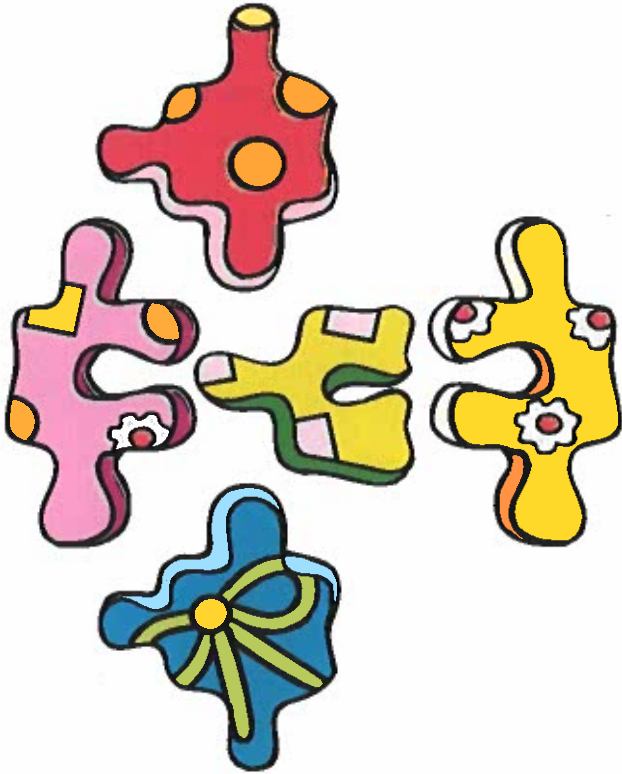


I think a much stronger graphic might be a photo of the children inside the lab. These clipart images suggest a much younger child to me. —Lyndi

# Strategies Lab Start-Up Guide



**An Innovative Hands-On Learning Experience  
that Enhances Critical Thinking, Strengthens  
Character, and Builds Self-Esteem**

April 24, 2006

Sponsored by the  
Colvin Run Elementary School and  
ThinkFun, Inc. **Business** Partnership



- PUT TOGETHER STRATEGIC PLAN
- GATHER STAKEHOLDERS
- Buy IN
- FIND FUNDS
- SET UP LABS
- MAXIMIZE ITS VALUE
- MEASURE AND COMMUNICATE RESULTS

4/19/2006

## Preface

*"The mind is not a vessel to be filled, but a fire to be ignited."*  
—Plutarch

Children enter into knowledge from many different paths. The Strategies Lab is powerful because it shows children that learning is not an elusive attainment, but rather something they have the power to unleash within themselves—anytime, anywhere.

The Strategies Lab reaches all students along the academic continuum, and has been shown to be as effective with low achievers as it is for gifted students. At a time when many urban U.S. school districts face extreme challenges and shortages in resources, the Strategies Lab offers an effective solution for students not served by traditional methods of instruction and grading. It is a way to inspire all levels of learners in a class at one time and in one place.

Because the Strategies Lab takes place in a fun and relaxed environment, it puts children at ease and gives them a natural confidence no matter what their IQ or past academic achievements. Combine this unique milieu with a skilled professional who thoughtfully selects games that engage and exercise the whole brain, and the results can be quite astounding.

The Strategies Lab is inquiry-based learning in the truest sense, because it encourages students to ask incisive questions, to make educated deductions, and to solve problems creatively and imaginatively. The result, as many teachers will attest, is that it transforms the way children think. Students begin to bring a new curiosity and capacity for critical thinking to their other schoolwork. In very little time, profound and exciting changes in learning and life attitudes take place in the schools that use these games.

This *Start-Up Guide* is designed to give you the nuts and bolts of the Strategies Lab experience. We've addressed how to put together a strategic plan, garner stakeholder buy-in, find the funding, set up the lab, maximize its value, and measure and communicate results. Throughout these pages you will find helpful tips and recommendations that we hope will make your journey a little smoother.

We are still in the formative stages of this wonderful educational innovation. Although everything we have presented here is "tried and true," it is just the beginning. We welcome your input and the opportunity to grow and refine the Strategies Lab program in the months to come.

- PUT TOGETHER A STRATEGIC PLAN
- GARNER STAKEHOLDER BUY-IN
- FIND THE FUNDING
- SET UP THE LABS
- MAXIMIZE ITS VALUE
- MEASURE AND COMMUNICATE RESULTS

## Stimulating Decorations

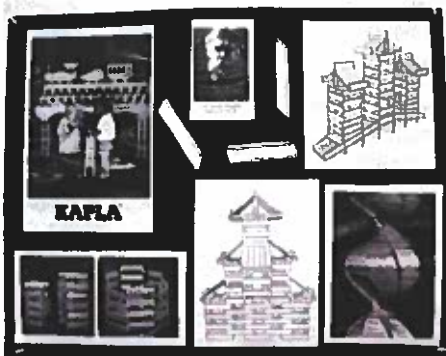
If you're lucky enough to have dedicated space, decorate your area with bright and interesting designs (think M.C. Escher, Tessellations, and Optical Illusions) and motivational sayings. Use the wall space to promote the core values of the lab. Create a Wall of Champions (see page X).

### Sample motivational sayings:

- ❖ "A mind that is stretched by a new experience can never go back to its old dimensions."  
—Oliver Wendell Holmes
- ❖ Everyone Deserves to Get Frustrated.
- ❖ A Mind is a Terrible Thing to Waste.
- ❖ "Reframe Problems into Opportunities."—  
Dewitt Jones
- ❖ "Imagination is More Important than Knowledge."—Albert Einstein
- ❖ Tell Me – I Forget  
Show Me – I Remember  
Involve Me – I Understand
- ❖ Risks
- ❖ Be All That You Can Be
- ❖ Question!
- ❖ "I have not failed, I've just found 10,000 ways that don't work."—Thomas Edison



**Tessellations are colorful checked or mosaic patterns that are mathematically intriguing and beautiful to look at. See Appendix C for some other sample wall hangings.**



**With design proportions based on the elementary progression of odd numbers: one, three, and five, Kapla blocks offer infinite building possibilities, and are a unique blend of art and science.**

## 2.6 Ordering Activities

Which activities should you buy and how many of each do you need? There are several categories of activities you will want in your Strategies Lab. Some of these activities overlap and many require multiple strategies.

- ❖ Individual or Multi-player
- ❖ Math
- ❖ Reading
- ❖ Creativity
- ❖ Problem Solving
- ❖ Visual Spatial
- ❖ Logic/Reasoning
- ❖ Strategic, including:
  - Deductive Reasoning
  - Following Directions
  - Thinking Ahead
  - Analyzing a Situation
  - Critical Thinking
  - Formulating a Strategy
  - Guessing and Checking
  - Finding a Pattern

### **Buy your activities in batches**

Choose a variety of proven activities for your first batch. See how you like them and then decide what to select for your next batch. Assess the gaps in student performance at your school. Select activities that target development of skills that will help fill those gaps. (Included in Appendix A is the Colvin Run inventory. Activities are rated according to Barbara Ross' experience in the Colvin Run Strategies Lab.)

At the end of the time for each center, students clean-up their center, stand up and push in their chairs. Have them point to the next center they should rotate to. When everyone is pointing to their next center, permit them to rotate. A should point to B, B to C, etc. H should point to A.

### **Step Three: Rotate Activities .**

Let's say you have eight different activity centers. During that period, you might rotate students every 12 minutes to four different activities that nurture their skills in the following areas:

- ❖ Problem Solving
- ❖ Strategy Development
- ❖ Deductive Reasoning
- ❖ Abstract Thinking
- ❖ Visual-Spatial Understanding
- ❖ Creativity
- ❖ Social Skills

### **Step Four: Record Successes and Struggles in a Class Log.**

This is a great task for the classroom teacher or a volunteer.

### **Step Five: Make Sure Students Follow the Order You Have Provided.**

Many activities, such as *Gridworks*, have levels of progression. Some children like to go straight to the last challenge and try to solve it. It is better that students start at the beginning and move through the levels. One way to ensure this happens is by giving students only the beginning challenges when they start. When they complete all the challenges in one level, then you can give them another level. Record the last level or challenge a student completes in the Class Log. Of course, there may be instances where moving directly to a higher level will make sense—the idea here is that you define what level challenge is appropriate for each student.

### **Step Six—Take Time to Reflect**

At the end of the hour, ask students to go to the table with the activity they liked the best. Ask a few students to share what they liked about the activity they selected. You will find some students like the creative activities, while others prefer activities with levels of difficulty for them to master or the ones where they get to play with someone else. Continue this discussion by asking them a number of thought-provoking that will reinforce their learning and elicit feedback about how the Lab or a new activity is working. You may hear comments that you want to record in the log.

- ❖ Which game in the Strategies Lab is the hardest for you? Explain.
- ❖ How do your problem-solving strategies change from one game to another?

### **Strategies Lab Tip**

Reflections about the Strategies Lab experience can be made outside the Lab too! Write some story starters and ask teachers to use them. Some of the children's feedback will provide anecdotal evidence that the Strategies Lab is having a positive impact.

- ❖ Can you imagine an activity that blends two games in the Strategies Lab? Explain.
- ❖ Which activity in the Strategies Lab do you find most interesting? Why?
- ❖ What is your favorite activity in the Strategies Lab? Why? What did you learn when you worked on this activity?
- ❖ Today you tried a new activity, \_\_\_\_\_, in the Strategies Lab. Write about the strategies you used to complete the activity and whether or not they helped.
- ❖ Persistence is a Thinking Behavior. What does persistence mean to you? Describe a time in the Strategies Lab when you were especially persistent. What activity were you working on? How did being persistent make you feel?
- ❖ The Thinking Behaviors are Persistence, Flexibility, Fluency and Originality. Which of these behaviors are easy for you to demonstrate? Which of these behaviors are hard for you to demonstrate? List 3 things you can do to improve?
- ❖ Describe a time in the Strategies Lab when you demonstrated one or more character traits: honesty, respect, responsibility, compassion.
- ❖ Write a story about the Strategies Lab for your school newspaper.
- ❖ Choose a Strategies Lab activity. Write a review about it. Do you recommend it? Why or why not? What grades is it appropriate for?
- ❖ You can work with one Strategies Lab activity for an entire lab session! What would you choose and why?
- ❖ What would you do if you worked on a Strategies Lab activity for an hour and couldn't solve the problem? How would you handle the situation?
- ❖ What do you do if you go to an activity in the Strategies Lab and you really don't enjoy it?

## 2.9 Strategies Lab Educational Objectives

Strategies Lab activities are for everyone. The hands-on board games, puzzles, and brainteasing activities used in the Strategies Lab not only improve computational, sensori-motor, and visual/spatial skills, but they also foster higher-level thinking abilities—from question posing and problem solving to abstract reasoning and ingenuity.

### Strategies Lab Learning Principles

Now that you have a class of students in front of you, you need to create a rich learning environment and be mindful of the learning goals you have established. There are a number of educational principles that inform the Strategies Lab experience. They include:

- Habits of Mind
- Thinking Behaviors
- Social Learning
- Risk Taking
- Character Education

#### Habits of Mind

In the book, *Discovering & Exploring Habits of Mind*, edited by Costa and Kallick, the authors include detailed explanations of 16 Habits of Mind, which are defined as “dispositions displayed by intelligent people in response to problems, dilemmas, and enigmas, the resolutions of which are not immediately apparent.” They dedicate a chapter to how to integrate these habits into your curriculum.

Fairfax County Public Schools has begun embracing the vocabulary of these habits. Consider infusing some of this new vocabulary into your own school culture. If you have your own school vocabulary already, use it. Teach it to the children. The words you choose to describe these learning processes help children to think consciously about their own thinking processes and decisions.

**Briefly, the Habits of Mind can be described as follows:**

1. ***Persisting***. Stick to it. See a task through to completion, and remain focused.
2. ***Managing impulsivity***. Take your time. Think before you act. Remain calm, thoughtful, and deliberate.
3. ***Listening with understanding and empathy***. Seek to understand others. Devote mental energy to another person's thoughts and ideas. Hold your own thoughts in abeyance so you can better perceive another person's point of view and emotions.
4. ***Thinking flexibly***. Look at a situation another way. Find a way to change perspectives, generate alternatives, and consider options.
5. ***Thinking about thinking (metacognition)***. Know your knowing. Be aware of your own thoughts, strategies, feelings, and actions—and how they affect others.

6. ***Striving for accuracy.*** Check it again. Nurture a desire for exactness, fidelity, and craftsmanship.
7. ***Questioning and posing problems.*** How do you know? Develop a questioning attitude, consider what data are needed, and choose strategies to produce those data. Find problems to solve.
8. ***Applying past knowledge to new situations.*** Use what you learn. Access prior knowledge, transferring that knowledge beyond the situation in which it was learned.
9. ***Thinking and communicating with clarity and precision.*** Be clear. Strive for accurate communication in both written and oral form. Avoid overgeneralizations, distortions, and deletions.
10. ***Gathering data through all senses.*** Use your natural pathways. Gather data through all the sensory paths: gustatory, olfactory, tactile, kinesthetic, auditory, and visual.
11. ***Creating, imagining, innovating.*** Try a different way. Generate novel ideas, and seek fluency and originality.
12. ***Responding with wonderment and awe.*** Let yourself be intrigued by the world's phenomena and beauty. Find what is awesome and mysterious in the world.
13. ***Taking responsible risks.*** Venture out. Live on the edge of your competence.
14. ***Finding humor.*** Laugh a little. Look for the whimsical, incongruous, and unexpected in life. Laugh at yourself when you can.
15. ***Thinking interdependently.*** Work together. Truly work with and learn from others in reciprocal situations.
16. ***Remaining open to continuous learning.*** Learn from experiences. Be proud—and humble enough—to admit you don't know. Resist complacency.



Keep entire Chart on one page.

## **Thinking Behaviors**

Thinking Behaviors are cognitive processes that enable us to make meaning from information and to create with information. They involve habits of mind that define attitudes and dispositions of good thinkers, and strategies that allow students to process information more effectively and efficiently.

Barbara Ross spent years studying and teaching thinking skills to schoolchildren. She developed the following model of Thinking Behaviors, which encompass some facets of the Habits of Mind. They are boiled down to four simple behaviors—*fluency*, *flexibility*, *originality*, and *persistence*:

Thinking Behavior	What it is	What it looks like	What it sounds like
<b>Fluency</b>	Can generate many different ideas	<ul style="list-style-type: none"> <li>▪ Lists a variety of ideas</li> <li>▪ Writes with ease</li> <li>▪ Generates multiple alternatives in problem solving</li> </ul>	<ul style="list-style-type: none"> <li>▪ Brainstorms numerous possibilities</li> <li>▪ Speaks comfortably and easily</li> <li>▪ Uses expressions like “Another thought is...”, “One more idea includes...”, “Here are several more suggestions...”</li> </ul>
<b>Flexibility</b>	Sees many possibilities and open to alternatives	<ul style="list-style-type: none"> <li>▪ Listens attentively to others ideas</li> <li>▪ Changes tasks and routines comfortably</li> <li>▪ Tries a variety of approaches while working on projects and class activities</li> <li>▪ Works toward group consensus and compromise</li> </ul>	<ul style="list-style-type: none"> <li>▪ States several ways to look at or solve a problem</li> <li>▪ Considers others’ points of view – can paraphrase</li> <li>▪ Uses words like “however,” “on the other hand” and “if you look at it another way”</li> <li>▪ Can state the pros and cons of an issue</li> <li>▪ Accepts criticism and suggestions: “You might be right.”, “I hadn’t thought of that.”, “Thank you for your ideas.”</li> </ul>
<b>Originality</b>	Enjoys making and doing things	<ul style="list-style-type: none"> <li>▪ Creates unique products</li> <li>▪ Uses unique approaches</li> <li>▪ Takes risks</li> <li>▪ Is self-directed</li> <li>▪ Is intrinsically motivated</li> <li>▪ Demonstrates creativity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Insightful comments</li> <li>▪ Plays with words, i.e., puns, figurative speech</li> <li>▪ Reflects a sense of humor</li> <li>▪ States unusual ways to solve problems</li> </ul>
<b>Persistence</b>	Keeps on trying, does not give up easily	<ul style="list-style-type: none"> <li>▪ Stays on task</li> <li>▪ Keeps trying – continued attempts</li> <li>▪ Finds alternatives</li> <li>▪ Uses multiple strategies</li> <li>▪ Takes time to think</li> </ul>	<ul style="list-style-type: none"> <li>▪ Asks for help</li> <li>▪ Self corrects</li> <li>▪ Makes affirmations: “I can do this.”, “I’ll try this.”, “Let’s try another way.”</li> </ul>

## **Social Learning**

Children learn a great deal about thinking behaviors and problem-solving strategies from one another in the lab setting. You can facilitate this social learning either during an activity or in a review at the end of a session. Examples of social learning include:

Contributing ideas	Asking questions
Listening	Encouraging
Taking turns	Expressing feelings
Accepting ideas	Relieving tension by joking

### **Ways to nurture social learning:**

- ❖ Encourage children to observe one another and to ask each other questions about how a challenge was solved.
- ❖ Make opportunities for children to think out loud. Ask a student to explain his thought processes while playing an activity.
- ❖ When you see a student making a poor play, let the play continue until it becomes obvious that the play wasn't good. Interrupt and ask that the students about what happened. Rewind the activity and ask the students to play it out differently until the students have a better understanding of implementing a strategy.
- ❖ Praise children for modeling good social learning behaviors.

### **Positive and observable social behaviors: [Note: some of these aren't social behaviors. LS]**

- ❖ Students become active problem-solvers and enjoy participating in the lab.
- ❖ Listening and cooperation are evident.
- ❖ Students become aware of their thinking.
- ❖ Use of the senses is obvious.
- ❖ Impulsivity and off-task behaviors are rare.
- ❖ Visual/spatial strength is apparent.
- ❖ Creativity and ingenuity can be seen in student solutions to problems.

## **Risk Taking**

Create an atmosphere in the Lab that shows students that it is acceptable to make mistakes as long as they can apply what they have learned and make an effort to solve the problem again.

Risk taking also implies a willingness to entertain new ideas, even if they challenge the status quo, and to revise one's thinking to accommodate new information.

### ***Strategies Lab Tip***

Recognize and honor the unique personalities of the students in the Lab. Children will often take unorthodox, but often productive, paths to an answer. Let them find the ways that work for them.

## **Character Education**

The Strategies Lab is one more place in school where students are taught that character matters. Encourage teachers, volunteers, and students to use your school's character education vocabulary. Of course, good sportsmanship is expected, but what does that mean? Colvin Run Elementary ties its character education program to behaviors in the Strategies Lab in the following way:

<b>Honesty</b>	<ul style="list-style-type: none"><li>▪ Play fairly and by the rules.</li></ul>
<b>Respect</b>	<ul style="list-style-type: none"><li>▪ Pay attention to the teacher.</li><li>▪ Give the activity your full attention so your partner and teammates feel respected.</li><li>▪ Provide lots of positive feedback.</li><li>▪ Give others freedom to learn.</li></ul>
<b>Responsibility</b>	<ul style="list-style-type: none"><li>▪ Take ownership of your learning.</li><li>▪ Treat pieces gently.</li><li>▪ Put away pieces in their proper place.</li><li>▪ Push in your chair when you leave the table.</li></ul>
<b>Compassion</b>	<ul style="list-style-type: none"><li>▪ Congratulate other players for a job well done.</li><li>▪ Don't be overly boastful.</li><li>▪ Share your expertise.</li></ul>

### 3 Build Upon Success (Thinking Outside the Box)

Build upon the success of your Strategies Lab. Consider other things you can do to integrate the learning objectives of the Strategies Lab into the culture of your school. Some ideas are:

- ❖ Integrate the lab with the curriculum.
- ❖ Add learning links to your web site.
- ❖ “Think While You Drink” event
- ❖ Host a Family Game Night event.
- ❖ Transition Thinking Behaviors to the home.

#### 3.1 Integrate the Lab with the Curriculum

The chart below, developed by Barbara Ross, shows how the Strategy Lab goals support a third grade curriculum. Classroom teachers can use this analysis to help children make connections between what they do in the lab and how it applies to their other subjects. This same kind of analysis can be done for each grade.

#### 3<sup>rd</sup> Grade Curriculum

Math	Science	Social Studies	English
Recognize and describe patterns and extend patterns	Develop questions to formulate hypotheses	Understand and practice rights and responsibilities	Use effective communication
Analyze a pattern using concrete objects and create a pattern with the same attributes	Make predictions and observations	Carry out rules and realize the consequences for violations	Listen attentively using eye contact
Investigate and describe the concept of probability	Draw conclusions	Use maps, graphs, tables, and graphs	Speak clearly using specific vocabulary to communicate ideas
Develop skills and strategies for problem-solving across the six content strands	Understand the basic ideas of sequence and cycles	Appreciate the culture of other civilizations through games, puzzles, and activities	Use a variety of planning strategies
	Investigate and understand some of the simple machines		Organize information sequentially or around major points
			Ask and answer questions

## Perseverance

'Tis a lesson you should heed,  
Try, try again;  
If at first you don't succeed,  
Try, try again;  
Then your courage should appear,  
For if you will persevere,  
You will conquer, never fear:  
Try, try again.

Once or twice though you should fail,  
Try, try again.  
If you would at last prevail,  
Try; try again;  
If we strive, 'tis no disgrace  
Though we do not win the race;  
What should you do in the case?  
Try; Try again.

Time will bring you your reward,  
Try; try again.  
All that other folks can do,  
Why, with patience, should not you?  
Try; try again.

# Work Quietly



# Stop!

## When you Hear the Timer



# Tidy up Your Area





# Stand Behind Your Chair



# Move to the Next Center

