Approaches to Teaching Thinking:

Toward a Conceptual Mapping of the Field

by Yoram Harpaz — December 15, 2005

The objective of this article is to suggest a conceptual map of the field of teaching thinking in order to help those who want to understand and implement it to know their way around. According to this map, the field of teaching thinking is divided into three approaches—the skills approach, the dispositions approach, and the understanding approach. Each one defines the key terms of the field—thinking, good thinking, and teaching thinking—differently. After presenting this typology and analyzing its various dimensions, the article tries to cope with two essential questions: Why three approaches, and which approach is most effective? The article concludes that the understanding approach is most effective in the school context and can incorporate the other two approaches.

When examining the educational literature of the past two decades, one is struck by the flood of publications and intensity of interest in the field of teaching thinking. One only has to enter the combination "teaching thinking" into the computer of an updated academic library in order to ascertain this fact. Sternberg and Spear-Swerling rightly remarked that "it would be difficult to read anything at all in contemporary literature of education without becoming aware of this new interest in teaching thinking." (Sternberg & Spear-Swerling, 1996, p. 102).

But what exactly is "teaching thinking"? Do the many theories and programs of teaching thinking speak of the same "thinking," "good thinking," and "teaching thinking"? I claim here that there is actually not one approach to "teaching thinking" but three—three approaches to teaching thinking that compete with each other for control of the field. A conceptual mapping of the approaches to teaching thinking will, I hope, enable further theoretical development of this field and its more effective application in teaching.

THE FORMULA FOR TEACHING THINKING

At the beginning of the 1940s, David Russell, a professor of education at the University of British Columbia, discussed the definition of critical thinking in two articles published in *The School* (1941, 1943). At the end of 1950s, he summarized his position on this issue in the *Encyclopedia of Educational Research* (Russell, 1960). During the period in which Russell attempted to define critical thinking, this concept occupied a marginal place in educational discourse. One generation later it became the focus of the far-reaching and influential educational movement for critical thinking, which is at the center of a broader movement for teaching thinking. Russell is rarely mentioned in the discourses of either movement. The modest journal *The School* in which his articles were published has ceased to appear, and the encyclopedia in which he summarized his position became obsolete. Yet the concise definition he offered for critical thinking is a fertile definition. I shall refer to it here, after minor changes, as the formula of teaching thinking, and attempt to map the field by means of this formula.

What is right thinking or critical thinking? Russell based his definition on the habit of thinking. The development of habits of critical thinking, he wrote, is more important than the transfer of knowledge or facts, as the latter tend to be forgotten while the former tend to persist. In another article he based critical thinking on four components: knowledge of the field or fields in which thinking is being done, attitudes and habits of questioning and suspending judgments, the application of logic and scientific method to the problem situation, and taking action in light of this line of thinking (Russell, 1943, p. 746). In a third attempt to define critical thinking Russell cut short the fourth component and offered a concise definition: "This [critical thinking] seems to involve attitude plus knowledge of facts plus some thinking skills" (Russell, 1960, p. 651).

I would like to construct from this definition the formula for teaching thinking. If we substitute good thinking for critical thinking, disposition for attitude, and understanding for knowledge (substitutions that will be explained below), we arrive at the formula: *Good Thinking = Thinking Skills + Thinking Dispositions + Understanding of Knowledge*. This formula is implied in the writings of various theoreticians of teaching thinking, and it suggests a key to an initial mapping of various theories and programs included in teaching thinking.

THE CRUCIAL QUESTION AND THREE APPROACHES

The approaches to teaching thinking answer the crucial question in this field: What is good thinking and how is it developed? More precisely, what is the foundational element that constitutes good thinking, and how can it be taught? The question is crucial because any theory or program for teaching thinking tries to answer it. In order to expose it, one must perform an "archeology of questions." This archeology of questions is done by asking, "What question does the information at hand come to answer?" When addressing this question to the theories and programs of teaching thinking, we find the residues of the crucial question.

The field of teaching thinking offers three answers, which reflect different approaches to teaching thinking: the skills approach, the dispositions approach, and the understanding approach.

THE FOUNDATIONAL ELEMENTS OF GOOD THINKING AND THE PATTERNS OF TEACHING THEM

THE SKILLS APPROACH

In the historical and ideological beginning there was the skills approach. This approach challenged traditional education, which focused on the transmission of knowledge. Changes in the condition and the picture of knowledge undermined traditional education and paved the way for the skills approach. This approach claimed that in an era in which knowledge doubles itself in short intervals, becomes obsolete, and becomes accessible to all, it is useless to focus on the transmission of knowledge. Moreover, in the era in which knowledge is conceived as relative there is no longer any need to sanctify it and commit future generations to it. Instead of imparting bodies of knowledge, we must impart to our students the skills of good thinking. These claims swept educational discourse, and the educational market (first and foremost in America) was filled with thinking skills of various qualities, including those of critical, creative, and effective thinking.

In the discourse of teaching thinking, the term "thinking skills" is common but still needs to be well defined. The term is used to refer to internal subjective meaning and external objective meaning. In the second connotation, thinking skills embody the various thinking means (strategies, heuristics, and algorithms) that render thinking processes more effective. In the first connotation, a thinking skill is the good use of thinking means, that is, fast and precise use, consuming a minimum of "mental energy." In the literature of teaching thinking, the term "thinking skills" sometimes has an internal connotation, sometimes external, and sometimes both. This creates the sense of ambivalence that often accompanies it. Combining the two connotations, we may say that good thinking is skilled thinking, and skilled thinking is that which implements thinking means in a fast and precise way.

Within the discourse on skills in teaching thinking, a fundamental differentiation is made between basic skills and higher order thinking skills. The former (e.g., classification, grading, and comparison) serve as a basis for the latter (e.g., decision making, problem solving, and concept formation). The former are recommended for teaching in primary grades and the latter in higher grades or in college. Although there is some sense in this differentiation, it is wanting in that simplicity and complexity of skills are mostly in the eye of the beholder. It is possible to make skills simple or complex in accordance with the aims of the person using them. Further, skills are intertwined and difficult to arrange in a linear hierarchy. It is true that a higher skill such as decision making requires mastery of simple skills, but even simple skills require mastery of complex skills (e.g., decision making in order to make a comparison).

We shall suggest another differentiation between neutral skills and normative skills. Neutral skills make the thinking processes we all do (identify, focus, classify, grade, discriminate, compare, select, generalize, summarize, ask, choose, assume, conclude, solve, decide, etc.) more efficient. Normative skills mold thinking processes that people do not naturally tend to carry out. Processes such as breaking conventional thinking patterns, devising problems, exposing basic premises, and discovering biases (mainly in one's own thinking) are unusual processes and more culturally bound. The purpose of normative thinking skills is to create or to mold such thinking.

To answer the second part of the crucial question, how to teach thinking skills, we turn to the pattern of impartation. We must first consider the pattern of instruction in general. Instruction is education through knowledge. As such, it has three basic components: teacher's activities, student's activities, and organization of knowledge. Instruction of course includes much more than that, but these three components are the "atoms" from which instruction is constructed.

The pattern of impartation, the teaching pattern meant to impart thinking skills, is constituted from an ordering of thinking skills meant for teaching (organization of knowledge), a demonstration of activity using the skill meant for teaching (teacher's activity), and practice (student's activity).

The pattern of impartation breaks thinking into a series of steps, corrects each step through an appropriate skill, brings the corrected thinking processes back to the thinking apparatus, and conducts quality control. (Barry Beyer, the most direct and energetic spokesman of the pattern of impartation, has expressed himself in the same spirit. Cf., Beyer, 1987a; Frank Smith attributed this mechanistic way of teaching skills to the logistic model that he believes has taken over American education[Smith, 1998, p. 67]).

The pattern of impartation is aimed at imparting thinking skills and, as such, belongs to the realm of teaching aimed at imparting skills of any kind. Zvi Lamm (1976) refers to this pattern as the pattern of imitation—a pattern based on the students' imitation of the teacher's behavior. Mortimer Adler included the pattern of impartation in his second column of teaching, a column based on coaching, exercises, and supervised practice (Adler, 1982, p. 23). Gary Fenstermacher and Jonas Soltis (1986) have called this pattern of teaching "the executive approach," one based on strict and goal-oriented management of the class by the teacher.

The teaching pattern aimed at the impartation of skills in general and thinking skills in particular is usually vilified in theory, though in practice it is the dominant pattern of teaching. It arouses intense metaphoric action among its critics. Dewey (1933/1998), for example, likened it to a system of pipes for drawing and pumping; while Freire (1970) compared it to "banking." Yet there is no fault with the teaching pattern as such, but with the context within which it is applied. When skills are forced upon students without reference to their own aims and choices, the pattern by which they are imparted harms their development through its overt and covert messages. But when students show an interest in the skills offered to them, this pattern of teaching is the quite efficient for their impartation. Since school children usually have no interest in the skills offered to them, the criticism is justified, especially in reference to the pattern of impartation which aims at educating for critical, creative, and independent thinking.

The pattern of impartation has been undermined not only due to external criticism but primarily due to internal criticism stemming from the discourse of teaching thinking, from the alternative discourse of the dispositions approach.

THE DISPOSITIONS APPROACH

The dispositions approach accepts the criticism directed at traditional education by the skills approach but rejects the reduction of good thinking to particular skills. According to the dispositions approach, the foundational element of good thinking is dispositions and not skills.

The dispositions approach grew out of criticism of the skills approach in two stages. Originally thinking dispositions were conceived of as "energy suppliers" for thinking skills, a link connecting skills and action. Such a link is vital, as people may possess thinking skills but lack motivation or the disposition to implement them. At this stage, thinking dispositions were derived from thinking skills: Each skill was given a matching disposition (cf., Ennis, 1987). At the second independent stage, the dispositions approach demanded a "self-definition," seeing a thinking disposition as a "unit of analysis for cognitive behavior," or an "explanatory construct" of cognitive activity (Perkins & Tishman, 1993b, p. 3). At this stage, thinking dispositions were construed as the main factor constituting good thinking. Thinking dispositions were henceforth derived from a general cultural image of a good thinker and became an end in and of themselves, independent of the skills they were supposed to motivate.

Let us first define the concept of thinking disposition, and then suggest a basic differentiation between types of thinking dispositions. When we discern a pattern of cognitive actions expressed by behavior that is seen or heard, such as oral or written expressions, we say that the person exhibiting this pattern has a disposition to think according to this pattern. For example, when we note that a person is seriously weighing positions different from his own, we say that he has a disposition toward open-mindedness. Open-mindedness is a pattern we identify in his cognitive behaviors (as expressed in his physical behaviors). Why do we say of that person that he has a disposition toward open-mindedness and not that he is open-minded? We do this because the concept of a thinking disposition renders the thinking pattern human, something dependent on the will, choice, or reflection of the person.

We can observe the source of thinking dispositions from two points of view. According to the first, thinking dispositions stem from unconscious sources: primordial impulses, repressed feelings, or other mechanisms shaping the mental world. According to the second, thinking dispositions stem from opinions, positions, values, and decisions that the individual has formed. In fact, dispositions stem from both sources as well as from a network of connections between them; but teaching thinking strives to strengthen the thinking dispositions stemming from conscious choice, a considered preference, and a reasoned attitude. A thinking disposition is therefore a reasoned motivation for a certain thinking pattern, a thinking quality (open-mindedness, depth, and systematic thinking, etc.) imbued with reasoned motivation.

Founders of the field of teaching thinking use various concepts to describe the dispositional dimension of thinking. Dewey, the founding father of the field, wrote of three attitudes: open-mindedness, whole-heartedness, and responsibility (Dewey, 1933/1998, p. 29–33). Costa and Kallick (2000) wrote of 16 habits of mind (persisting, managing impulsivity, listening with understanding and empathy, thinking flexibly, etc.). Sternberg listed 20 personal qualities that qualify "successful intelligence"— self-motivation, control of impulses, knowing when to persevere, translating thought into action, and so forth (Sternberg, 1996, p. 251–259). In Sternberg's books written with Spear-Swerling (1996) and with Grigorenko (2000), the "negatives" of these personal qualities are mentioned—negative thinking dispositions, termed stumbling blocks. Paul listed nine traits of mind or rational passions of the critical thinker—independence of mind, intellectual curiosity, courage, humility, empathy, integrity, perseverance, faith in reason and fair-mindedness (Paul, 1992, p. 151–156). Siegel wrote of the critical attitude or critical spirit of the critical thinker (Siegel, 1988, p. 39–42). Perkins listed seven dispositions—to be clear, broad, deep, sound, curious, strategic, and aware (Perkins, 1995, p. 284–285). Baron also wrote of a disposition which is the foundation of good or rational thinking—"active open-mindedness" (Baron, 1985). Although all of these concepts overlap to a certain extent and are used indiscriminately by the writers, there seem to be marked differences as well. Each concept illuminates a certain aspect of the dispositional dimension of thinking. A *reasoned thinking disposition*—thinking disposition in a strong sense—captures most, if not all of these aspects.

However, we must weaken somewhat the "thinking disposition in the strong sense," at least in its depth and breadth. Thinking dispositions do not affect the whole personality; they are not character or personality traits. Intellectual traits and character traits are interrelated in a complex fashion; they do not necessarily lie along the same continuum. A person may be intellectually bold and yet cowardly in character. Further, thinking dispositions do not affect the whole of thinking. A person may be disposed to deep thinking in his scientific occupation but to superficial thinking in the political realm. Thinking dispositions are context dependent.

Although there are not as many dispositions as there are thinking skills (Sternberg assesses the number of thinking skills at near one thousand [Sternberg, 1987, p. 251]), it is appropriate to propose a basic distinction between two types of dispositions: thinking dispositions and a disposition to think. This is not a clear-cut distinction, for thinking dispositions include or encourage the disposition to think; yet, it has a conceptual and practical justification. Thinking dispositions are a reasoned motivation to think in a specific manner; disposition to think is an inclination to be involved in thinking and to invest in it. Dewey believed this to be the most important trait of "reflective thinking." He mentions at the start of *How We Think* that reflective thinking is "the kind of thinking that consists in turning a subject over in the mind and giving it serious constructive consideration" (Dewey, 1933/1998, p. 3). A disposition to think is an act of devotion to think, of shifting from an orientation toward practical goals to thinking about the goals and about thinking. This is a different quality or level of thinking. This characterization has a very important practical meaning, for school leaves no room for thinking of this type. Only a school that allots time to thinking of this kind and encourages it—that fosters the disposition to think—may be considered a school that enables and teaches thinking. Such a school is an essentially different institution from the conventional one. (Barber mentioned this dialogue: Teacher to pupil: "What are you doing?" Pupil to teacher: "I'm thinking". Teacher to pupil: "Well, stop it and get on with your work." [Barber, 1997, p. 181]).

Let us now turn to the second part of the crucial question: How do we teach thinking dispositions? Thinking dispositions are taught by means of the pattern of cultivation, a pattern intended to foster thinking dispositions or intellectual character molding. The pattern of cultivation is different from that of impartation not only in its composition but in its very essence. The pattern of impartation is a direct teaching pattern; that of cultivation is an indirect teaching pattern. We have defined teaching as "education through knowledge"; knowledge has but a marginal role in the pattern of cultivation. Passmore, in his classic article "On Teaching to be Critical," in which he defines critical thinking as a thinking disposition ("Being critical is indeed more like the sort of thing we call a 'character trait' than it is a skill."), states that lectures about critical thinking will not help much to turn students into critical thinkers, just as lectures on decency will not make them more decent. Dispositions are cultivated indirectly, not by the transmission of knowledge but by a comprehensive culture of thinking that foster in various ways thinking dispositions (Passmore, 1967).

The pattern of cultivation consists of a personal example by the teacher, a cultivating activity for students, and explicit dealing with dispositions. Personal example is different from modeling behavior. Within the framework of the pattern of cultivation, the teacher must embody in his personality and behavior the dispositions toward which he wishes to educate. A cultivating activity is one that fosters the desired dispositions in learners. The pattern of cultivation is largely indifferent to knowledge (it is possible to cultivate thinking dispositions through dealing with any type of knowledge), but not to knowledge of one specific type—thinking dispositions themselves. Dealing explicitly in the latter, in various ways, enhances their cultivation.

The pattern of cultivation aims to cultivate cognitive traits and as such it belongs to the teaching pattern that seeks to cultivate all types of traits or to educate the character. Lamm (1976) called this "the pattern of molding." Fenstermacher and Soltis (1986) referred to this pattern of teaching as the liberationist approach, an approach liberating a person from unwanted traits. This teaching pattern has also been vilified in the last decades as indoctrination. The cultivation approach claims in its defense that although it aims to mold dispositions, these are dispositions to critical, creative, and effective thinking, that is, independent thinking.

THE UNDERSTANDING APPROACH

The understanding approach differs from the dispositions approach in that it does not accept the criticism of the skills approach about traditional education that focuses on the transmission of knowledge. It rejects the dichotomy between teaching knowledge and teaching thinking, between teaching *what* to think and teaching

how to think; it acknowledges an internal connection between knowledge and thinking, between the *what* and the *how*. The quality of our thinking, claims this approach, depends on our knowing the topic or, more precisely, on our understanding of it. The understanding approach is therefore the product of a dialectic development: It preserves the basic intuition of traditional education that knowledge and good thinking are interconnected, but does not see in traditional education conditions for understanding. When knowledge is held in memory only, it is "fragile knowledge," inert, naive, and ritualistic (Perkins, 1992, p. 21–27). Fragile knowledge does not contribute to thinking, and may even harm it. But when knowledge is understood it is a necessary and possibly sufficient prerequisite to good thinking. The understanding approach therefore explicates the conditions under which knowing (keeping in mind details detached from each other and from the knower genuine interests) becomes understanding.

The understanding approach grew out of philosophy and psychology, the two main disciplines feeding the field of teaching thinking. The philosophical argument for the function of (understood) knowledge in good thinking is expressed by John McPeck, who repeatedly states the "obvious and commonsensical" ideas that (a) there is no generalized thinking, only thinking about something; (b) a good thinker on one matter is not necessarily a good thinker on another matter; (c) the quality of thinking depends on knowledge of the thought-about topic and on the discipline to which it belongs; and (d) teaching thinking must focus on teaching for understanding of the theoretical disciplines. In other words, good thinking of any sort—critical, creative or effective—is "parasitic upon the knowledge component" (McPeck, 1994, p. 111). The psychological argument arrives at a similar conclusion, but on the basis of empirical studies. These studies conclude that the main factor of good thinking is knowledge, or rather the understanding of knowledge (cf., Perkins & Salomon, 1989).

The inclusion of understanding among the foundations of good thinking may be surprising. We invest in thinking skills and thinking dispositions in order to arrive at good thinking and good thinking produces understanding; understanding is therefore the product of good thinking, and not vice versa. This is an isolating line of thought, according to which there is knowledge "out there" and there is a mind "in here." The mind creates activity—thinking—that is directed out to knowledge. Thinking acts upon knowledge in order to bring it into the mind. When this is done successfully, it results in understanding. Thinking is therefore a pure activity, knowledge is pure content, and understanding is an outcome of successful thinking activity upon knowledge. A different integrating line of thought serves as the basis for the understanding approach. It claims that thinking and understanding are inseparable (although it is useful to distinguish between them). Thinking is not a pure activity but activity with knowledge; and when this knowledge is understood, thinking activity is more generative (creates better solutions, decisions, and ideas). Understanding, therefore, is not only a product of good thinking but also its source.

Let us define understanding, and propose a basic distinction between two types of understanding essential for good thinking. Three conceptions of understanding appear in the literature of teaching thinking, possibly sharing as a common basis the representations concept of understanding. Possibly, but not necessarily, a "radical" version of the third conception denies the necessity of this common basis.

The literature on teaching thinking speaks of understanding as location, application, or performance. According to the first conception, "to grasp the meaning of a thing, an event, or a situation is to see it in its *relation* to other things: to note how it appears or functions, what consequences follow from it, what causes it, what uses it can be put to" (Dewey, 1933/1998, p. 137). According to the second conception, "an individual understands a concept, skill, theory, or domain of knowledge to the extent that he or she can apply it appropriately in a new situation" (Gardner, 1999, p. 119). A third presentation claims that "understanding is the ability to think and act flexibly with what one knows" (Perkins, 1998, p. 40). Examples of "understanding performances" are explanation, exemplification, and justification (Perkins, 1992, p. 77). We may consider the second conception of understanding as part of the third. In such a case application is the ultimate or privileged performance of understanding.

These three conceptions may have a common basis in the assumption that understanding depends on the presence of appropriate representations in the mind. When a concept/representation is well connected to other concepts/representations it is better understood (understanding as location). The better a concept is located in a system of other concepts, the better its application (understanding as application); and the better a concept is located and applied, the easier it is to perform thinking operations with it (understanding as performance). Yet, "people can have flexible performance capability without any representations at all in any useful sense of representation" (Perkins, 1998, p. 51). That is, a person may carry out thinking processes with knowledge (understanding activity) without having a complete representation map in his head.

Understanding of the thought-about topic is a necessary but insufficient prerequisite for good thinking. Good thinking depends on substantive understanding and reflective understanding. The first is understanding of the substance of thinking relating to its field. It may be predisciplinary, disciplinary, interdisciplinary, or metadisciplinary. As it climbs up the disciplinary ladder, it becomes a higher order understanding. The second is understanding relating to thinking itself or, more exactly, to the fundamentals and conditions that make for good understanding. Perkins' idea about "knowing your way around the realms of thinking" illustrates well the meaning of the term reflective understanding (Perkins, 1995, p. 267–297).

We teach for understanding through the pattern of construction. This pattern endows the fundamentals of teaching with the following content: the organization of knowledge—"big ideas" (or "the main insight," or "enduring understanding"); a special teacher activity—stimulating or undermining; and a special student activity—investigative learning. The organization of knowledge in "big ideas" has an acculturative justification and a cognitive justification. The understanding approach aims at constructing ideas of cultural depth capacity. Gardner expresses this idea well in *The Disciplined Mind* (1999). As for the second justification, to understand means to put in context, in a whole, in a gestalt. Therefore the teacher must concentrate upon or aim at the general (see, for example, Brooks & Brooks, 1993). The explicit role of the teacher in teaching for understanding is to arouse motivation for investigative learning by arousing interest or undermining basic premises and assumptions. Since understanding is constructed and not absorbed, the essential activity of students in classes for understanding is active investigation—asking a question and searching for knowledge to answer it. According to Sizer (1984) "Understanding is more simulated than learned. It grows from questioning oneself or from being questioned by others, such as teachers" (p. 117).

Since understanding is not transferred from mind to mind but must be constructed in the mind of each individual, the pattern of construction, like the pattern of cultivation, is an indirect pattern of teaching. It is difficult to locate this pattern of teaching in the typologies of Lamm or Fenstermacher and Soltis; but it does appear in Adler's typology as the "Maieutic of Socratic questioning and active participation" (Adler, 1982, p. 23). It also appears in Scheffler's (1989) typology, which includes "three philosophical models of teaching": "the impression model," "the insight model," and "the rule model." The second pattern includes all of the components of the pattern of construction.

The pattern of construction is more immune to criticism than the others, because it is very difficult to oppose. It is situated between curriculum-centered education and child-centered education; the understanding approach, therefore, respects cultural contents on the one hand and primary motivation and personal creativity on the other.

ADDITIONAL ASPECTS OF THE APPROACHES TO TEACHING THINKING

We have seen that the field of teaching thinking offers three approaches to the crucial question. To better understand them, let us examine them from four different perspectives: ideological, interpretative, metaphorical, and practical. Such examination will enhance the main argument of this paper, that teaching thinking is not homogeneous as it seemed to its founders and proponents, but a heterogeneous field in which three approaches or "worldviews" about teaching thinking are imbedded.

The Ideological Aspect

Presenting the approaches to teaching thinking as answers to the crucial question misses an important aspect in all of them—the ideological aspect. It would appear from such a presentation that the controversy between the approaches is primarily ontological, focusing on what constitutes good thinking. This presentation of the approaches is indeed partial and will be distorted unless we add to it the ideological dimension.

Lamm (in press) shows that educational theories have a structure similar to that of an ideology rather than a scientific theory. An ideology is constituted of a utopia, an image of the ideal world; a diagnosis, a description of the actual world; a strategy, the means to turn the actual world into an ideal world; and a collective, the target population at which the ideology is aimed and which is expected to adopt and realize it. In the ideological structure these four parts do not appear separately but are welded together, and this causes their distortion. Thus, the diagnosis of an ideology is strongly biased by its utopia, the strategy of an ideology turns into a dogma, and its essence as the adjustment of means to an aim is distorted.

Educational theories have a structure similar to that of an ideology. Their utopian component is expressed in the image of "the educated person"; their diagnostic component in theories on the nature of the child (good or bad from birth), the nature of society, the nature of knowledge, and so forth. The strategic component in didactic measures; and the collective component is expressed in expecting society, parents, teachers, and students to cause a change in education. When we wish to understand the nature of an educational theory, we must ask what utopian image of an educated person directs it.

Teaching thinking is directed by an explicit image of the educated person as a good thinker. As there is not one teaching of thinking but three, we must ask what content each teaching ascribes to the image of the good thinker.

The skills approach is directed by a utopian image of the good thinker as the efficient thinker. The efficiency of the good thinker in the skills approach has internal and external dimensions. According to the first, the good thinker conducts cognitive activities efficiently: makes decisions, solves problems, makes generalizations, comparisons, grading, and so forth, with maximum speed and precision. According to the second dimension, efficient thinking aids the good thinker in reaching his practical goals—the efficient thinker is also the practical thinker. The principle of efficiency affects the conception of the main modes of thinking that teaching thinking aims to promote—critical thinking and creative thinking—both of which are not necessarily efficient: Their aim is not to reach practical goals. When critical thinking and creative thinking undergo reduction to skills, the principle of efficiency implicit in the term *skill* takes over. See for example Michael Scriven and Diane Halpern's definition of "critical thinking" as efficient thinking helping to achieve practical goals (Scriven, 1993, p. 34; Halpern, 1996, p. 5).

The dispositions approach is directed by a utopian image of the good thinker as the wise thinker. The wise thinker is assessed by his habits of mind, attitudes or dispositions, not by cognitive abilities (recognizable through psychometric tests). He is motivated by intellectual properties of intrinsic or internal value not necessarily connected to the efficiency of thinking activity or to achieving practical goals. The thinking dispositions of the wise person contain values appreciated by the surrounding culture. Contemporary western culture, for example, cherishes values such as creativity, criticism, open-mindedness, empathy, awareness, depth, and systematic thinking. Thinking dispositions, unlike thinking skills, are not neutral means for achieving something of value; they are valuable in themselves. They may stand in contrast to certain goals desired by a person, which the practical thinker knows how to achieve.

The understanding approach is directed by a utopian image of the good thinker as the learned thinker, versed in the topics about which and through which he thinks and in those that are valuable for the given culture. The learned thinker is therefore a product of two trends, cognitive and cultural. According to the first, understanding is a cognitive prerequisite to good thinking; according to the second, some topics are worth understanding from the cultural point of view. These two trends are interconnected, as a good thinker does not think in a vacuum; he is a good thinker in a given culture.

The approaches to teaching thinking therefore have an inevitable ideological bias toward a certain concept of good thinker, part of a general concept of a good person and life. The controversy between these approaches to teaching thinking is therefore not only ontological but also, or perhaps even primarily, ideological. People choose an approach for its ideological vista. Ideological decisions in education are not irrelevant to the whole thing—they *are* the whole thing.

The Interpretative Aspect

The approaches to teaching thinking are interpretative wholes through which the main issues of teaching thinking are viewed; the approaches interpret according to their own logic central issues in teaching thinking. Let us demonstrate this idea through four central topics in the teaching thinking discourse: thinking shortfalls, metacognition, intelligence, and foundational elements of good thinking.

Thinking shortfalls. The recognition that people do not think as well as they could is a basic starting point for the field of teaching thinking. Each approach to teaching thinking shares this premise, but characterizes thinking shortfalls according to its own perspective.

When good thinking is assumed to be based on thinking skills, faulty thinking is considered a lack of thinking skills or their flawed application. Thinking shortfalls are perceived by the skills approach as faults.

When good thinking is thought to be based on dispositions, thinking shortfalls are viewed as based on character flaws or on a weak ego. Thinking shortfalls are viewed by the dispositions approach as weaknesses.

When good thinking is claimed to be based on understanding the thought-about topic, thinking shortfalls are assumed to result from a lack of such understanding; they are viewed by the understanding approach as misunderstandings.

Metacognition. Teaching thinking owes its existence to a special trait of human cognition, the ability to reflect upon thinking and to manage it. Metacognition not only constructs the field of teaching, but is also considered by the approaches to teaching thinking as a critical skill/disposition/understanding for good thinking, and teachable and learnable through impartation/cultivation/construction.

The skills approach bases metacognition upon a series of skills. Mastering these skills ensures an efficient implementation of thinking about thinking in order to manage it. Since metacognition is done by everyone at one time or another (and always and necessarily accompanies every act of cognition whether reflectively or pre-reflectively, according to Sartre [1943]), metacognition is "a neutral skill."

The dispositions approach includes metacognition in its list of dispositions. A disposition toward metacognition is a central element in the intellectual character of a good thinker. Everyone possesses the ability for metacognition, but not everyone has the disposition to implement it.

The understanding approach reasons that metacognition is possible, or at least generative, when it is equipped with a new understanding through which former understandings are seen, corrected, and improved. Metacognition, like cognition, cannot be an empty activity; it is always and necessarily bound with certain content and is valuable only when this content is understood.

Intelligence. If "intelligence is the stuff of thought" (Halpern, 1996, p. 21), what is this "stuff" made of? Every approach to teaching thinking believes that its foundational element is the crucial element of human intelligence. Skills and understanding may be translated to abilities that are tested in the traditional IQ tests. Abilities are also the essence of intelligence according to new conceptions of multiple intelligences. The traditional and the new conceptions do not base intelligence on thinking dispositions. The dispositions approach therefore aims to revolutionize the conception of intelligence and base it on intellectual dispositions. Such a shift in the conception of intelligence, claim Perkins (1995), Costa & Kallick (2000), Tishman (2000), and Ritchhart (2002), will have a far-reaching impact on teaching thinking and on teaching as a whole.

Mutual reduction. The approaches to teaching thinking interpret differently not only the central issues in the field but also the essence of the rival approaches. Each approach strives to reduce the others to its own concepts and products. We may talk about conceptual reduction and product reduction. In the first, each approach tries to demonstrate that the central concepts of the rival approaches are actually contained in its own central concept. The second reduction tries to prove that the product of one approach actually includes the products of the rival approaches. If, for example, we impart to students the skill of making a comparison, we will be cultivating the disposition to make comparisons or constructing an understanding of the contents compared. Since the mind is a whole, skills, dispositions, and understanding are subject to a partial overlap. This overlap tempts us to reduce; yet the very existence of three separate approaches proves that reduction has not been successful.

The Metaphorical Aspect

"Metaphor is for most people a device of the poetic imagination and the rhetorical flourish—a matter of extraordinary rather than ordinary language," wrote George Lakoff and Mark Johnson; but "the way we think, what we experience, and what we do every day is very much a matter of metaphor" (Lakoff & Johnson, 1980, p. 3). Thus, for example, thinking is done through four fundamental metaphors: thinking as moving (wandering, reaching a conclusion, arriving at a point); thinking as perceiving (seeing or shedding light); thinking as object manipulation (playing with an idea, turning over an idea, exchanging ideas); thinking as eating (swallowing an idea, digesting, chewing) (Lakoff & Johnson, 1999, pp. 235–244).

Sternberg (1990) claimed in *Metaphors of the Mind* that in order to understand theories and the questions they pose, we must look for the principal metaphors directing them. He distinguished between different conceptions of intelligence by the principal constituting metaphor of each. Let us follow Sternberg and try to discover the principal metaphors constituting the approaches to teaching thinking.

The main metaphor of the skills approach is the toolbox, in which the mind is conceived as a kit of strategies, tactics, heuristics, methods, routines, and so forth. Skilled thinking is achieved by the proper use of thinking tools. This metaphor often appears in the writings of theoreticians of teaching thinking, even those who don't strictly hold to the skills approach. Thus, Treffinger and colleagues wrote about the strategy of creative problem solving as a "tool kit" (Treffinger, Isaksen & Dorval, 1994); Lipman, the father of Philosophy for Children, wrote, "The basic reasoning equipment possessed by adults is rather like a kit of tools" (Lipman, 1991, p. 28). The key to "higher order thinking," he wrote, "is not using the thinking skills-tools separately, but coordinating or orchestrating them" (Lipman, 1991, p. 35). De Bono wrote that his favorite analogy of a good thinker is to a carpenter (De Bono, 1992); Perkins compared the "mindware"—the "software" of the mind, the "stuff" that makes good thinking—to kitchenware, the tools of a well-equipped kitchen (Perkins, 1995, p. 13). Stephen Reid related to thinking itself as a tool to which a good manual—his book—must be attached (Reid, 2002, p. x). *(Another metaphor behind the skills approach is thinking as a knowledge processor and the mind as a computer. Frank Smith called it "an ugly metaphor" [Smith, 1990, p. 12], and Neil Postman—"a metaphor gone mad" [Postman, 1992, p. 112]).*

The main metaphor of the dispositions approach is that of deep currents, invisible and with a definite direction, sweeping our intellectual behaviors. This metaphor is not explicit, but this does not detract from its strength; on the contrary, invisible metaphors are more powerful than plain or explicit ones, as they cannot be criticized or restrained. The whole principle of the dispositions approach attests to the existence of this metaphor. According to it, thinking as a cognitive activity is a surface phenomenon beneath which stirs a more basic existence—dispositions, habits, and attitudes. An effective teaching of thinking acts upon these deep currents and not the thinking actions themselves.

The central metaphor of the understanding approach is a net. To understand something is to locate it in a web of concepts on the thought-about topic. The more closely woven the net, the more flexible the thinking will be. Good thinking is the ability to play with ideas and manipulate them in the net in which they are bound. This ability depends on the amount and depth of interrelations that one establishes between concepts on the density of the net. Robert Fisher wrote, "In teaching children to think we are aiming for children to make as many connections between concepts as possible, to perceive relationships, to build structures of understanding and thereby to provide them with more opportunities to pattern future experience" (Fisher, 1990, p. 85). Marzano et al. wrote: "A useful metaphor for the comprehension process is that of weaving a tapestry - taking what we already know abut the topic and integrating it with new information presented in the text in order to create a new 'picture' of the topic" (Marzano et al., 1988, p. 42). Salomon and Perkins wrote about understanding as a "network of bites and pieces of information" (Salomon & Perkins, 1996, p. 117).

The Practical Aspect

Theoreticians of teaching thinking are motivated by a vision of a school concentrating totally on developing thinking: "The school as home for the mind" (Costa, 1991). They conceive of school as an empty space into which one can introduce educational aims, curricula, and teaching methods. A school is not, however, an empty space, but one teeming with concept-laden patterns of action. Seymoure Sarason (1982) called these patterns "regularities." The most central pattern of school, deriving from its structure and not from a pedagogical logic, is the pattern of teaching. When other concept-laden patterns of action try to infiltrate the school, those constituting the school take them over and assimilate them. This mechanism explains the school's great stability, its being a robust institution that has survived "a century of reforms" (Ravitch, 2000).

Let us consider what might happen to the approaches to teaching thinking and their patterns of teaching when they are brought into a school. Any approach to teaching thinking will be subject to a "standard deviation" from its logic. Every approach may also be subject to a typical "standard deviation" caused by the meeting between its own core and the core of the school's pattern of teaching.

When the skills approach with its pattern of impartation is introduced it will be deviated from its proper course. Let us call the typical "standard deviation" of the skills approach, and its pattern of impartation, taming. Under the pressure of the school structure and the pattern of teaching prevalent in it, the pattern of impartation will become a pattern of teaching that will impart to the students thinking skills through blatant behavioristic means—reinforcements for desirable behaviors and sanctions for undesirable behavior. "Thinking lessons" imparting thinking skills will be forced upon the students, like all other lessons. The students will exercise the material, be tested on it, and will not transfer it to new areas of knowledge or to their own experience.

When the dispositions approach with its pattern of cultivation attempts to infiltrate school and change its pattern of teaching, it too will be deviated from its proper course. Let us call the typical "standard deviation" of the dispositions approach, and its pattern of cultivation, preaching. Under the pressure of the school structure and its pattern of teaching, the pattern of cultivation will attempt to curtail the lengthy and complex process of cultivating dispositions by means of intensive preaching aimed to structure dispositions "from below"—without explicit and critical discussion of them. The school's prevalent patterns of action and teaching cannot cultivate thinking dispositions such as the disposition to deep, open-minded, and creative thinking. When asked to adopt this aim, schools can only preach or try to shape dispositions through conventional punishments and rewards. The cultivation of thinking dispositions requires other patterns of action and teaching, contradictory to those prevalent in school education.

The understanding approach with its pattern of construction will also be deviated from its proper course if it attempts to infiltrate school and change its patterns of actions and teaching. We can call the typical "standard deviation" of the understanding approach and its pattern of construction lecturing. Under the pressure of the school structure and its prevalent pattern of teaching, the pattern of construction will attempt to curtail processes: Instead of trying to construct understanding of concepts and ideas—a lengthy personal process not given to complete management from the outside—this pattern will lecture or impart them based on the assumption that hearing is equal to understanding. The school's patterns of action and teaching—the need to "cover material," the examinations testing for the ability to recycle fragmented information, frontal teaching, and so forth—are not structured toward teaching for understanding. If they adopt this goal, they must distort it.

We can conclude that the vision stimulating theoreticians and advocates of teaching thinking of "the school as a home for the mind"—an educational institute which is a successful infusion of the prevalent teaching and teaching thinking—is impractical. It is impossible to deal with teaching thinking, through any approach, in "a place called school." Lipman wrote that a cynical commentator might say that "people send their children to school to learn in order to keep them from thinking" (Lipman, 1991, p. 1). Perhaps people have a better intention but the result is the same.

School as the place that develops thinking must be essentially and structurally different from the prevalent school. Such a school is still awaiting its developers.

Interim Summary: The Approaches to Teaching Thinking as Metatheories or Metaprograms

We summarize the road we have traveled so far in the following table:

Characteristics of the Approaches	The Skills Approach	The Dispositions Approach	The Understanding Approach
The foundational element of good thinking	Skills: Thinking tools used efficiently—quickly and precisely—in given circumstances.	Dispositions: Motivation for good thinking formed by reasonable choices.	Understanding: The ability to locate a concept in a context of other concepts, to implement concepts in new contexts, and to perform thinking processes with knowledge.
Types of foundational elements	Neutral skills; Normative skills	Thinking dispositions; Disposition to think	Substantive understanding; Reflective understanding
Patterns of teaching	Impartation	Cultivation	Construction
Ideologies: "the good thinker"	Efficient thinker	Wise thinker	Learned thinker
Typical thinking shortfalls	Faults	Weaknesses	Misunderstandings
Metacognition	Skill	Disposition	Understanding
Intelligence is comprised of:	Skills	Dispositions	Understandings
Attempt at reductionism	Disposition and understanding are included in skill	Skill and understanding are included in disposition	Skill and disposition are included in understanding
Metaphors for thinking	Toolbox	Deep currents	Net
"Standard deviation"	Taming	Preaching	Lecturing
Theories, programs, ideas—examples	De Bono—CoRT Ennis—Taxonomy of critical chinking Beyer—Direct teaching of thinking Perkins—Thinking frames Perkins & Swartz— Graphic organizers Swartz & Parks— Infusion Sternberg— Intelligence implied Treffinger, Isaksen & Dorval—Creative problem solving Johnson & Blair—Informal logic Chaffee—Thinking critically Whimbey & Lochhead— Problem solving Feuerstein— Instrumental Enrichment Lipman—Philosophy for children	Perkins—Dispositions theory of thinking Tishman—Thinking dispositions Costa—Habits of mind Baron—Theory of rationality Langer— Mindfulness Barrel— Thoughtfulness Facione—Critical thinking dispositions Passmore—Critical thinking as a character trait Siegel—The spirit of the critical thinker Sternberg— Successful intelligence Golman—Emotional Intelligence Lipman—Philosophy for children	Perkins— Understanding performances Gardner— Understanding in the disciplines Wiske—Teaching for understanding Wiggins & McTighe —Understanding by design Paul—Critical thinking in the strong sense McPeck—The reflective critical thinker Brown—Community of learners Smith—Understanding as good thinking Brooks & Brooks— Constructivist instruction Lipman—Philosophy for children Harpaz—Community of thinking

Theories and programs of teaching thinking do not fall neatly into the different approaches; many fit simultaneously into two or three. But even in these eclectic theories and programs one dominant approach is usually reflected, indicating that these approaches are ideal types that are not fully realized in a given theory or program or in the practice of teaching thinking.

We may think of the approaches to teaching thinking not only as "ideal types" of teaching thinking but also as metatheories or metaprograms. The individual theories and programs may be classified into three metatheories/programs: the skills approach, the dispositions approach, and the understanding approach. All theories/programs claiming that skills are the foundation of good thinking belong to the skills approach; all those claiming that dispositions are the foundation of good thinking belong to the dispositions approach, and all those claiming that understanding is the foundation of good thinking belong to the understanding approach. The fact that theories/programs belong to the same approach (metatheory/program) does not exclude a conflict between them. They may side with skills or dispositions or understandings of various sorts (e.g., De Bono [1992] strongly criticizes theories and programs of logical-critical thinking. According to our classification, both his theory and program and that of logical-critical thinking belong to the same approach or metatheory/program—the skills approach). The conflict in the realm of teaching thinking thus exists on two levels: between the approaches or the metatheories/programs and between theories/programs included in the same approach or metatheory/program (emphasizing the common misconception that teaching thinking is a uniform field speaking in a single voice).

TWO ESSENTIAL QUESTIONS: WHAT TO BELIEVE AND WHAT TO DO

Toward the end of this conceptual mapping of teaching thinking, we remain with two essential questions: what to believe and what to do.

Why three approaches and not two or five, for that matter? What is the justification for the "metatheory" developed here—that it is possible to classify all theories of teaching thinking into three metatheories of teaching thinking?

Finally assuming that there are indeed three approaches to teaching thinking, is it possible, or desirable, to combine them or must we choose only one?

WHAT TO BELIEVE?

There are hermeneutical and ontological justifications for the division into three approaches. My interpretation of texts on teaching thinking reveals three approaches. There is nothing sanctified about this triad; readers are welcome to find or devise other approaches consisting of foundational elements of good thinking + patterns of teaching thinking.
We may indeed find in the literature of teaching thinking other approaches to teaching thinking unnoticed by the present discussion. In order to anchor the discussion upon sounder foundations, we must find an extratextual interpretation to the textual presence of the three approaches to teaching thinking in the existence of thinking itself—in its ontology. Such a process may provide a more enduring reason for the three approaches to teaching thinking that appear in the texts on the subject.

This justification for the existence of three approaches proceeds from teaching thinking to a cognitive theory about the components of thinking. Is it possible to extract from the approaches to teaching thinking a theory about the structure of thinking? Or more precisely, which component of thinking does each foundational

element of good thinking aim to develop? The skills approach aims to develop the processes of thinking; the dispositions approach aims to develop the qualities of thinking, and the understanding approach aims to develop the contents of thinking (or the way they are kept in the mind). Three elements of good thinking against three components of thinking make for thinking skills ? processes of thinking, thinking dispositions ? qualities of thinking, understanding ? contents of thinking (or their state in mind of the thinker).

From the approaches to teaching thinking, we may arrive at the ontology according to which thinking is made of processes, qualities, and contents. Each thinking activity necessarily involves these three components. Each contains processes such as classification, grading, discrimination, comparison, conclusion, decision; each has a certain quality: thinking may be deep or shallow, broad or narrow, systematic or haphazard, open or closed, critical or dogmatic; and each has a certain content (in philosophical parlance, thinking is intentional). Each thinking activity has an object of its thinking. A thought-about object is a concept; and a concept may be present in the mind in various states.

Teaching thinking aims to improve thinking. It must therefore relate normative elements of good thinking to the ontological components of thinking. The normative elements of the approaches to teaching thinking lead us to the ontological texture of thinking. The three approaches fit the three components of thinking. Good thinking is composed of skills, dispositions, and understandings, because thinking is composed of processes, qualities, and contents. Teaching thinking with its three approaches provides thinking with its three components, with a portion of skills + dispositions + understanding (SDU). How exactly does the provision of thinking with SDU take place? Is it possible to teach simultaneously according to the three patterns of teaching of the approaches to teaching thinking?

WHAT TO DO?

Assuming the existence of three approaches to teaching thinking, how should we teach good thinking? Given that a combination of the approaches is desirable (a good thinker is one who possesses skills, dispositions, and understanding), we must strive for that combination. Yet a simple combination of the approaches to teaching thinking is impossible, or at least undesirable, both from a practical and an essential point of view.

Practically (and logically), combining the three is not possible because a teacher cannot teach simultaneously according to the three patterns of teaching thinking. Further, an average teacher cannot teach according to more than one program of teaching thinking.

Combining the approaches to teaching thinking is also undesirable from an essential point of view. As stated, the approaches are ideologies directed by different images of the good thinker. These images are not only declarations of the approaches, but mainly messages implicit in their patterns of teaching. The teaching systems of the approaches relay different images of the good thinker, even of the good life. When teaching patterns convey different messages, they neutralize each other, their educational effect is cancelled, and a hopeless confusion reigns in the students' minds.

We are, therefore, caught in a frustrating dilemma. On the one hand, a good thinker needs thinking skills, thinking dispositions, and understanding; on the other hand, it is impossible to teach in the three patterns of teaching thinking. We may extract ourselves form this situation by using the strategy of auspices.

According to the strategy of auspices, teaching thinking must adopt one of the three approaches, and develop under its auspices the other two elements of good thinking. We are therefore forced to prefer one approach. Which approach should be preferred over the others? Which approach should we adopt in order to teach through it the three elements of good thinking? We should adopt the understanding approach. Many reasons—logical,

theoretical, ideological, and pedagogic—may be advanced for this choice.

The logical reason. Educational questions must be asked in an actual context. To the question what is good thinking and how to educate for it, we must add another question: What is the target population, and what is the context? Our chief target population is students in school; not in the usual school, in the context of which the teaching patterns of the approaches are liable to typical "standard deviations," including the pattern of construction, but still a school that is based on teaching—that is, education through knowledge. In this context the argument is that the school deals with teaching, and that is necessarily the teaching of knowledge; the teaching of knowledge without understanding is a corruption of thinking; therefore, teaching thinking has no choice but to teach for understanding.

The theoretical reason. An increasing number of studies show the extent to which prior knowledge—understanding—is crucial for good thinking (cf., Perkins, 1995). Understanding the thought-about topic is a more effective thinking tool than general thinking tools such as tactics, strategies, heuristics, and routines. Good thinking may result from understanding the topic even without thinking skills and dispositions, but not vice versa. It is reasonable, for example, to impart to a person thinking tools for making a comparison; but even their full mastery will not help her compare historic eras, works of art, or scientific theories she does not understand. On the other hand, when she understands she will be able to make a good comparison between them even without being an expert in the general skill of making comparisons. Naturally, understanding does not ensure good thinking; but it is a prerequisite for it and is almost sufficient.

The ideological reason. In his book, *Teaching is a Conserving Activity,* Neil Postman (1979) proposed a "thermostatic model" as an apparatus for directing educational preferences. According to this model the role of education is to heat cultural trends that have overcooled and to cool negative cultural trends that have overheated. In the present sociocultural situation, culture itself (in the normative sense of the word) seems to have overcooled. Present-day education devotes itself to a utilitarian philosophy. Utilitarianism in the practical and most direct sense is the main narrative directing teaching and certainly learning (Postman, 1996). Students study natural and human sciences not because they find them meaningful or because these may help them understand the world and themselves, but because success in these studies will help them gain a diploma. Thus, the most wondrous cultural achievements serve a purpose irrelevant to them and, moreover, stand in contrast to the ethical and intellectual values embodied in them. In these circumstances, the educational thermostat must heat a more cultural educational approach, one that tries to draw the learners nearer to the understanding of great ideas, not because these ideas may help them but for their intrinsic value.

The pedagogical reason. The understanding approach may be the spearhead of a new educational model—the third model. "The educational pendulum swings, inevitably though not regularly, between conventional, didactic instruction and child-centered education," wrote Bereiter and Scardamalia. "There ought to be a third alternative, but what could it be?" (Bereiter & Scardamalia, 1993, p. 199). The authors recommend a "knowledge-building community" as a third model of teaching. Barbara Rogoff and her colleagues (Rogoff, Matusov, & White, 1996) also recommend a new model of teaching that is not "adult-run," meaning curriculum-centered education, and not a "children-run" model, or child-centered education. They recommend a model based on the "transformation of participation" of children and adults in the process of teaching and learning. This model is similar in principle to the third model of Bereiter and Scardamalia.

Our own pedagogical sense deems the understanding approach as the best candidate to lead the third model of education, as this category has an external, or cultural pole, and an internal, or psychological pole. According to the first, understanding is connected with cultural content that is understood and worth understanding; according to the second, understanding is tied to an independently regulated inner process of building meanings. Concentration on the first pole only produces the old or traditional education, which is curriculum centered; concentration on the second pole only produces the new or progressive education (progressive in the "radical" sense and not in Dewey's complex sense), that is child centered. Education according to the understanding approach places neither the curriculum nor the child but the meeting between them at its center—an active,

critical, and thought-laden meeting. Both the individual and the culture are constructed in this meeting. The individual constructs his identity and worldview, and the culture becomes meaningful and is enriched by new ideas. This meeting between the individual as meaning-maker and culture as the raw material for meaning making is the crux of the third model.

These four reasons lead us to prefer the understanding approach, and to teach under the auspices of its theory and to practice all the elements of good thinking. We must emphasize that the adoption of the understanding approach does not mean forsaking the imparting of thinking skills or the cultivation of thinking dispositions. The understanding approach must impart and cultivate both of these in the framework of its own aims and means. Skills must be imparted in an authentic context in which learners/researchers experience them as essential for developing their understanding; dispositions must be cultivated through embodying them in ongoing behavior, dealing with them in adequate opportunities, and experiencing intellectual activity that invites them.

CONCLUSION

When introduced into teaching thinking, the crucial question—what is the foundational element that constitutes good thinking, and how do we develop it?—generates three answers. Each poses as the only correct answer— each shapes an approach to teaching thinking. An approach to teaching thinking is a coherent conceptual framework aimed at directing the development of the element of good thinking. The approaches to teaching thinking are not self-aware or consolidated; if they were, the work done here would be a repetition of what is already known. This article was not meant to find approaches to teaching thinking but to explain the field, to map it conceptually. The need to map this field was derived from the vagueness that threatens its very existence. The conceptual map proposed here may open a space for further theoretical development of the field and enable its more effective application to education.

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