Reflecting on Your Learning Objectives

Use the questions below to determine the specific content and objectives you will focus on during this active learning experience and to reflect on related instructional variables.

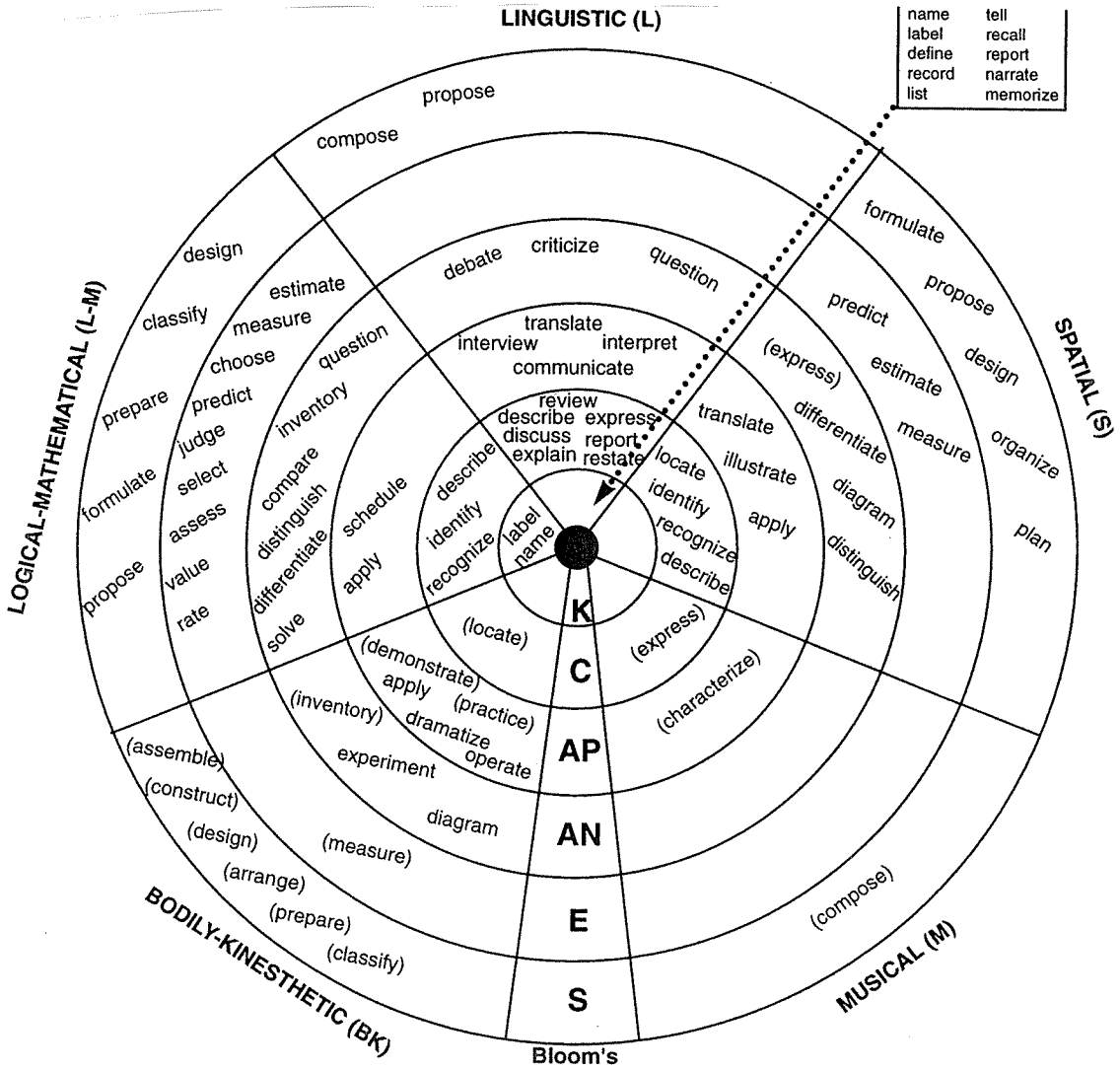
- What curriculum standards or learning outcomes do you want the active learning experience to address?

Students will...

- How might an active learning experience support these outcomes?
- What about this learning must I consider when planning an active learning experience? (For example, what may my students find challenging or difficult?)
- What do I know about the particular students I teach (such as specific learning needs) that I should consider when planning an active learning experience related to these learning outcomes?
- Will students need to follow a specific sequence of steps to reach these outcomes?
- How can I structure and pace this active learning experience to support students' understanding?
- How might this learning be relevant to students' lives now?
- How might this learning be relevant students' lives later?

Exploring

- What activities or problems could I use to support the instructional objectives I have chosen for this learning experience?[23]
- How, specifically, do these activities or problems support my objectives?
- What about these activities or problems do I expect my students to find intellectually stimulating and challenging?
- Do these activities or problems suggest ways my students can be grouped for learning?
- Do these activities or problems suggest ways to collaborate with other teachers?
- Do these activities or problems suggest ways to involve my students' families?
- How do these activities or problems invite my students to apply their abilities and learning styles?
- How do these activities or problems invite my students to learn from each other?
- How can I use instructional materials, technology, or other resources to support these activities or problems?
- What about these instructional materials, uses of technology, or other resources do I expect students to find challenging and engaging?
- Of these possible activities or problems, for which are my students most prepared?



Reflecting on Helping Students Connect With Content

Use the questions here and on the next two pages to determine how you will help students connect with, process, and explore new learning.

Connecting

- What must my students already know to achieve these learning objectives?
- What in my students' personal lives, experience, or backgrounds might help them relate to this new content?
- What might my students find interesting about this content?
- What more do I need to know about my students to help them connect mindfully with this content?
- How can I learn these things about my students?
- How can I help my students see the relevance of this learning?
- What analogies or metaphors might help my students relate aspects of this content to what they already know?

Processing

- At what points during this active learning experience should I provide processing opportunities for my students?
- What specific graphic organizers and writing or drawing opportunities could help my students process this content?
- How might questioning and discussion help my students understand important ideas related to this content?
- What other interactions between my students could assist them with processing?
- How do my ideas for processing opportunities support multiple learning styles?
- What accommodations will I need to make for individual students' learning needs?
- What signs of student understanding will I look for to determine whether students are engaged with their learning?
- What signs of student understanding will I look for to determine whether my structure and pacing are appropriate or need to be adjusted?
- What homework activities can help students further process and reinforce their learning?

Reflecting on Preparing, Supporting, and Managing Students

- Do my students need any teambuilding preparation before doing group work?
- How can I structure planned activities to scaffold my students' efforts?
- How can I prepare my physical environment to support these planned activities?
- How can I help my students understand the purpose and relevance of these planned activities?
- What group-structures can support my students as they work in teams?
- How can I vary grouping during planned activities to encourage greater interaction among diverse students?
- What group roles can my students use to manage their work?
- What preparation do my students need to perform these roles effectively?
- What decisions and choices can my students make as they complete activities?
- What preparation and support do my students need to make those decisions and choices?
- How can I use praise effectively to reinforce my students' intrinsic motivation, group-process skills, and learning strategies?
- What feedback will my students need to advance toward the learning goals?
- Which of my interpersonal skills and attitudes will help my students succeed?

Reflecting on Key Attributes of Effective Active Learning Experiences

When planning active learning experiences, it is easy to get carried away planning activities that are interesting and fun for students. However, during planning, it is important to remember that active learning experiences must be purposeful — that is, they must encourage critical thinking and support your learning objectives. Before and after you plan, reflect on the key attributes of active learning experiences described in Part II, presented below as questions. Your consideration of these qualities can help you plan active learning experiences that purposefully engage students in specific learning.

Quality	Does this active learning experience...
Centrality	... support an important instructional goal?
Connection to prior knowledge	... encourage students to connect new learning with prior knowledge?
Purpose	... have a clear purpose that students will understand?
Relevance	... have relevance for students?
Challenge	... challenge students to think critically?
Interest	... interest students?
Depth	... encourage students to explore important ideas in depth?
Social interaction	... allow students to construct their understanding cooperatively?
Multisensory stimulation	... engage students on multiple sensory levels?
Cross-disciplinary focus	... help students make important connections between subjects?
Student choice	... encourage students to make choices independently and as a group?
Responsibility	... make students responsible for constructing their understanding and conducting themselves according to established standards?
Autonomy	... permit students to complete a task with minimum supervision?
Creativity	... allow students to express themselves in some way?

Key Attributes of Effective Active Learning Experiences

Successful active learning experiences share many key attributes. An understanding of these qualities can help you locate or develop active learning experiences that suit your students. While a few qualities may not apply to all active learning experiences, striving for most of these qualities will help make your active learning experiences as strong as they can be.

- **Centrality:** The activity supports an important instructional goal rather than a peripheral one.
- **Connection to prior knowledge:** Students understand how the content under study connects with their prior knowledge, and this positioning makes them willing to explore unknown, but related, subject matter.
- **Purpose:** The purpose of the activity is clear to students — they understand what they are doing, why they are doing it, and how the activity is expected to achieve the intended purpose.
- **Relevance:** The activity helps students find meaning in the content — to understand the relevance of specific knowledge to the world around them, as well as to their individual lives.
- **Challenge:** All students find their tasks intellectually challenging, but do-able. They are asked to use critical thinking to accomplish something at the border of their competency levels, but they are given adequate tools and instruction and feel competent to meet the challenge.
- **Interest:** Students are intrigued by the problem or challenge the activity poses. They function as investigators, designers, or problem solvers.
- **Depth:** The activity invites students to explore important ideas in depth, rather than to gloss large quantities of information. Students are asked to apply their skills to meaningful tasks and are given adequate time to investigate, analyze, synthesize, and evaluate.
- **Social interaction:** Students construct their understanding with assistance from teachers as well as their peers. They share leadership, they ask for and provide help when needed, and they use each other's perceptions and ideas to arrive at group consensus and understanding. Together, they strive for the individual success of each group member, as well as the group as a whole.
- **Multisensory stimulation:** The activity engages students on multiple sensory levels. For example, in addition to working with written materials, tasks may be visual, tactile, or auditory. Students move around the room as needed, and express themselves appropriately using means that best suit their learning styles.
- **Cross-disciplinary focus:** The activity helps students make important connections between subjects. Students observe influences of one subject on another and are encouraged to use skills of one content area in the service of another.
- **Student choice:** As the activity proceeds, students are encouraged to make choices both independently and as a group. For example, they may be asked to choose an approach, assign roles, divide work, design investigations, presentations, or products, or select an assignment.
- **Responsibility:** Students understand what is expected of them both academically and behaviorally. They know how they will be assessed and their understanding guides them as they make judgments about their work and behavior.
- **Autonomy:** Students are permitted to complete the task in their groups with a minimum amount of teacher supervision. Their roles are clearly defined, and they monitor themselves individually and as a group.
- **Creativity:** Students are permitted to express themselves in some way — for example, by writing, drawing, building, performing, demonstrating, or developing a unique solution to a problem.

If the Shoe Fits . . .

The summary of what a teacher does with the multiple intelligences is pictured in the shoe metaphor. In the closet are many pairs of shoes. Each has a different use. Each helps its owner in a different way. When the shoe fits properly, the owner's feet are comfortable. When the shoe slips and slides on and off the heel, it slows the pace. When one pair fits more snugly than another, the owner tends to favor the comfortable pair. And of course it's more beneficial to have lots of shoes that fit just right, for multiple shoes, like multiple intelligences, serve multiple purposes.

The shoe metaphor leads to many implications for classroom and school changes. Many go beyond curricular and instructional modifications. The theory can lead to:

1. A new way to understand the complete child including strengths and weaknesses
2. Elimination of the need to label students or isolate large groups of students for special instruction
3. Elimination of the need to ability group and track students
4. The creation of problem-centered schools with activities outside the school walls
5. The establishment of multi-age classrooms that group students by developmental age and interest
6. The assessment of learning in a range of authentic learning experiences
7. The opportunity for every student to excel in at least one intelligence
8. Students who excel by understanding and applying what they have learned
9. Teachers who mediate learning
10. The elimination of letter grades

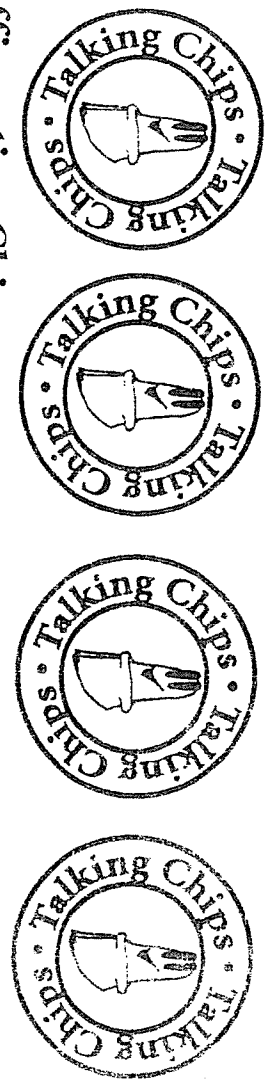
Today's classroom requires that the teacher adapt his or her teaching to meet the diverse challenges of today's students. When we begin to think of students as diversely intelligent rather than measuring each child against one fixed standard with an outdated instrument, the logical/mathematical IQ test, we will begin to see a true change in the performances of students.

Comparison of Tate's 20 Instructional Strategies to Learning Theory

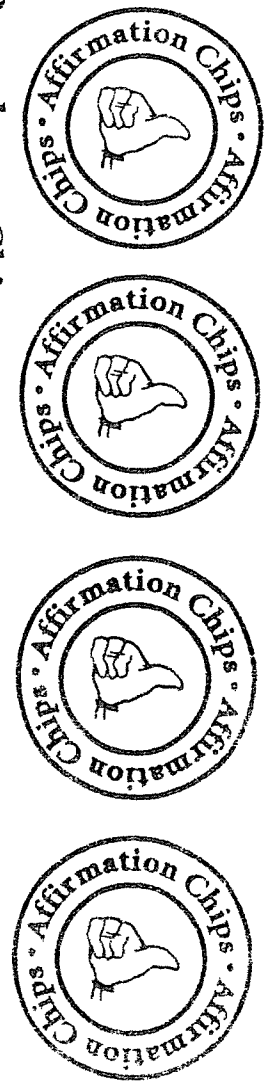
Tate's 20	*Multiple Intelligences*	*VAKT*
Brainstorming and discussion	Verbal-linguistic	Auditory
Drawing and artwork	Spatial	Kinesthetic/tactile
Field trips	Naturalist	Kinesthetic/tactile
Games	Interpersonal	Kinesthetic/tactile
Graphic organizers, semantic maps, and word webs	Logical-mathematical/ spatial	Visual/tactile
Humor	Verbal-linguistic	Auditory
Manipulatives, experiments, labs, and models	Logical-mathematical	Tactile
Metaphors, analogies, and similes	Spatial	Visual/auditory
Mnemonic devices	Musical-rhythmic	Visual/auditory
Movement	Bodily-kinesthetic	Kinesthetic
Music, rhythm, rhyme, and rap	Musical-rhythmic	Auditory
Project-based and problem-based instruction	Logical-mathematical	Visual/tactile
Reciprocal teaching and cooperative learning	Verbal-linguistic	Auditory
Role plays, drama, pantomimes, charades	Bodily-kinesthetic	Kinesthetic
Storytelling	Verbal-linguistic	Auditory
Technology	Spatial	Visual/tactile
Visualization and guided imagery	Spatial	Visual
Visuals	Spatial	Visual
Work study and	Interpersonal	Kinesthetic

Communication Regulators

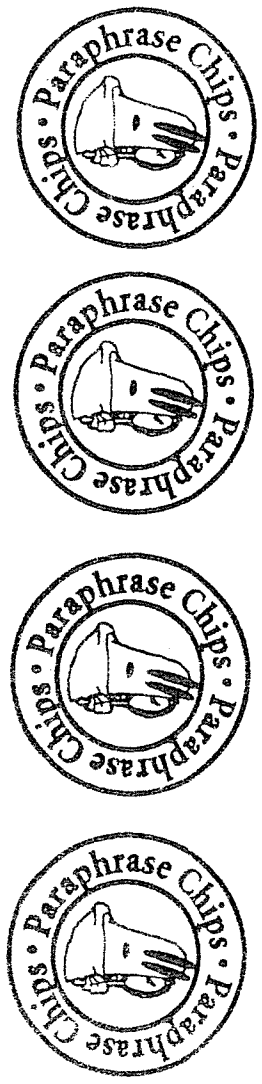
Talking Chips



Affirmation Chips



Paraphrase Chips



GUIDELINES FOR CREATING AN ENRICHED ENVIRONMENT

- immerse students in reality; use firsthand sources
- next, and only after all available firsthand resources have been exhausted, use only those secondhand experiences which allow for hands-on of real items (not plastic replicas)
- only use books and other print materials, video, and pictures as supplementary extensions of what is taught through firsthand resources
- provide each class with a broad based reference library; trade books, current encyclopedias, CD-Rom video discs
- make the environment body-compatible
- eliminate clutter; avoid distraction and overstimulation
- change bulletin boards, displays and materials frequently; always stay current with what is being studied at the moment. Put away the old except for a few items (e.g., the mindmap for the component) which will jog recall
- consider not purchasing class sets of textbooks. Buy only a few for teacher resource and spend the money on *being there immersion,* and hands-on (of the real thing) materials for students
- have regularly scheduled guest speakers to support content
- increase input by at least ten times what it is today—and that's just for starters

Building Community

Before pursuing any new strategy with students, it's essential to discuss your planned approach with them so that they know what to expect. For example, you could start by explaining your belief that learning is most effective when students are permitted to arrive at it on their own. You could then describe how active learning experiences and group work help students think and learn. You may also wish to point out that, while students will work in teams at times, group work does not involve competition: The goal is deep exploration — learning — and all individuals and teams can be successful.

If your students are new to group work, it may also be helpful to lead them in teambuilding activities and to introduce them to collaboration gradually (see Related Activities at the end of Part III). When first faced with the prospect of working this new way, some students may fear "failing" at your new approach or may feel anxious about working with peers they do not know. Leading students in activities that do not threaten their grades and that expose them gradually to increasingly challenging collaborative tasks can strengthen their confidence, quell their fears, and leave them excited about group learning.

The remaining sections of Part III are concerned with building community, managing students' group work, and helping students develop the skills and confidence required to succeed with group work.

Bodybrain-Compatible

- *Meaningful Content*
- *Movement*
- *Enriched Environment*
- *Choices*
- *Adequate Time*
- *Collaboration*
- *Immediate Feedback*
- *Mastery/Application*

Basic Principles (PIES)

- **P** — Positive Interdependence
- **I** — Individual Accountability
- **E** — Equal Participation
- **S** — Simultaneous Interaction

An Example:

The Power of Positive Attention

I cannot emphasize enough the power of praising groups for desired behaviors. One day I was in the classroom of a teacher first trying Jigsaw. She had been part of a one-day workshop with me, and had also seen me demonstrate Jigsaw with another class at her middle school.

She had all of the elements right. The class would come to full attention when she raised her hand. The student experts were standing as they presented their parts to their groups. One team had a missing expert, and the teacher handled that well by using the Teams Consult piece she had learned in the workshop.

But something was terribly wrong. The noise level was high. Over in one group the expert was using her new found authority to scold her teammates for being stupid. In another group as soon as the teacher was looking another way, the expert stuffed some paper in his nose which led to loud giggles and laughter. And the quiet signal was really not much help: The kids responded by quickly coming to attention, but right afterwards they would return to loud talking and off-task behaviors.

As I watched I became increasingly uncomfortable. What was wrong? What could be done? I remembered the theory of group-based positive reward and walked over to the teacher and said, "I am going to sit down again, but in a moment I want you to walk over to the best group in the class, give the quiet signal, and draw everyone's attention to the group, praising them for their good work, saying exactly what you like about their behavior. Don't give points; just say clearly what you like."

She did. And we were both surprised by the power of the praise. For about ten minutes after the positive attention, all the teams were markedly more on task. When they began to slip, I asked her to use group technique again. This time teams stayed on task longer.

By the end of the period, the class had turned around. We both saw Jigsaw working the way it should. The teacher was thrilled; she had a powerful tool for shaping the class.

Positive attention establishes the norms for the classroom; students learn which behaviors are valued; they receive a very clear message as to how to behave well in the new setting. Holding up as a model the groups which are behaving best is a clear way to give the message that you value certain behaviors. The students feel more secure when clear norms are established.

Tips for Providing Constructive Feedback

The following checklist may help you formulate constructive feedback that can help your students view their work objectively with the goal of refining and improving it:

- Establish your standards and expectations for performance before students begin work.
- Provide feedback as students work on projects or as soon as possible after they complete a task.
- Let students know ahead of time that you will be giving feedback.
- Affect a friendly tone when providing verbal feedback.
- Avoid using all capital letters and exclamation marks in written comments. Unless the comment is a positive one, they can make your tone seem angry or strident.
- Use "I" rather than "you" statements.
- Focus on student work rather than on the student.
- Comment first on what specifically students have done well; recognize effort.
- Articulate your thoughts clearly and plainly.
- Avoid generalizing ("always," "never"), exaggerating ("This is the worst ..."), or characterizing ("It's as if you ...") the work or the student (even a comment you think is funny can hurt a student's feelings).
- Avoid "loaded" language ("failure," "obvious," "completely," "clearly").
- Give students specific suggestions about how they can improve their work.
- Provide choices that allow students to make decisions about revision.
- Be clear about what students must do to improve their work.
- Keep your feedback brief.
- Ask students questions after verbal feedback to be sure they understood your comments.
- Provide opportunities for students to share their thoughts in response to your feedback and to ask questions of their own.
- Empathize if students express frustration or difficulty, but maintain your expectations for student work.
- Give students time to reflect on your feedback.

Establishing a Collaborative Code

Before students undertake group work, it is important that they understand your expectations for team behavior. By helping students establish a "collaborative code," you can introduce them to the benefits of group work as well as the behaviors and attitudes that make it possible for each of them to reap those benefits.

The benefits of group work help students understand how you expect them to profit from group learning. For example, group work:

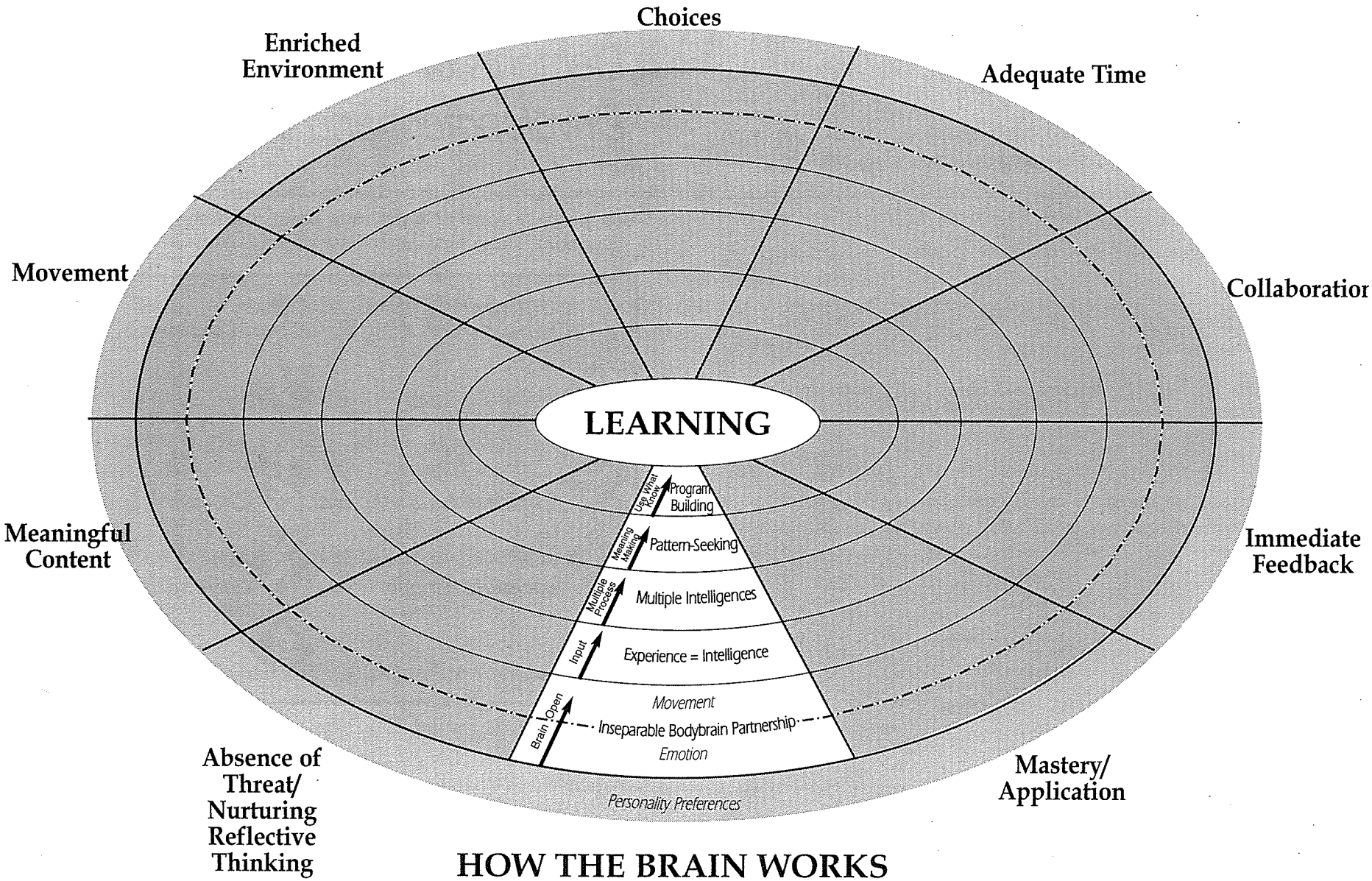
- gives each student many opportunities to contribute to group learning
- encourages students to share leadership roles
- makes learning more interesting, meaningful, and relevant for students
- challenges students to think more deeply
- promotes deeper, more memorable understanding
- allows students to learn from each other as well as the teacher
- teaches students how to work together with different types of people
- invites students to challenge and encourage each other to think and to take learning risks
- shows students that their diversity enriches their products and performances

Behaviors and attitudes that support group work help students understand how they can make group work productive and successful. For example:

- Share responsibilities fairly.
- Show respect for one another — *listen.*
- Keep an open mind — be willing to try the ideas of others.
- When you disagree, express your ideas but don't attack others.
- When someone disagrees with you, don't take it personally.
- Strive for consensus when making decisions.
- Stay focused on group goals.
- Always do your personal best.
- Cooperate — help others succeed and ask for help when you need it.
- Take risks — push yourself to try new roles and greater challenges.
- Be sure the group product represents the contributions of all group members.
- Take pride in working well as a team.

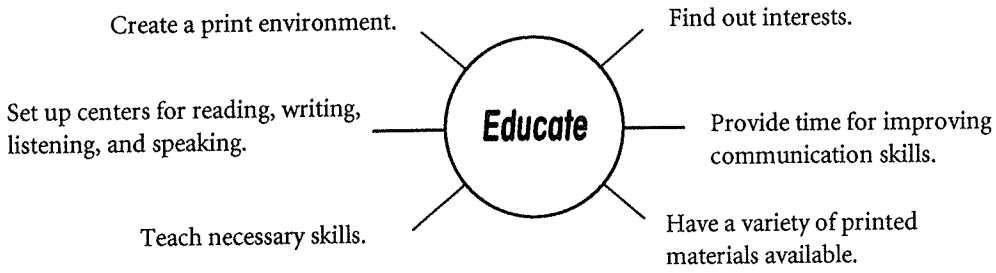
The 19 Senses

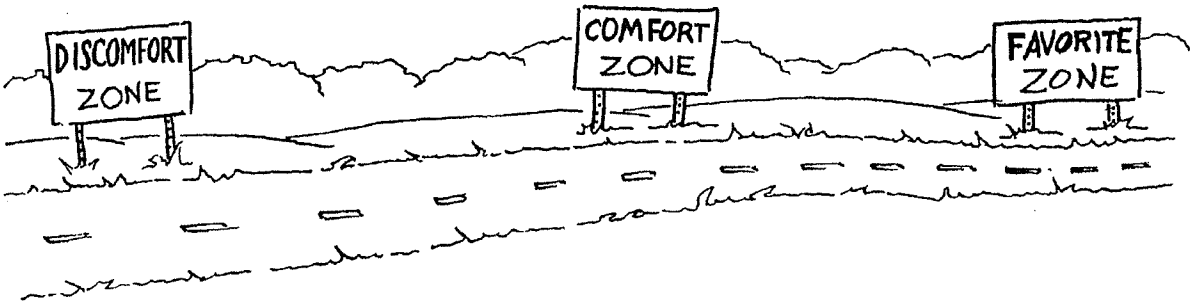
SENSES	KIND OF INPUT	EXAMPLES OF SENSORY INPUT FROM STORY
Sight	Visible light	Reflections dancing on the water; darting minnows, dams breaking, etc.
Hearing	Vibrations in the air	Laughter, gravel scrunching; mud sucking; rocks clashing,splashing
Touch	Tactile contact	Bare feet scrunching in the pebbly gravel; tepid, slow-moving water
Taste	Chemical molecular	Sweat dripping down their faces; an occasional splash of creek water
Smell	Olfactory molecular	Smelly mud
Balance	Kinesthetic geotropic	Keeping balance wading in the deep gravel; moving rocks/mud
Vestibular	Repetitious movement	Re-arranging rocks and shoveling smelly mud
Temperature	Molecular motion	Warm summer day
Pain	Nociception	Thankfully, none!
Eidetic imagery	Neuroelectrical image retention	The vivid picture of the scene and its details
Magnetic	Ferromagnetic orientation	The location of the creek—south of the family home
Infrared	Long electromagnetic waves	The warmth and power of the sun's rays
Ultraviolet	Short electromagnetic waves	The warmth and power of the sun's rays
Ionic	Airborne ionic charge	The refreshing feeling from being around water
Vomeronasal	Pheromonic sensing	Primal sense of smell—body odors, sweat, rotting vegetation
Proximal	Physical closeness	The nearness of the brother
Electrical	Surface charge	The humidity of the creek eliminated any perceivable static electricity
Barometric	Atmospheric pressure	The steady, unchanging atmospheric pressure of a calm summer day
Geogravimetric	Sensing mass differences	Density (weight to mass) of material—pebbly gravel versus gooey mud



HOW THE BRAIN WORKS

"E"asing On Down the Road of the Verbal/Linguistic Journey





Encounter		Employ		Embrace
Is able to tell an interesting story with all the details for complete understanding, but when it comes to writing it down on paper, says, "I can't write."	→	Finds a nonthreatening environment where content and organization are the emphasis instead of mechanics and spelling. Writing is accepted.	→	Sees the enjoyment and value of writing. Begins to write on own and shares writing with others. Edits and revises some favorite pieces of work.
Has difficulty paying attention and listening when others are talking.	→	Learns the social skills of listening. Realizes how it feels not to be listened to and learns to interpret verbal and nonverbal communication.	→	Listens with respect and finds value in others' contributions. Becomes an effective communicator.
Doesn't like to read and has difficulty with the printed word.	→	Finds interesting books. While being read to, sees the enjoyment of and need for reading.	→	Enjoys reading for enjoyment and information. Becomes a lifelong comprehending reader.

Self-Reflection - Polishing the Verbal/Linguistic Shoe

Personal Use

0 — 1 — 2 — 3

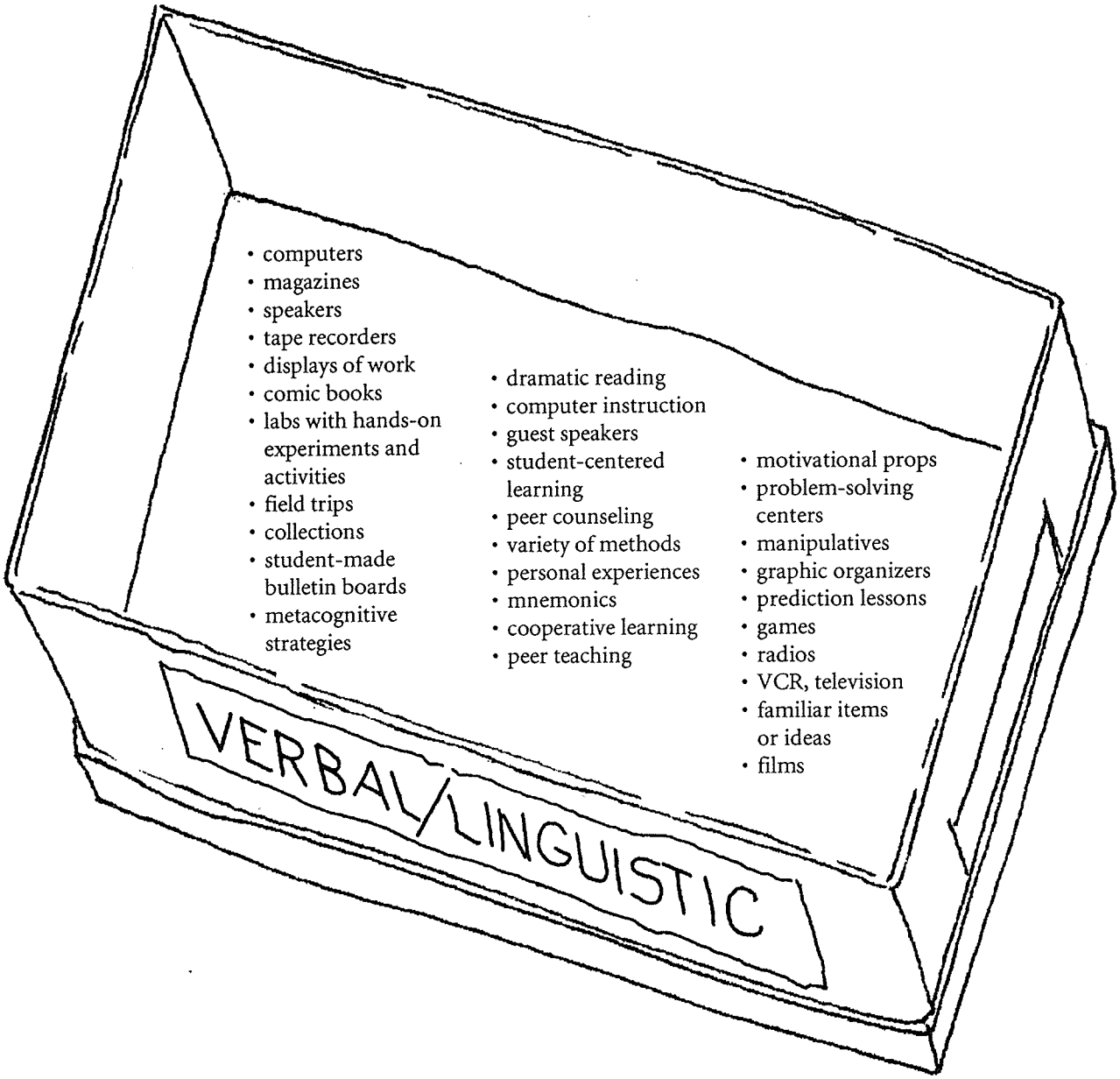
Discomfort Zone — Comfort Zone

Professional Use

0 — 1 — 2 — 3

Discomfort Zone — Comfort Zone

What Activities Promote Learning With This Intelligence?



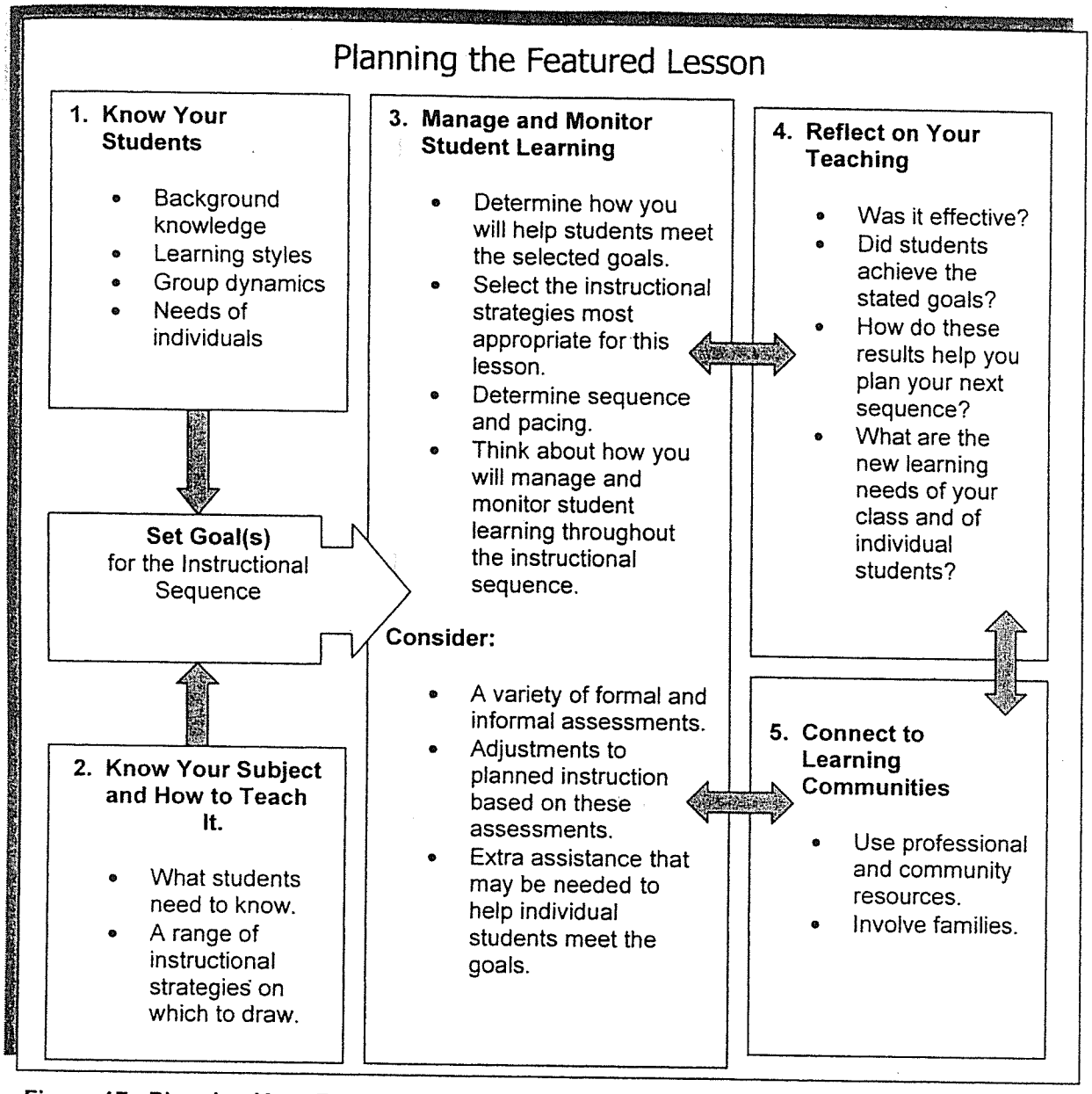


Figure 17. Planning Your Featured Lesson.
The Five Core Propositions provide a framework for accomplished teaching as the teacher plans an instructional sequence.

Some entries may also ask you to discuss the organization of the class environment and the routines that are part of your practice. Some entries address the classroom community in terms of building students' social skills and a positive climate for learning.

Prompts for Exercise 3-4: Fitting the Pieces Together

1

I am committed to my **students:**

What are the interests and learning characteristics of my students as individuals and as a group? What is their background knowledge? What are their learning needs?

2

I know my **subject** and how to teach it:

What are the important ideas in my subject area?
What concepts & skills shall I focus on?
What are the most effective instructional techniques I could use?

3

I manage & monitor my students' learning:

What are my goals for this lesson?
How can I help students meet them?
Do I need to adjust instruction for some students?
What is the sequence and pacing of activities?
How will I monitor and assess student learning throughout the teaching sequence?

Student Learning

4

I think about & learn from my experiences:

Based on student responses to the instructional sequence, was my teaching effective?
What could I do differently?
How do these results help me plan my next sequence?
What will I do next with my students?

5

I belong to different **learning communities:**

What resources can I use to enhance student learning?
How can I involve and/or keep parents informed about class activities and expectations?
Where can I obtain support or inspiration to improve my teaching?

Figure 12. Prompts for Exercise 3-4: Fitting the Pieces Together.
Use these prompts to help you complete your exercise.

Elements of the Brain-Compatible Classroom

The classroom environment that best facilitates the full development of the intelligences is sometimes called "brain compatible." For the brain to function fully, it is beneficial for the classroom to provide five elements: trust and belonging, meaningful content, enriched environment, intelligent choices, and adequate time.

TRUST AND BELONGING

The brain-compatible classroom is an inclusive classroom. Here each child feels that she belongs, can contribute, is considered important by the teacher and her peers, and is challenged by high, consistent expectations. When the teacher ignores the child and does not call on her to answer questions, when peers make fun of her or put her down, when the content goals are merely covering the material, completing workbooks, and finishing the textbook, the child cannot feel cared about.

In the brain-compatible classroom, the teacher trusts that every child, no matter how rich or poor, tall or short, black or white, will learn and develop. The rates of growth may vary. (How many times has a worried parent taken a child to the pediatrician because the child did not start reading as soon as her older siblings?) The interests may vary. (How many children in the same family like to do what their siblings do?) Throughout the school years, it is important to keep the faith in a child's natural tendency to learn, to encourage the child with patience, and to remember that rate of learning and interest will always vary. When the classroom is inclusive, the changes will come.

MEANINGFUL CONTENT

For most teachers, curriculum is set by the district. At best, curriculum committees will align the different intelligences with established outcomes or reconfigure outcomes to match development of the intelligences. In the classroom, the teacher can align the multiple intelligences approaches with district outcomes. It is most beneficial when the students understand the lesson outcome along with the clear goals and the purposes of what they are learning. If the goal of a lesson is to learn how to mix oil colors for texture (visual/spatial), the teacher can be explicit in helping students see how that task is connected to painting a more eye-appealing picture (the product). It is even more helpful when the teacher links the product outcome to the lifelong benefits of a strong visual/spatial intelligence.

Product-based outcomes help students make immediate connections to a purpose for learning a skill. When the learning starts with the making of the product itself, they discover a need for the skills. This approach works well with tasks that require math computation and problem-solving skills. The teacher assigns the students to design a treehouse. The architectural rendering will be the product. The teacher includes accurate computation and aligned measurements of all heights, lengths, and widths. The students must check their computation to meet these standards. When they are inaccurate, they will have to pursue instruction and coaching to learn computation and measurement.

Problem-based outcomes challenge students to distinguish means from ends. The goal is the solution of a problem. For instance, a short-story lesson about "The Most Dangerous Game" might have a problem framework that begins with this challenge statement: "You are trapped on an island owned by a man who wants to make you game for his hunt. Your problem is how to do something no other human game animal has ever done: escape alive." After reading the first half of the story, the students will have a clear understanding of the problem. At this point, the students will brainstorm possible solutions, examine consequences, and make a plan for escape. After reading to the end, they can compare their proposed solutions to the main character's and evaluate their own problem-solving approaches.

Product-based outcomes are often linked with process outcomes in the multiple intelligences curriculum. This linkage enables students to apply their understandings and assess their skill development at two levels: (1) reading and writing skills, and (2) problem-solving skills. In the short-story lesson, the students can extend the discussion of the problem by inventing additional similar scenarios for ending the story, write the new story endings, and assess the endings