

THE STRATEGIES LAB

FLEXIBILITY

FLUENCY

CREATIVITY

ORIGINALITY

PERSISTENCE



Program Guide DRAFT

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Photos by Nora Callahan

***** Below are some highlights of my educational philosophy, the philosophy that led to and supports the Strategies Lab Program. This section is my summer project and is by no means complete.**

Strategies Lab Educational Objectives

Strategies Lab activities are for everyone. The hands-on board games, puzzles, and brain teasing activities used in the Strategies Lab not only improve computational, sensory-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

When you have a class of students a rich learning environment needs to be created. Be mindful of the established learning goals. There are a number of educational principles that form 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 the school has its own vocabulary already, use it. Teach it to the children. Choose words to describe these learning processes to 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.

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.

I spent years studying and teaching thinking skills to schoolchildren. From this experience I developed the following model of Thinking Behaviors. The model, which encompass some facets of the Habits of Mind, but is boiled down to four simple behaviors—*fluency, flexibility, originality, and persistence*; briefly outlined in the chart on the following page.

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

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 the students what happened. Rewind the activity and ask the students to play it out differently until they have a better understanding of implementing a better strategy.
- ❖ Praise children for modeling good social learning behaviors.

Positive and observable behaviors:

- ❖ 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 again to solve the problem.

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:

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

Integrate the Lab with the Curriculum

The chart I developed below shows how the Strategy Lab goals support Fairfax County's 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.

3rd 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

- ❖ Stop when you hear the timer.
- ❖ Tidy-up your area.
- ❖ Stand behind your chair.
- ❖ Move to the next center.

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.

3. Rotate Activities

Let's say you have eight different activity centers. During that period, you might rotate students every 10-12 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

Strategies Lab Tip

Establish a progressive pace.
When setting up for a class, select the level appropriate for that class and leave the other levels in the bin. This keeps children from jumping ahead.

4. Record Successes and Struggles in a Class Log

This is a great task for the classroom teacher or a volunteer. Think about how you will use the data and guide teachers and parent helpers in filling out the log to that end.

5. 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.

6. Take Time to Reflect

This is really important. However you choose to make time for reflection is fine. But, don't skip this step!

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.

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.

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

Coaching for Classroom Teachers

When you start up your Lab, coach teachers so they understand their role. Generally, teachers are encouraged to participate in the lab and coach and nurture the students. The Strategies Lab gives students a chance to demonstrate knowledge and skills that aren't always apparent in normal class time. This is valuable for the teacher and student! Specifically teachers should:

- ❖ Assist students in following directions for activities;
- ❖ Clarify directions and answer questions as needed;
- ❖ Look for and act upon teachable moments;
- ❖ Listen and look for examples of student thinking, planning, and strategizing; and
- ❖ Record instances of fluency, flexibility, originality, and persistence in the log.

Inevitably you will encounter a lot of initial enthusiasm for the lab. Many teachers will think about getting copies of the activities for their own class. Discuss with them how duplicating the activities in the classroom will dilute the effectiveness of the activities in the lab. Of course, not all strategy activities need to be in the domain of the lab. Agree on or suggest some complementary activities that can be incorporated into the classroom.

Training for Volunteers, Substitute Teachers & Specialists

A Volunteer training session will have a long-term positive impact. At the session, teach volunteers about the goals of the Strategies Lab and how you expect them to support these goals. For example, encourage volunteers to play a variety of activities. Model how you would like them to interact with the students, the types of behaviors they should be observing, how to take notes in the Class Log, etc.

Stimulating Environment

If you're lucky enough to have dedicated space, enrich 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.

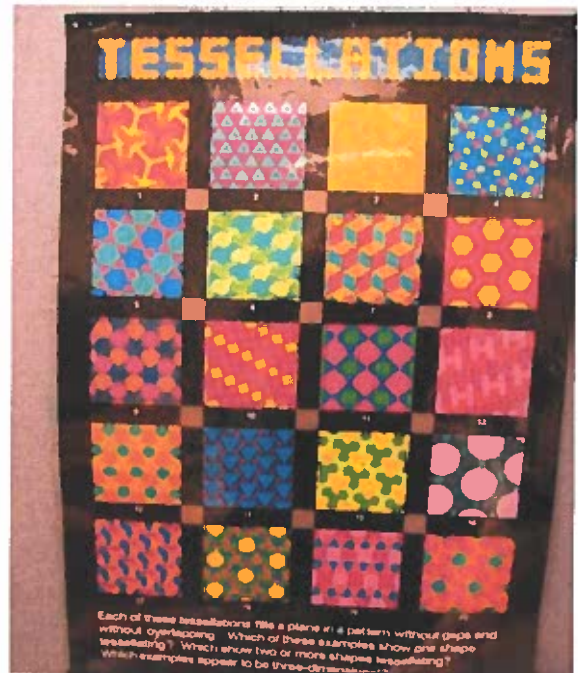
Ordering Activities

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 activities address multiple skill sets and strategies.

- ❖ Social Learning (Individual or Multi-player)
- ❖ Math
- ❖ Reading
- ❖ Creativity
- ❖ Problem Solving
- ❖ Visual Spatial
- ❖ Logic/Reasoning
- ❖ Strategic

Think about the developmental needs of the students at your school and select activities that will address those needs. Consider the following strategies:

- ❖ Deductive Reasoning
- ❖ Following Directions
- ❖ Thinking Ahead
- ❖ Analyzing a Situation
- ❖ Critical Thinking
- ❖ Formulating a Strategy
- ❖ Guessing and Checking
- ❖ Finding a Pattern



Tessellations are colorful checkered or mosaic patterns that are mathematically intriguing and visually stimulating.



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.

Appendix D – Sample Motivational Sayings and Posters

- ❖ “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
- ❖ Be All That You Can Be!
- ❖ Question!
- ❖ “I have not failed, I've just found 10,000 ways that don't work.”
—Thomas Edison
- ❖ Think Different!
- ❖ “The beginning of knowledge is the discovery of something we do not understand.”
--Frank Herbert

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

