Why Johnny Can't Persevere

Using ThinkFun Games to Develop Strategies and a Can-Do Attitude

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Do you know Johnny? He gives up easily when faced with a challenging problem or situation. He goes back to the same comfortable "too easy" books during quiet reading time. He shuts down or at best immediately asks for help when faced with a new type of math problem. If asked to research a topic for social studies, he wants help if the exact topic isn't listed in the table of contents or index of the book.

Last year, we discovered a powerful way to help students like Johnny. Our Strategies Lab, a new resource in our school, showed enormous potential to not only help students develop their strategic thinking but also motivate students to persevere through difficult tasks of any sort. In fact, we soon learned the two went hand-in-hand.

We wanted to tap into the incredible appeal of these games to help our students develop strategies that they could apply across the board, in the content areas and in everyday life - in other words, we wanted them to develop universal strategies.

To accomplish this, we knew we needed more games, what we called "bridge kits"—games that teachers could check out from the lab and take to the classroom to prompt students to continue and extend their strategy development and "talk." We wrote a proposal and won a VAG grant to purchase these kits, and piloted the expanded program in spring 2006 for students in kindergarten through grade 5.

In this article, we'll describe the pilot and the changes we observed in our students' motivation and problem solving.

The Research

Explicit teaching of strategies is nothing new. Several instructional initiatives in the past decade, such as Project Rightstart (Griffin et al., 1992) and communities of learners (Brown and Campione, 1994, 1996) have emphasized teaching strategic thinking. As explained in *How People Learn: Brain, Mind, Experience, and School* (Bransford, Brown, and Cocking 1999), such programs, although diverse in their approach, all aim at "helping students to understand how strategies can help them solve problems, to recognize when each strategy is likely to be most useful, and to transfer strategies to novel situations."

Such initiatives are supported by a large body of research into how children learn and problem solve. We now know that children develop and use a variety of strategies in many learning domains, including reading, scientific reasoning, and spatial reasoning. We also understand that strategic thinking is a crucial and generalizable tool. "The broader the range of strategies that children know and can appreciate where they apply,

the more precisely they can shape their approaches to the demands of particular circumstances." (Bransford, Brown, and Cocking 1999)

Our challenge as teachers is to foster students' ability in and love for strategies and problem solving so that they are empowered to face the challenge of any problem. We sought a strategies approach that would engage all our students, and give those who might be shy or fearful in the regular classroom a different opportunity to apply themselves. Knowing that our students approached the strategies games enthusiastically, we believed that we could capitalize on the games to help students discover and learn to more universally apply a broad range of strategies.

The Process

With the financial support of the VAG grant, and matching grants from Fairfax County Public Schools and ThinkFun, Inc., (the maker of the games we sought to use), we launched our 6-week pilot with 11 of our classrooms, ranging from kindergarten to grade 5. Students like Johnny would have the opportunity to discover, develop, and apply their strategies and strategic thinking.

The first time Johnny went to the lab, he had a blast. He played Rush Hour, Brick by Brick, and Hoppers. These games were hard, but unlike other challenges Johnny had faced, these were also very fun. And he didn't feel pressured. All his classmates were in there trying to figure out the games, too. Johnny also learned what a strategy was. His Strategies Lab (SL) teacher explained that it's something you do to help yourself when you're trying to solve a problem or do something challenging. She reminded the students about the strategies they learned to help them read.

At the end of the session, the SL teacher asked the students what strategies they had used to help them succeed with the games. Johnny had discovered that if he looked at the set-up of his game and studied it a little bit before he started moving the pieces around, it helped him. He and his classmates called that strategy "thinking ahead." His classmates offered "Start over;" "Try to get the cars out of the red car's way;" "Try turning the pieces over to see if they'll fit;" "If one way doesn't work, try another way;" and "Keep trying, no matter how hard it is!" The SL teacher wrote down the strategies for each game on chart paper. This was the beginning of "strategy talk" for Johnny and his class.

Then, Johnny and his classmates played the games in their classroom over the next couple weeks. From time to time, they would discuss any new strategies they had discovered with their teacher.

The second time Johnny's class visited the lab, they learned two new games and started new charts with strategies they discovered for those games. Again, they brought the games back to the classroom to play and continue their strategy talk.

On Johnny's class's third visit, the SL teacher put the charts up for all the strategies they had discovered up to that point. She told his class that they would be looking for

"universal strategies," strategies that could be used all the time—not just for one game, not just for games, but anytime they were faced with a problem or challenging situation. She asked Johnny and his classmates to look for strategies that popped up again and again in the different games. The students discovered that "Think ahead," "Keep trying," "If you get really stuck, start over," "Look for another way," and "Use what you know" showed up a lot.

They then discussed other times they could use these strategies, not just with the games. "When can you use them with reading?" the SL teacher asked. Johnny's class offered several examples: "If you're stuck on a word, you look for another way to figure it out, maybe by looking at the picture." "You think ahead about what's going to happen next in the story." "You start over by re-reading from the beginning of the page or the sentence."

"When can you use these strategies when you're doing a math problem?" the SL teacher asked. Again Johnny's classmates made good connections: "You use what you know and keep trying." "You look for another way to solve it, if what you're doing isn't working." Johnny and his class also talked about how to apply strategies when learning a new skill, like riding a bike. Their favorite one: "No matter what, don't give up!"

The last few weeks, as Johnny and his class played more games, they charted as many universal strategies as they could find. They learned the difference between a universal strategy and a game-specific strategy and the usefulness of both. Toward the end, when they learned a new game, they were able to predict which strategies might be the most helpful for that particular game. Back in their classroom, Johnny and his classmates were showing improvement in their strategy talk and strategy applications across the board.

Our Findings

At the end of the pilot, nearly all the teachers reported progress in the following key areas (listed with selected teacher observations):

Increased perseverance, independence, and motivation

"A majority of students try and solve problems, whereas before, they often gave up if it seemed too hard." "I've noticed that many students seem to have adopted a try, try and try again attitude!"

"Some students who would tend to become frustrated and want to give up or immediately use hints, began to implement many of the strategies we discussed."

Generalization of strategic thinking
"Some of my students talk about things a lot more—whether it is problems with friends or even academically, i.e., in reading, they use different approaches as opposed to just looking at the first letter." "My students have started using

strategies that were talked about in other content areas. They have even referred to them as "strategies" and used the same language."

"Lots of talk about strategies on the SOL tests – many felt empowered by the possession of strategies."

Increased metacognition and verbalization of thinking
"My students have realized that there are many ways to solve problems and to try different methods. They also now know that some (methods) are better than others." "The students are more clear and thorough in communicating their problem-solving since the pilot began."

Conclusion

Now Johnny accepts the "just right" books his teacher gives him and will do the mental work necessary to get through them. In math, Johnny will work at a math problem for several minutes before he asks for help. He's discovering that he can usually figure it out himself. And now when Johnny researches a topic and that topic is not listed in the index, he thinks about how else he can find the information he needs.

The Strategies Lab and bridge kits influenced students' problem solving in just six weeks. Students learned to:
- Discover, analyze, and apply strategies
- Identify universal and game-specific strategies
- Predict which game-specific strategies would be helpful with new games
- Generalize universal strategies to content areas and everyday life problem-solving

As a result, students learned a powerful concept—"I can." They discovered that they could employ strategies to help themselves, regardless of the challenge. When students believe and apply this, they become engaged learners and versatile problem-solvers, not just in school, but in life.

At Annandale Terrace this year, we will be expanding our program to all our classes. We encourage all schools to dedicate the time and resources to develop their own strategies labs and bridge kits. We all know students like Johnny. And with a little help discovering strategies, Johnny CAN persevere.

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Sidebar:
The Strategies Lab Concept and ThinkFun Games

Strategies Lab:
Using games to learn and improve thinking is nothing new, but something about the Strategies Lab concept struck us as a winner when we first learned about it in spring 2006 in a presentation by Barbara Ross, GT Resource Teacher at Colvin Run Elementary School in Fairfax County. In fact, she and her students can be viewed in her lab online at: www.fcps.edu/mediapub/cable-tv/schoolscene/ss_archive.htm

When we learned about Barbara's work, we knew immediately that the concept had great potential for our students. And thanks to our principal, Chris Dickens, we were given the space and resources to put this concept to work for our students.

Why ThinkFun?
ThinkFun games were originally designed for home use, but educators over the years have found them irresistible tools for engaging and challenging students. Who hasn't seen Rush Hour in a GT classroom over the years? At Annandale Terrace, we found that the format of their games—a playing platform accompanied by a deck of cards with a series of problems ranging from beginner to expert—allows all students to be appropriately challenged.

Interested in exploring the possible educational dimension of their games, ThinkFun generously underwrote our pilot. We used their games exclusively for the pilot, and they're generally the ones most favored by our students. However, our Strategies Lab and other schools' labs include a host of games, including those by Gigamic (makers of Quoridor and Katamino), and Educational Insights (makers of Blokus). The key to game selection is that the games be challenging, and also fun—as in, "It takes a minute to learn and a lifetime to master…"

The games we used in our pilot include:
Rush Hour; Rush Hour, Jr.; Sudoku 4x4; Sudoku 5x5; Brick by Brick; Shape by Shape; TipOver; Hoppers; Safari Rush Hour; River Crossing; and many more. To learn more about ThinkFun games, see www.thinkfun.com.

Sidebar:
Annandale Terrace ES and Strategy Instruction

About five years ago, Annandale Terrace teachers Amy Green and Glennon Doyle Melton introduced a strategies approach in response to the rise in high-stakes testing. They demonstrated how the language found in standardized tests ("test talk") could be its own genre. Since we already teach general reading strategies and genre-specific strategies, they explain, students can be taught to approach tests the same way they approach reading any other genre—armed with strategies that can help them understand the material before them. Then Amy and Glennon documented this approach in the book, *Test Talk: Integrating Test Preparation into Reading Workshop* (2007). The Strategies Lab offered a natural extension of how we were already employing strategies learning at Annandale Terrace.

Sidebar:
Exceptionalism Revealed

"Jose really shined when it came to solving the games. He tends to struggle with focusing in the classroom, and yet he was able to look at the games and find solutions quicker than his classmates."

One of the most powerful opportunities the Strategies Lab, bridge kits, and "strategy talk" affords us is the opportunity to watch students approach challenges unlike any others they face throughout their school day. Time and time again, teachers have expressed surprise that students who were having learning or attention issues related to regular classroom tasks were excelling when working with the games.

We plan to develop a record-keeping system to help us track students displaying strengths with the games, or with analyzing the strategies. We are always on the lookout

for twice-exceptional students, and the Strategies Lab will be one more identification tool for us.