Thinking Dispositions:  
A review of current theories, practices, and issues

by Shari Tishman and Albert Andrade

Introduction

What does it mean to be a good thinker? Traditionally, the answer to this question has been formulated in terms of cognitive ability or skill: Being a good thinker means having certain sorts of critical and creative thinking abilities. Good thinkers certainly have thinking skills. But they also have more: Motivations, attitudes, values and habits of mind all play key roles in good thinking, and in large part it is these elements that determine whether people use their thinking skills when it counts.

In an effort to account for the affective and attitudinal dimension of high-level thinking, many scholars and educators involved in the thinking skills movement have urged attention to what are often called "thinking dispositions." This document aims to outline current trends, issues and theories concerning the dispositional side of thinking.

There are three parts to this document. Part One provides an overview of some recent work around the definition, classification, assessment, and instruction of thinking dispositions. The four sections in Part One are organized according to the following four questions:

1. How are thinking dispositions defined?
2. What kinds of thinking dispositions are there?
3. Can thinking dispositions be assessed?
4. Can thinking dispositions be taught?

Part Two is a brainstorm of issues and questions concerning thinking dispositions that occurred in the Summer of 1994 at the 6th International Conference of Thinking, held at Massachusetts Institute of Technology, in Cambridge, Massachusetts. This section, too, is organized according to the four questions just listed.

Part Three is a bibliography of books, articles and programs that either are directly about, or relevant to, thinking dispositions.

We recognize that, although interest in thinking dispositions has increased in recent years, it is by no means a new concept. Many scholars and educators have been concerned with the dispositional side of thinking over the years, and have given it careful attention in their
work. The theories and practices reviewed here are eclectic, and do not represent all the important historical or current work in the field. Almost certainly, most readers of this document will make connections to work they know about that is not represented in this text. The authors acknowledge and honor these connections, and apologize in advance for any serious omissions.

**Part One: Overview of Recent Work in the Field**

1. **How are Thinking Dispositions Defined?**

   Broadly defined, thinking dispositions are tendencies toward particular patterns of intellectual behavior. In an effort to further identify the nature of these patterns of thinking, several scholars and educators have proposed more precise definitions.

   The concept of dispositions has always been of interest to philosophers. For example, in his classic work, *The Concept of Mind*, the philosopher Gilbert Ryle claims that to possess a dispositional property "is not to be in a particular state, or to undergo a particular change; it is to be bound or liable to be in a particular state, or undergo a particular change, when a particular condition is realized" (Ryle, 1949). So, Ryle explains, glass has a brittle disposition even if it is not broken into pieces at a given moment. And a person can have the disposition to smoke, even if he is not smoking at a particular moment.

   The philosopher of education Robert Ennis, who has been involved in the thinking skills movement since its inception, has long recognized the importance of critical thinking dispositions (Ennis, 1962). Following the philosophical tradition, Ennis defines a thinking disposition as a tendency to do something given certain conditions. Ennis argues, however, that, unlike the brittleness of glass, in order to qualify as a thinking disposition, the disposition must be exercised reflectively. In other words, given the appropriate conditions, dispositions are not automatic (Ennis, 1994).

   Stephen Norris, another philosopher of education concerned with critical thinking dispositions, also defines a thinking disposition as a tendency to think in a certain way under certain circumstances (Norris, 1994). In Norris' view, a thinking disposition is not simply a desire or predilection to thinking critically. He says, "...individuals must either have formed habits to use certain abilities, or overtly think and chose to
use the abilities they possess. A person with an ability to think critically under certain conditions will do it, only if so disposed" (Norris, 1994).

Like Norris, psychologist Gavriel Salomon regards thinking dispositions as not just a "summary label for a cluster in interrelated and relatively stable behaviors" (Salomon, 1994). According to Salomon, dispositions do more than describe behavior; they assume a causal function and have an explanatory status (Salomon, 1994). A disposition is a cluster of preferences, attitudes, and intentions, plus a set of capabilities that allow the preferences to become realized in a particular way (Salomon, 1994). In a similar spirit, Peter and Noreen Facione, authors of the California Critical Thinking Dispositions Inventory, define a thinking disposition as a constellation of attitudes, intellectual virtues, and habits of mind (Facione, Sanchez, Facione 1994).

Most of the above definitions follow the everyday usage of the term disposition, which contrasts with the notion of ability. Thus, as Norris suggests, one can have an ability to do something – for example, the ability to seek balanced reasons in an argument – but not be disposed to do so. Following this everyday usage, one can say that good critical thinkers have critical thinking abilities and critical thinking dispositions. In other words, the critical thinker who seeks balanced reasons in an argument has both the ability and the disposition to do so.

In a departure from this everyday usage, David Perkins, Eileen Jay and Shari Tishman have put forth what they call a "triadic conception of thinking dispositions," which includes the concept of ability. In an effort to explain the basic psychology of thinking dispositions, they propose there are three psychological components which logically must be present in order to spark dispositional behavior. These three elements are: (1) sensitivity - the perception of the appropriateness of a particular behavior; (2) inclination - the felt impetus toward a behavior; and (3) ability - the basic capacity to follow through with the behavior (Perkins, Jay & Tishman, 1993). For example, someone who is genuinely disposed to seek balanced reasons in an argument is (1) sensitive to occasions to do so (for instance while reading a newspaper editorial); (2) feels moved, or inclined, to do so; and (3) has the basic ability to follow through with the behavior, for instance, he or she can actually identify pro and con reasons for both sides of an argument.

2. What Kinds of Thinking Dispositions Are There?

For starters, both positive and negative thinking dispositions contribute to overall thinking performance. For example, on the positive
side, one might be disposed toward fair and open-minded intellectual behavior. On the negative side, one might disposed toward biased and one-sided thinking. Most of the work being done in the field focusses on the productive thinking dispositions - dispositions that contribute to and characterize high-level critical and creative thought.

Many scholars have put forth views about what they see as the key, or most important, high-level thinking dispositions. Some scholars claim there is one overarching thinking disposition, while others have put forth taxonomies that include several high-level thinking dispositions. Probably not all that much hangs on this distinction: the scholars who argue for one overarching thinking disposition readily talk about subdispositions. But the distinction serves as a useful organizer for this section.

One overarching thinking disposition. The view that high-level thinking is characterized by a single overarching thinking dispositions is perhaps most fully worked out by psychologist Ellen Langer. Although she doesn't use the term "thinking dispositions," she advances the view that good thinkers have the tendency towards "mindfulness." According to Langer, mindful thinkers tend to create new categories, or simply "pay attention" to given contexts; they tend to be open to new information; and they tend to cultivate an awareness of more than one perspective (Langer, 1989).

Educational psychologist Gavriel Salomon also recognizes mindfulness as an overarching thinking disposition. However, Salomon offers his own list of key characterological components of mindfulness. These include a positive attitude toward ambiguous and complex situations, a preference for novelty and incongruity, and an intention to seek out such situations, or even shape situations in a way that makes them fit the preference (Salomon, 1994).

The philosopher Richard Paul argues that the "strong sense" critical thinker is characterized by the overarching disposition towards faiemindedness (Paul, 1990). According to Paul, this disposition includes several traits of mind, such as intellectual humility, intellectual courage, intellectual perseverance, intellectual integrity, and confidence in reason.

Although he doesn't use the term "thinking disposition," philosopher of education Harvey Siegel talks about the "critical-spiritedness" required to engage in reason assessment. This tendency, he argues, is composed of objectivity, intellectual honesty, impartiality, a willingness to conform judgement and action to principle, and a commitment to seek and evaluate reasons (Siegel, 1988).

Peter and Noreen Facione speak of an overarching disposition to think critically, and aim to measure it in their California Critical Thinking Dispositions Inventory (Facione & Facione, 1992). An analysis
of their results indicates that this overarching disposition factors into seven subdispositions: openmindedness, inquisitiveness, systematicity, analyticity, truth-seeking, critical thinking self-confidence, and maturity (Facione, Sanchez, Facione, 1994).

Several key thinking dispositions. Another group of scholars have advanced taxonomies of high-level thinking dispositions that include numerous dispositions. For example, Robert Ennis currently recognizes not one, but fourteen separate critical thinking dispositions (Ennis, 1994). According to Ennis, critical thinkers have a tendency to:

- be clear about the intended meaning of what is said, written, or otherwise communicated
- determine & maintain focus on, the conclusion or question
- take the total situation into account
- seek and offer reasons
- try to be well-informed
- look for alternatives
- seek as much precision as the situation requires
- try to be reflectively aware of one’s own basic beliefs
- be open-minded: seriously consider other points of view and be willing to consider changing one’s own position
- withhold judgement when the evidence and reasons are sufficient to do so
- use one’s critical thinking abilities
- be careful
- take into account the feelings and thoughts of other people

Art Costa does not use the term "thinking dispositions, but instead refers to "passions of mind." (Costa, 1991). He identifies 5 key passions that characterize the good thinker:

- efficacy
- flexibility
- craftsmanship
- consciousness
- interdependence

Perkins, Jay, and Tishman advance a view of seven key critical thinking dispositions. Building on their triadic conception of disposition, they argue that each of these seven tendencies involve distinct sensitivities, inclinations, and abilities. The seven dispositions are:

1. The disposition to be broad and adventurous
2. The disposition toward wondering, problem finding, and investigating
3. The disposition to build explanations and understandings
4. The disposition to make plans and be strategic
5. The disposition to be intellectually careful
6. The disposition to seek and evaluate reasons
7. The disposition to be metacognitive

3. Can dispositions be assessed?

The issue of assessment poses one of the greatest challenges to the concept of thinking dispositions. As Robert Ennis has noted, "a fundamental problem in assessing critical thinking dispositions...is that a disposition is something we want students to evidence on their own – without being pushed or prompted to evidence it" (Ennis, 1994). Traditional assessments – particularly multiple choice tests – measure only ability, and tell us nothing about how the learner is disposed to think without external prompts or guidance. Essay tests, such as the Ennis-Weir critical thinking Essay test, do a better job of eliciting students’ thinking dispositions, but they don’t discriminate between the influence of disposition and ability on performance, and they can even fail to fully reveal critical thinking abilities, because of students’ countervailing dispositional influences (Norris, 1994). Ennis argues that the most promising way to assess critical thinking dispositions is through guided open-ended opportunities (Ennis, 1994). These are opportunities for students to pursue any pattern of thinking they want, in response to a specific problem situation.

For example, Stephen Norris is exploring assessments that challenge students with an open-ended yet focused problem situation, such as a search for living creatures on another planet. The problem provides students with some information from which it is possible to derive hypotheses, interpretations, and conclusions, although students are not explicitly directed to do so. According to Norris, an analysis of students’ responses can reveal the critical thinking dispositions they bring to the task.

Another quite different approach to the assessment of thinking dispositions is through self-report of attitudes, opinions, beliefs and values. The most well-known example of this approach is the California Critical Thinking Dispositions Inventory (CCTDI), developed by Peter Facione and Noreen Facione. This is a 75 item survey, to which students respond to each item using a six-point Likert scale ranging from "strongly agree" to "strongly disagree." For example, two items
chosen at random from the inventory are: *We can never really learn the truth about most things*, and *The best argument for an idea is how you feel about it at the moment.* Based on students' responses to these and similar questions, the CCTDI provides a profile of seven critical thinking sub-dispositions: truthseeking, openmindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and maturity. The CCTDI was written to be used at the college-level, but has been adapted with some success to earlier grades. Unlike the assessments proposed by Ennis and Norris, it is a measure of critical thinking disposition only; it does not measure cognitive ability, nor does discriminate between the contributions of ability and disposition to intellectual performance.

A third approach to the assessment of thinking dispositions is currently being developed by David Perkins, Shari Tishman, and Albert Andrade. Based on the Perkins-Tishman-Jay triadic definition of thinking dispositions described earlier, this approach aims to distinguish between cognitive ability, inclination, and sensitivity, and assesses their relative contribution to overall critical thinking performance. The Perkins-Tishman-Andrade assessment instruments consist of a three-task sequence. Each task is designed to isolate one element of the dispositional triad.

In task one, thinking shortcomings are embedded in a story text—shortcomings such as overgeneralization, or a failure to seek alternative options. Students are asked to read the text and identify any problems, puzzles or concerns they have with it. Task one measures sensitivity to thinking occasions. In task two (which typically but not necessarily immediately follows task one), the embedded shortcoming are made salient, and students are invited to respond to them directly. Task two measures inclination, and it is similar to the "guided open-ended opportunity" encouraged by Ennis and Norris. Task three, which typically is administered a few days after tasks one and two, reintroduces students to the shortcomings and explicitly asks students to respond to them in a particular way. For example, if the shortcoming consists of a character in a story failing to seek alternative options in a situation where it is important to do so, task three will explicitly ask students to generate alternative options for the character. In this way, task three "stands in" for sensitivity and inclination, and directly measures cognitive ability.

Early testing of the Perkins-Tishman-Andrade prototype instruments indicates that the three-task sequence can reveal reliable information about students' thinking dispositions. However, the instruments are still under development. With the exception of the Facione California Critical Thinking Dispositions Inventory, there is as yet no widely available instrument to assess thinking dispositions, although, in
different ways, Ennis, Norris, and Perkins-Tishman-Andrade are all working towards this goal.

4. Can thinking dispositions be taught?

The question of whether thinking dispositions can be taught really has two parts. The first part asks about basic human psychology. Is it possible to fundamentally change and improve the way people think? The second part asks about method. If thinking can be changed for the better, which techniques are most effective? The following paragraphs discuss each of these questions in turn.

Can thinking be changed for the better? The concept of thinking dispositions, particularly as put forth by the scholars and educators mentioned in this review, is a kind of conception of intelligence. The basic conception behind dispositions goes something like this. A large part of being intelligent means being able to think well. And people who think well have strong thinking dispositions. Therefore, a large part of being intelligent means having strong thinking dispositions. This doesn't imply that all good thinkers have the same thinking dispositions, or that all good thinkers have equally strong thinking dispositions. As many of the scholars discussed in this review suggest, there are many different thinking dispositions, and therefore many different kinds of strong thinking-dispositional profiles. However, if intelligence is defined at least in part as consisting of strong thinking dispositions, then, to borrow a phrase from David Perkins, the question of whether thinking can be changed for the better really comes down to the question: is intelligence learnable?

Although there is a perennial debate about the degree to which intelligence can be improved, there is no question that some aspects of intelligence are learnable to some extent. Because the concept of thinking dispositions is about high-level patterns of intellectual behavior, to ask the learnable intelligence question means to ask whether it is possible for people to learn to reason better, to be more openminded, to be more reflective, to be more strategic, and so forth (these are thinking-dispositional tendencies that most scholars agree are important).

In Outsmarting IQ: The emerging science of learnable intelligence, David Perkins looks at the research behind various programs for teaching thinking, and presents evidence for the learnability of these sorts of dispositional tendencies. Reviewing the research around such thinking skills programs as Odyssey, Instrumental Enrichment, CoRT, and Philosophy for Children, Perkins concludes that people can learn to
be more intelligent in a number of ways. For example, they can learn to be more reflective, to provide more reasons and explanations, to seek more alternatives, and to be more imaginative. Some research indicates that gains in these areas persist over a number of years, and some research indicates that these gains are reflected in modest gains in IQ scores.

Unfortunately, there is still relatively little long term research on thinking skills programs, so there is much we don't know about the learnability of high-level thinking. But it is worth noting that a commitment to the view that high-level thinking dispositions are learnable is a mainstay of the thinking skills movement. This is because educators concerned with the teaching of thinking are not concerned simply to impart thinking skills so that students do better on tests. The hope is to teach students to transfer and internalize the thinking skills they learn, so that they will be better thinkers on their own, in a variety of contexts inside and outside of school. In short, the hope is to help students develop strong and stable thinking dispositions. While continued research into the learnability of intelligence is sorely needed, Perkins' work suggests that this hope is not ill-founded.

Which instructional methods best teach thinking dispositions? This aspect of the question, too, is difficult to address, because the main emphasis of most thinking skills programs to date is on just that: skills. Very few instructional programs have been designed that explicitly emphasize the dispositional side of thinking. However, it can be argued that thinking skills programs that are successful in the long term – successful in the sense that students transfer and internalize their learned thinking skills so that they become a stable part of their intellectual behavior – do teach thinking dispositions, even if that is not their explicit intent.

Shari Tishman and her colleagues at Harvard Project Zero have suggested a set of criteria for assessing how well an instructional approach might be expected to teach thinking dispositions, even if the focus of the approach is skills-centered (Tishman, Jay & Perkins, 1993; Tishman, Perkins & Jay, 1995). Their view is based on the idea that thinking dispositions are learned through a process of enculturation, rather than direct transmission. Thinking dispositions, they argue, are characterological in nature, and, like many human character traits, they develop in response to immersion in a particular cultural milieu. The cultural milieu that best teaches thinking dispositions is a culture of thinking – an environment that reinforces good thinking in a variety of tacit and explicit ways. An effective program for teaching thinking dispositions, therefore, should create a culture of thinking in the
classroom. Such a culture will have the following four elements: *Models* of good thinking dispositions, *explanations* of the tactics, concepts and rationales of good thinking dispositions, peer *interactions* that involve thinking dispositions, and formal and informal *feedback* around thinking dispositions.

Here is an example. Suppose you want to design or acquire a program to teach reasoning to your eighth graders. If the program is to effectively enculturate strong reasoning dispositions, it should meet the following four criteria.

1. It should provide *models* of good reasoning behavior, for example by providing historical or literary examples of good reasoning, by providing opportunities for the teacher to model reasoning, by structuring experiences in which students model reasoning for themselves, and by helping students identify reasoning behavior (or the lack of it) in everyday situations. The purpose of the *models* criterion is to make sure that students are provided with exemplars of what thinking dispositions look like in practice.

2. The program should also provide direct *explanations* about the purpose, concepts and methods of good reasoning. In other words, students should be told why good reasoning is important, and directly taught some key reasoning concepts and moves. For example, they should be provided with explanations about such concepts as evidence, hypothesis, justification, and theory. And they should also be provided with explanations about methods for seeking evidence, constructing hypotheses, and so on. The purpose of the *explanation* criterion is to ensure that students are directly provided with information about the core concepts and methods of the thinking disposition.

3. A program for teaching reasoning should provide plenty of opportunity for peer *interaction* around reasoning. These are interactions in which students reason together, discuss reasoning with one another, evaluate reasoning together, and so on. The purpose of this criterion is to bring the thinking disposition alive for the student by anchoring it in meaningful interpersonal interactions.

4. Last but certainly not least, the program should provide plenty of opportunities for formal and informal *feedback* around thinking dispositions. Through teacher feedback, peer feedback, and self feedback, students should learn about the strengths and weakness of their reasoning behavior. Feedback is one of the most powerful ways a culture teaches and expresses its values, and the purpose of the *feedback* criterion is to make sure that classroom environment is one in which reasoning behavior
is supported, encouraged, and truly valued in a way that is clear to the student.