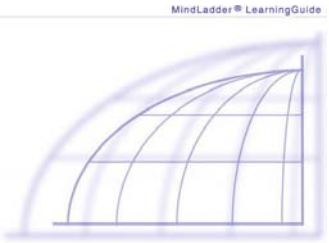

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T-11: Hypothetical Thinking

This knowledge construction function orients students to look for and consider alternative possibilities to explain things. It helps learners to take their reasoning beyond what is and ask questions of what if? - Students use this knowledge construction function to question and vary the conditions and assumptions that surround a problem. Hypothetical thinking paves the way for new ideas that students can pursue to improve their understanding of problems and search for new and better solutions. It is a mental process whereby students take what is and speculate or conjecture about what might be.

The development of this knowledge construction function nourishes a disposition or need to look for and consider alternative possibilities. In the absence of this function it is difficult for learners to reframe the perceived or surmount the known. A student may be able to use if – then reasoning, but only in a restricted sense in that her one explanation is seen as the only one possible. For example, James may think that *if* Mary is crying, *then* she must be in pain. He does not consider that other possibilities may exist, such as she may hungry, tired, sad or afraid. Without this knowledge construction function students tend to rely on a single view of a problem without examining other possibilities that might lead to different conclusions and solutions.

To mediate this function, present your students with ill defined problems and have small groups of students or the whole class brainstorm possibilities and theories to explain them (see also T-21). In an ill-defined problem it is not clear right away what the problem is. Use discussions of ill defined problem to explain the role of this knowledge construction function. Have your students practice hypothetical thinking in response to problems from across the curriculum and the academic subject areas. Connect your curriculum with issues in your community to identify topics for this purpose.

"Why is the bird population dwindling", "Why is food poisoning increasing", "Why do people marry older". Ill defined problems elicit the need for hypothetical thinking. Having groups of students or the whole class brainstorm hypothetical thinking sets a model for students who are having difficulty with this function.

Provide your students with frequent opportunities to think hypothetically by the way you question them in the classroom learning environment. "What do you think would happen if we tried B instead of A?" or "How do you think your project might benefit if you narrowed your focus?" Scientific experiments are well suited for the development of this knowledge construction function. "What do you think would happen if you were to raise the temperature faster?" and "Why do you think this is so?" The development of this knowledge construction function contributes to the development of creativity and imagination. With hypothetical thinking students learn how they can take their minds beyond what is to a realm of inspiration, innovation and enterprise.

Have your students identify and discuss different inventions from the standpoint of hypothetical thinking, creativity and innovation (e.g. the wheel, the harnessing of fire, systematic planting of crops, appliances, computers, internet-based services). Have your students think what they might invent a solution for.