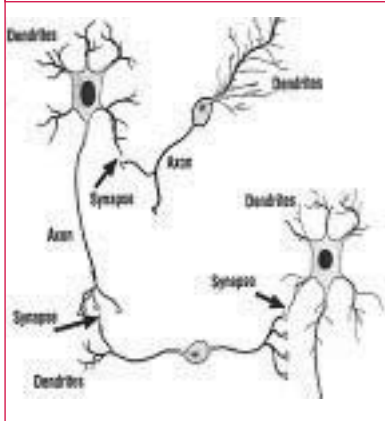
<sup>2</sup>The seven correlates of effective schools are clear school mission, high expectations for success, instructional leadership, frequent monitoring of student progress, opportunity to learn and student time on task, safe and orderly learning environment, and home-school relations.







**Figure 1:  
How Neurons Make  
Connections  
(Jensen 1998, p. 12)**



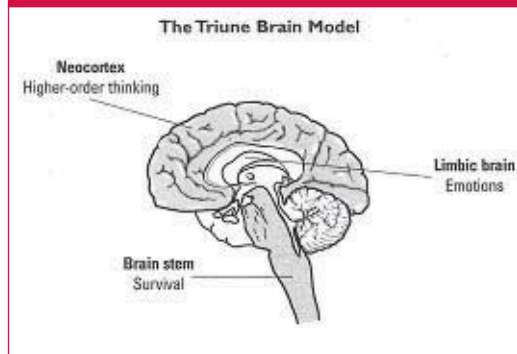
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our brain’s creative capacity (Dryden and Vos 1999, 117). We make more neuron connections “than all the leaves on all the trees in all the world” (Given 2002). Not only are these synapses vastly numerous, they instantly and constantly shift. “Counting synapses is like counting raindrops in a rainstorm” because they are so dynamic and seemingly chaotic, continually reconnecting and reconfiguring (Given 2002).

From birth to death, we continue to lose brain cells but, with stimulation, we also continue to grow additional dendrites and axon terminals on the nerve cells we keep, like branches and roots on little trees. The more dendrites and axon terminals we have, the more neural connections (synapses) we can make. These electro-chemical synapses are the biological substance of learning. The image in Figure 1 portrays this process (Jensen 1998, 12).

In addition to the electro-chemical level of learning, it is useful here to remember that the brain is made up of three basic regions (pictured in Figure 2):

**Figure 2:  
The Triune Brain Model  
(Erlauer 2003, 8)**

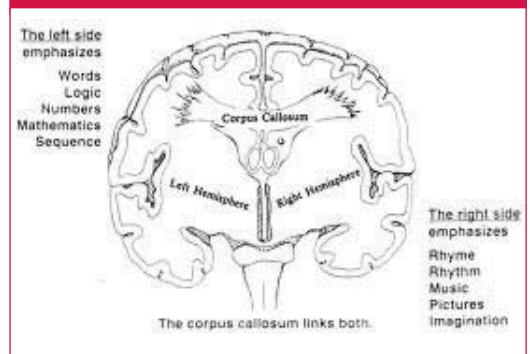


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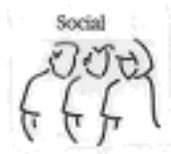
- The lower “brain stem,” controlling instinctual physiological behavior like breathing or swallowing.
- The central “limbic system,” the key area for emotions and long-term memory.
- The upper “neocortex,” the location of our abilities to see, hear, think, talk, reason, and create.

Scientists also have identified two hemispheres to our brain—the left and the right. Their main functions are summarized in Figure 3 (Dryden and Vos, 124). These two sides are linked by the “corpus callosum,” whose 300 billion neurons have the same potential for 20,000 dendrites each as other brain cells. The more connections we can make to involve both hemispheres in the learning process, as in learning the words to a song (left side) and the melody (right side), the faster we learn. We can also make these connections with physical activity, where we crisscross the right and left sides of our bodies (see Chapter III, C, Principle and Practice 11).

**Figure 3:  
The Two Sides of Your Brain  
(Dryden and Vos, 124)**







### **OUR SOCIAL LEARNING SYSTEM**

Human beings are social animals and generally learn better working together. We

have a strong basic need to belong. "The tendency to associate, establish links, live side by side, and cooperate is an essential characteristic of humans.... Consequently, even when we place a high value on independence, interdependence is a natural human trait" (Given 2002, 37). Thus, teachers support learning when they incorporate cooperation and group work in teaching. In addition, nurturing positive social relations in classrooms is important because "students in each class ... will develop an unwritten code of conduct that either supports the curriculum or undermines it" (Given 2002, 57).



### **OUR COGNITIVE LEARNING SYSTEM**

Most people think of cognitive thought processes when they think of learning, at

least in relation to schooling. Indeed, the brain's cerebral cortex in humans has continued to grow over the millennia, and it provides us with extraordinary capacities for thought. This system takes information from all the other systems, interprets it, and guides problem solving and decision making. It is responsible for knowledge

acquisition and thinking. However, before the cognitive system can concentrate on higher order thinking, it must manage the emotional and social systems (Given 2002, 61).



### **OUR PHYSICAL LEARNING SYSTEM**

Stimulation is the key to learning and it begins with our sensory perceptions:

"All learning (abstract thinking and imagination included) originates with sensory input. All experiences, readings, discussions must enter the body/ brain through the senses before connecting to various sensory areas within the brain. The more senses involved, the more fertile ground within the brain for ideas to be planted" (Haebig n.d.).

A number of educational systems around the world today have divorced body movement from learning, requiring students to sit still and listen, read, or write and allowing limited time for recess. However, this body/brain dichotomy is an idea that limits learning (Dryden and Vos 1999, 371-373; Jensen 1998, 35). Motor stimulation directly impacts brain development and academic achievement, especially for young students but also for learners of all ages.

**Before the cognitive system can concentrate on higher order thinking, it must manage the emotional and social systems.**

**(Given 2002, p. 61)**



**PRINCIPLE 2: LEARNING TAKES PLACE ON MANY LEVELS SIMULTANEOUSLY; IT IS NOT A LINEAR PROCESS.**

Given the five learning systems and the velocity and complexity of the brain's synaptic connections, learning should be considered a multi-faceted, dynamic process rather than a series of precise steps. In addition, a great deal of learning occurs at the subconscious level. This level is working in perception, processing, and information recall (Dryden and Vos 1999). Because of the multi-level simultaneity of learning, no one order for learning certain content works best for everyone. In addition, we now know that large amounts of information presented pictorially and globally can be absorbed by the brain.

All this complexity means that we can absorb much more information faster than many people have thought, as long as it is presented in ways that interest the learner. Furthermore, to try to keep every student learning the same thing in the same way is a hopeless and undesirable task, usually resulting in bored and frustrated teachers and students and less learning than could have occurred.

For teachers, this is both good news and bad news. They do not have to present a curriculum in one particular, step-by-step sequence in order for students to learn, yet they have more of an active role to play in orchestrating learning than they may have thought. To accelerate learning, they should not present information in small, logical, out-of-context, boring bites. Rather,

they need to stimulate students' brains with a variety and quantity of appropriately challenging and interesting information.

**PRINCIPLE 3: MULTIPLE INTELLIGENCES AND DIFFERENT LEARNING STYLES EXIST; EACH LEARNER IS A UNIQUE COMBINATION OF THESE SETS OF CAPACITIES.**

This principle combines two concepts that have broad acceptance within the field of education in the West: multiple intelligences and learning styles.

**Multiple Intelligences—What Learners Learn.**

In his book, *Frames of Mind* (1983), Howard Gardner opened the door to a complete overhaul of our understanding of intelligence. Rather than the one narrow set of criteria regarding language and math abilities so widely used in the West, he redefined intelligence to be the ability to (a) solve problems that one encounters in real life, (b) generate new problems to solve, and (c) either make something or offer a service that is valued within one's culture. Gardner identified seven intelligences, to which he soon added an eighth (see Figure 5).

Appendix B provides more description of these intelligences. Fuller treatment of this model can be found in almost every book in the annotated bibliography at the end of this monograph and especially in Silver et al. Many of the websites listed also include information on multiple intelligences.



interpersonal style, based on sensing and feeling; an understanding style, based on intuitive thinking; and a self-expressive style, based on intuitive feeling (see Figure 7).

Generally speaking, the concept of multiple intelligences “is centered around the *content* of learning and the relationship between learning and eight distinct fields of knowledge or disciplines....The learning style model revolves specifically around the individualized *process* [author’s emphases] of learning” (Silver et al. 2000, 41). In simple terms, multiple intelligences deals with what we are especially good at learning. Learning styles show how we prefer to learn. Both of these concepts fit within the overarching framework of our five learning systems (see Figure 8). They partly explain how we apply these systems in a learning situation.

**PRINCIPLE 4: POSITIVE EMOTIONS AND A RELAXED, ALERT STATE GREATLY IMPROVE MOTIVATION AND LEARNING; THREATS IMPAIR THEM.**

The vital role of emotions in learning was referred to above in the emotional learning system. Establishing an atmosphere of safety, trust, friendly cooperation, and appreciation makes an enormous difference in students’ motivation and their access to and application of their learning abilities. On the other hand, “Excess stress and threat in the school environment may be the single greatest contributor to impaired academic learning” (Jensen 1998, 53). Stress from humiliation, punishment, or fear of failure can cause “illness, poor pattern recognition, and weaker memory” (Jensen 1998, 61).

Threats “activate defense mechanisms that are great for survival but lousy for learning” (Jensen 1998, 57) so they are

**Figure 7: The Four Learning Styles; Styles Summary (Silver et al., 2000, 25, 28)**

<b>Sensing (S)</b> Bring step-by-step procedures and concreteness		
Thinking (T) Bring logic and objectivity	<b>MASTERY STYLE</b> <i>Sensing-Thinking (ST)</i> <i>Realistic, practical, matter-of-fact</i> <ul style="list-style-type: none"> <li>• Good at organizing, reporting, building, planning, and carrying out projects</li> <li>• Like to remember, describe, manipulate, order</li> </ul>	<b>INTERPERSONAL STYLE</b> <i>Sensing-Feeling (SF)</i> <i>Sociable, friendly, interpersonally oriented</i> <ul style="list-style-type: none"> <li>• Good at building trust &amp; rapport, empathizing, responding, teaching</li> <li>• Like to support others, personalize information, express emotions, learn from experience</li> </ul>
	<b>UNDERSTANDING STYLE</b> <i>Intuitive-Thinking (NT)*</i> <i>Theoretical, intellectual, knowledge-oriented</i> <ul style="list-style-type: none"> <li>• Good at arguing, researching, developing theories, explaining</li> <li>• Like to analyze, test/prove, examine, connect</li> </ul>	<b>SELF-EXPRESSIVE STYLE</b> <i>Intuitive-Feeling (NF)*</i> <i>Curious, insightful, imaginative</i> <ul style="list-style-type: none"> <li>• Good at developing original solutions, thinking metaphorically, articulating ideas, expressing and creating</li> <li>• Like to predict/speculate, imagine, generate ideas, develop insights</li> </ul>
<b>Intuition (N)</b> Bring insight and abstraction		
*Intuition is represented by the letter “N” rather than the letter “I” because in Jung’s Theory of Psychological Types, the letter “I” is used to designate introversion		

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ness” (Jensen 1998, 57-59). Having decided that she or he cannot learn, the student stops trying.

Teachers generally know that rewards motivate better than punishments do. They may not know, however, that intrinsic motivation is generally stronger than extrinsic motivation. In other words, internal rewards (e.g., a sense of pride and satisfaction with one’s accomplishments) work better than external ones (e.g., candy, money, or special privileges). Brain research tells us that we are naturally motivated by curiosity and novelty, meaningful activities, and successes (Jensen 1998, 65). When we pleasure our brains with these experiences, they release chemicals called opiates that produce a natural high and we feel good. Our brains respond by adding more receptor sites for these pleasurable experiences. Students respond differently to external rewards such as coupons or food because their biology and life experiences are different. “However, when a learning experience is positive, nearly all students will respond favorably in their unique biological ways” (Jensen 1998, 65).

The best mental state for learning is one of relaxed alertness in which the conscious mind is linked with the subconscious, where most information is stored (Dryden and Vos 1999, 169). In this state we are receptive to new ideas, ready to be creative in exploring them, and most likely to retain them in our long term memories. We are also more likely to cooperate with others

and to enjoy what we are doing, both of which accelerate learning.

Self-esteem, an aspect of our emotional system, has been called “the heart of learning” (Dryden and Vos 1999) and needs to be nurtured to accelerate learning. School administrators and teachers who expect and support every learner to succeed, rather than accept mediocrity for many and failure for some, can greatly improve student achievement. “Our self-image is probably the most important thing in determining whether we are good learners” (Rose and Nicholl 1997, 64).

**PRINCIPLE 5: COLLABORATION AIDS LEARNING.**

While most people can read, hear, observe, memorize, or figure something out by themselves, they are usually more efficient and effective learners if they work with others (Erlauer 2003, Chapter 8). Because human beings in all cultures are socialized to relate to others for their roles, functioning, and even their identities, they naturally learn better that way as well, as long as the group process is well managed.

**PRINCIPLE 6: LEARNING COMES FROM DOING THE WORK ITSELF.**

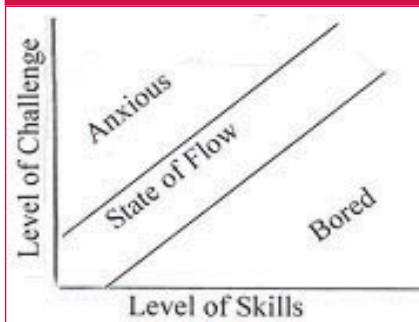
This principle contains two very important ideas: learning by doing and doing real work. We will look at each one separately.

For real learning to take place, people must be actively engaged (Rose and Nicholl, 1997). Most people retain very

**For real learning to take place, people must be actively engaged.**  
**(Rose and Nicholl, 1997, 64)**



**Figure 11:**  
**Flow as the Optimal State for Learning (Vos Workshop)**



From Vos, J. "The Learning Revolution in Action." (Training for Teachers and Trainers) January 2003, 2004. San Diego, CA.

The optimal mental and emotional state for learning in which challenge and comfort are balanced has been described in recent educational literature as "flow" (Csikszentmihalyi 1991), in which one's skills are in balance with the challenge. Too high a challenge for a low level of skills makes one increasingly anxious; too low a challenge for a high level of skills makes one increasingly bored. In a state of flow, learners naturally apply themselves to nonthreatening, mentally intriguing, and appropriately demanding tasks.

**PRINCIPLE 8: LEARNERS NEED FREQUENT INTERACTIVE FEEDBACK.**

In addition to challenges, our brains need feedback to maximize our learning. As they engage in learning activities, students need feedback on their performance and achievement in order to progress (Erlauer 2003, 8). In fact, the brain is a self-referencing learning system based on feedback; it continually decides what to do next based on an evaluation of what it experienced (Jensen 1998, 33). We ask: Am I doing this right? Is this working well? Did she understand what I said? Will they laugh if I say this? Students need teachers to provide frequent and useful information about their current status so they can adjust their behavior to reach desired goals.

**PRINCIPLE 9: THE BRAIN ABSORBS INFORMATION IN IMAGES INSTANTLY AND AUTOMATICALLY; IT ABSORBS IMAGES AS EASILY AS WORDS.**

No doubt, we have all at some point heard the folk wisdom, "A picture is worth a thousand words." Now research in neurobiology has scientifically validated this axiom (Wolfe 2001). "We take in more information visually than through any of the other senses" (Wolfe 2001, 152), and our brains actually perceive, process, and recall information in images as much if not more than in words. For example, when we recall memorable events in our lives, our minds remember the event mostly in images, augmented with sounds, tastes, and smells; then, we describe those images and other sense experiences with words (Wolfe 2001, 151).

Images are as valid and necessary as word representations in the stimulation of our learning systems. They are very efficient ways to convey and store a lot of information. Research studies have demonstrated "amazingly" high levels of retention of visual images over long periods of time; in fact, "the capacity for long-term memory of pictures seems almost unlimited" (Wolfe 2001, 152).

People working in the field of advertising understand and manipulate this brain capacity; educators and government officials communicating with semi-literate and illiterate adults engage the power of images as well. Now educators in schools and publishers of instructional materials are increasingly appreciating and utilizing

Research studies have demonstrated "amazingly" high levels of retention of visual images over long periods of time; in fact, "the capacity for long-term memory of pictures seems almost unlimited."

(Wolfe 2001, 152)























**Figure 13: Summary of Accelerated Learning Principles and Practices in Education Literature**

<b>Principles</b>	<b>Practices</b>
1. Learning is creation, not consumption.	1. Include time and ways for students to ponder and attach personal meanings to information and learning experiences.
2. Learning takes place on many levels simultaneously; it is not a linear process.	2a. Provide overviews; show interrelationships; provide experiences. 2b. Provide an enriched learning environment with stimulating things to look at and work with.
3. Multiple intelligences and different learning styles exist; each learner is a unique combination of these sets of capacities.	3a. Incorporate multiple intelligences in instruction and assessment. 3b. Teach to different learning styles.
4. Positive emotions and a relaxed, alert state greatly improve motivations and learning; threats impair them.	4a. Help students to relax and enhance their self-esteem; eliminate threats. 4b. Engage learners' natural motivation. 4c. Add play, fun, and joy to learning.
5. Collaboration aids learning.	5a. Group students for collaboration. 5b. Include cooperative learning activities.
6. Learning comes from doing the work itself.	6. Incorporate active learning, problem- and project-based learning, and discovery learning.
7. Learners need appropriate challenges to use and expand their learning capacities.	7. Provide learning tasks that stimulate students without frustrating them.
8. Learners need frequent interactive feedback.	8a. Provide for frequent, specific feedback from various sources. 8b. Expand feedback beyond repetition of information to performance-based and interactive forms.
9. The brain absorbs information in images instantly and automatically; it absorbs images as easily as words.	9. Use lots of images in learning: pictures, charts, objects, and metaphors.
10. Music aids learning.	10. Use music to set learning atmospheres and to aid the process of storing and remembering information.
11. Body movement aids learning.	11a. Make frequent mind-body connections for learning. 11b. Provide sports activities for all in school.



With modernization, urbanization, globalization, and the gradual spread of ideals of human rights, more people in developing countries now believe that at least a primary school education is a necessity and even a right. Parents and leaders at all levels of society in these countries are increasingly aware that the prosperity of families, communities, and countries in the modern era greatly depends on basic educational skills for work, whether in a cottage industry or in public places. Some believe that in the twenty-first century, a basic education is the right of every person, child, or adult. AL-D literature assumes that premise.

**PRINCIPLE 2: GIRLS AND OTHER UNDERSERVED AND DISADVANTAGED POPULATIONS NEED SPECIAL SUPPORT TO BE IN SCHOOL AND TO BE EQUITABLY TREATED THERE.**

Equitable treatment in school attendance and participation in class is a factor that affects every student's achievement. Categories of students sometimes treated inequitably include girls and young women, students from language minority groups, those with physical handicaps, and young men—and woman—back in school who fought in wars. Although the AL-D literature focuses mainly on the equitable treatment of girls and young women, one can validly substitute any one of these other groups in many statements below.

Many countries have particular challenges in increasing access to schooling for girls and other

underserved and disadvantaged populations such as linguistic minorities or students with physical handicaps. Beliefs and assumptions about the unworthiness and inabilities of these children can be deeply engrained in a country's culture. In some countries, these barriers to children's basic education are lowering. In other countries, especially in rural areas, they remain strong. In either case, cultural sensitivity is needed to find common ground that honors everyone's perspective and yet allows all children to get a basic education.

Policies at the educational system level that support equitable treatment for girls and boys are sometimes subverted in the classroom by teachers' conscious and subconscious discrimination against girls. "Throughout the world, boys consistently receive more (and more challenging) instruction from teachers" (O'Gara et al 1999, 7). As with educational system-level issues of equity, a lot of written material can be found elsewhere about instructional factors that create disadvantages for girls in the classroom, primarily based on stereotyping women and girls to be less intelligent and less important than boys (O'Gara and Kendall n.d., Tietjen 1991). Instructional factors include:











a number of programs, and Mexico's "Telesecundaria" now reaches a large proportion of that country's rural secondary students (Wang 2000, 2).

Special mention needs to be given here to improving teachers' skills by using information and communication technologies because instructional strategies and practices are such a vital part of accelerating learning. IRI and ETV programs for students provide the means to improve teachers' skills through modeling and structuring the instruction desired of teachers. In addition, pre- and in-service teacher training programs can be augmented with technology.

For example, China chose ETV as the most cost-effective way for a massive in-service teacher education program begun in 1987 to address its urgent problem of a large number of under-qualified teachers and limited financial resources (Wang 2000). Within a few years, two million primary and junior secondary school teachers had been trained. By 1994, largely due to ETV training, the percentage of under-qualified primary teachers had dropped from 39 to 14 percent and that of under-qualified junior secondary teachers had been lowered from 73 to 36 percent (Wang 2000, 4).

**PRINCIPLE 8: COMMUNITY INVOLVEMENT IS IMPORTANT IN DEVELOPING AND SUSTAINING SCHOOLS AND IN IMPROVING STUDENT ATTENDANCE AND ACHIEVEMENT.**

Community involvement is important for resource sharing and increased attendance. Local communities have resources that schools need and from which they can benefit. The involvement of community members in establishing and running a local school is also vital, given limited resources and monitoring by officials. Community involvement can include constructing or altering the building where schooling takes place. It can also include playing a role in helping to make policy decisions that reflect local conditions and holding school officials accountable for staff behavior that affects students' learning.

A study of community involvement in schools as part of programs to improve the quality and delivery of education (Rugh and Bossert 1998, xiv-xv) tentatively concluded the following:

- "Community involvement in decisions about scheduling, school conditions, and facility location" was useful in increasing the attendance of "disadvantaged groups, such as the poor, the rural, and girls;"
- It was more likely to be helpful where local demand for education was not met by an adequate governmental supply of schooling opportunities;



## **PRACTICES OF ACCELERATED LEARNING IN DEVELOPMENT LITERATURE**

### **PRACTICE 1A: PASS LAWS AND MAKE POLICIES TO PROMOTE FREE UNIVERSAL PRIMARY EDUCATION.**

Government policymakers can create a legal framework for the right of children to obtain a basic education and for parents to be required to send them to school. By making this education free, they lessen the financial barrier faced by many parents, particularly those in rural communities. Policies to promote universal primary education sometimes include programs of school construction to limit the distance children must travel in rural areas. Other policies include incentives, discussed in Practice 2.a.

### **PRACTICE 1B: ESTABLISH FLEXIBLE SCHEDULES AND DOUBLE SHIFTS AS NEEDED TO PROMOTE ACCESS.**

As explained by Karen Tietjen (1991), the establishment of flexible schedules and double shifts is one of several ways that government officials, working with school administrators, can promote access to school for children in developing countries. School administrators can work with government officials to modify the school schedule to accommodate certain children's needs. For children who work outside the home or have significant responsibilities at home, flexible schedules can greatly improve their attendance. School breaks can be scheduled to accommodate planting or harvesting

seasons. The school week can be extended through Saturdays in order to allow children the opportunity to work some part of each regular school day. The passage of universal free primary school laws can create sudden increases in enrollment, which in turn can overwhelm the physical capacity of some schools. In this case, and hopefully as temporary measures until additional schools are built, a morning and an afternoon shift of teachers and students can be instituted. In areas that are more sparsely inhabited by school-age children, multi-grade classrooms can allow them to have access to nearby schools.

### **PRACTICE 2A: CONDUCT CAMPAIGNS AND PROGRAMS TO RAISE AWARENESS AND PROVIDE FAMILY ASSISTANCE IN SENDING GIRLS AND OTHER UN- OR UNDER-EDUCATED CHILDREN TO SCHOOL.**

At the central government level there are a number of policies, practices, and programs that can be revised or created, improved, or implemented to encourage families to send their un- or under-educated children to school (Kane 1996; O'Gara and Kendall n.d.; O'Gara et al. 1999; Prather 1996; Tietjen 1991). Although AL-D literature deals primarily with girls, some of it can be applied to children of language minorities, those with physical disabilities, or older boys not graduated from primary school. Practices and programs include the following:

- Financial incentives and subsidies for parents to offset lost family

**For children who work outside the home or have significant responsibilities at home, flexible schedules can greatly improve their attendance.**



Although this study focused on improving girls' participation in school, many of the findings can apply to children in poor families or inequitably-treated categories of students. While cautioning that incentives seem to have affected enrollment and attendance more than performance and achievement, Prather offers many conclusions. The first three relate to incentive program contexts, and the last four address program features (Prather 1996, 95-98). These conclusions can inform program planning:

- "Programs that use incentives that fit the local economic and cultural contexts are more likely to be successful..."
- Incentives are more likely to be effective in a political environment that legislates educational participation by girls [or other targeted categories of students]...
- Incentives are more likely to be effective if implemented with specialized populations..."

Incentive programs are more likely to be effective if:

- They include a 'critical mass' of program elements for increasing girls' [or other targeted students'] participation;
- Interpersonal contact and meaningful community involvement are part of program implementation;
- There is guaranteed funding for at least a primary school cycle; and
- A local organization is involved in program implementation.

#### **PRACTICE 2B: PROMOTE CLASSROOM PRACTICES THAT ENCOURAGE THESE CHILDREN'S ATTENDANCE, PERFORMANCE, AND ACHIEVEMENT.**

Teachers and school administrators can do a great deal to create classroom and school climates that support attendance and achievement of un-educated and under-educated children (Tietjen 1991, 23-43). The first step is to take an introspective look at their own attitudes, beliefs, and values and decide to change exclusionary ones. The second step is to discover and acknowledge the ways in which they have behaved, consciously or unconsciously, that excludes these children from equitable treatment. For example, teachers and administrators could consider the frequency and quality of their interactions, their communications about expectations, and their assigning of responsibilities. The third step is to realize ways in which male preferences in learning styles and multiple intelligences, problem-solving, and thinking modes are culturally embedded in their instructional principles and practices (Kane 1996).

As teachers and administrators see these discriminatory practices, they can take measures to change them, in order to accelerate the learning of these categories of students. The best way to do so is to vary their instructional and personal interactions following the practices of accelerated learning. In honoring and incorporating individual differences in learning and teaching to all the learning systems, teachers will more likely treat each child equitably.







Recent developments in electronic technology offer developing countries renewed possibilities for using ETV (Tiene 2000, 39-43). Television programs can now be recorded on videotape for playback at times chosen by teachers, so scheduling problems are less of a limitation. Videotapes are widely available in developing countries because movies on tape are so popular. Today programs of fairly high quality can be recorded by one person in nearly any location with relatively inexpensive equipment and the raw footage edited using low-cost computer software packages. The digitalization of television and videotapes, "perhaps the most significant technological advance of all... promises to be clearer, capable of more dynamic special effects, reproducible without signal degradation, and easier to edit" (Tiene 2000, 39).

While rural areas in developing countries are difficult to reach with ETV, urbanization has brought large numbers of people to cities that are served by television stations. Many of these stations have solid support from the government. A number of their broadcasting systems "are currently superior to television that was broadcast in the United States just a few decades ago" (Tiene 2000, 42).

Whether or not to use computers often triggers the debate of whether poor, rural communities should be provided with computer technology. Despite their advantages in accelerating learning, computers and—to a lesser extent—television can seem prohibitively expensive to educational systems struggling to provide basic materials and supplies. Often

communities face the reality of minimal or no resources available to power and/or maintain the hardware. Sadly, this resource limitation is creating "a major gulf between information haves and have-nots;" furthermore, the "have-nots become the know-nots and the do-nots" who are "developmentally disadvantaged" (Dryden and Vos 1999, 91). This gap will widen in developing countries in the coming years as the use of computers grows among the younger, better educated generation and those working with Western businesses and non-profit organizations.

In addition, the outwardly high costs of media and communications technology need to be examined in more depth. "A number of cost-effective studies have also found IRI to be a highly competitive educational strategy, compared to other interventions" (Bosch et al. 2002, 140). The cost of TVs and VCRs has greatly decreased over the years so that now their purchase can be considered for many schools in the developing world (Tiene 2000, 43). In addition, media and communication technologies can offset their costliness somewhat with savings in textbook production, distribution, and replacement. Educational leaders in some countries, notably Singapore and Finland, are finding the money to provide Internet links in every classroom and computers for every one to two students. Their business sectors are supplying some of this money as an investment in a computer-literate work force.

Teacher pre- and in-service training is particularly vital for the implementation of information technology. Central and

**Whether or not to use computers often triggers the debate of whether poor, rural communities should be provided with computer technology.**















**Figure 17: An Educational Framework for Accelerated Learning Programs in Developing Countries**

<b>Element</b>	<b>Description</b>
Instructional Philosophy	The mind is not a vessel to be filled but a fire to be ignited Learning is creation; not consumption Learning takes place on many levels simultaneously; it is not a linear process
Instructional Basis	Uses all five learning systems -- cognitive, emotional, physical, social, and reflective (referred to as holistic instruction) Instructs to engage the whole -brain Integrates curriculum topics
Instructional Goals	Reduce the time it takes students to complete a designated level of instruction Reengage out-of-school students with in -school peers
Target Population	Students of all ages and levels of schooling Children who need to “catch up” with other learners of similar age. Special emphasis on girls, children from isolated areas, children from war -torn or other crisis situations, or other children whose schooling has been disrupted in some way
Instructional Venue	Formal or nonformal schools
School and Classroom Learning Environment	Classrooms that are safe, welcoming, and unthreatening, even to anxious or traumatized students Classrooms that stimulate all five senses; include visuals and real -life objects to handle and examine Room arrangement and furnishings that facilitate individual, small group, and large group activities Flexible schedules where necessary to accommodate student needs
Curriculum	Principles/practices can be applied to any curriculum Condensed curriculum can be created Incorporates specific needs (e.g., life skills, HIV/AIDS prevention, vocational skills, etc) and local problems and contexts
Teaching	Is learner-centered <ul style="list-style-type: none"> <li>- Acknowledges and addresses children’s physical, social, and emotional needs</li> <li>- Minimizes rote memorization, recall, and recitation of facts</li> <li>- Promotes understanding in personally meaningful ways</li> <li>- Reflects connection between emotions and rational thought</li> <li>- Provides opportunities to learn by doing and doing real work</li> </ul> Uses active, problem - and project-based activities <ul style="list-style-type: none"> <li>- Helps students discover, apply, and manipulate facts in real -life contexts, preferably in local community situations</li> <li>- Frames learning as a creative adventure with appropriate challenges</li> <li>- Provides opportunities to categorize, compare and contrast, summarize, analyze, evaluate, and make recommendations</li> </ul>











difficulty so the buddy could think and the tutor could figure out a way to help, (b) prompt with a hint or suggestion, and (c) praise good work in everyday kid language.

Before they began using this program, teachers had a number of readers 12 - 18 months below their chronological age. With this program, tutors gained up to two years reading age in just ten weeks. Over six months, tutors gained an average of four reading years, and their slower reading buddies gained more than two years.

In Oakland, CA (p. 397), a mathematics program called Special Elementary Education for the Disadvantaged (SEED) taught advanced high school mathematics to ten-year-old African-American children from low-income families using a number of accelerated learning practices. These students had been up to two years behind in math achievement before the program started, yet were successful in learning advanced math concepts.

## **EXAMPLES FROM THE DEVELOPMENT LITERATURE**

### **FROM CREATIVE ASSOCIATES INTERNATIONAL, INC. (1998) ON THE COMPLEMENTARY OPPORTUNITY FOR PRIMARY EDUCATION (COPE) PROJECT IN UGANDA**

From 1995 to 1998, UNICEF funded the development of teaching/learning materials for the Complementary Opportunity for Primary Education (COPE) project in Uganda, an instructional program outside of the national

formal school system to provide primary schooling for rural, out-of-school youth. The program was characterized by several innovative elements:

- Relatively small class size of 30-40 children per class, with two classes per learning center;
- A compressed time frame for instruction—five years of schooling to be completed in three years;
- A condensed, skills-oriented curriculum culled from the formal school curriculum and enriched with ten life skills identified by the World Health Organization: decision making, critical thinking, creative thinking, problem solving, communication, interpersonal relations, self awareness, empathy, coping with emotions, and coping with stressors;
- Highly participatory teaching and learning methods;
- Instruction that reflected children's various learning styles, incorporating poster-sized charts, manipulatives, music, and physical activity into regular classroom activities;
- A system of continuous, skills-oriented assessment of learner achievement.



















were encouraged to ask parents for such things as trays and containers for the aids with many parts and containers of various sizes for math concepts.

In addition to learning aid objects, teachers made “rainbow charts” to record pupils’ progress through the year’s academic tasks. These charts had different colored vertical sections for progressively more difficult levels of content or skills. These levels were based on the national curriculum for the Standard Three grade. Each pupil had a smiley face circle with his or her name on it which he or she could move to the next color level once he or she performed at least 18 out of 20 tasks correctly at the current level.

Qualitative data were collected from documents, observations, interviews, and videotapes, and quantitative data were collected from student testing. Comparable testing data from control groups were collected from schools in a nearby district. Qualitative data included reports by teachers such as:

“I am producing teaching and learning aids and using the aids appropriately, managing large classes, making continuous assessment records and making lesson schemes, encouraging pupils to learn, co-teaching with my fellow teachers, and using various strategies when teaching pupils... I do not harass pupils any more” (Miske, 2003, 8).

“There were discussions in groups; pupils were interacting among

themselves; pupils were able to ask the teacher questions. Gender bias was minimized. Pupils were thinking fast” (Ibid, 9).

“The introduction of the lesson was lively and linked to the subject matter. The TALULAR materials used were clock faces, which were correctly used. He used group work, which allowed pupils to participate fully in the lesson. He used other pupils to correct those who gave wrong answers. Mr. K. gave written exercises and went round checking the pupils’ work. The class was well controlled” (Ibid, 13).

The study’s positive outcomes, which were reported by Shirley Miske, are extensive and are fully enumerated here in order to show how a fairly simple innovation based on accelerated learning ideas, can have widespread positive ramifications. In this case the innovation was continuous assessment using learning aids for instruction and performance assessment and colored poster charts of progress.

Miske cautions against thinking that this program provides the magic solution to educational quality; however, she states that “the evidence is undeniable that something significant is going on in CAFS schools, which has important implications for primary education” (Miske 2003, 6).

The study lists the following outcomes:

- Students learned the expected language and mathematical skills:



- Head teachers supported these changes, and their relationships with teachers improved:
  - Head teachers helped teachers find storage places for learning aids;
  - They arranged meetings with parents to inform them about continuous assessment and ask for their support;
  - Generally, head teachers had more supportive relationships with their teachers.

**INDIA: ACCELERATING LEARNING TO COMBAT ABUSIVE CHILD LABOR**

In Andhra Pradesh, India, an innovative program is helping to eradicate child labor by helping poor working children in urban areas to “catch up” academically with their peers, and enroll into regular schools.

The program, the Child and Police Project (CAP), is sponsored by the Dr. Reddy Foundation for Human and Social Development, an organization founded in India in 2001. The primary aim of CAP is to minimize exploitation

and deprivation in the lives of children and instead offer them a life of dignity and opportunity. CAP particularly targets children who are being exploited while working in hazardous work environments like welding and mechanic shops, quarry, and foundry shops.

Under the CAP program, staff members interface regularly with police, various local organizations, the MVF, the labor department, and the social welfare department to identify working children and motivate them to join the project. Enrollees are placed in a six-month residential camp, where the objective is to prepare them for a regular school life. The camp provides shelter and a safe environment that teaches values of caring, sharing, and co-existence. The camp also serves as a residential “bridge school” where enrollees learn what is needed to be admitted and retained in mainstream government schools.

In the bridge school, children are put through an individualized, rapid, or accelerated, learning program that allows them to acquire the necessary

**CAP Program Elements**

- Regular interface with social organizations to identify participants
- Residential program that provides safe, caring environment and accelerated learning
- Low teacher-pupil ratio
- Locally developed nontraditional teaching, learning materials



**The “magic” of the [Pratham] program is an approach by which learning is treated as a game, with planners integrating four types of class activities. In a standard learning sequence, children say something, do something, read something, and write something.**

remedial education to in-school children, and preparing pre-schoolers to enter formal school. Programs reported mixed success with limited numbers of participating children, but were not tested in large-scale settings. Alarmed by the huge number of children unable to read and write and the years predicted to reach universal primary education, Pratham began a search for a “magic wand” that would ensure that children in school would learn to read and do basic math in three months or less so that they could begin to “read to learn.” Planners wanted a way to accelerate learning on a massive scale with considerable predictability using the human resources available.

Pratham’s solution was the Read India Programme, a scaleable, replicable campaign designed to get “every child reading in a short-predictable time frame.” From January to June 2003, the program was piloted with children in Pratham schools and summer programs throughout India and in a government school pilot effort in Maharashtra. Since the pilot ended, the program has been spreading rapidly to different parts of India in Pratham’s own programs and in governmental school systems. It also is being adopted by some non-governmental organizations.

In testing this approach with math instruction, planners noted that children learned numbers and addition/subtraction with carrying over/borrowing in less than a month and multiplication and division in another month. Fueled by this success, planners adapted the approach to reading instruction.

The reading instruction proceeds as follows. To assess reading ability at the start of the program, students are asked to read alphabets, words, paragraphs, and short stories. Ability is recorded. Then, guided by a trained instructor, children begin to ‘read’ from the first day.

Four types of teaching/learning materials are used:

- A set of alphabet cards;
- The “barakhadi” chart — an Indian consonant vowel chart;
- Paragraph cards — simple paragraphs of four to five lines, with short, simple sentences in big font; and
- A set of six to eight simple stories printed on separate sheets, with a slightly higher degree of difficulty than the simple paragraphs.

During about 90 minutes each day, the instructor guides the following main activities in the class, depending upon its composition:

- Reading aloud (20 minutes) — A four-step process where the teacher reads the story aloud with children following on their page and listening, children discuss the story, teacher reads the story again while children read, and children attempt to read;
- Using the barakhadi chart (20 minutes);
- Learning with rhyming words (10 minutes or as needed); and
- Saying anything, writing anything (no time limit).



**Figure 18: Selected Applications of Accelerated Learning — A Summary**

<b>Feature</b>	<b>Afghanistan</b>	<b>Iraq</b>
Target Population	Thousands of returning refugees  Overaged students, especially girls ages 10 -17	Out-of-school, traumatized, and disenfranchised students in urban and rural areas who had not previously participated in school
Instructional Venue	Community identified sites; Nonformal sites	Government schools with special classes for target population
Instructional Goal	Completing at least two grades in one school year	Completing two grades in one school year
School/Classroom Learning Environment	Small class size/learning activities  Increased contact hours  Learning resources	Socially and emotionally comfortable classroom atmosphere
Curriculum	National curriculum, enhanced with life skills, including peace education, land mine awareness, etc.	Condensed version of national curriculum  Intervention subjects (e.g., art therapy, art, sports, dance, music, and handicrafts) based on local requests
Teaching/ Classroom Practices or Activities	Teacher works as facilitator and guide  Improved teacher/student and student/student interactions  Promotion of respectful and conscientious engagement  Cooperative learning activities	Uses visual, auditory, and kinesthetic (sight, sound, and movement) modes to instruct students  Students engaged in active learning  Teacher provides different activities to allow learners to explore content in a variety of ways  Students are guided in connecting learning, associating it with a big picture, and demonstrating their understanding of the information
Instructional Materials	Textbooks, teacher guides, and other learning materials in the classroom  Classroom, teacher, and student kits provided	Limited numbers of textbooks  Alternative, teacher-generated materials available
Performance Monitoring/ Testing	According to MOE policy: grade level equivalency exams given	Students receive regular feedback from teachers and peers through talks and paired/small group activities
Special Features	Not applicable	Student incentives, to include transportation, hygiene kits, and/or school bags  Teacher incentives



## SUMMARY

This chapter gives actual examples of how theory and practice have been joined together to accelerate learning for children and youth. Education literature provides examples of schools in Western countries using principles and practices of accelerated learning outlined in Chapter III with significant increases in academic achievement. Overviews in development literature of varied field-based projects demonstrate how principles and practices of accelerated learning are being applied in various developing world contexts to address differing needs.

Five programs are particularly highlighted in this regard. In Afghanistan, accelerated learning is being used to attract both out-of-school students and overage youth into school after years of governmental neglect of the educational system. In Iraq, accelerated learning is being used to jumpstart children whose education was recently disrupted by political upheaval and war. In Malawi, continuous assessment and the use of child-centered learning materials have resulted in improved school performance for large numbers of children who were unable to read, write, and do basic mathematics. In India, accelerated learning programs have been used both to draw children from exploitative and abusive work situations and also to increase literacy levels for masses of children.

These programs, which show the widespread applicability and potential of accelerated learning principles and practices, share several common elements. All of the program designs reflect the principles common to accelerated learning programs in both industrialized and developing world contexts: concern for students' emotional and social needs; learner-centered instruction; active, problem- and project-based learning; learning as personally meaningful acts; and performance-based assessment and feedback. Some accelerated learning programs are being implemented in formal school situations; other programs are implemented in schools established especially for them. Unlike most programs from the education literature, all are intended to reduce the time needed to complete a particular course of instruction.

Research-based examples document how accelerated learning practices such as participatory, child-centered teaching practices, teaching to different learning styles, physical activity, and regular feedback have led to increases in motivation and attention as well as gains in academic achievement. Children around the world—from the United States, Canada, and New Zealand to Colombia, Pakistan, and Uganda—have benefited from accelerated learning principles and practices.







**Figure 21: Measures of Success in Implementing Accelerated Learning (AL): from National to Local Level (Continued)**

<b>Phase</b>	<b>Resources</b>	<b>Processes</b>	<b>Outcomes</b>
Training of Teachers and Administrators; Preparation of Materials	Strategic plan and committee(s) to develop training plans and materials; Actively-engaged AL consultants	Incorporate AL into pre- and in-service teacher, supervisor, and school administrator training, including modeling AL in the training	Levels of AL knowledge, applied skills, and commitment to implementation by teachers, supervisors, and school administrators trained
	AL-based school instructional materials and teacher's guides well-done and well-distributed	Train teachers and supervisors in using AL - based materials and guides; give them practice with coaching and feedback	Levels of ability to instruct with AL approach and materials; Levels of ability to professionally reflect on own AL instruction
	Interest in producing AL - based programs in distance education, and media and communications technology	Produce such programs; distribute information on them and teach skills in using them within AL context	Number of such programs produced and distributed; Number of teachers trained in their use; Numbers of needed equipment distributed
School-based Instruction	Knowledge of all aspects of AL by teachers, supervisors, and school administrators trained	Continually train, coach, monitor, and support local teachers and administrators in implementation of AL	Levels of increased implementation of AL in local schools, using materials and guides provided and adding locally produced ones Levels of increased implementation of AL in local schools
	Programs in distance education, media and communications technology, needed equipment, and trained teachers	Transmit and/or distribute tapes	Levels of use of such AL - based programs
	Leadership, management, and cooperation in implementing AL strategic plan	Develop AL-based policies, practices, and instructional materials; Establish ways to continually share ideas, materials, coaching, and support at local and regional levels of schooling	a. Students' levels of attendance, class participation, achievement, grade promotion, attitudes about school; b. Teachers' levels of attendance and cooperation, attitudes about students, job satisfaction; c. Parents' and community leaders' levels of satisfaction and support of AL and student outcomes







- If overcrowded classrooms due to universal primary education or other school enrollment initiatives have forced the system to double shifts or half-day classrooms of instruction;
- If whole groups or communities of children have been out of school for a term or more due to seasonal work;
- If education is being initiated in isolated, rural communities where children previously did not have an opportunity to attend school;
- If school has been disrupted for one or more school terms due to some crisis-induced emergency (e.g., natural disaster, war, community epidemic); and
- If national leaders are or can be persuaded that significant change is needed and possible in their country's educational system in order to attain the student achievement goals they desire for their country's future.

At the same time, in keeping with the recognition that change can come at any point in a structure or set of processes, educators at the regional or local level can begin to use accelerated learning principles and practices. Classroom teachers can consider altering some of their teaching methods and techniques. They can begin with a small change in their behavior toward students, a homemade learning aid to augment a textbook lesson, a rearrangement of

classroom furniture into groups, a little music to settle students down or new lyrics to a familiar melody to aid memorizing facts. Mentor and supervisory teachers can do the same and support their mentee teachers. Supervisors can encourage innovative teachers who use accelerated learning principles and practices and lead in educating parents and local leaders in the benefits of these changes.

As educators and others contemplate adopting and adapting principles and practices of accelerated learning in the developing world context, it is important to note that accelerated learning does not advocate disrespect for elders, teachers, or tradition (Baxter 1996, 4). Certainly the principles and practices are different from those in the traditional way of teaching, and they will require cultural sensitivities and adjustments. Giving students a much more active role than before, however, does not have to mean that they act disrespectfully.

Active, problem- and project-based, discovery education can be seen as preparing students to better serve their families, communities, and countries in today's and tomorrow's world. In many developing countries, leaders and foreign aid donors are empowering people to participate more actively in a variety of social sectors. As countries' economies develop more global connections, the next generations will need different knowledge and skills to create prosperity.





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Gardner, H. *The Unschooled Mind: How Children Think and How Schools Should Teach*. New York: Basic Books of HarperCollins, 1991.

By the originator of the concept of multiple intelligences, this book deeply analyzes our assumptions about how schools and learning should be organized. Albert Shankar, President of the American Federation of Teachers, wrote: "If we closed schools today and asked ourselves how we could reinvent them to work for all youngsters, my answer would be: 'According to the ideas and models in Howard Gardner's *The Unschooled Mind*.' Visionary yet practical, scholarly yet accessible, this book is a stunning achievement."

Given, B. *Teaching to the Brain's Natural Learning Systems*. Alexandria, VA: Association for Supervision and Curriculum Development, 2002.

In 140 very readable pages, Given provides an excellent understanding of the brain as an interweaving of five major learning systems: cognitive, emotional, physical, social, and reflective. She explains each neurobiological system in terms of its structure, functions, driving forces, and behavior patterns. With her connecting of each system to teaching roles and behaviors, teachers can better understand how they inhibit or facilitate their students' learning.

Jensen, E. *Teaching with the Brain in Mind*. Alexandria, VA: Association for Supervision and Curriculum Development, 1998.

This book is a great introduction to AL-E. The information in its 114 pages opens up new and exciting ways to think about learning, readiness for learning, motivation and attention, threats and stress, memory and recall—all based on a layman's explanation of what brain research is telling us about learning and teaching.

Jensen, E. *Learning with the Body in Mind*. San Diego, CA: The Brain Store, 2000.

With graphics and metaphors, Jensen explains the physiology of learning and the symbiotic relationship of brain and body. He includes a number of practical applications and exercises, a list of supplemental resources, and a complete bibliography.



Silver, H. F., R. W. Strong, and M. J. Perini. *So Each May Learn: Integrating Learning Styles and Multiple Intelligences*. Arlington, VA: Association for Supervision and Curriculum Development, 2000.

This is another book designed to explain psychological and educational theory in terms that ordinary people can understand and to apply the concepts to classroom teaching. The authors provide explanations and self-assessment for both frameworks, then show teachers how to audit and realign their curriculum and instruction to take advantage of these learning abilities. They also discuss how to align assessment of students' achievement with these abilities, making tests part of the learning process.

Wolfe, P. *Brain Matters: Translating Research into Classroom Practice*. Arlington, VA: Association for Supervision and Curriculum Development, 2001.

Wolfe does just what the subtitle of her book says. She explains the structure and function of the human brain so non-scientists can clearly understand, and she walks you through the process of sensory perception to information storage. Then she provides 55 pages of very practical ideas, including a "toolkit of brain-compatible strategies," for teachers to use Monday morning.



## APPENDIX A

### FOUR LEARNING STYLES BASED ON JUNG'S PSYCHOLOGICAL TYPES EXPLAINED IN DETAIL (CONTINUED)

<b>The Intuitive-Thinking (NT) or Understanding Learner</b>	<b>The Intuitive-Feeling (NF) or Self-Expressive Learner</b>
<p>Prefers to learn by:</p> <ul style="list-style-type: none"> <li>• studying about ideas and how things are related</li> <li>• planning and carrying out a project of his own making and interest</li> <li>• arguing or debating a point based on logical analysis</li> <li>• problem solving that requires collecting, organizing, and evaluating data</li> </ul> <p>Learns best from:</p> <ul style="list-style-type: none"> <li>• lectures</li> <li>• reading</li> <li>• logical discussions and debates</li> <li>• projects of personal interest</li> </ul> <p>Likes:</p> <ul style="list-style-type: none"> <li>• time to plan and organize her work</li> <li>• working independently or with other intuitive-thinking types</li> <li>• working with ideas and things that challenge him to think, explore, master</li> </ul> <p>Dislikes:</p> <ul style="list-style-type: none"> <li>• routine or role assignments</li> <li>• memorization</li> <li>• concern for details</li> <li>• rigid rules and predetermined procedures</li> </ul>	<p>Prefers to learn by:</p> <ul style="list-style-type: none"> <li>• being creative and using his imagination</li> <li>• planning and organizing her work in her own creative ways</li> <li>• working on a number of things at one time</li> <li>• searching for alternative solutions to problems beyond those normally considered</li> <li>• discussing real problems and looking for real solutions</li> </ul> <p>Learns best from:</p> <ul style="list-style-type: none"> <li>• creative and artistic activities</li> <li>• open-ended discussions of personal and social values</li> <li>• activities that enlighten and enhance -- myths, human achievements, dramas, etc.</li> </ul> <p>Likes:</p> <ul style="list-style-type: none"> <li>• contemplation</li> <li>• being able to learn through discovery</li> <li>• opportunity to plan and pursue his own interests</li> <li>• recognition for personal insights and discoveries</li> </ul> <p>Dislikes:</p> <ul style="list-style-type: none"> <li>• too much attention to detail</li> <li>• facts, memorization, rote learning</li> <li>• tasks with predetermined correct answers</li> <li>• detailed and demanding routines</li> </ul>







#### STAGE FOUR: PROVIDE A RANGE OF INPUTS

The content of the lesson is given in Visual, Auditory, and Kinesthetic (VAK) modes. This stage:

- Inputs new information through the use of sight, sound, and movement/action.
- Is distinctive and promotes active engagement.
- Requires lots of opportunities for structured language exchange.
- Is limited in duration to allow for added reflection, assimilation, and review.

#### STAGE FIVE: PROVIDE ACTIVITY

Different activities are used to allow learners to explore the content in a variety of ways. This stage:

- Accesses a range of intelligences over time.
- Provides a 'balanced diet' of activities (over time).
- Encourages learners to reflect on their own learning preferences.
- Immerses language in the learning activity itself.

#### STAGE SIX: DEMONSTRATE

The learners demonstrate their understanding of the new knowledge. This stage:

- Further optimizes purposeful language exchange.
- Requires learners to share understanding through a variety of outcomes.
- Encourages further reflection on processes used.
- Creates opportunities to 'model' success.

#### STAGE SEVEN: REVIEW FOR RECALL AND RETENTION

The learners review individually and in structured groups. This stage:

- Consolidates the learning through individual, paired, and shared review.
- Teaches different memory and recall techniques.
- Provides feedback for performance improvement.
- Previews what is to come next.







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