



Literacy at Hartford Public High School

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Nonlinguistic Representations from Classroom Instruction that Works by Robert Marzano, et al.

The “dual-coding” theory of information storage postulates that knowledge is stored in two forms—a linguistic form and an imagery form. The linguistic mode is semantic in nature. This mode contains actual statements in long-term memory. The imagery mode, in contrast, is expressed as mental pictures or even physical sensations, such as smell, taste, touch, kinesthetic association, and sound. The more we use both systems of representations, the better we are able to think about and recall knowledge. This is particularly relevant to the classroom, because studies have consistently shown that the primary way we present new knowledge is linguistic. We either talk to them about the new content or have them read about the new content.

This means that students are commonly left to their own devices to generate nonlinguistic representations. When teachers help students with this kind of work, however, the effects on achievement are strong. It has been shown that explicitly engaging students in the creation of nonlinguistic representations stimulates and increases activity in the brain.

Two generalizations can guide teachers in the use of nonlinguistic representations in the classroom.

1. **A variety of activities produce nonlinguistic representations.** Producing nonlinguistic representations in the minds of students can be accomplished in many ways. These include the following:
 - Creating graphic representations
 - Making physical models
 - Generating mental pictures
 - Drawing pictures and pictographs
 - Engaging in kinesthetic activities.

2. **Nonlinguistic representations should elaborate on knowledge.** “Elaboration” means “adding to” knowledge. When students elaborate on knowledge, they not only understand it in greater depth, but they can recall it much more easily. The process of generating nonlinguistic representations engages students in elaborative thinking. Asking students to explain and justify their elaborations can enhance the power of the elaboration.

Graphic Organizers

Graphic organizers are, perhaps, the most common way to help students generate nonlinguistic representations. These organizers combine the linguistic mode with the nonlinguistic mode in that they use symbols and arrows to represent relationships. The most frequently used types correspond to six common patterns into which most information can be organized: descriptive patterns, time-sequence patterns, process/cause-effect patterns, episode patterns, generalization/principle patterns, and concept patterns.

Descriptive Patterns

Descriptive patterns can be used to represent facts about specific persons, places, things, and events. The information does not need to be in any particular order.

