

Good Thinking

Or: The Ironic Path of Teaching Thinking

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The idea was simple and inspiring: in the age of the explosion, obsolescence, availability, and relativity of knowledge (the dubious product of subjective points of view and interests)¹ it makes no sense to teach knowledge; it makes sense to teach *how to deal with knowledge* – to locate, process, criticize, and create knowledge, which means *to think*. Thus, within a short time – from the beginning of the 1980s – teaching thinking became a trend, and teaching knowledge became passé. Enthusiastic educational thinkers developed many theories of teaching thinking, so that the field suffers from the illness it was meant to cure – the explosion of knowledge. Anyone who wants to understand the field of teaching thinking or, even more so, to apply it in the classroom, is paralyzed by the abundance of theories of good thinking and its teaching (Cf. Harpaz, 2007).

What, then, is to be done? First of all: order. We should sort out the theories according to their approaches (meta-theories) to teaching thinking. Then we should examine the approaches to teaching thinking and, from that examination, derive several useful insights. One insight, which is central to the following remarks, is that *teaching thinking has followed a rather ironic path – first rebelling against knowledge and then returning to it; it tried to bypass content but was trapped in it*. Let's follow the path taken by teaching thinking.

Give the Child a Fishing Rod!

The *skills approach* developed first – a complex of theories that arose around the claim that the factor that produces good thinking (Perkins called it “mindware”) is thinking skill. If you want students to think well – deeply, systematically, critically, creatively, etc. – you have to equip them with thinking skills. These skills, and not bodies of knowledge, must be central to the curriculum, teaching, and learning. Knowledge, so claimed the *skills approach*, has an expiration date (which is not marked on the label, but it's certainly soon), whereas thinking skills have an eternal shelf life. Thinking skills – strategies, techniques, heuristics, etc. – are tools for dealing with knowledge, which don't wear out;

¹ The explosion, obsolescence, availability, and relativity of knowledge are truisms by now, self-evident, but the real truth, in the old sense of the word truth, is that the bases of knowledge, the “big” theories that form the various disciplines, neither explode nor become obsolete – in any event, not so fast. The availability of knowledge is also conditioned by previous knowledge, with which a person comes to Google™ or to some other source (if there is one). The relativity of knowledge is also relative: in a given cultural context, there is a complex of propositions that can be regarded as objective in a contextual sense.

these tools may be used, among other things, but mainly to criticize knowledge (and to determine its expiration date) and to create new knowledge. In other words, “Give the child a fishing rod (thinking skills) and not fish (knowledge)!”²

The skills approach caught on quickly, and the market filled up with various thinking skills. Why not, after all? What sells better than simple skills for upgrading thinking? Here are some examples of thinking skills:

Lateral Thinking Tools: Edward de Bono is the most productive producer of thinking skills, or, as he calls them, thinking tools.³ His CoRT (Cognitive Research Trust, cf. de Bono, 1991) includes a cluster of thinking tools – instructions for a certain mode of thinking labeled with initials – whose purpose is to produce *lateral thinking*: thinking that breaks out of routine patterns (“thinking out of the box,” “breaking paradigms thinking,” “breaking through thinking,” and other clichés). For example, PMI (Plus, Minus, Interesting). Whenever you encounter a new idea, apply PMI to it. Ask whether it is positive, negative, and interesting. Or, APC (Alternatives, Possibilities, Choices): Whenever you make unusual decision or suggest an explanation, see whether you have exhausted the field of alternatives, possibilities, and choices given to you. There is also OPV (Other People’s View): Whenever you are about to make a significant decision, think about what other people will think about it; they doubtless have other points of view and they are liable to make trouble for you.

Since people don’t think alone – thinking is a social activity (and even when we think alone – Plato called thinking “the conversation of the soul with itself” – we think in concepts and images that we have internalized) – de Bono (1993, for example) developed tools for group thinking. The most popular tool is called The Six Thinking Hats. Each hat represents thinking focused on certain content: the white hat is thinking focused on facts (relevant ones to the issue under discussion); the red hat is thinking concentrated on emotions (which the issue raises); the black hat is thinking based on “negative” judgment (the flaws of the idea); the yellow hat is thinking concentrated on “positive” judgment (the advantages of the idea); the green hat is thinking focused on creativity (of new ideas); the blue hat is thinking focused on itself (thinking about the process of thinking that was done in the group). The underlying idea of the hats is *parallel thinking*. That is to say, if you are participating in a meeting and reaching a decision, think in parallel. First everyone thinks white, then red, then black,

2 This sound bite, “give the child a fishing rod!” is one of the favorites of Israeli prime ministers when they talk about education. It is based on the proverb attributed to Lao Tzu, “Give a man a fish and you feed him for a day. Teach him how to fish and you feed him for a lifetime.”

3 The term, “thinking skill,” certainly the most prevalent term in the discourse of teaching thinking, is, however, ambivalent and confusing, because it includes both the thinking tool and the way it is to be applied (skillfully – rapidly and precisely).

etc. If you think that way, de Bono promises, the thinking will be more effective, and the decision wiser.

De Bono's thinking tools are mainly basic rules of thumb for thinking, which are similar to the rules people give to themselves by means of folk proverbs or common sayings. Their main advantage (in my opinion) does not lie in themselves, but rather in the suspension of judgment they call: when you employ thinking tools, you delay a little before passing judgment, deciding, or agreeing (“Haste is from the Devil,” says the Hebrew proverb), and delaying is usually good for thinking. So here is a home-made thinking tool: TBJ (think before judging).

The Infusion Strategy: Robert Swartz and Sandra Parks (1994) are the progenitors of the infusion strategy. This system combines the teaching of thinking skills with the teaching of content, and, in its founders' opinion (as well as that of the Ministry of Education in Israel; see Memorandum of the Director General, September 2008), it is a win-win situation: thinking skills are learned in an “authentic” context of teaching content, and the content is enriched by a dimension that adds depth and interest to it (not to mention the principal advantage: no time is “wasted” on teaching skills in the framework of a subject, and no money is wasted on training and hiring “thinking teachers”). Swartz and Parks classified the skills into four categories: clarifying ideas, generating ideas, assessing the reasonableness of ideas, engaging in complex thinking tasks. To make the teaching of skills more effective, they invented “graphic organizers” and attached “guiding questions” to them. For example, here are guiding questions and a graphic organizer intended to help you with decision making (which belongs to the first category):

1. What makes a decision necessary?
2. What are my options?
3. What are the likely consequences of each option?
4. How important are the consequences?
5. Which option is best in light of the consequences?

SKILLFUL DECISION MAKING

OPTIONS What can I do?	

OPTION CONSIDERED

CONSEQUENCES What will happen if you take this option?	SUPPORT Why do you think each consequence will occur	VALUE How important is the consequence? why?

Now let's say that you are history teacher using the infusion system, and you are teaching about some historical decision, perhaps one of those discussed by the historian Ian Kershaw in *Fateful Choices: Ten Decisions that Changed the World, 1940-1941* (2007). Suppose you are teaching about Hitler's decision to attack the USSR. At a certain point you halt the flow of events and teach the skill of decisions making. You present the guidelines for making a decision to the students, and you ask: Why did Hitler have to make this decision? What were the options available to him? What were the results

of each of the options? And so on. Afterward you ask the students to fill in the graphic organizer. Fine! What have you done? Have you taught the students how to make intelligent decisions? Have you enriched the historical story with an important insight? I'm not sure. Maybe it would be better to teach the students how to make an intelligent decision on the basis of their daily life. Why seek evidence in the content of the curriculum? Wouldn't it be better to relieve the study of history and other subjects from the duty of teaching thinking skills, which spoil the flow and pace of the teaching of content? Maybe the teaching of thinking skills infused in the content of subjects is in fact a no win situation.

As to the main question – not about the infusion strategy but about the essence of the thinking skills themselves: let's say that Hitler had been trained in the skill of making decisions with the infusion method, and he had answered the guiding questions properly and filled in the graphic organizer to the teacher's satisfaction. Would he have made a different decision? For example, would he have decided not to attack the USSR but rather to finish the war against England (as Stalin assumed he would do, so that he *decided* to ignore reports about an imminent German invasion)? Did Hitler's decision, which was destructive in every respect, derive from lack of skill in making decisions or from deeper causes, for example, his ideological fanaticism, his conceptual universe, his self-delusion, his wishful thinking (Dewey claimed that wishful thinking was the cause of all failures in thinking), his fantasies, his fears, his hatreds, his hubris – in short, his pathological personality? Making a wise or stupid decision comes from many factors; skill is one of the marginal ones (but skills are easy to teach and evaluate; try to teach and evaluate the truly important factors in reaching decisions. No easy task!).⁴

Informal Logic: this is a special field that specialized in the development of thinking skills, a field with deep Aristotelian roots; it deals with the location, criticism, and structuring of syllogisms (Ennis, 1987; Johnson and Blair, 1994). The syllogism is the framework of our logical, rational thinking, and when it is valid – the conclusion derives from the prior assumptions – our thinking is “healthy.”⁵ The ethical imperative of informal logic is *the commitment to give reasons*: a good thinker has an intellectual conscience that requires her to justify and validate her words by means of valid syllogisms.

4 By the way, Kershaw's general conclusion is that the decisions made by the democracies were wiser than those of the dictatorships, because a democratic regime requires consultation with partners in power and consideration of public opinion. The quality of our decisions in particular, like the quality of our thinking in general, depends not only on ourselves but also on the environment in which we think.

5 That is to say logical, but not necessarily true. The truth of a conclusion depends on the truth of the prior assumptions. Incidentally, a conclusion can be both illogical and untrue. Nel Noddings wrote with amazement of students of hers in a course in logic, who were given the assignment: “1. All fish can swim (Alternatively, if x is a fish, x can swim). 2. I can Swim. 3. ? : A surprising number drew the conclusion 'I am a fish'” (1998, p. 83)

The favorite branch of informal logic is *finding fallacies* – in your own arguments or (better) in those of your opponent. The most common fallacies are dual in nature: logical and psychological. Here are some examples:

Circularity – basing conclusions on an assumption that must be proven;⁶

Appeal to authority – basing an argument on the statement of some important person;

Bandwagon – associating with “winning arguments”;

Glittering term – use of prestigious concepts to make an impression;

Slippery slope – the argument that a minor incident will necessarily lead to a grave one (“Give him a finger, and he’ll take the whole hand”);

Post hoc ergo propter hoc – confusing priority in time with causality (the argument that one thing is the cause of another simply because it occurred earlier in time);

Ad hominem – an argument directed at a person (to discredit him) rather than at his argument;

A Straw Man – the simplistic representation of the opponent’s position to make it easy to attack it;

Either... or... – dichotomous thinking (everything is black and white, with no shades of gray).

Indeed, skills in logical thinking, which are hardly taught at all in Israeli schools (Amos Oz [a renown Israeli writer] wrote in an article that Israel is actually not a state, a society, or a nation, but rather a collection of arguments), are extremely important, and it could be that today, when young people have become called “Screenagers,” they are more important than ever. Neil Postman claimed that television fills young people’s heads with pictures and displaces the syllogistic arguments from them. Thinking that does not take place in the framework of syllogisms is, in his opinion, degenerate (he predicted the decline of American because of too much television watching). Similarly, Gabi Salomon argued that the computer inflicts the “butterfly defect” on young surfers: jumpy thinking that is unable to deal with a subject systematically and reach a conclusion from a series of assumptions. Whether or not this is true, logical thinking must be developed everywhere, constantly; logic is the structure of our thinking, and the structure needs rehabilitation and reinforcement.

Give the Child Bait!

Fine, let’s say we have taught thinking skills (directly or by infusion), and the students have mastered

6 In order to demonstrate the supernatural powers of his rabbi, a Jew telling another Jew, “When the remnant of Napoleon’s army fled from Russia, it got to a shtetl, and the rabbi hid it behind the curtain on the Holy Ark in the synagogue, and thus it was saved.” “He hid the whole army behind the curtain?!” asked the second Jew.” “You see!” says the first Jew (it sounds better in Yiddish).

them, but suppose they are not *disposed* to applying their thinking skills in class or outside? They can do it, but they don't want to – then what? We look for way to work on their thinking dispositions; we transfer the educational gaze from thinking skills to the *motivation* to make use of them. Thus the *dispositions approach* arose. People think well, this approach claims, when they are motivated by good thinking dispositions (there are also bad ones – the opposite of the good ones). The imperative is thus: *Give the child bait (dispositions to think) and not (just) a fishing rod (thinking skills)! Motivation, the bait, to think well is inherent in the concept of thinking disposition, because a disposition is motivation, the desire, the drive to think in some productive manner (see the examples below).*

However, the dispositions approach is not content with playing the secondary role of supplying energy for thinking skills. It wants to supplant the skills approach and replace the category of thinking skills as a key category for understanding and improving thinking, with the category of thinking dispositions. Henceforth, the thinking disposition becomes the main “unit of analysis for cognitive behavior” (Perkins, Jay, and Tishman, 1993, p. 3). Of course a thinking disposition can be assisted by thinking skills, but skills alone do not assure good thinking, *even when there is* motivation to implement them. Good thinking demands deeper foundations than thinking skills; good thinking is influenced decisively by a person's intellectual traits – traits that have direct influence on the quality of thinking – and not by his or her thinking skills.⁷ In short, according to the *dispositional view of intelligence*, the essence of good thinking, the “mindware,” are thinking dispositions. Here are examples of some thinking dispositions:

Seven Thinking Dispositions: David Perkins (1995, pp. 274-288) lists seven thinking dispositions, which he calls the “Seven Samurai” as well as “the soul of intelligence.” In his opinion they include all the characteristics of good thinking, counterbalance one another (it is wrong to take any one thinking disposition all the way; the other dispositions are needed to restrain it), and reflect common cultural values:

1. *Clarity:* The disposition toward thinking that is clear, coherent, precise, specific and well organized.
2. *Breadth:* The disposition toward thinking that is broad, adventurous, flexible and independent.
3. *Depth:* The disposition to understand deeply, to seek underlying unities and hidden causes.
4. *Soundness:* The disposition toward thinking that is accurate, thorough, fair, knowledgeable, logical, and well supported by evidence.
5. *Curiosity:* The disposition toward thinking that is curious, questioning, probing and inquisitive.

7 To paraphrase Kant's famous dictum, one may say: dispositions without skills are empty, and dispositions without skills are blind.

6. *Strategy*: The disposition toward thinking that is strategic, planful, and uses devices to sustain effective organization.
7. *Awareness*: The disposition toward thinking that is metacognitive, aware of itself, and reflective.

Sixteen Habits of Mind: Arthur Costa and Bena Kalick (2000) listed sixteen habits of mind, which are vital to good thinking. Habits of mind “are defined as dispositions displayed by intelligent people in response to problems, dilemmas, and enigmas, the resolutions of which are not immediately apparent” (Ibid, p. xvii). Here are the habits of mind and the imperatives inherent in them:

1. *Persisting*: Stick to it. See a task through to completion, and remain focused.
2. *Managing impulsivity*: Take your time. Think before you act. Remain calm, thoughtful, and deliberate.
3. *Listening with understanding and empathy*: Seek to understand others. Devote mental energy to another's thoughts and emotions.
4. *Thinking flexibly*: Find a way to change perspectives, generate alternatives, and consider options.
5. *Thinking about thinking (metacognition)*: Be aware of your own thoughts, feelings and actions – and how they affect others.
6. *Striving for accuracy*: Check it again. Nurture a desire for exactness.
7. *Questioning and posing problems*: Develop a questioning attitude. Find problems to solve.
8. *Applying knowledge*: Transfer the knowledge beyond the situation it was learned.
9. *Thinking with clarity and precision*: Strive to for accurate communication. Avoid overgeneralizations, distortions, and deletions.
10. *Gathering data through all senses*: Gather data through all your natural paths.
11. *Creating, imagining, innovating*: Generate novel ideas, and seek originality.
12. *Responding with wonderment*: Find what is awesome and mysterious in the world.
13. *Taking responsible risks*: Live on the edge of your competence.
14. *Finding humor*: Look for the whimsical and unexpected in life. Laugh at yourself.
15. *Thinking interdependently*: Work with and learn from others in reciprocal situations.
16. *Remaining open to continuous learning*: Learn from experiences.

Nine Traits of Mind: Richard Paul (1992), writes about “traits of mind” for independent, critical, and fair thinking, and he compiled a list of nine:

1. *Independence of Mind*: the disposition and commitment to autonomous thinking, thinking for oneself.

2. *Intellectual Curiosity*: the disposition to wonder about the world.
3. *Intellectual courage*: having a consciousness of the need to face and fairly address ideas, beliefs, or viewpoints toward which we have strong negative emotions and to which we have not given serious hearing.
4. *Intellectual Humility*: awareness of the limits of one's knowledge.
5. *Intellectual Empathy*: having a consciousness of the need to imaginatively put one self in the place of others in order to genuinely understand them.
6. *Intellectual Integrity*: recognition of the need to be true to the intellectual and moral standards implicit in our judgments of the behavior or views of others.
7. *Intellectual Perseverance*: willingness and consciousness of the need to pursue intellectual insights and truths in spite of difficulties, obstacles, and frustrations.
8. *Faith in Reason*: confidence that, in the long run, one's own higher interests and those of humankind at large will be best served by giving the freest play to reason.
9. *Fairmindedness*: willingness and consciousness of the need to treat all viewpoints alike. This is the ability to reason without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends.

Paul's traits of mind are broader than Costa and Kallick's "habits of mind" and Perkins' thinking dispositions. However, the concept of thinking dispositions, the name we have given to the second approach to teaching thinking, is a broad one, which includes a world view, an attitude, a value, a trait, motivation, emotion, and other concepts that are related to the whole personality. The dispositions approach argues, therefore, that thinking is more than thinking; the intelligence is not what thinks; the whole person thinks. The dispositions approach brings thinking home, after it had been snatched away by the skills approach; and that home is very complex and difficult for education. It is relatively easy to inculcate thinking skills; it is hard to nurture thinking dispositions. Thinking skills, like skills in general, are acquired by imitation and practice; thinking dispositions, like personality traits in general, are acquired by identification (with real or imaginary ideal figures who embody them) and by internalization. Schools are set up for imitation and practice; they are not set up for identification and internalization.

Give the Child Fish!

So let us say that a certain person is motivated by good thinking dispositions and endowed with good thinking skills; will she be a good thinker? When a person *understands* the subject she is thinking about, her thinking is good – deep, systematic, critical, creative, etc.; when she doesn't understand, her

thinking isn't good – it is shallow, scattered, closed, routine, etc. Thinking thinks content, and when it understands the content it thinks, it is endowed with the most essential condition to be good. Understanding is therefore a basic prerequisite, perhaps a sufficient one, for good thinking.

There is no good thinking in a general way, good thinking about any subject in the world; there is good thinking about a certain subject – a subject that one understands. Let's say we've endowed you with the thinking skill of comparing and with a disposition for deep thinking. Now you are asked to compare impressionism to pointillism, between communism and anarchism, or between theism and deism, but you don't understand any of those "isms." Is there any chance that you'll be able to compare them in any deep way (a rhetorical question)? Let's say you are experts in art history or political science of comparative religion, but you have never specifically learned the skill of making comparisons or consciously acquired the disposition to deep thinking; will you have any problem in making a deep comparison between subjects in fields you understand (another rhetorical question)? The main factor in good thinking, the "mindware," about a given subject (or good thinking in general) is therefore understanding. The imperative is thus: "Give a child fish (knowledge), or rather help him to know his way around the fishing zones (areas of knowledge) and not (only) a fishing rod (skills) and bait (dispositions)!"

Let's try to understand understanding:⁸ in the literature of teaching thinking there are two complementary concepts of understanding: as location and as performance.

Understanding as Location: according to one concept, to understand something is to place it in a context – people understand a concept, a rule, or an idea when they place it in the context of a network of relevant concepts. The denser the network, the deeper the understanding. If, for example, someone asks you, "What is democracy?" and you say, "Democracy is decision-making by the majority," we would say your understanding is superficial, because you only made use of one concept "majority rule," for understanding the concept of democracy. But if you give a long lecture about the historical development of democracy from ancient Greece to the present, if you explain clearly what the division of powers means, the rights of the individual, and the tyranny of the majority, and you discuss thoroughly the crisis in democracy in the age of globalization, we would say that your understanding of

8 Howard Gardner (1991, p. 179) writes: "Understanding is a complex process that is itself not well understood." Incidentally, both Gardner and Perkins, leaders of the understanding approach, mainly refer to *school understanding* – understanding of the concepts that the teacher and textbooks transmit to students. They forget the understanding whose source is the world; people created concepts in order to understand the world, to orient themselves in it, and to act in it intelligently, and not to excel in taking tests. It would be interesting to see whether, if the concept of understanding were freed from schools and directed toward the world, any significant change would take place in understanding it.

the concept of democracy is quite deep – you made use of many concepts to explain it (explanation is an externalization of understanding).

Understanding as Performance: It is difficult to construct and evaluate understanding as location, because it located in people’s minds and people’s minds (thank God) are inaccessible (even our mind, as Freud taught, is inaccessible to us). Teachers therefore can’t know whether the network of concepts in the student’s mind is thin or dense. How, asked David Perkins (1998), can we make understanding into a public event, so that we can construct and evaluate it. He answered: let us redefine it as performance: to understand is to perform thought processes with what we know – to interpret it, to provide an example of it, to criticize it, and so on. Perkins (1990) suggests seven understanding performances, and I offer a list of eighteen, divided into three categories (in this context understanding as location becomes one understanding performance among others).

To present knowledge	To think about and through knowledge	To criticize and create knowledge
To express knowledge in your own words	To analyze and synthesize knowledge	To give reasons and justify knowledge
To explain knowledge	To apply knowledge	To expose contradictions and tensions in knowledge
To suggest interpretations of knowledge	To suggest examples, metaphors, analogies, comparisons	To question knowledge
To build a model for knowledge	To generalize from detailed knowledge	To reveal basic assumptions of knowledge
To represent knowledge in various ways	To contextualize knowledge	To formulate counter knowledge
To present perspectives on knowledge	To predict on the basis of knowledge	To create knowledge on the basis of knowledge

The understanding approach returns the teaching of thinking to knowledge: knowledge is not external to thought, as, for example, food is to eating; knowledge and thinking are intrinsically

connected with one another. When the knowledge about which and by means of which we think is not understood, thinking moves in fits and starts; when knowledge is understood, thinking flows.⁹ The mind moves flexibly in areas where it knows its way around (Perkins proposes the expression “knowing your way around” as a metaphor for understanding) and demonstrates the desired qualities of good thinking. However, the understanding approach does not call for a return to the teaching of knowledge in the simple sense – continuing to stuff quantities of knowledge into the children’s minds (as containers); it calls for *teaching for understanding* – teaching that strives to enable students to find their way around knowledge, to create connections between concepts, and to perform thought processes on the basis of knowledge. Teaching and learning for understanding demand a very different educational environment from that of the ordinary school.

Why Fish?

Of course the distinctions between thinking skills, thinking dispositions, and understanding knowledge are not absolute. There is a partial overlap among these categories and mutual relations. However, it is important to distinguish among them for the purpose of both understanding and action. Education does not want only to understand the world; it mainly wants to change it. Teaching thinking does not want only to understand thinking; it mainly wants to improve it. For that purpose it must ask itself, “What will I concentrate on? On inculcating skills, on nurturing dispositions, or on building understanding?” Following most of the important theorists in the field, I also propose concentrating on understanding in the teaching of thinking – for theoretical, pedagogical, practical, and logical reasons.

The Theoretical Reason: most theories and studies of teaching thinking support the basic claim of the understanding approach: a person thinks well about and by means of the subjects that he or she understands. The thinking of experts is better (in their field of expertise) than that of lay people. According to the well known “ten year rule,” a person must be in a field (think and investigate in it) for about ten years before she begins to produce good thinking in it.

The Pedagogical Reason: Teaching thinking is an important goal, but, while it is in the first row, it is not first on line. Other important educational goals are also in the first row, such as understanding

9 One may speak of three physical states of knowledge (an understanding performance: the invention of a metaphor): solid, gaseous, and liquid knowledge. In the first state, knowledge is attached to the context in which it is learned – the students grasp it strenuously and are unable to play with it, to transfer it from context to context, to do understanding performances with it (it is inert knowledge); in the second state, the elements that comprise knowledge – concepts – are detached from one another, and there is no logical connection among them; the knowledge is not located in a significant context, and it does not move from context to context; in the third state, the liquid state, knowledge is understood and flexible and moves from context to context.

fields of knowledge and the world. With the understanding approach, you see two movies for the price of a single ticket: you understand the great ideas of the culture, and you learn to think about them and by means of them.

The Practical Reason: Schools teach knowledge organized into subjects and curricula. If teaching thinking wants to be accepted in schools, it has to be consistent with this trend, but not by fitting in or adapting, by hitching a ride on the teaching of content (and sometimes spoiling it), but rather by effecting a change in the teaching of content – by means of teaching for understanding.

The Logical Reason: If we don't teach for understanding, then we're teaching for misunderstanding. Indeed, the average school actually teaches for the sake of misunderstanding, and (probably) not because of a hidden agenda. Most students don't understand the subjects they study (which is why they quickly forget them), because they lack conditions for learning that is steeped in understanding. Teaching for misunderstanding has destructive intellectual and emotional influence. Hence there is no alternative: we must teach for understanding; we must provide conditions for learning steeped in understanding.

Here in brief are the outlines of an educational environment that provides conditions for teaching and learning steeped in understanding.

Foundations of the Educational Environment	Foundations of the Educational Environment for Understanding
Teaching	Takes place in frameworks of teaching for understanding. Such frameworks were developed by Perkins and his colleagues (Wiske, 1998) Wiggins and McTighe (1998), Harpaz (2008) and others.
Learning	Active and inquiring learning; students ask questions and grapple with them; students create rich conceptual networks and varied understanding performances.
Evaluation	Understanding performances are the standards; students are evaluated according to the number and quality of their understanding performances.

Curriculum	The content is organized according to the principle of depth rather than breadth; the content is organized according to "big ideas" that give meaning to the details of information.
Organization	The principle of providing conditions for understanding guides the organization of time and space and the hierarchy of functions.
Climate	The educational climate fosters wonder, the asking of questions, deep think about ideas with the aim of understanding the world and ourselves by means of them.

In conclusion, the field of teaching thinking, a theoretical and practical field, which has gained momentum in the past decades and taken over considerable parts of educational discourse, began with thinking skills, continued with thinking dispositions, and concluded (for the moment) with the understanding of knowledge. The succeeding stages of development did not do away with the earlier ones but rather displaced them from center stage and cooled off the hopes they had aroused. Teaching for understanding – the stage at which teaching thinking is now situated – doused the hopes that teaching thinking could bypass the teaching of knowledge. Nevertheless, teaching thinking does not have to return to the inculcation of scholastic knowledge; it must provide thinking skills, develop thinking dispositions, and enable guidance in understanding knowledge. However, because it cannot concentrate on the development of all three factors of good thinking at the same time, it would do best to concentrate on the last one – teaching for understanding.

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