



## Sequencing and Executive Functions

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Sequencing refers to students' abilities to put events in order. These events may be familiar, daily routines (making the bed, washing hands, eating breakfast) or unfamiliar (crossing a drawbridge, grilling hamburgers, snowboarding) depending on students' prior knowledge. Sequencing is necessary for:

- understanding and telling stories;
- performing daily activities;
- solving problems;
- reading comprehension;
- succeeding in school and at work.

In order to sequence events correctly, a student has to:

- understand cause and effect;
- make predictions;
- understand time and transition words in stories like *first, next, last*;
- know the elements of a story like *beginning, middle, and end*;
- have adequate reasoning and planning skills.



### Executive Functions

The ability to sequence events relies heavily on our reasoning or executive functions abilities. The term *executive functions* refers to our abilities to solve problems and monitor, plan, and direct future behaviors (Tstatsanis, 2004). These mental processes help link past experiences and prior knowledge to our present actions ("Executive Function," 2009). Executive functions are activated when we begin a novel task or we are faced with a new challenge (Singer & Bashir, 1999). Meltzer (2004) identified the following executive function processes.

- planning
- prioritizing
- memorizing
- organizing
- shifting
- checking

(p. 80)

Sequencing tasks require students to use all of their executive function processes, especially when the task is unfamiliar. For example, some students may not have had the experience of going snowboarding. This event is unfamiliar to them so they have to use their reasoning skills to figure out a logical sequence of the events.

Many times, speech-language pathologists and teachers will give the students sets of cards that are out of order and ask the students to put the cards in order. In order to do this, students have to use their executive functioning systems. They need to *plan* and *prioritize* steps for placing the pictures in the correct order. They have to *organize* the steps so that they relate to each other logically, *shift* attention to the details in each picture, *remember* (memorize) the details of each picture, and *check* the pictures to make sure that they are in the correct order.

## Teaching Sequencing

Sequencing activities benefit students by helping them to remember a process, to learn the names of the steps in a process, know the tools used to complete the process, and to understand and use the specific vocabulary associated with a process (Marr & Morgan, 2005). Sequencing activities that include the manipulation of pictures, words, and sentences help build important literacy skills like reading left to right, comprehending important details, predicting, and identifying the parts of a story. A majority of states have educational standards that address sequencing at basic levels (identifying what happened first, next) and at advanced levels (writing essays, performing experiments; Academic Benchmark, 2010). The federal government's *Common Core Standards* includes standards for describing the details of an event at nearly every grade level (2010).



### Resources

- Academic Benchmarks. (2002). K–12 educational standards. Retrieved from <http://www.academicbenchmarks.com>
- "Executive Function." National Center for Learning Disabilities. (2009, March). Executive function fact sheet. Retrieved from <http://www.ncl.org/ld-basics/ld-aamp-executive-functioning/basic-ef-facts/executive-function-fact-sheet>
- Marr, B., & Morgan, B. (2005). Integrated activities for VET teaching: Section 3, sequencing activities. RMIT University. Retrieved from <http://mams.rmit.edu.au/bpcufknw8tdv.pdf>
- Meltzer, L., & Krishnan, K. (2007). Executive function and learning disabilities. In L. Meltzer (Ed.), Executive function in education: From theory to practice (pp. 77–105). New York, NY: The Guilford Press.
- Singer, B. D., & Bashir, A. S. (1999). What are executive functions and self-regulation and what do they have to with language-learning disorders. *Language, Speech, and Hearing Services in Schools*, 30, 265–273.
- Tsatsanis, K. (2004). Heterogeneity in learning style in Asperger syndrome and high-functioning autism. *Topics in Language Disorders*, 24, 260–270.

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