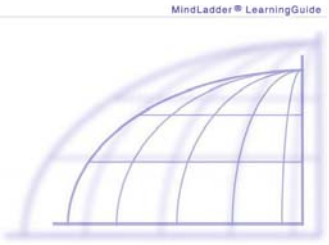

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T-25: Summative Thinking

This knowledge construction function enables students to learn from their experience. Summative thinking is necessary to identify similarities and recurrences and to establish the trends and regularities that may form a basis for the discovery of stable rules and cause-effect relationships. Summative thinking improves students' ability to predict, to forecast and to apply their knowledge efficiently when confronting familiar problems. Summative behavior is associated with the development of rule seeking and conceptual understanding as a cognitive mode of interacting with one's world.

Children who do not have this knowledge construction function at their disposal are prone to view events as unrelated and as individual occurrences in isolation from one another. (See also T-14). If events are perceived as episodic and disconnected from one another then there is no search for a common element or rule that may tie them together. Likewise, there is no systematic examination of the circumstances whereby cause-effect relationships can be discovered.

If rules are not searched for and cause-effect relationships not found, children will not learn in an economical way since they do not learn from their experience. They will repeat over and over ineffectual behavior (see also C-8 and C-9) and show lack of insight even when their behavior is associated with negative emotional consequences. Discouraged, they may increasingly manifest premature closure (R-1) and withdraw from learning opportunities in the classroom. The development of summative thinking is a priority for students who have come to see themselves as passive recipients of information (T-14) and is a prerequisite for students to become self-regulated learners (C-10).

Martin, an eight year old, is absorbed by a balance beam with attachable weights. Through several trials he has detected that some

relationship exists between the length of the balance beam and the attached load. Building on knowledge construction functions such as strategies for inferential thinking (T-16), and using summative thinking, Martin is well on his way to discover, replicate and prove that a stable relationship exists.

To mediate the development of this knowledge construction function guide your students to periodically survey and review their accumulating experiences in order to search for consistencies and similarities. Summative thinking involves first surveying, reviewing and putting things together. It then involves rule seeking to search for what they have in common. It finally involves the search for cause-effect relationships to explain why they happen. Summative thinking involves a search for meaning and conceptual understanding.

A student must be able to make comparisons (T-9) and establish relationships (T-14) before he can use summative thinking, so if you spend time mediating these knowledge construction functions you will be laying the foundation for summative thinking. Throughout the curriculum ask questions that involve summation and review: “How many projects have we done since the school year started?”, “What could you do at the end of each project that you could not do before?”, “How did you feel at the end of each project?”, “How were the projects alike and how were they different?”

Also help students to sum up experiences by asking them to describe events and activities in which they participate. "What did you do today at the aquarium?" To develop cause-effect thinking, ask questions connected to your students’ experiences. "What do you think will happen if we mix the blue food coloring with the yellow? Let's try and see. Ok? What to you think will happen if we do it one more time? And ten more times? – So what can you conclude?" To help establish rule seeking ask questions about generalized principles. "When people are sad they_____?" or "When people are happy they_____?" or “After day comes_____ and after night comes_____?”

Help students take possession of this knowledge construction function first by realizing and then by exercising their ability to use summative thinking at will to search for consistencies, rules, and cause-effect relationships throughout the academic subject areas and throughout their experience. Encourage students to use this function to discover stable connections between antecedents and their consequents. Discuss with your students how they can use summative thinking to develop knowledge which they can use to improve their learning proficiency and problem solving skills.