

Using Visual Tools to Support Young Learners

**Sheri Marlin
Borton Primary Magnet School
Tucson, Arizona**

Retelling of a story read or heard is a common way for teachers at Borton to assess a child's comprehension of the text. This method reinforces the belief that reading is a process of constructing meaning. It communicates to students the importance of reading for meaning. Further retelling of a lesson or event is a way to assess student learning.

Behavior Over Time Graphs have proven an excellent tool for helping students organize their thinking prior to retelling. When used instructionally, the tool supports learners in mastering the outcomes of properly sequencing events, selecting the most important events and analyzing character motivation and action. Once the graph is constructed students are instructed to tell the story of the line. This visual tool is a great support for all students, but especially those that are learning English. Consistently practicing these skills with primary age children increases their accuracy and the depth of their retelling responses.

When working with literature, story events are used along the x-axis to represent the passage of time in the story. Putting each event on a post it note or small slip of papers allows the events to be rearranged and refined in order to determine the best sequence to properly summarize the story. Constructing the y-axis creates a rich opportunity for vocabulary development. Determining the most salient change and selecting the most specific words to define the continuum provide an opportunity to assess those students who are performing expertly versus students who are approaching the standard in constructing Behavior Over Time

Graphs. Students have great discussions about what events to use, whose perspective they wish their graph to represent and what words will make a continuum of change that best represents the main idea of the story.

Classroom events also tell a story. To help students better understand the concept of change over time some Borton teachers use people coming in and out of the classroom to give students a very tangible picture of how a graph tells a story. This graph shows number of people in the classroom at different times of day. From this students are able to note many significant things. For example, the number of people is greatest at the beginning and end of the day because many parents are participating in the classroom at that time. The teacher is alone in the classroom during outside choices, but some children join her during lunch. These concrete numbers make a great introduction to Behavior Over Time Graphs for kindergarten students.

From this lesson it is a smooth transition to children graphing how they feel about various times of the school day. Using similar events as the people in my classroom graph, students are able to indicate their feelings about school. The book, *My Map Book*, by Sara Fanelli, supports the idea that concepts can be represented graphically as well as linguistically. A second grade class uses graphs of feelings about the school day to attempt to illustrate points of high stress that might impact academic performance during the school day. An equally concrete example of change over time for young children is daily attendance. Teachers not only help students to use the graph as a source of information, but also to begin to extrapolate inferences based on the information in the graph.

As students became more proficient with Behavior Over Time Graphs, teachers began to explore how learners could use the tool in their own writing. A first grade class was studying various versions of the folk tale, “The House that Jack Built.” They looked at verbs in the story and decided whether they showed high, medium or low action. For example, sitting might be considered a low action verb while jumping was a high action verb. A favorite of the adults was that student determined kissing and milking a cow fell somewhere between low and medium action, but getting married, that was high action.

The next step was for students to write their own “House that Jack Built “ story. They then used Behavior Over Time Graphs to conduct the same type of analysis of the verbs in the students’ stories. In so doing student learned several things. They learned the importance of using specific action words in their writing. They also saw the benefits of varying the level of intensity in a story. Finally, these lessons provided a rich opportunity for students to explore the power of word choice or seeking a more specific word to describe what the character is doing.

This progression from retelling to a tool for writing illustrates a powerful point in the learning we have done as a staff employing visual tools. When we take our direction from the students, we are able to see them go farther than we would have imagined planning based on our own prior experience or preconceived ideas of what students can do. Viewing what kindergarten and first grade students could do in evaluating their own work on their own, the teacher hypothesized that second grade students could use this same tool to revise a piece of writing, so she proposed the idea to her second grade colleague.

Stock Flow Diagrams also support students in retelling story information. Some stories such as “The Trolley Ride” have a story line in which characters are going in and out of a specific location. Modeling the characters getting off and on the trolley with actual character cut outs provides a concrete introduction to Stock Flow Diagrams. “We’re Going to the Zoo” serves as the basis for another stock flow experience. The idea of patrons going in and out of a zoo is congruent to a math activity in the Investigations curriculum where students add or subtract 1, 2 or 3 to single digit numbers.

As kindergarteners became more skilled at understanding the ideas of stocks and flows teachers kept pushing them to see what they could do. When analyzing a class experience, making stone soup, kinder students were able to predict a change in the slope of the line as soup was served when children were served their soup in cups and adults were served their soup in bowls. Students also adjusted their graph because they noticed that steam coming off the cooking soup lessened the quantity in the stock pot. The analysis of this activity using the Stock Flow Tool significantly increased students abilities to understand, articulate and think about the soup making experience.

Stock Flow is also a valuable tool for looking at a theme running through multiple texts. For example one group of students read a variety of texts in which the characters exemplified courage to varying degrees. The students then determined what caused a character to feel more or less courageous. Finally, students were able to use their analysis to write about a time in their own life when they behaved courageously.

These stories identify some very concrete ways of introducing Behavior Over Time Graphs and Stock Flow Diagrams to students that could be used or modified to introduce these tools to learners at all stages of K-12 education, but the important idea is that when teachers choose to learn alongside their students and plan instruction based on what students are able to do, students and teachers learn together. When students make their thinking visual, teachers are able to observe and understand what students already know and what reteaching may be required to help clarify ideas. When students make their thinking visual, they can retell their ideas and they can deepen their own thinking. Borton teachers approached the application of Systems Thinking in the classroom by asking questions and in so doing they learned along with their students strategies for clearer, deeper thinking.