Yoram Harpaz

Teaching and Learning in a Community of Thinking

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This book is dedicated to my dear parents who survived the Holocaust and built a new life for themselves in a kibbutz they helped establish in Israel.

Foreword

"All learning is learning to do!" That's what I've said to my university students from time to time when they seem to be thinking of learning as storing stuff in the mind. Of course, anyone would recognize learning to play tennis or operate on the heart as a kind of learning to do. But so is coming to understand the roots of democracy or the theory of relativity.

The Third Model very much reminds me of this precept, because through and through it articulates and celebrates ideas in the same general spirit. Knowledge, Yoram Harpaz emphasizes, is not an object, nor knowing it a matter of getting it into the container on top of your neck. "Knowledge is a structure or story that works." And what puts it to work? The mind, in its interpretive activity of making meaning – undertaking applications, finding connections, extrapolating, critiquing, creating. The successful learner is not just one who knows, but "knows how to work with knowledge and to relate to it."

To appreciate learning to do in full flower, we need an emphatically broad conception of doing. It's not just *doing with* the knowledge served up by text or lecture. Very often it's *doing over* – critically examining and revising, even discarding. Very often it's *doing up* – going well beyond what's given to construct new configurations of knowledge.

Doing over and *doing up* are very much on the map of *The Third Model*, and questions are the pilot. Not just any old questions either. The ideal question is "open, undermining, rich, connected, charged, and practical." For instance, "open" means questions that lack a definitive answer and so create ample space for sustained inquiry. "Undermining" means questions that upset quick and easy presumptions. Answers to someone else's questions make up the typical curriculum, questions often unimaginative and unarticulated. However, education as envisioned here involves learners working directly with explicit, important, and provocative questions, many of them their own.

"All learning is learning to do" does have one odd characteristic: the principle applies even to memorizing. Although memorizing may feel like filling up the mind's filing cabinet, abundant psychological research shows memory to be a highly

constructive process, a kind of artful doing benefiting hugely from making ideas meaningful and relating them to one another.

However, it is still a very limited kind of doing. Fancy notions of what gets stored – not merely information but schemas or mental models – might seem to rescue the stodgy notion of mind-as-container with a modernized version of what gets put there. The catch is that mere containment isn't enough no matter what is contained. To be said to understand, we have to be able to do things. Try this analogy: it's handy to have a map, but imagine having a map without the skills to find your way using it. Maybe you could pass the quiz on maps at the end of the unit – here's the scale of miles, this direction on the map is north. But that's not really what the map is for. The same for schemas and mental models. They're not just for having, they're for doing, and merely having them stored up does not in itself guarantee you can do much with them.

The notion of affordance, introduced a number of years ago by the perceptual psychologist J. J. Gibson, offers some insight here. Gibson urged that as we navigate through the world, we don't just see objects and layouts. We perceive "affordances," the sorts of purposeful actions that objects allow and invite. For instance, chairs afford sitting…and so do many fallen logs, tree stumps, low walls, and wide window sills. We see these opportunities in a direct natural way and take advantage of them by sitting on all sorts of convenient surfaces. Likewise, we might see how a screwdriver or a shovel affords leverage, pick it up, and use it as a lever. And to carry this into the conceptual realm, we can learn to perceive the leverage afforded by ideas.

And so to knowledge: if we consider knowledge any sort of object at all, it's an object bristling with affordances. Knowledge commonly affords, for instance, application, challenge, extrapolation, analysis, revision, testing, and synthesis. The learner who simply knows the knowledge in the container sense does not engage any of those affordances. But the learner who truly knows can wield the knowledge to do something with it, as naturally as one might pick up a convenient object and use it for a lever.

So yes, all learning is learning to do, and good learning is learning to do in remarkably expansive ways. This is one of many lessons to be gleaned from *The Third Model*. As you read on, you will discover a number of other handy conceptual levers of learning. And perhaps pick them up and put them to work!

David Perkins

Preface

Two decades ago, Jerusalem's Branco Weiss Institute for the Development of Thinking joined forces with Intel Electronics in Israel for the purpose of developing a model school that, in both its spirit and actions, would embody such "hi-tech" characteristics as working in small teams, focusing on projects, a technologically rich environment, and creative climate. As one of the educators working in the Branco Weiss Institute, I was asked to develop the model. At that time, I did not know about the Third Model or about the Third Approach or about the Third Drive (see below), but they were in the air and implicitly guided my thoughts. Over several weeks, I put together a preliminary model of the "Intel-Lect School," based on teaching and learning in a community of thinking. In developing this model, I was assisted by my friend Amnon Karmon, today the Director of the Kerem Institute for Teacher Training in Jerusalem. After the model was approved by a joint committee of the Branco Weiss Institute, Intel, and the Ministry of Education, I recruited three more friends: Gail Talshir (today a Senior Lecturer in Political Science at the Hebrew University), Lia Ettinger (today in a senior position at the Heschel Center for Environmental Learning and Leadership), and Adam Lefstein (today a Senior Lecturer in Education at the Ben-Gurion University of the Negev). Later, I also recruited Orly Lindner, a highly knowledgeable and experienced teacher at the René Cassin High School in Jerusalem. This team improved the model and began to apply it in various schools.

At first, we ran a pilot project in the tenth grade at the Hebrew Gymnasia High School in Jerusalem. This proved to be successful. Indeed it was too successful, for it deluded us into thinking that we had found the key to making classrooms into Communities of Thinking and schools into Intel-Lect Schools. During the following seven years, we established a network of Intel-Lect Schools, which included two dozen schools – elementary, intermediate, and secondary – throughout Israel. One of these schools, the Branco Weiss High School in Beit Shemesh, was built from the ground up according to the model of the Intel-Lect School.

In the summer of 1998, the network of Intel-Lect Schools gathered in the new building of the Branco Weiss Institute in downtown Jerusalem to share new ideas

and the lessons learned in their implementation. After greetings and an opening lecture, the audience split into groups that withdrew to separate rooms in order to plan Communities of Thinking – to invent fertile questions, research plans, and concluding performances (see below). Afterward, the groups returned to the central auditorium and presented their plans to the other groups. After three busy days, the principals and teachers returned to their schools equipped with practical ideas and a new spirit.

* * *

For a few years in the early 1990s, a rare climate emerged in the history of Israeli education, a climate particularly favorable to discovering and applying new ideas in education. Amnon Rubinstein, the Minister of Education, and David Gordon, the Director of the Pedagogical Secretariat, transmitted a message to the field in the spirit of "Give us new teaching and learning that breaks out of the shackles that schools place on them!" From overseas, especially the USA, came inspiring educational ideas, a complex of new concepts of learning, teaching, thinking, knowledge, and mind, which was called Constructivism. The message of Constructivism in all its varieties was "Teach young people how to think, to construct knowledge, to create meaning, instead of stuffing their heads with meaningless details!" In the spirit of these messages, the Branco Weiss Institute was established to process, transmit, and circulate the messages of advanced education – progressive education pervaded by the concepts of Constructivism – throughout the country by publishing books and journals, by holding conferences in which world-renowned educational figures took part, by establishing various educational frameworks, and by conducting countless workshops and courses. At that time, hi-tech industries reached the peak of their prestige, overshadowing low-tech industries to which the traditional school, the "factory school," was connected historically, structurally, and ideologically. The new type of industry offered educators a model of an organizational environment that encouraged original and daring thinking. It also created a new economy, in which the ability of workers to process, create, and apply knowledge – that is, to think – was a primary condition for success. The new knowledge economy challenged education and opened up new possibilities for it. At that time, a Department for Experiments and Initiatives took shape in the Ministry of Education to respond to the many requests from schools for academic guidance in order to obtain the status of Experimental Schools. People all over were talking about a New Middle East, which was supposed to emerge from the Oslo Agreements, and above all of this exulted the challenging and liberating spirit of postmodernism. The promise of a new kind of education was in the air.

* * *

However, the educational and geopolitical skies darkened. Conservative education, backed by world views, interests, and the strong inertia of the existing schools, rapidly recovered. With its battle cries – "Back to Basics!" "Tougher Standards!"

"Accountability!" "Outcome-Oriented Education!" – it put progressive education on the defensive. The foundations of traditional schools, which had received a slight shock from the discourses of constructivist education, were shored up again. New ministers of education took office, and new directors were appointed to the Pedagogical Secretariat. They were all, to one degree or another, determined to quell the spirits and put education back on its old track – control by the Ministry of Education and the political party in charge of it. The enthusiastic educational discourse of the mid-1990s was silenced and replaced by economic discourse, the essence of which was the submission of education to a utilitarian, business-oriented world view. Disappointing results in international achievement tests – which became the supreme standard for judging the educational system – caused a national trauma and strengthened this tendency. A National Task Force for Advancing Education in Israel (the Dovrat Commission) was established with great fanfare in order to start everything all over again and restore the State of Israel to its proper place in the table of international educational achievement. The Branco Weiss Institute, the spearhead of advanced education, adapted to the new climate and concentrated its main efforts on developing formulas for success in all kinds of examinations. The Department for Experiments and Initiatives in the Ministry of Education lost its influence, and the designation "Experimental School" lost its prestige. Hi-tech industry, its aura dimmed after the collapse of the bubble, joined forces with the conservative trend in education, or rather it co-opted that trend for its goal: imparting measurable and useful skills that would equip young people to compete in the world market and consolidate the power of the State of Israel as a favorable site for national and international corporations. In the background, the Second Intifada raged (the Al-Aksa Intifada), reopening the basic issues of the conflict with frightful cruelty. Aircraft hijacked by Al-Qaeda terrorists struck the Twin Towers and the Pentagon. Echoes of the Clash of Civilizations were heard everywhere. The fresh spirit of postmodernism, which made every absolute standard relative, everything solid fluid, became a rigid dogma that persecuted its opponents zealously. The window of opportunity that had opened for a different kind of education was now closing.

* * *

A few years after the establishment of the network of Intel-Lect Schools, I received a scholarship from Harvard University and went to study in the USA. Adam Lefstein took my place as the Director of the network. He expanded it, established a program for training teachers to work in a community of thinking, and attracted young, gifted facilitators. After a few years, he traveled to the UK to pursue advanced studies in Oxford University. He bequeathed to his successor, Nir Michaeli, a more professional network, but also a weary one. The favorable educational climate in which the network had thrived was now hostile. The enormous gravitational pull of traditional classrooms and schools did its work. The shortage of funds that affected the Branco Weiss Institute dictated its policy: a project that was financially unsustainable was cut. The model of the Intel-Lect School and community

of thinking created problems of its own, and all of these factors eroded the experiment and the network of schools that implemented it.

* * *

In 2000, Adam and I received an invitation to a conference of a new school movement called the Navigator Consortium (Navcon) in Australia. The goal of these schools, which were located in Victoria, so the invitation stated, was to change the patterns of teaching and learning in the schools. About a thousand teachers gathered in a basketball stadium. A few hundred of them were quite familiar with the model of community of thinking (CoT they called it). We were astonished. While the network of Intel-Lect Schools was gradually perishing in Israel, the model had been adopted in several places in faraway Australia, where it aroused great interest. From there, the model migrated to New Zealand, and from there to Singapore (the cynosure of the educational leaders in Israel). In the intervening years, we have been traveling to these places and instructing hundreds of teachers in planning Communities of Thinking. In some schools in the Pacific region, community of thinking functions by the book.

* * *

The present book introduces the model of an Intel-Lect School and community of thinking. Let us hope that, rather than a gravestone, it marks the chance for a new beginning. The book is divided into three parts. The first part presents the broad ideological and theoretical context of the community of thinking – the Third Model and the Third Approach. In the second part of the book, a narrative of the model is presented: five "atomic pictures" of learning, teaching, mind, knowledge, and the aim of teaching and learning are presented in contrast to five "atomic pictures" of the kind of education we recommend. The third part of the book presents the practice of teaching and learning in a community of thinking, based on the five recommended pictures. This practice includes the inventing of a fertile question, performing researches, and presenting concluding performances. Hence, the book moves between a general theoretical context and concrete practice. "Practical" readers (or "local" ones, in terms of Robert Sternberg's theory of thinking styles) are invited to read the book from the end to the beginning, from the third part to the first; "theoretical" readers (or "global" ones, in terms of Sternberg's theory of thinking styles) are invited to read the book as it is written. Each part of the book is independent and understandable on its own.

* * *

Many educators in Israel and throughout the world were involved in the effort to develop and apply the model of teaching and learning in a community of thinking, and I owe a deep debt of gratitude to them: Branco Weiss and Dan Sharon – the founders and directors of the Branco Weiss Institute for the Development of

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Introduction

Imagine a teacher coming in to meet a community of thinking at the beginning of the academic year. After saying "good morning" and exchanging a few words with two or three students, she presents the fertile question (see below) to the classroom community, the question that the community will deal with during the coming half year. She invented the question with the help of other teachers, whom she consults regularly at planning meetings. She writes or projects the fertile question on the board and asks the students to examine it and write preliminary thoughts in their notebooks or on their laptops, ideas that occur to them upon reading the question. The students, who are familiar with fertile questions and used to lessons that begin with and build upon questions of various kinds, respond without difficulty. While doing so, they consult with fellow students and the teacher. After a while, the teacher asks some of the learners to share what they have written with the community, and she educes interesting questions from their comments. She writes or projects the heading "question bank" on the board and beneath it the questions that students suggest. Then she asks the class to split up into small groups to discuss some of the questions that were deposited in the "bank." Finally, she asks one of the students to sum up the discussion. Now she introduces a film that she is about to screen. Before the screening, she distributes a questionnaire and asks the students to consult the questions while watching the film and afterward. There is plenty of time, since the lesson lasts for five hours.

A few weeks have gone by. The students now relate comfortably to the fertile question and show increased interest in its various aspects. They talk about it directly by means of the CoT Portal, which provides a digital forum and various scaffolds for thinking and understanding. In one of her lessons, the teacher asks the students to formulate research questions and present them for class discussion. The students talk about the questions they have posed; the teacher writes them on the board and leads a discussion on each question: Does it fit the criteria of a good research question? What aspects of the fertile question does it reveal? Can it be combined with other research questions? Now she asks the students to organize into teams around a research question and to revisit the question with the aim of expressing it in a way that all the learners in the research team agree to. Afterwards, she refers

the learners to the posted research instructions and the various procedures on the CoT Portal for pursuing research questions effectively. She discusses the instructions and procedures with the learners.

A few more weeks have passed. The students are immersed in their research. Each team has its own research question, and each learner in the team deals with an aspect of the question. During the lesson, the research teams are found in different places – some are in the school library, others are in a university library, some interview experts, and some go to museums. One team is engaged in off-site observation while others are working with their computers in designated areas of the school. From time to time, the teacher assembles the entire community so that teams can report on their progress, teach each other, and discuss their findings in accordance with established procedures for presenting arguments and holding discussions.

Several more weeks have passed. The teams have already shared the first drafts of their research reports by email with other teams, experts, and the teacher. Based on feedback that they have received, they have improved their reports. They defend their amended reports before evaluation teams that include teachers, students, parents, and experts. The evaluation teams offer additional feedback according to agreed upon rules designed to promote learning.

At a certain stage – the last trimester of the year – the teacher assembles the learners to discuss the production of a communal concluding performance. One student suggests organizing a conference in which each team will build a booth and present its concluding performance. Another suggests taking invitees on a tour during which each team will present its work. Another student proposes inviting representatives of organizations that have an interest in the teams' research findings.

Why not? Why can't instruction and learning in a school be done in this or a similar way? This description is closer to reality – to what takes place outside of schools – than what typically happens in schools, where pupils sit in rows and (in the best case) copy the teacher's words into their notebooks. People outside of schools interact in various manifestations of communities of thinking – they discuss an interesting question, a question that emerges from real life, and related questions to which it gives rise. And yet, it is the traditional school environment that seems like the natural phenomenon, and every effort to create a different educational environment is viewed as a deviation and arouses opposition.

School has indeed commandeered our mindset and loaded the key concepts of education – learning, teaching, knowledge, mind, education, being educated, etc. – with content embodied in its patterns of action: (serious or real) instruction consists of formal lectures in preparation for an examination; (serious or real) learning is attentive learning for tests; (true and important) knowledge is that which is learned in school; the mind is a vessel for the purpose of storing knowledge; an educated person is someone who acts in accordance with the demands of school and brings home good report cards. In sum, education is what happens in schools.[1]

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[1] In his classic book, *Deschooling Society* (1971), Ivan Illich sought to distinguish between two phenomena that, in his opinion, were not connected: school and education. He defined the school without reference to education: "For this purpose I shall define 'school' as the age-specific, teacher-related process requiring full-time attendance at an obligatory curriculum" (1970, p. 38).

But school is not only a concept or a unified system of concepts. School is also an actual given in the world. As such, school is reinforced not only by a mindset but also by material constraints. National education budgets dictate low-cost education: a teacher with 30 or more students in the class; teaching by transmitting and learning by drill; examinations based on closed questions and answers; low teacher salaries; plain buildings with only basic equipment. There is reciprocal support between the school as a concept, as an educational world view, and the school as an actual given, as an institution subject to budgetary and other constraints. Patterns of teaching, learning, and organization that underlie the school derive from the connection between school as a concept and school as a given. Hence, the effort to change schools encounters a two-fold difficulty: the resistance of school as a concept, on the one hand, and the resistance of the given institutional entity, on the other.

There are alternatives. The control that schooling exercises over education is not absolute: the term "education" goes beyond that of "schooling." The imagination rebels and conjures up alternatives. More importantly, reality rebels and demands alternatives: democratic, knowledge-based societies need a different kind of school. The present-day school, which was conceived some 200 years ago, no longer serves society or individuals effectively. Democratic, knowledge-based societies that devise educational environments appropriate to their values and needs will enjoy an enormous advantage.

The model of the Intel-Lect School and community of thinking seeks to provide such an educational environment. This environment may not be the best one in existence and certainly is not the best one possible. However, it provides a point of departure – a conceptual and practical framework that reflects patterns of action vested with concepts closer to the beliefs of many about the education we deserve.

Chapter 1
Teaching and Learning in a Community of Thinking: The Context

Ideas can be situated in various contexts, and each context gives them a different meaning (for meaning, as we know, is in the context). In this chapter I will locate the framework of teaching and learning in a community of thinking within a broad context, within a complex of ideas that will give it a deeper meaning. I will place the idea of the community of thinking in three contexts, called the third model, the third approach, and the third drive. Actually, the third model, the third approach, and the third drive are the general rule, of which the community of thinking is only one example.

The Third Model

The Third Approach

The Third Drive

CoT
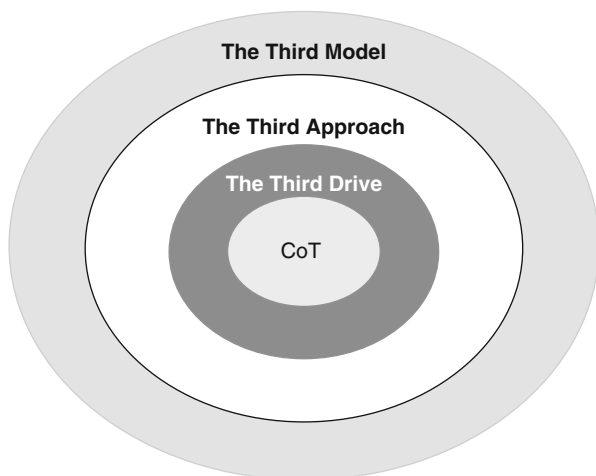
1.1   The Third Model

A new model in educational thought and practice has been emerging during the past three decades, which I shall call the third model. This new model is distinct from the two previous models – "old education," which is curriculum-centered (sometimes called the "demand model"), and "new education," which is child-centered (sometimes called the "support model"). The model of teaching and learning in a community of thinking is one variation of the third model.

1.1.1   The First and Second Models

In the late 1930s, in his *Experience and Education*, John Dewey took stock of the progressive education movement, which was born of his ideas and inspiration. In his opinion, the progressive education movement had gone too far in the paedeocentric direction while pursuing a direct confrontation with the prevailing "old education." In opposition to every concept and process of the "old education," the progressive movement had framed contrary concepts and processes. Dewey disapproved of this dichotomous way of thinking and strove toward a more nuanced approach, some synthesis of traditional "old education" and the new paedeocentric education – the third model (cf. Kohlberg and Mayer 1972). He made a brief comparison of the old, traditional education to the new, progressive education in order to reject the dichotomy of his disciples, advocates of progressive education:

> If one attempts to formulate the philosophy of education implicit in the practice of the new education, we may, I think, discover certain common principles amid the variety of progressive schools now existing. To imposition from above is opposed expression and cultivation of individuality; to external discipline is opposed free activity; to learning from texts and teachers, learning through experience; to acquisition of isolated skills and techniques by drills, is opposed acquisition of them as mean of attaining ends which make direct vital appeal; to preparation for a more or less remote future is opposed making the most of the opportunities of present life; to static aims and materials is opposed acquaintance with a changing world. (1938/1997, pp. 19–20)

Here, then, according to Dewey in the cited passage and in the chapter from which it is taken, are the main differences between the old and new kinds of education (Table 1.1).

As noted, Dewey sought to counteract this dualism (all of Dewey's thought is marked by the effort to eliminate the prevailing dualisms in Western thought in general and in educational thought in particular [see Scheffler 1974]). He saw it as the embodiment of simplistic "either/or" thinking, derived from the fact that his disciples formulated the new education in absolute opposition to the old education.

Dewey was not an observer on the sidelines. The new or progressive education grew out of his thought, out of the "Copernican revolution" that he provoked in educational thought. He proclaimed that revolution with the following words:

> Now the change which is coming into our education is the shifting of the center of gravity. It is a change, a revolution, not unlike that introduced by Copernicus when astronomical

Table 1.1 Differences between old education and new education according to Dewey

Types of education →		
Components of education ↓	Old education	New education
Goal	To transmit content shaped in the past	To make possible personal development
The character of the goal	Static (a fixed world and graduate)	Dynamic (a changing world and graduate)
Content (knowledge, skills, values)	Formulated in the past and imposed on the students	Discovered and shaped by the learners
Organization of content	Isolated knowledge and skills	Knowledge and skills connected with the goals of the learners
Learning of content	By means of drill	By means of experience
Source of learning	Texts and teachers	Personal experience
Discipline	External	Internal
Relation to time	Preparation for the future	Exploiting the present
Relation of the school to the environment	Isolated from the environment	Part of the environment

center shifted from the earth to the sun. In this case the child becomes the sun about which the appliances of education revolve; he is the center about which they are organized. (Dewey 1902/1990, p. 34)

Indeed, Dewey precipitated the "revolution." However, his successors, led by William Heard Kilpatrick, who tried to apply Dewey's concepts in the Project Method, took it too far, at least in Dewey's opinion.

Despite Dewey's effort to mitigate the dichotomy between the old and new education and to produce some synthesis between the two, this dualism became increasingly rooted in educational discourse. Since then every educational theory or approach measures itself on a scale of which one extremity is "old education" and the other is "new education."

Whereas Dewey sought to reduce the dichotomy between old and new education, more recent thinkers elaborated the dichotomy into a tripartite construct. These theorists split the old education into two types of education. Zvi Lamm, for example, in his *Conflicting Theories of Instruction* (1976), divided education into three "instructional logics": the "logic of socialization," according to which the goal of education is to conform the students to the society in which they live; the "logic of acculturation," according to which the goal of education is to mold the spirit of students in the light of values and truths underlying the preferred culture; and the "logic of individuation," according to which the goal of education is to enable every student to fulfill herself (see Harpaz 2010). The first and second logics epitomize old education (the first model), and the third logic epitomizes new education (the second model).

In a similar fashion, Gary Fenstermacher and Jonas Soltis, in *Approaches to Teaching* (1986), divided educational thought into three "approaches": the "executive approach," according to which the teacher is the manager of the classroom, transmitting useful knowledge and skills to her students; the "liberationist approach," according to which the teacher frees her students from irrational urges,

false beliefs, and misunderstandings by exposing them to the humanistic ideas embodied in culture; and the "therapist approach," according to which the teacher supports the emotional and cognitive development of each student. The first and second approaches epitomize old education, and the third one epitomizes new education.

Kieran Egan (the third and final example of the further partition of the dichotomy between old and new education), in *The Educated Mind* (1997), divided educational thought into three "ideas": the "idea of socialization," the "Platonic idea," and the "Rousseauian idea." The first and second ideas epitomize old education and the third, new education.

The typologies of Lamm, Fenstermacher and Soltis, and Egan differ in various aspects, but essentially they are rather similar.[1]

It is worth taking note of some lessons that these thinkers derived from their similar typologies. Lamm, as indicated by the original Hebrew title of his book, *Contradictory Logics in Instruction*, believed that there were contradictions among his logics with respect to the means of instruction but not their goals. On the level of goals, the educated person is someone who has gone through a sufficient process of socialization, acculturation, and individuation. That is to say, she has acquired useful skills, codes, and behaviors and absorbed truths and values, and she fulfills herself in the course of her life. However, so far as means are concerned, the patterns of instruction neutralize (contradict) each other. In other words, the educational influence of one logic counteracts the educational influence of the other logics. Therefore, an educational institution that aims to create a cumulative educational influence and avoid bouncing its students back and forth between contradictory educational logics must adhere to a single logic of education (cf. Lamm 2000, p. 92, 261, 404).

In direct contrast, Fenstermacher and Soltis argued that there is a contradiction between the two educational approaches with respect to goals, for each approach has a different image of the educated person, but there is no contradiction as to means. In their opinion, instruction should employ all three approaches according to special circumstances and contexts (Fenstermacher and Soltis 1986, pp. 58–61). Egan maintained that there was a contradiction on every level among the three prevailing ideas in educational thought and that this contradiction is at the root of the crisis of modern education. The best way to avoid this contradiction, according to Egan, is to reject the underlying structure altogether and to adopt – what else? – his idea, which involves the arousal and development of the five cognitive-cultural tools or types of understanding – somatic understanding, mythological understanding, romantic understanding, philosophical understanding, and ironic understanding – according

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[1]We may add other educators who suggest similar divisions. For instance, Israel Scheffler (1964/1989) writes about "models of teaching" – the impression model, the insight mode, and the rule model. William Schubert (1986) writes about "curriculum paradigms" – the paradigm of the social behaviorist, the paradigm of the intellectual traditionalists, and the paradigm of the experimentalists.

Table 1.2 The elaboration of Dewey's dichotomy into a trichotomy

Dewey	The old education (the first model)		The new education (the second model)
Lamm	The logic of socialization	The logic of acculturation	The logic of individuation
Fenstermacher and Soltis	The executive approach	The liberationist approach	The therapist approach
Egan	The idea of socialization	The Platonic idea	The Rousseauian idea

to the students' developmental stage. (Egan, in my opinion, fails to extricate himself from the logics/approaches/ideas of education. His idea belongs to the logic of acculturation or to the liberating approach or to the Platonic idea.) (Table 1.2)

1.1.2   Disappointment with the First and Second Models

As noted, John Dewey not only elucidated the concepts of the old and new education, but he actually created them (until Dewey invented the "new education," education didn't know that it was old). In his own words, he caused the "Copernican revolution" in education, shifting the center of gravity from the general curriculum to the individual student. Since the advent of the "new education," about a hundred years ago, growing out of Dewey's ideas (he himself was influenced by Rousseau, Frobel, and the other forefathers of progressive education),[2] education has vacillated between these poles, moving to and fro with the prevailing climate of opinion. It appears that our season is characterized by disappointment – to one degree or another, depending on who is disappointed – with both models, old and new. Of course, not everyone is disappointed. For disappointment is a product of interpretation. Many believe that education according to one or another of the models – the "closed" schools of the first model or the "open" schools of the second – is doing fine, and with just a bit more effort, it could do better. However, side by side with this degree of satisfaction, there is much persuasive criticism of both educational models. These critiques are based on ideological, theoretical, and empirical considerations of thinkers and researchers as well as from direct experiences of parents, teachers, and students. This criticism is fundamental: it applies to the very structure

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[2] In his *Essais*, Michel de Montaigne expressed rather progressive ideas in the late sixteenth century, nearly 200 years before Rousseau wrote *Emile, or On Education*, the basic book of the new education, which made the child central, and almost 400 years before this revolutionary education burst into the world with a great commotion in the 1960s. So let's preserve our ignorance diligently, lest we discover that everything has already been said about education.

of the school, whether of one model or another, and it gives rise to widespread skepticism towards and low expectations from schools.

The criticism of the two models of education can be divided into two opposing points of view: (a) *schools don't work* or (b) *schools work too well*.

Looking first at the "closed" school model, with respect to *doesn't work*, the main critique is that most of the material (knowledge and skills) that students supposedly learn is simply forgotten (or, more accurately, they erase it; forgetting is an action and ignorance is acquired) shortly after they finish their studies, sometimes merely hours after the examination. If, in a school where the curriculum is central, the principal goal is imparting knowledge and skills, and students forget most of this material over time (do you remember how to derive sines and cosines or Newton's Second Law or the policy of alliances that caused World War I?), something is simply not working here! And knowledge that is not forgotten lies neglected in the memory, knowledge that is of no use, inert knowledge. True, the school, apparently, has educational goals that are more than simply remembering material – for example, widening horizons, developing curiosity, promoting love of learning, refining artistic taste, cultivating moral sensitivity, and strengthening social involvement. However, those goals are not achieved either. Very often the opposite goals are attained. Thus, the school based on the first model is a failure in terms of its own goals.

With respect to *working all too well*, critics of the "closed" school model argue that the school is actually an effective institution. It achieves the very goals implicit in the curriculum – primarily the hidden curriculum. As expressed by John Gatto (2002), schools dumb students down, preparing them to be mindless consumers of brands and mass media, brainwashed by political rhetoric and entertainment. Moreover, the school forms its students' common sense and assumptions, so that when the time comes, they will be loyal to the social and economic order that oppresses them. In addition, schools betray working class children and advance the children of the affluent classes, thus replicating social class stratification for the benefit of the hegemonic class (cf. Bowles and Gintis 1976; Giroux and McLaren 1989). In these and other respects, schools work very well, which explains its survivability, despite penetrating criticism, and the failure of reforms that seek to change it.

As to the "open" school model, with respect to *doesn't work*, the critics argue that free/open/democratic schools, as they are called from one decade to the next (though there are some differences among them), where the child is central, do not fulfill their motivating vision. The intellectual, emotional, and moral development, which is meant to emerge from self-regulated learning and primary motivations, does not take place, contrary to the promises of the twentieth-century prophets of open education such as Neill, of *Summerhill*, and other romantic educators of the 1960s such as John Holt, Herbert Kohl, Paul Goodman, Jonathan Kozol, George Dennison, J. B. Leonard, and Neil Postman. In many of these schools, as attested by their students and graduates, an atmosphere of failure and barrenness prevails. The main reason for the failure of the second model, so say its critics, derives from its core belief that there is an isolated human subject, an entity with an essential nature distinct from society and culture, and that it is innately good. That is to say, the child, by its very nature, is curious, inquiring, creative, open, critical, honest,

generous, and the like, and if the child is only left alone, all that goodness will find expression. The critics of the child-centered school argue that, on the contrary, a child has no pure nature in two senses: it has no pure nature because the most natural instincts are formed from top to bottom by society and culture (cf. Geertz, below) and because it is also "bad" (lazy, selfish, cruel, etc.), just like adults. In short, the second model posits in the child what it wants to extract, and because that which is posited is not there, it does not, of course, emerge on its own.[3]

Another critique, which also strikes accurately at the principled weakness of the second model, argues that open education is necessarily based on manipulation, since "the alteration of the curriculum to suit the needs and interests of the students is limited by the harsh fact that most students have to be in school whether they want to be or not" (Jackson 1968/1990, p. 110). This basic manipulation necessitates a further series of manipulations meant to give the students the feeling of freedom and choice where they don't exist.[4] One way or another, it is a fact that

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[3] In *The End of Education* (1996), Neil Postman describes the digital utopia of Diane Ravitch and others, according to which children will learn academic subjects with great joy by means of the computer, and he writes that it arouses "a typical sense of unreality": little children have trouble falling asleep and instead of complaining to their parents, they solve virtual problems in mathematics with friends. Ravitch, he writes, did not invent a new kind of educational technology but a new kind of child (pp. 39–40). Reading of the literature of open education sometimes also arouses that "typical sense of unreality." There, too, a new kind of child is invented.

Edward de Bono tells a joke (heard in a lecture at the Van Leer Institute in Jerusalem, December 1996) that points out the basic weakness of open education (he used this joke differently): A man, whose limbs were all broken in a traffic accident, and who is in a plaster cast, asks the doctor: "After you take the cast off, will I be able to play violin?" The doctor answers, "Certainly." The patient says with satisfaction: "Great! Because I didn't know how before this."

According to open education, the inner essence of the child consists of two components: the general and the particular. The general component is, as noted, innate. The individual part is what distinguishes each child, his authentic self. The child, therefore, is an avocado: it has an inner kernel. On the other hand, according to postmodern views, which speak of the "death of the subject," the child is an onion, layer upon layer, culturally constructed, with no inner kernel.

[4] One of the founders of open education in Israel analogized open education to pregnancy: "There are no half pregnancies; when choices are limited, manipulation appears." He gave an example: a teacher in an open school calls the roll at the beginning of the lesson and says, "I don't understand why Dina and Dan aren't in class. I told them clearly that anyone who doesn't want to come doesn't have to." In a familiar cartoon, aimed at progressive education, a child is seen asking his teacher: "Do I have to do what I want to do today?"

David Olson defines a school as an institution that by its essence deprives the child of responsibility for learning and the eagerness to manage its own learning: "The goals of returning responsibility to the learners and recognizing children's willingness to accept responsibility for their own learning are among the distinguishing features of modern 'child-centered' pedagogical theories, but such goals are difficult or impossible to accommodate within the institutional obligations of schools" (Olson 2003, p.179). Elsewhere he writes: "Although reform was often justified on the basis of the importance of self-fulfillment and personal experience rather than the set goals and roles of the adult society, the school remained the instrument of the state" (ibid., p. 186). He also states: "Although education in its most general sense may be viewed as any process or activity that allows the young to benefit from the accumulated knowledge and experience of the old, the very idea of pedagogy is based on the premise that it is the adults who are responsible for children's learning anything worthwhile" (ibid., 202). In short, it is the adults, not the children, who need education, and the concept of the free/open/democratic school is inherently self-contradictory.

Table 1.3 Critiques of the closed and open school

Schools → Critiques ↓	Closed school (the first model)	Open school (the second model)
Doesn't work	Most of the material "learnt" is forgotten; there is no positive experience of learning	There is no learning in depth; there is no fulfillment of the intellectual potential
Works all too well	Prepares for obedience and consumption; reproduces the societal order	Secures "a reservation" for the wealthy societal orders; transmits individualistic ideology

schools of the second model fail to extricate themselves from their marginal place in the educational system. While the system may not be offering these schools much help (most such schools are funded by wealthy parents instead), if their motivating vision were to be fulfilled, even partially, open schools would expand despite opposition of the system and prevail over the schools based on the first model.

As for *working all too well*, the critics of the second model argue that free/open/democratic schools serve the affluent classes, who want to escape from "closed" schools and place their children in "nature reserves," where they are protected from forced consolidation and mediocre teachers. The well-to-do are not concerned that these schools do not systematically prepare their children for matriculation exams, because their children's future is assured. Indeed, child-centered schools transmit the individualistic and egocentric ideology of the parents to their students: the individual is in the center, and the society is only a means or an obstacle on the path of his advancement. From these and other points of view, the second model works too well and fulfills its purpose.

To summarize these critiques of schools – closed or open – from a pedagogical point of view, the schools are failures, but they are a sociological success (from a hegemonic viewpoint), which explains their persistent existence, despite criticism leveled against them from all sides (Table 1.3).

1.1.3 The Appearance of the Third Model

The third model arose against the background of disappointment with the two older models. From the vantage point of this model, the others are not contradictory. Rather, they are essentially similar with respect to the learning, teaching, and knowledge they embody.

According to Barbara Rogoff, the two older models are based on common basic assumptions regarding learning. The model that she proposes is based on different assumptions and can rescue education from the pendulum swings between control and freedom, between the two apparently opposing models of teaching and learning:

> Two of the models, adult-run [the first model] and children-run [the second model] instruction, are often cast as opposite extremes of a pendulum swing between unilateral control

and freedom […]. We argue that the adult-run and children-run models are closely related, in that they both involve a theoretical assumption that learning is a function of one-sided action (by adults or children, respectively, to the exclusion of the other). The community of learners instructional model supersedes the pendulum entirely; it is not a compromise or a "balance" of the adult-run and children-run models. Its underlying theoretical notion is that learning is a process of transformation of participation[5] in which both adults and children contribute support and direction in shared endeavors. However, it is difficult for people with background in one-sided models of learning (such as many of the new parents in school we are studying) to avoid assimilating the community of learners model to adult-run/children-run dichotomy. (Rogoff et al. 1996, pp. 389–390)

Students learn in all three of the models of instruction, but they learn different things regarding what is essential. What is essential, according to Rogoff and her colleagues, is the relation to the acquired knowledge and to the community within which learning takes place. In the adult-run model ("the industrial model of teaching and learning"), the students do not have to understand the subjects studied and their purpose, nor do they have to show interest in them. Their task is to receive knowledge from the active teacher, who directs the process. The teacher's agenda derives from the assumption that learning is the result of the one-way transfer of knowledge and skills from those who possess them to those who lack them (ibid., p. 394). The students are not partners in setting the agenda. Instead of participating in a joint effort, their task is to perform the actions that the teacher has planned for them. Though there is some coordination between the activities of the teacher and those of the students, the actions are compartmentalized, in contrast to a situation of cooperation in which people's ideas and interests intermingle (ibid).

In reaction against Rogoff's adult-run model, advocates of progressive education proposed a child-run model of instruction, in which the children are active producers of knowledge and the intervention of adults is perceived as a potential obstruction to learning.[6] In the child-run model, the ideal is for children to discover reality on their own or in mutual cooperation with their peers. Children become active agents in learning, and the world of adults is seen as a passive source of material or as a source of negative influence that is liable to destroy the children's nascent potential (ibid).

According to the two well-established models, the process of learning has an active and a passive side; each of them is premised on a one-dimensional philosophy of teaching, in which adults and children compete for control; each is a limited and reciprocal alternative to the other. "In accordance with Dewey's call for going beyond the dichotomy, we argue that the model of a community of learners is not situated on the course of the pendulum; it does away with the assumption that

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[5] Rogoff's principle of participation is intentionally different from Vygotsky's principle of internalization. In the process of participation, the subject does not change; what changes is the degree of his participation in social activity, which moves from the periphery toward the center (Rogoff 1990).

[6] As Martin Buber put it, the image of the funnel was replaced by the image of the pump (Buber 1949, p. 245). Today the prevalent image, inspired by constructivism, is of the child or of the mind as a food (knowledge) processor.

learners and teachers are on opposite sides of the barricade and reconceives them as mutually involved in a joint effort" (ibid., p. 396).

> The community of learner's model is not a balance or "optimal blend" of the two one-sided approaches, but rather a distinct instructional model based on a different philosophy […]. In a community of learners, all participants are active; no one has all the responsibility and no one is passive […]. In a community of learners, children and adults together are active in structuring the inquiry, though usually with asymmetrical roles. Children and adults collaborate in learning endeavors; adults are often responsible for guiding the process and children also learn to participate in the management of their own learning […]. We argue that it is consistent within the community of learners model for adults under some circumstances to provide strong leadership or extensive explanations to assist the group, and for children under some circumstances to have primary responsibility. (Ibid., pp. 397–396)

Taking a direction similar to that of Barbara Rogoff and her colleagues, Carl Bereiter and Marlene Scardamalia wrote:

> The educational pendulum swings, inevitably although not always regularly, between conventional, didactic instruction and child-centered education. There ought to be a third alternative, but what could it be? Not some compromise between the other two, for that is what already exists in most schools? (1993, p. 199)

Bereiter and Scardamalia propose evading the swing of the pendulum by taking the third path or model in directing education – the model of the research group or of the knowledge-building community:

> Why, then, should the research group not also be a model for restructuring schooling? Could knowledge-building, carried out in the progressive manner of scientific research groups, provide the missing third way to conduct education? In an earlier era it was possible to dismiss this idea as romantic. Researchers are discovering or creating new knowledge; students are only learning what is already known. By now, however, it is generally recognized that students construct their knowledge. This is true if they are learning from books and lectures as it is if they are acquiring knowledge through inquiry. This is not an article of faith (although it is treated as such by some educators). It is an obvious implication that falls out of any plausible theory of knowledge acquisition. A further implication is that creating new knowledge and learning existing knowledge are not very different, as far as psychological processes are concerned. Thus there is no patent reason why schooling cannot have the dynamic character of scientific knowledge building. If there are insurmountable obstacles, they are more likely to be social or attitudinal than of a cognitive kind. (Ibid., p. 200)

Hence, these authors recommend reconstructing schools on the model of the research group or community, the essence of which is "collective pursuit of meaning and understanding" (ibid., p. 204). The vision of children as knowledge producers is not unreasonable or overambitious, they argue, since the human mind, by its nature, constructs knowledge and creates meaning.

Indeed, there are indications that such a model is taking shape, as indicated by such terms as "a community of learners," "a community of researchers," "a community of thinkers," "a reflective community," and "a community of practice."[7] "In all these

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[7] Grossman, Wineburg, and Woolworth write: "The word community has lost its meaning. From the prevalence of terms such as 'community of learners,' 'discourse communities,' and 'epistemic

variations, the central idea carried by the term 'community' is that schooling should become a collective effort to understand the world" (ibid., p. 210).

These, according to Bereiter and Scardamalia (ibid., pp. 210–211), are the characteristics of the new educational model:

1. Deep learning of subjects – preference for depth rather than coverage.
2. The focus is on problems and not on categories of knowledge (rather than "the heart," focus on "how does the heart work?").
3. Research is motivated by the learners' questions.
4. The main challenge is to explain phenomena. Students are encouraged to develop explanatory theories and support or challenge their theories with the relevant facts.
5. The focus is on group rather than on individual progress toward shared understanding.
6. In place of typical schoolwork, work on aspects of the shared task is conducted in small groups.
7. Discussion of the subjects under consideration proceeds with great seriousness, and students are expected to respond to one another.
8. Teachers contribute what they know to the discussion, but their contribution is not decisive, since there are also other sources of information.
9. The teacher remains the leader by virtue of being an expert in learning, but her role changes from that of someone standing outside of the learning process to someone who participates in it.

Bereiter and Scardamalia claim that the assumptions of the third model are accepted by most educators today; however, the problem is that they try to implement it within the framework of one of the more familiar models of education, either the first or the second, whichever is most familiar to them: "The hard part is to translate the notion of knowledge-building community into a form of practice that does not downslide into one or the other conventional form" (ibid., p. 219).

Although Rogoff and her colleagues and Bereiter and Scardamalia come from different schools of cognitive psychology, and although they view cognitive processes from different angles, they all characterize the third model in similar fashion and talk about it as a model essentially different from the older ones.

To demonstrate the characteristics of the third model, let us examine the three communities of learners/researchers/knowledge builders that embody it.

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communities' to 'school community,' 'teacher community,' or 'community of practice,' it is clear that community has become an obligatory appendage to every educational innovation" (Grossman et al. 2001, pp. 942–943). Incidentally, farther on they mock the idea of "virtual communities," but it is certainly possible that virtual communities are closer to the idea of community and "living" communities.

One source of the concept community as an alternative framework to the classroom is the American philosopher Charles S. Peirce (1839–1914). He invented the term "community of inquiry," which Matthew Lipman borrowed and developed (see below). Peirce sought to replace the Cartesian model of the isolated philosopher in radical doubt by "people coming together to serve as jury to ideas and hypotheses" (Pardales and Girod 2006, p. 301).

1.1.4 Community of Learners

The psychologists Ann Brown and Joseph Campione are the developers of a framework they call community of learners, or Fostering Communities of Learners (FCL). This framework grew out of another framework called reciprocal teaching, which was developed by Brown with Annemarie Palincsar in the 1980s, with the aim of encouraging the understanding of texts by means of an "interpretive community." Reciprocal teaching is based on four processes guided in turn by the participants: the leader opens by presenting a question for the purpose of directing the examination of the text and concludes by summarizing the argument of a section or of the entire text; between these two stages, he or she facilitates the activities of clarifying concepts or difficult passages and of predicting what will be said further on in the text. The framework – questioning, clarification, prediction, and conclusion – promotes understanding of texts and guides the community on the basis of a shared aim and rules for discussion and interpretation. Reciprocal teaching is included in a broader framework that grew out of it: a community of learners.

With unreserved enthusiasm, Lee Shulman (1997) described what he saw in a classroom in an elementary school in Oakland, California, run as a community of learners, guided by Brown and Campione, and he asked whether it was possible to convert classes in traditional schools to communities of learners. The class that Shulman observed was studying a unit in biology that dealt with protected species – species in danger of extinction – in the environmental context of the city of Oakland. This is what can be learned about a community of learners from Shulman's report.

The framework of a community of learners consists of four parts. The first part is a series of lessons called "benchmark lessons," whose purposes are (1) to create a common basis of knowledge, by demonstrating correct and erroneous conceptions of learners regarding the subject being studied, and (2) to define the goal of the research, i.e., where the learners will be in another 15 weeks. The goal in the class that Shulman observed was to present the Oakland City Council with a survey and proposals, oral and written, regarding the situation of protected species within its jurisdiction. The City Council, for its part, scheduled meetings with the young learners and prepared for them with full seriousness. During the benchmark lessons, the learners formulated the questions that interested them, which they wished to research in small, specialized groups.

The second part of the community of learners is called "research groups." At this stage, which lasts for about two months, the community splits into small research groups, and each group specializes in a certain area. In this case, they specialized in a certain species that was in danger of extinction. This process includes reading relevant texts (according to the method of reciprocal teaching), holding interviews with experts in the field, observation, collection and processing of information, and so on. From time to time, the teacher invites the groups for cross-discussion and

further construction of a common knowledge base. In the third part, which is called "jigsaw," experts from each group are sent to the other groups to present the information they have gathered and developed. The information that was collected and developed in each of the research groups is utilized for the solution of essential problems. The problems and solutions are presented by the learners in the framework of the fourth part – the summary exhibition. In this case, the summary exhibition consisted in the presentation of the research and its conclusions to the Oakland City Council. "What was striking, as you looked at the community of learners classrooms, is first of all, how much the students were learning" (ibid., p. 15).

To gain understanding of the community of learners framework by means of direct experience, Shulman organized his annual seminar at Stanford University, which deals with research in teacher training, according to its principles. Having experienced impressive results – learning of a different quality – he asked the key questions: "What are the conditions under which teachers can learn to engage in this kind of teaching? Under what circumstances can teachers sustain these practices over time?" (ibid., p. 9).

His answer is pessimistic: the average school cannot adopt the framework of a community of learners because its fundamental principle is opposed to that upon which the community of learners is based; the typical school is based on the principle of certainty, on early prediction of the processes and outcomes of learning: "We have not yet created the conditions in schools, institutions, or in teacher education that not only will tolerate the creation of uncertainty and unpredictability, but will in effect develop values that will support teachers and learners in those communities to engage in such activities" (ibid., p. 29).

Nevertheless, it is certainly possible and worthwhile, in Shulman's view, to develop new educational institutions – schools, colleges, and universities – that will provide the conditions needed for a community of learners.[8]

Joan Heller and Ann Gordon (1999) investigated the experimental classrooms of Brown and Campione and summarized the differences between the traditional, didactic classroom and that of the community of learners in the following manner (Table 1.4):

Brown and Campione (1996) summed up the life cycle of a community of learners in the following way: "These three key activities – (a) research, (b) in order to share information, (c) in order to perform consequential tasks – are all overseen and coordinated by self-conscious reflection on the part of all members of the community. In addition, the research-share-perform cycles of FCL cannot be carried out in a vacuum. All rely on the fact that the participants are trying to understand deep disciplinary content" (p. 293) (Table 1.5).

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[8]Amnon Karmon, Sarit Segel, David Koren, and I proposed establishing a teachers' college based on the third model and on the organization of knowledge intended to develop thinking. See Karmon et al. (2006).

Table 1.4 The didactic class versus a community of learners

Classrooms → Components ↓	Traditional didactic classroom	Nontraditional intentional learning environment
Students	Passive recipients of information provided by teacher	Students as researchers and teachers
Teacher	Provider of knowledge; classroom manager	Model learner and thinker; guide and facilitator
Curriculum	Basic skills distinct from higher order	Learning to learn and thinking, as basic skills
Content	Broad coverage of content; fragmented curriculum	Depth rather than breadth; integration of basic skills in service of learning coherent curriculum
Computers	Drill and practice; programming	Tool for intentional reflection and creation of extended community
Assessment	Fact retention; traditional testing of content	Performance/projects/portfolio; knowledge discovery and utilization processes

Table 1.5 The life cycle of a community of learners
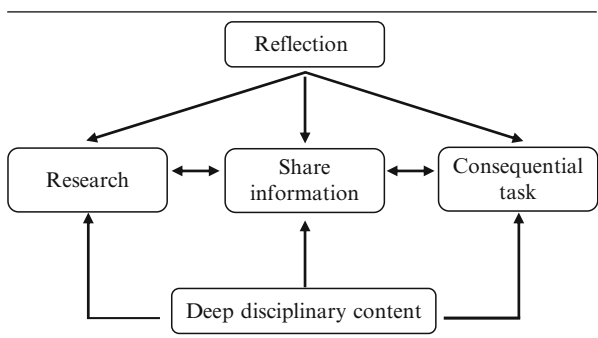
Regarding the reflexive component, the founders of the framework write:

> FCL is historically an intentionally metacognitive environment. The roots of FCL, including Reciprocal Reading, Jigsaw, guided writing, guided assessment, and exhibitions and performances are all designed as metacognitive activities, occasions for students to monitor their own and others' comprehension, and reflect on progress to date. The classroom talk in FCL is largely metacognitive: "Do I understand?" "That doesn't make sense," "They [the audience] can't understand X without Y," and so forth. (Ibid., pp. 304–305)

Regarding the "deep disciplinary" component, which is one of the basic goals of the community of learners, they write: "One cannot expect students to invest intellectual curiosity and disciplined inquiry on trivia; there must be a challenge, there must be room to explore, to delve deeply, to understand at ever deepening levels of complexity" (ibid., p. 306). The unit of knowledge in a community of learners must lead the students to serious inquiry that will bring them from preliminary, naive theories to the foundations of the discipline – according to the learners' level of development.

The community of learners, Brown and Campione explain, represents a paradigm shift in the conception of learning that took place in the second half of the twentieth

century – from behaviorism to constructivism. Behaviorism sought general laws of learning that did not depend on the individual, the other, the situation, or the content. It viewed learning as a personal act, passive and receptive in character, whereby behaviors were dependent upon external reinforcements and simple associations. In the wake of the "cognitive revolution," theories of learning began to emphasize its active, reflective, and social character. Learners were now seen as active constructors of knowledge and not as passive recipients. The focus of learning shifted from repetition to the need to create associative connections to understanding of disciplinary knowledge. Psychologists who studied learning left their laboratories for "natural" environments, including school classrooms, and they discovered the complex, creative, situation-dependent nature of learning. On the basis of these discoveries, educational psychologists proposed the principles of a different kind of learning, similar to that which takes places in "real life," outside of schools.

Ann Brown (1994, pp. 9–10) summed up the principles of this different kind of learning, upon which the community of learners is based:

1. Active, strategic, conscious learning, self-motivated and directed toward a goal: active learners are meta-cognitive learners, aware of their strengths and weaknesses, who enlist appropriate learning strategies. Behavioristic learning, "despite the learner," is not effective. Effective learning derives from the goals of the learner herself ("A purpose in mind!") and not from the goals determined by authorities above her.
2. The classroom as a system of "zones of proximal development": learners develop at their own pace. They are ripe for further development at different time intervals. In the spirit of Vygotsky's concept, investigation is conducted by individuals and groups under the guidance of a trained leader who directs development toward the next stage, the "zone of proximal development."
3. The legitimation of differences: personal differences are identified, evaluated, and shaped. The educational environment encourages specialization in particular areas and a variety of specializations enrich each separate specialization.
4. A community of discourse: higher order thinking is the product of internalized dialogue. Establishing ways to discuss and disagree lays the groundwork for individual thinking.
5. A community of action: learning depends on the existence of a community of learning and inquiry. Every member of the community of learners depends on the other members. This positive dependence encourages cooperation, mutual respect, and a feeling of responsibility and group identity.

   The preceding five principles are interconnected. A system of many zones of proximal development assumes decentralized expertise; decentralized expertise assumes the legitimacy of personal differences; and so on. Brown adds another pair of principles to create a systematic structure of good learning:
6. Deep conceptual content appropriate to the learners' stage of development.
7. Authentic evaluation coordinated with the curriculum.

1.1.5   Community of Inquiry

Matthew Lipman, the creator of the Philosophy for Children program, is also the father of the method of teaching and learning called community of inquiry. He states the goal of the program:

> The aim of Philosophy for Children is to promote excellent thinking: thinking that is creative as well as critical, imaginative as well as logical, inventive as well as analytical. But to make children think well, we must first make them think. This involves an intellectual awakening, a strengthening of their ability to discriminate the relationships among things – to draw appropriate distinctions and make connections. (Lipman 1991, p. 35)

The best way to do this – to make students think, to recognize the connections between things – is to deal with philosophy in the framework of a community of inquiry. Since children in elementary grades, for whom the program is intended, are unable to read original philosophical texts, Lipman wrote "philosophical novels" for them. These "novels" describe children who hold philosophical conversations about topics taken from the life of children of the learners' age. Each "novel" is devoted to problems in an area of philosophy – logic, epistemology, ethics, and politics. Though Lipman has written a great deal regarding the advantage of philosophical content for developing thought, he does not believe it is a necessity. It is possible to develop thinking with other content. What is necessary is the pedagogy or methodology: "the pedagogy of the 'community of inquiry' should be the methodology for the teaching of critical thinking, whether or not a philosophical version of it is being employed" (Lipman 1991, p. 3). And what is the nature of a community of inquiry? What are the desirable characteristics of students who participate in it?

> Thus, we can now speak of "converting the classroom into a community of inquiry" in which students listen to one another with respect, build on one another's ideas, challenge one another to supply reasons for otherwise unsupported opinions, assist each other in drawing inferences from what has been said, and seek to identify one another's assumptions. A community of inquiry attempts to follow the inquiry where it leads rather than being penned in by the boundary lines of existing disciplines […]. Consequently, when this process is internalized by the participants, they come to think in moves that resemble its procedures. They come to think as the process thinks. (Ibid., pp. 15–16)

The concept of internalization – assimilation of the social process in the thinking of the individual (Vygotsky's influence is evident[9]) – is the decisive argument in favor of the community of inquiry. Table 1.6 presents the social processes that take place in a community of inquiry and are internalized in the thinking of its participants (Lipman 1991, p. 52).

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[9] "We call this bringing of the action inward, this recapitulation of the high mental functions that are connected with a change in their structure, the process of internalization. Our main meaning is: the fact that the high mental functions are first constructed as external patterns of behavior that depend on an external sign is not coincidental. On the contrary, this fact is determined by the very psychological nature of the high function, the function that does not appear as a direct extension of the elementary processes but is rather a pattern of social behavior that a person uses by himself and directs toward himself" (Vygotsky 2003, p. 16; emphasis in the original).

Table 1.6 Social processes internalized in individual's mind

Characteristic behaviors of the community	Internalized individual behaviors
Members question one another	Individuals question themselves
Members request of each other reasons for beliefs	Individuals reflect on their reasons for thinking as they do
Members build on one another's ideas	Individuals build on their own ideas
Members deliberate among themselves	Individuals deliberate in their own thinking
Members offer counterexamples to the hypotheses of others	Individuals anticipate counterexamples to their own hypothesis
Members point out possible consequences of one another's ideas	Individuals anticipate possible consequences of their own ideas
Members utilize specific criteria when making judgments	Individuals use specific criteria when making judgments
Members cooperate in the development of rational problem-solving techniques	Individuals follow rational procedures in dealing with their own problems

Lipman summarizes:

> And so with countless other cognitive acts and processes: They begin in each of us as adaptations of group behaviors. And since thinking is individual emulation of social norms and social conduct, the more rational the social or institutional conduct, the more rational will be the internalized reflection. A community that has institutionalized patterns of criticism among its members prepares the way for those members to become more self-critical, self-controlled, and autonomous. (Ibid.)

Ann Sharp, Lipman's partner in developing and circulating the program of Philosophy for Children,[10] expanded the circle of "assets" that are internalized during the process of participation in a community of inquiry from the ability to think to more general and personal characteristics, which she calls "cognitive virtues" or "intellectual traits." How can we know, she asks, that we are in the presence of a community of inquiry? Her answer is that we know we have such a community when students:

accept corrections by peers willingly;
listen to others attentively;
revise their views in light of reason from others;
take one another's ideas seriously;
build upon one another's ideas;

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[10] Ann Sharp is Lipman's loyal partner in developing the program of Philosophy for Children and in writing books and articles in support of it. Ann Brown and Joseph Campione were a couple. Carl Bereiter and Marlene Scardamalia are a married couple. Is there any connection between life as a couple and the creation of a community of learners/inquirers/knowledge builders, etc., based on dialogue, cooperation, and intimacy? Do couples create externalizations of ideal life as a couple in the educational frameworks that they establish? Most of the institutes dedicated to dialogue between religious believers and nonbelievers in Israel – and there are many – were established by married couples in which one is a believer and the other one is a nonbeliever.

develop their own ideas without fear of rebuff or humiliation from peers;
are open to new ideas;
show concern for the right of others to express their views;
are capable of detecting underlying assumptions;
show concern for consistency when arguing a point of view;
ask relevant questions;
verbalize relationships between ends and means;
show respect for persons in the community;
show sensitivity to context when discussing moral conduct;
discuss issues with impartiality;
ask for criteria. (Sharp 1988, p. 209 [adapted])

Elsewhere Sharp (1993) described how the dialogue in a community of inquiry reveals and shapes characteristics vital for its own existence: care of each participant for the growth of the other participants and the logic of the discussion, which assumes openness and willingness to change attitudes and to change; trust in others, in their willingness to accept the thinking of others; and autonomy and self-esteem that derive from the belief of each participant in the others and in the world. These characteristics and others arise from the principles that guide the character of the dialogue in the community of inquiry: tolerance, consistency, a general outlook, openness, self-correction, conscious use of criteria, sensitivity to context, and respect for all the participants as possible sources of new insight.

Matthew Lipman (1991, pp. 241–243) summed up the main stages and goals of the community of inquiry in the following way:

1. *The Offering of the Text*: The text, the philosophical novel, demonstrates a community of inquiry to the learners by means of a story "from life" with imaginary characters; the text presents the values and intellectual achievements of past generations; the text mediates between the learners and the culture; the text reflects processes of thought that take place in the individuals' minds; the text describes human relations that are susceptible to analysis in logical terms; the text is read by turns by all the participants; the participants discover that the text is significant and relevant to their lives; the thinking behavior of the imaginary protagonists are gradually internalized in the thought of the participants.
2. *The Construction of an Agenda*: Raising preliminary questions and responses of the community of inquiry regarding the text; the teacher relates to every contributor to the discussion with seriousness; the whole community constructs its research agenda; the agenda is a map of the participants' areas of interest; the agenda includes the subjects that arose in the text and appear important to the students, respond to their intellectual needs; the teacher and the students define the point of departure for the discussion.
3. *Solidifying the Community*: The creation of group solidarity by means of dialogical inquiry; giving preference to the activity of thinking rather than the results of thinking; formulating differences of opinion and subjects that need to be understood; development of thinking skills in the context of dialogue; learning how to

apply tools of thought; joining together in shared thinking; development of increased sensitivity to significant details and context-dependent differences; the group works together to feel its way on the trail of the argument; internalization of the visible group behaviors.

4. *Using Exercises and Discussion Plans*: Processing questions within the academic tradition; application of the disciplinary methodology by the participants; internalization by the students of other philosophical possibilities; concentration on specific problems in order to encourage articulation of judgments; direction of the inquiry to the examination of general ideas and subjects such as truth, beauty, justice, and the like.

5. *Encouraging Further Responses*: By means of varied forms of expression; familiarity with the synthesis of critical and creative thinking and of the community and every individual in it; striving to deepen meaning by means of strengthening judgment.

Lipman writes: "The chief concern of education was traditionally held to be the transmission of knowledge from one generation to another […]. The great paradigm shift in the history of education has been the redesign of education to have thinking rather than learning [of knowledge] as its target" (1988, p. 141).

When the development of thinking is seen as the goal of education, Lipman writes, all the definitions of the dimensions of education and all the metaphors bound up with them "collapse like dominoes," giving way to new definitions and metaphors. The question of traditional education – how can we cause students to repeat and absorb certain knowledge? – is replaced by a new question: "how specifically to involve students in the inquiry process, how to introduce them at least as much to the demonstrably problematic aspects of the subject matter under investigation as to the purportedly settled aspects?" (ibid., p.142). Lipman's answer to this question is: "by making the classroom into a community of inquiry."

1.1.6   Community of Knowledge Building

Carl Bereiter and Marlene Scardamalia are the originators of the framework called community of knowledge building. The concept of "knowledge building" is meant to replace that of "learning" as a focus of the educational process. The two terms indicate different activities directed at different goals. Bereiter uses the concepts of Karl Popper to distinguish between building knowledge and learning. Popper divided the world into three realms: World 1, the world of objects (the "objective" world); World 2, the world of the mind (the "subjective" world); and World 3, the world of ideas (the "intersubjective" world), which seeks to understand the two others (Popper 1972). "Learning is activity directed toward World 2. It is doing something to alter the state of your mind to achieve a gain in personal knowledge or competence. Knowledge building is activity directed toward World 3. It is doing something to a conceptual artifact" (Bereiter 2002, p. 255).

"Doing something to a conceptual artifact" means creating ideas in the process of work on ideas – to find alternatives to them, to criticize them, to deduce new ideas from them, etc. In World 2, the processes of the mind – thinking, learning, internalizing, etc. – are the focus; in World 3 the focus is "outside" – on ideas, theories, and other conceptual products. In World 3 researchers work on conceptual products the way a carpenter works on a table in World 1.

These two actions – learning and constructing knowledge – demand different educational environments. A school is an educational environment focused on learning, on World 2. The instruction is interested in content that is located in the mind. In principle, a school could be focused on conceptual products, on World 3 – although this would require a fundamental change in instruction, evaluation, curriculum, etc. However, scholastic education is directed at learning guided by the metaphor of mind as container. The mind, which is seen as a container, is to be filled by teaching selected content. Even constructivist instructional methods are focused on learning and not on constructing knowledge, and they are guided by the metaphor of the mind as a container. In contrast, the mark of constructing knowledge is progressive discourse, meaning concern with ideas with the goal of improving them. The improvement of ideas is the concern of science. "Scientific progress is not a matter of getting closer to the truth; it is a matter of improving on existing knowledge" (Bereiter et al. 1997, p. 331). Progressive discourse, by its very nature, is group discourse: "If there is anything distinctive about science, it is not to be found in the working of individual minds but in the way scientists conduct themselves as a community" (ibid., p. 333).

The essential characteristic of scientific work lies in four commitments to progressive community discourse: (1) Commitment to mutual advances in understanding: commitment to progress in the understanding shared by all the participants; the ideal is that all participants should agree that there has been improvement in their understanding compared to its previous state. (2) Commitment to empirical testability: commitment to formulated questions and hypotheses in a way that allows for testing them by empirical evidence; this is willingness to submit a position to a test, to make it vulnerable. (3) Commitment to expanding the basis for discussion: commitment to enlarging the network of facts and ideas that are already accepted by the participants – which increases the possibility for constructive discussion of points of disagreement. (4) Commitment to openness: commitment to critical thinking, to disagreement, to challenge, and to new ideas.

These commitments are not peculiar only to the scientific community; they characterize other communities that are not concerned with science but with art, literature, and any other subjects about which a community of learners and researchers might seek theoretical progress.

The view of science as the commitment of a community to improve understanding and advance knowledge has rich pedagogical potential, because it is tailored to the children's efforts to understand the world and makes it possible to turn the classroom into a community of knowledge building. "If students can carry on progressive discourse aimed at explaining natural phenomena, then they are doing science – regardless of their mastery of research procedures" (ibid., p. 334).

The progressive discourse described below took place over a period of three months in the sixth grade of a public school in Alberta, Canada. The discussion

dealt with the phenomenon of accelerated growth at puberty, and it was carried out on Computer-Supported Intentional Learning Environment (CSILE) – software and a network designed to support constructive discourse. The participants' entries are guided by the kind of thinking they wish to contribute to the group discourse: P (problem), MT (my theory), INTU (I need to understand), NI (new information), C (comment), and WHWL (what have we learned?). Each entry of INTU can give rise to a secondary discussion that can branch off from the central discussion following the special interest it arouses. The example presented below is part of such a secondary discussion, the title of which was "About Growing." It included 179 entries.

The starting point of the discourse was the personal interest expressed by participants in the phenomenon of accelerated growth – a topic that arouses curiosity during adolescence. Some participants asked when their growth spurts would begin, while others asked when theirs would end. One student wrote that he was one of the shortest boys in the class; everyone around him was growing, and he felt as if he were shrinking. One girl wrote that she had grown fast and was going to be a very tall girl. She wanted to know when her growth would stop. Discussion of this kind is not scientific. Rather it is the sharing of a common experience that is not subject to controls. However, after a short while interest arose in the process of growth itself, as a phenomenon in the world, and it took the form of scientific hypotheses. One student asked whether growth rate was hereditary. One student wondered whether trees also had a period of accelerated growth. A third student hypothesized that accelerated growth stopped after the material from which it was made was exhausted. Another student suggested that the body has some kind of clock that controls the process. Gradually the expectation arose that a common solution would be found to various INTU questions concerning the phenomenon of accelerated growth.

Thus, the first commitment was formed – to strive for joint understanding of the phenomenon. The students turned to various sources of information and while doing so they created the third commitment – to expand the basis of agreed-upon knowledge. The basis of agreed-upon knowledge developed rapidly and with it arose new questions (Why do nails and hair continue to grow after other physical growth has ceased? What is the nature of the growth of knowledge in our brains? Is the accelerated growth of trees and flowers similar to that of animals?), which prompted the basic question of what should be considered knowledge. Once this question arose, the second commitment was formed – subjecting knowledge to empirical test.

The subject of heredity became central and focused on the question of whether growth ceased when offspring reached their parents' size. The children decided to conduct a survey and compare the heights of parents and their offspring. The survey also included grandparents to test the hypothesis that in old age people begin to shrink. In this part of the discussion, the fourth commitment – openness – was created when the students examined unconventional ideas.

The final stage in the discussion dealt with the question, "What have we learned?" The students spoke of having learned many concepts and facts. Follow-up on the group discussion showed that a conceptual change took place among the participants with respect to the nature of growth. Most of the students wanted to continue the discussion in order to formulate their own theories on the subject, and they also suggested various ways of doing so.

Teachers and leaders from CSILE occasionally intervened and made comments to further the discussion. The CSILE technology made the community discussion possible. Unlike email, communication in the community network built knowledge, and it is not one-to-one but rather with the community, according to agreed-upon procedures.

The experiment demonstrates a true process of progressive discourse to build knowledge. If that truly is the nature of scientific activity – the scientific method itself – then the students truly experienced it. This experience differs from learning by the method of research or discovery in several important respects: (1) the focus is not on doing (research) but on understanding; (2) the focus is not on argument but on cooperation – the students are not encouraged to form a position and defend it, but to strive to create a basis for mutual understanding; (3) the focus is not a project, a research task, or any concrete result that can be exhibited, but the increase and deepening of knowledge and understanding; (4) the framework is not that of science studies but of the personal interest that gradually grew out of scientific activity. Hence, the goal is not science, but rather the ability to take part in progressive discourse of building knowledge. Bereiter writes: "The crucial issue is whether the students are working in World 3. If they are, they are doing knowledge building, regardless of how active a role the teacher plays in their World 3 work" (2002, p. 266). Development of the ability to participate in the construction of knowledge means educating young people for the information economy and society, an economy and a society in which work with knowledge – creating, evaluating, organizing, locating, applying, and processing information – will be an indispensable ability.

According to Marlene Scardamalia (2002, pp. 78–82), the framework of the knowledge-building community is based on two dynamics: a socio-cognitive dynamic and a technological dynamic. The former includes mental ways of working, and the latter includes ways of working with a Knowledge Forum, the software of the knowledge-building community (an advanced version of the CSILE software), permitting and encouraging the first dynamic. In this case the computer is combined with a new pedagogy and enables it, unlike many instances in which the computer is a mere adjunct to traditional pedagogy, without realizing its possibilities.

We have surveyed three communities of learners, investigators, and builders of knowledge very briefly, communities that embody the basic assumptions of The Third Model. Let us now describe these assumptions systematically.

1.1.7   The Third Model as a Synthesis of the First and Second Models

Rogoff and her colleagues and Carl Bereiter and Marlene Scardamalia warn against conceptualizing the third model in terms of the first and second ones. To establish the third model as something new, they argue, we must distance ourselves from the "magnetic field" of the old models and conceptualize it on its own terms. While this warning merits our attention, the presentation of the third model as a synthesis of the older models can shed light on the third model from a useful angle. Indeed, the

third model is a synthesis of the first model (thesis) and the second (antithesis). In this synthesis of the two models, we ascend to a new level and create a new conceptual and practical framework.

To demonstrate this dialectical principle, one may use the "formula of instruction" developed by Gary Fenstermacher and Jonas Soltis (1986). After a correction,[11] the formula is as follows: $T + I + C + S = P$. The teacher (T) instructs (I) content (C) to the student (S) in order to achieve a purpose (P). The educational process has (at least) five components – teacher, instruction, knowledge, student, and purpose – which coalesce in the image of the desired graduate. The purpose determines the function and quality of the formula's other components. For example, when the purpose (P) is critical thinking (the educated person = a critical thinker), then the role and character of the teacher, instruction, knowledge, and the student in the process of instruction take shape accordingly. As noted, according to the typologies of Lamm, Fenstermacher and Soltis, and Egan, education may serve three purposes: socialization, acculturation, and individuation, using Lamm's terminology. Each such purpose gives specific content to the components of the formula of instruction. How are these components conceived in the three models of teaching? How does the synthesis of the two previous models constitute the third model?

Teacher: *Thesis*: According to the first model, the role of the teacher is to provide the students with bodies of knowledge and skills useful for social success and a professional career (the logic of socialization – for the sake of simplicity, I will use only Lamm's terminology) or to shape their spirit in light of the fundamental values and truths of the privileged culture (the logic of acculturation). In the first case, the teacher is the authoritative manager of the classroom; in the second case, she is a charismatic model for identification. *Antithesis*: According to the second model, the function of the teacher is to enable the student to develop according to his abilities, propensities, and pace (the logic of individuation). As a sensitive facilitator, the teacher seeks to be as unobtrusive as possible. *Synthesis*: According to the third model, the role of the teacher is to have the student encounter ideas in challenging ways so that he will understand the world and himself or, in constructivist's terms, construct the world and himself.

Instruction: *Thesis*: According to the first model, instruction – the authoritative transmission of knowledge and skills (socialization) or inculcating truths and values (acculturation) – plays a central role, because it promotes learning and propels the student from his initial position of ignorance and irrationality toward the ideal of an educated person. *Antithesis*: According to the second model, we must strive to minimize teaching, even abolish it, because it impedes learning, that is to say, the student self-regulates learning (individuation). *Synthesis*: According to the third model, instruction is an ally of learning – it neither drives nor impedes learning – since it motivates learners to deal actively with ideas that structure them and their understanding.

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[11] The original formula of Fenstermacher and Soltis is T∅Sxy. The teacher instructs (∅) the student (S) specific content (x) for a specific purpose (y). In my opinion, this formula is mistaken, because it has only two variables, content and purpose, whereas in fact all the terms of the formula vary according to the quality of the purpose.

Student: *Thesis*: According to the first model, the student is a candidate for acquisition of behaviors, skills, and knowledge that will be useful for his social role and professional functioning (socialization) or the internalization of values that will restrain and refine his inherent nature – his instincts, prejudices, misconceptions, and the like (acculturation: "Humans are born evil"). *Antithesis*: According to the second model, one must nurture the student's inherent nature, his authentic personality, and defend it against the unsupervised acquisition and internalization of externally imposed ideas (individuation: "Humans are born good"). *Synthesis*: According to the third model, the individual is a product of her relations with both people and ideas. One must make certain that the student encounters people and ideas in constructive ways (the child is born neither good nor evil; the child "does not exist" at birth; it takes shape in its contacts with society and culture).

Content: *Thesis*: According to the first model, the content includes useful knowledge and skills (socialization) or moral values and truths that underlie culture (acculturation), which are organized in a common and imposed curriculum. *Antithesis*: According to the second model, knowledge includes only what the student brings by himself and organizes for himself in an authentic and spontaneous curriculum (individuation). *Synthesis*: According to the third model, knowledge includes "big ideas" and "essential questions" that help students understand and think about the world. These are organized in an open and flexible curriculum.

Purpose: *Thesis*: According to the first model, the desired graduate is someone who has acquired practical knowledge, useful skills, accepted codes, and prevailing behaviors (socialization) or who has internalized formative truths and values (acculturation). *Antithesis*: According to the second model, there is no general image of "the educated person." The educated person is someone who has actualized his unique personality, sometimes in opposition to accepted behaviors and formative values (individuation). *Synthesis*: According to the third model, the educated person is someone who develops in constant dialogue with behaviors, truths, and values, someone whose critical thought derives from familiarity with areas of knowledge and the world of ideas.

The above synthesis can be described in the terms of David Olson (2003, pp. 213–266). He writes that education is controlled by folk psychology.[12] According to one folk theory (the thesis), there is a sharp distinction between the knower and the known. "The known is seen as a commodity that can be shaped, stored, and transmitted quite independently of any particular knower" (ibid., p. 217). This division exists in societies where knowledge is regarded as authoritative and absolute. In this context, the task of the mind is to retain – not to create – knowledge. The mind's main cognitive faculty is memory. The function of education in such a context is to transmit knowledge. The opposing folk theory (antithesis) tries to bridge between the

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[12] "*Folk Psychology*, a somewhat dismissive yet apposite way of referring to common sense, intentionalist psychology, that is, the psychology of beliefs and desires, as currently employed in mainstream cognitive science" (ibid., 213). "One advantage of such folk theories is their accessibility to ordinary language, a language that can be learned and shared by the teacher and student" (ibid., p. 221).

knower and the known, to rehabilitate the viewpoint of the knower, his subjectivity. In the framework of this theory, "Learners are seen as constructing models of the world by using narratives and paradigmatic frames in order to interpret their experience and plan their actions" (ibid., p. 219). Knowledge, in this instance, is not grasped as absolute or true, but as a personal invention that can be changed.

The pedagogy of the past 100 years, writes Olson, was largely a battlefield where these two folk theories were in conflict. Teachers know them and, guilt-ridden, vacillate between them. When they work according to the first theory – covering the material and testing on it – they feel good in relation to the system, but less so in relation to the student. When they work according to the second theory – letting the student understand in his own way and express himself – they feel good toward the student and less vis-a-vis the system.

However, beyond the teachers' emotional-pedagogical catch-22, there is a more fundamental problem here. Let us assume that children are responsible for their learning and build their own truths: "What assurance do we have that the beliefs that they construct are true, at least true in the limited sense of 'taken to be true' by the larger society?" (ibid., p. 223). In short, between every child's making meaning and the given meaning imposed on students, there has to be a third path (a synthesis). Olson calls it "joint intention." On the one hand, there are truths accepted by the society because they meet agreed-upon criteria for distinguishing between truth and falsehood; on the other hand, there is the child's subjectivity – the knowledge, beliefs, abilities, desires, intentions – with which he enters the learning process. Giving preference to either of the poles leads us to one of the folk theories. In contrast, "a promising alternative is to be found in the concept of pedagogy as the management of joint intention […] the ability of an adult and child to coordinate their perspectives […]. Joint intentions provide the basis for cooperative activities […] each must also recognize that his or her single part is part of a larger enterprise, the duet. This larger intention is the joint intention" (ibid., p. 224). Therefore, "the essential feature of pedagogy, it may be argued, is combining the intentions of the teacher and learner in a joint intention […]. Forming a joint intention involves discovering a common frame of reference, a common goal, or common ground with the learner" (ibid., p. 243). The common basis is a joint project with agreed-upon internal criteria of quality.

The concept of joint intention establishes teaching and learning as a common action. Olson does not fully explain the concept but rather leaves it as a challenge for other researchers. In our terms, in the first folk theory the curriculum is central; in the second folk theory the child is central; the third folk theory is the third model, in which teachers and students are involved in a joint intention to learn and investigate a problem to get to a shared truth based on agreed-upon criteria.

Generally speaking, the first model favors the framework; the second model favors freedom from the framework; the third model favors freedom within the framework. Thus, the first model favors exerting educational pressure to shape students "from the outside"; the second model favors freedom from educational pressure so that the students shape themselves "from within"; the third model favors sensitive and dialogical educational pressure "from the outside" to shape the student "from within" (the quotation marks are meant to indicate reluctance to distinguish

sharply between "outside" and "inside"). Indeed, the first model demands the initial acquisition of knowledge (learning) and only afterward (if there is time) thinking about the knowledge; the second model demands thinking first (critical, creative, independent) and only afterward (if there is time) learning; the third model proposes learning while thinking and thinking while learning. There can be no meaningful learning without thought about the subjects being studied, just as there can be no meaningful thought without understanding the subjects being studied. Finally, the first model says to the child: "Stay outside!" That is, give up what interests you and adapt to the school ("Don't ask what the school can do for you, but what you can do for the school"). The second model says to the child, "Come in and go out the way you are!" That is, everything lies within you, and the school will adapt to you and help you fulfill yourself. The third model says, "Come in and build yourself through the community!" That is, neither self-abnegation nor self-fulfillment, but self-construction through thoughtful interaction with people and knowledge.

What motivated this synthesis of the two older models in a third model? Historically speaking, as noted, the two older models were disappointing, since following the logic of either one did not lead to the desired results. Philosophically speaking, it appears that underlying this synthesis is a blurring of the distinction between the individual, society, and culture. With respect to the first model, the individual is the negative element, and the society and culture are the positive elements. Society must socialize and acculturate the individual so that he integrates into society and culture and does not bring them to ruin. (Freud comments that every year humanity faces a new invasion of barbarians.) For the second model, society and culture are the negative element, and the individual is the positive element. Education must consolidate the uniqueness of the individual, allow her to fulfill herself, so that society and culture will not oppress her and turn her into a tool in their service. The third model blurs the distinction between these two elements and conceives them as a single continuum. The approach is evident in many disciplines that have contributed interpretation reflecting their particular vantage point. Here, for example, are a few lines of Clifford Geertz in this matter:

> In attempting to launch such integration [between human beings and culture] from the anthropological side and to reach, thereby, a more exact image of man, I want to propose two ideas. The first of these is that culture is best seen not as complexes of concrete behavior patterns – customs, usages, traditions, habit clusters – as has, by and large, been the case up to now, but as a set of control mechanisms – plans, recipes, rules, instructions (what computer engineers call "program") – for the governing of behavior. The second idea is that man is precisely the animal most desperately dependent upon such extra-genetic, outside-the-skin control mechanisms, such cultural programs, for ordering his behavior [...]. Undirected by culture patterns – organized systems of significant symbols – man's behavior would be virtually ungovernable, a mere chaos of pointless acts and exploding emotions, his experience virtually shapeless. Culture, the accumulated totality of such patterns, is not just an ornament of human existence but – the principal basis of its specificity – an essential condition for it [...]. What this means is that culture, rather than being added on, so to speak, to a finished or virtually finished animal, was ingredient, and centrally ingredient, in the production of that animal itself [...]. Most bluntly, it suggests that there is no such thing as a human nature independent of culture [...]. We are, in sum, incomplete or unfinished animals who complete or finish ourselves through culture [...]. (1973, pp. 44–49)

The conception of the human being as a thoroughly sociocultural creature has been processed in various ways by educators in the theory and practice of the third model.[13]

Charles Taylor supports the above argument through his interpretation of authenticity: individuals exist only through their connection with society and culture. Being authentic is not discovering your inner isolated essence, as the second model would have it, but discovering yourself through "languages" that are already there:

> The general feature of human life that I want evoke is its fundamentally *dialogical* character. We become full human agents, capable of understanding ourselves, and hence of defining an identity, through our acquisition of rich human language of expression. For purpose of this discussion, I want to take "language" in a broad sense, covering not only the words we speak but also other modes of expression whereby we define ourselves, including the "languages" of art, of gesture, of love, and the like. No one acquires the languages needed for self-definition on their own. We are introduced to them through exchanges with others who matter to us – what George Herbert Mead called "significant others." The genesis of human mind is in this sense not "monological," not something each accomplishes on his or her own, but dialogical. (Taylor 1991, pp. 32–33)

And:

> But for the moment, the general lesson is that authenticity can't be defended in ways that collapse horizons of significance […]. So the ideal of self-choice supposes that there are *other* issues of significance beyond self-choice. The ideal couldn't stand alone, because it requires a horizon of issues of importance, which help define the *respects* in which self-making is significant […]. The agent seeking significance in life, trying to define him or herself meaningfully, has to exist in a horizon of important questions. That is what is self-defeating in modes of contemporary culture that concentrate on self-fulfillment in *opposition* to the demands of society, or nature, which *shut out* history and the bonds of solidarity […]. I can define my identity only against the background of things that matter […]. Authenticity is not the enemy of demands that emanate from beyond the self; it supposes such demands. (ibid., pp. 38–41)

The philosophy of the third model echoes Taylor's insights. The frameworks of the various communities "translate" them into pedagogical practices.

1.1.8   In Conclusion

As Rogoff and her colleagues and Bereiter and Scardamalia cautioned, the foundational principle of the third model is not one of compromise, a middle way, a correct dosage of the first and second models. However, contrary to the view of those

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[13] The assumption that the mind is a cultural organ is the point of departure for Kieran Egan's "fourth idea" (1997, 2008). He explains that education is trapped in a dead end with three contradictory ideas: the idea of socialization, the Platonic idea, and the Rousseauian idea. The way out is in a fourth idea, the Eganian idea, which is based on that of Vygotsky, according to which the mind internalizes sociocultural tools and develops by means of them. Egan proposes a computer metaphor (today the computer rules the world of educational metaphors): "So we are invited to think of our brain as computer hardware and the mind as its operating system or programs it is running. One evident feature of our minds is that they are cultural organs" (Egan 2008, p. 38).

authors, neither is it entirely separable from those models. The founding principle of the third model is dialectical, synthesizing the two older models and forming a new unity, in which they are vested with meaning different from that of their original form.[14] Thus, the third model is a new creation. Proof of this is that it cannot be placed in any of the familiar educational typologies such as those of Lamm, Fenstermacher and Soltis, and Egan. A new ideal type of education and instruction must be forged in its honor.

This is not a simple claim, for it disrupts the typologies of education mentioned above, and those typologies aim to include not only the modes of education that have existed, but also those that will exist. According to Lamm's typology, for example, the third model would be called "eclectic" (Lamm 2002, pp. 110–170), that is to say, a combination of the logics of socialization, acculturation, and individuation (mainly the second and third logics); and eclectic theories and practices, according to Lamm, contain contradictions. Indeed, from Lamm's perspective, the third model is not only not a new creation, but also a defective creation.

In order to defend its unique identity against assimilation into one of the older models, the third model must consolidate its own identity; it must deepen its theory and create an educational environment in which various communities of learners/inquirers/researchers/knowledge builders/thinking arise decisively out of the closed and open classrooms familiar to us. The model of instruction and learning in a community of thinking, the hero of our book, aims to make its modest contribution to this trend.

1.2 The Third Approach

In teaching thinking, the main question is: what is the factor that makes for good thinking and how does one develop it? Posing that question in the arena of teaching thinking, yields three answers:

1. The factor making for good thinking is *thinking skills*; it is developed by means of *the pattern of impartation*.
2. The factor making for good thinking is *thinking dispositions*; it is developed by means of *the pattern of cultivation*.
3. The factor making for good thinking is *understanding* (of the subject about and through which one thinks); it is developed by means of *the pattern of construction*.

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[14] It is noteworthy that Lawrence Kohlberg and Rochelle Mayer suggested a typology with a similar dialectic. In their article, "Development as the Aim of Education" (Kohlberg and Mayer 1972), they identify three educational ideologies: the romantic ideology, which the writers quoted here called the ideology of individuation/the therapeutic approach/the Rousseauian view; the ideology of cultural transmission, which the writers called acculturation/the liberating approach/the Platonic approach; and the progressive ideology. The latter ideology sometimes balances between the other two.

These three factors and the teaching methods associated with each of them are the foundations of the *approaches to teaching thinking*. In my opinion, the third approach – that of understanding – is preferable. The framework of teaching and learning in a community of thinking can be seen as a framework for teaching and learning for understanding. Teaching and learning for understanding is also the soul of the third model.

Let us now expand on what has been said in this dense paragraph.[15]

1.2.1   The Reception of Teaching Thinking

Teaching thinking is a theoretical and practical field, the goal of which is to develop good thinking: critical, creative, and effective thinking. As a theoretical field, teaching thinking seeks to answer the question of what good thinking is; as a practical field, it tries to answer the question of what key factors makes for good thinking and how can it be taught. Since the mid-1980s teaching thinking has been a dominant stream in educational discourse but has had comparatively little influence on educational practice. Concepts such as "higher-order thinking," "thinking styles," "multiple intelligences," "thinking skills," "thinking dispositions," "teaching for understanding," "critical thinking," "creative thinking," "effective thinking," and "infusion" have been common parlance among educators at all levels, and it appears as if the entire educational system were headed for teaching thinking. Robert Sternberg and Louise Spear-Swerling wrote, "Probably never before in the history of educational practice has there been a greater push to teach children to think well […]. It would be difficult to read anything at all in the contemporary literature of education without becoming aware of this new interest in teaching thinking" (Sternberg and Spear-Swerling 1996, p. 102). Even if this statement is slightly exaggerated (especially the first part), there is no doubt that teaching thinking has been accepted rapidly and has become a strong trend in contemporary education.

What caused the rapid acceptance of teaching thinking? Here are several factors and arguments that accelerated its acceptance:

Change in the Situation of Knowledge: In recent decades, knowledge itself has undergone three far-reaching changes: it has "exploded" – the amount of knowledge doubles within short periods; it becomes outdated – theories and interpretations are frequently replaced by new ones; it is accessible – in resources such as books, the computer, and the minds of other educated people. These changes have made the teaching of discrete bodies of knowledge, which prevails in schools, anachronistic.[16]

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[15] The following chapter is a simplified condensation of my book, *Fishing Pole, Bait, and Fish: Approaches to Teaching Thinking*, Jerusalem: Branco Weiss Institute (2005).

[16] The assumptions of the explosion, obsolescence, and accessibility of knowledge are accepted as self-evident without proper critical evaluation. Knowledge has indeed exploded, and it does indeed go out of date, but not the bases of knowledge, that is to say, the basic theories, such as Darwin's

Change in the Picture of Knowledge: Not only has the condition of knowledge changed, but our concept of it – our relation to it – also has changed as a result. Under the influence of postmodernist theories, knowledge is conceived as relative by intellectuals as well as by "ordinary" people (and this is a significant phenomenon), as dependent upon various factors: on the coincidental community that a person belongs to, on point of view, on discourse, on the effort to gain power, on language, on paradigm, on the neural structure of the brain, and more. If knowledge is relative – the result of an arbitrary conceptual framework and not an unbiased observation; of invention and not discovery; of interests and not the desire for truth – why should one relate to it with veneration and dedicate all of scholastic education to transmitting knowledge?

The Information Economy: The new, postindustrial economy is based on processing information. Information is its raw material, energy, and product. The new sources of wealth are knowledge and its applications and not natural resources and physical labor. Muscle and machine power is giving way to brainpower. Production, management, and application of information are the most important economic functions of individuals and businesses. The information economy is based on workers who are able to deal with information – to locate, process, and apply information – that is to say, people who can think well.

Democratic Society: Substantive democracy, as opposed to procedural democracy, where democratic procedures alone exist, is based on a "democratic mentality," on the ability and tendency of citizens to think independently. An open society demands open thinking; open, active, independent thinking is the fuel of democratic institutions. Civil society as well – the field of action of volunteerism, the NGO sector that has developed rapidly in the past decades – owes its existence to the citizens' vitality, ability, and disposition to think and to invent social solutions in sectors that the state has abandoned or where it is powerless.

The Age of Change or Uncertainty: The only stable factor in contemporary society is the rapid and deep change that takes place in every area of life. Forms of work, family, entertainment, culture, leisure and, of course, technology change beyond recognition before our eyes. These changes cut people and societies off from familiar situations and routine solutions to problems. Today's problems are unprecedented and far more complex than those of the past. The solutions of the past are inadequate. Hence, it is necessary to discover new information constantly and to invent creative solutions – that is, to think well.

Cognitive Psychology: The long reign of behaviorism over the psychology of learning (that which cannot be observed is not scientific and perhaps does not exist; learning is observed behavior acquired by conditioning) yielded to the new science of the mind – cognitive psychology – which allowed the opening of the "black box" – the mind – and the investigation of processes that take place

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theory of evolution, Einstein's theory of relativity, or Freud's psychoanalytic theory. The basic theories are constantly undergoing correction, but new ones don't appear every day, year, or decade. Knowledge is also accessible to people who have prior knowledge, on the basis of which they know how to obtain information. The other arguments in favor of teaching thinking also merit critical evaluation.

"within" it. The new science equipped education with a rich "mental language" about human consciousness and gave teaching thinking a rich world of concepts and a strong tailwind.

Good Learning: As society became a learning society, learning came to be considered as the goal of education (lifelong learning) not just as its means (to gain knowledge). Hence, learning garnered much more attention, and new theories of learning emerged. One of the current insights about learning is that good learning is the result of thinking about the subjects of study while learning about them. Schools fail on their home court – in the effort to transmit bodies of knowledge – because they do not succeed in stimulating the students to think about and utilize the content they are "learning." Thinking about the content that is learned, intellectual struggle with it, is a condition for learning it. Hence, even when the goal of instruction is simply transmission of knowledge and not development of thinking, the development of thinking is vital.

The Charm of Teaching Thinking: Good thinking is defined as thinking that helps people attain their goals, whatever they may be. Is there anyone who doesn't want to attain his goals? Is there anyone who doesn't want to think well? Teaching thinking is regarded as a field with no specific ideology. Education committed to ideological content (religious education, multicultural education, democratic education, etc.) is seen as "particularistic education," and it arouses opposition of some sections of the public. Teaching thinking, by contrast, is seen – though this view is not necessarily correct – as education concerned with form, not with content, as education appropriate to every social and cultural segment of the population, as universal education.

The Savior Syndrome: The crisis in modern education arose virtually ab initio, as modern, universal education began to spread in the West during the nineteenth century. Every era in education looks back nostalgically to the one that preceded it, which also longed for the one before it. The chronic crisis in education, or the feeling of crisis, gave rise to chronic expectations of a rapid and comprehensive solution from some direction – a new definition of the goals of education, a new method of instruction, advanced technology, unprecedented budgets, and so on. This anticipation of "salvation" makes education vulnerable to panaceas and fads (and also – in the wake of the inevitable disappointment – to cynicism). From the mid-1980s teaching thinking was one of the prime candidates for rescuing education.

For these reasons and arguments, teaching thinking was accepted rapidly, and the rhetoric of "Don't teach content, teach thinking!" has dominated educational discourse both in and out of the academy.

1.2.2   A Conceptual Map

If nothing is more practical than a good theory, as Kurt Levin said, there would appear to be nothing less practical than many theories, especially many inconsistent theories. The vision of teaching thinking – people thinking critically, creatively, and

effectively in order to cope wisely with today's unprecedented challenges – was received enthusiastically by educational theorists, who developed countless, inconsistent theories of teaching thinking. A person who wishes to understand the field, not to mention apply it in teaching, is helpless in the face of the cacophony and can hardly be expected to know which theory to adopt.

Theorists of teaching thinking have taken note of the chaotic state of the field and tried to overcome it by various means: compiling anthologies that present the various theories (e.g., Costa 2001); proposing criteria for choosing a good theory (e.g., Sternberg 1984); opting for one or another among the theories (e.g., Lipman 1991); establishing a framework for teaching and study with components of several theories (e.g., Marzano et al. 1988); etc. I, too, have joined this campaign to salvage a structure that is collapsing under its own creativity, by proposing a conceptual map of the field of teaching thinking (see Harpaz 2005, 2007). This map provides a place for all the theories in the field of teaching thinking and enables them to be applied intelligently in teaching. In brief:

All theories of teaching thinking must deal either explicitly or implicitly with the *main question*, which is, what is the factor that makes for good thinking and how do we develop it? This question is practical, because teaching thinking, like all education, is a practical enterprise that seeks not only to understand the world but also, and mainly, to change it (or to understand it in order to change it). Hence, the main question is not "what is good thinking?" – an important question in its own right, dealt with extensively in the literature of teaching – but rather "what is the factor that enables it?" For if we can identify the factor whose development assures good thinking, we can concentrate on it and place upon it, as upon an Archimedean point, the lever of teaching thinking.

We find three answers to that main question in the literature of teaching thinking. Each entails a different approach to teaching thinking:

The answer of the first approach to teaching thinking is *skills*: the factor that makes for good thinking is *thinking skills*. One develops thinking skills through *the pattern of impartation* – a framework to teach (impart) thinking skills.

The answer of the second approach to teaching thinking is *dispositions*: the factor that makes for good thinking is *thinking dispositions*. One develops thinking dispositions through *the pattern of cultivation* – a framework of teaching (cultivating) dispositions to think.

The answer of the third approach to teaching thinking is *understanding*: the factor that makes for good thinking is *understanding*. One develops understanding by means of *the pattern of construction* – a framework for teaching (structuring) understanding.

An approach to teaching thinking, therefore, includes a *foundational element* of good thinking (skills/dispositions/understanding) and *educational apparatus* for imparting/cultivating/structuring it. The educational apparatus depends upon the basic element, because each element – skills/dispositions/understanding – demands a particular teaching pattern appropriate to it. We shall now offer a short description of these two components – the foundational elements of good thinking and their educational apparatuses.

1.3   The Basic Elements of Good Thinking

David Perkins calls the basic element of good thinking "mindware":

> It is whatever people can learn that helps to solve problems, make decisions, understand difficult concepts, and perform other intellectually demanding tasks better. To draw an analogy with computers, mindware is software for the mind – the programs you ran in your mind that enable you to do useful things with data stored in your memory… Mindware is whatever knowledge, understanding, and attitudes you have that support you in making the best use of your mind. (1995, p. 13)

So what are the elements of the mindware that enable a person to think better? In the literature of teaching thinking, we find three such elements.

1.3.1   Thinking Skills

The first to appear was the skills approach. It paved the way for the following two approaches: that of dispositions and that of understanding. The skills approach opposed traditional education, the "old education" in Dewey's terms, which was concentrated on transmitting knowledge.[17] Against the background of changes in the economy, society, and culture, the skills approach argued that it no longer makes any sense to transfer bodies of knowledge. Instead, one should cultivate the students' abilities to process, apply, criticize, and create knowledge, i.e., to think well. Thinking well means skillful thinking. These arguments provoked educational discourse, and the educational marketplace was flooded with thinking skills of various qualities.

What is a thinking skill, and what skills are vital for good thinking? In the discourse of teaching thinking, that concept of "thinking skill" is the most common of all, but the concept actually suffers from particular fuzziness. This fuzziness derives from the existence of two different meanings that are not distinguished from one another: "outer meaning" and "inner meaning." In the first sense, thinking skills are a tool for thinking that is meant to make thought processes more effective. Thinking tools are given names such as "strategies," "heuristics," "algorithms,"[18] "scaffolding," "frames," "routines," and "maps." With respect to the second meaning, thinking

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[17] John Dewey described traditional education as composed of two systems of pipes – one packs knowledge in by means of lectures and the other draws knowledge out by means of examinations (Dewey 1933/1998, p. 261). The grade that the student receives, according to this image, is equal to the relation between the material drawn out (by participation in classes, by doing homework, in tests) and the material packed in (by the teacher and textbooks). A grade of 85, for example, would mean that, for a given student, 85 % of the material was packed into him.

[18] "Heuristic" derives from the Ancient Greek verb *heurisko*, to find, and it is the opposite of an algorithm. It refers to rules derived from experience (rules of thumb) that are applied to problems that are not well defined. These rules increase, but do not ensure, the prospect of solving such ill-defined problems. In contrast, algorithms are applied to well-defined, formal problems, and they ensure a solution. A heuristic rule common among new teachers in the United States is "Don't smile until Thanksgiving; don't laugh until Christmas."

skill means the deft use of thinking tools: rapid use, with a minimum expenditure of mental energy; precise use, appropriate to the circumstances or the problem. In this case, emphasis is on the manner in which the thinking tool is used and not on the tool itself. When we combine these two meanings of the concept of thinking skills, we come up with the definition of good thinking according to the skills approach: good thinking is skillful thinking, thinking that applies the tools of thinking rapidly and precisely.

In the literature of teaching thinking, it is common to distinguish between *simple* and *complex* thinking skills. The former – classifying, ranking, comparing, and the like – are the basis for the latter – making decisions, solving problems, forming concepts (abstraction or generalization), and the like. However, this distinction is artificial, since it is difficult to rank thinking skills according to simplicity or complexity and place them in hierarchical order (for instance, the "simple" skill of ranking requires the "complex" skill of making decisions).

Along with the prevalent and problematic distinction between simple and complex thinking skills, one can propose another distinction, a more productive one in my opinion, between *indifferent* and *valuable* thinking skills. Indifferent thinking skills are meant to increase the *efficiency* of the thought processes that a person applies naturally: identifying, focusing, sorting, ranking, distinguishing, comparing, choosing, asking, selecting, estimating, concluding, generalizing, problem solving, decision making, and so on. Valuable thinking skills, on the other hand, are meant to form the thought processes that people typically don't perform and which they *ought* to perform, for example, breaking routine patterns of thought, inventing problems, discovering basic assumptions and biases, criticizing one's own beliefs, and other thinking processes that people usually don't perform, especially in connection with their own thinking. Valuable thinking skills seek to activate thinking processes of that kind and make them more effective, because they are of value (in a given culture).

The distinction between indifferent and valuable thinking skills has important conceptual and practical significance, because it distinguishes between two essentially different kinds of thinking skills, each of which demands instruction with particular emphasis. Indeed, the valuable skills should be preferred because they are prized by us.[19]

1.3.2   *Thinking Dispositions*

The dispositions approach accepts the critique of the skills approach regarding traditional education, with its concentration on transmitting knowledge, but rejects

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[19] Frank Smith argues that since in any event people perform the thinking processes that the indifferent skills seek to improve, and they do so very skillfully, the impartation of such thinking skills is entirely superfluous (Smith 1990).

the reduction of good thinking to skillful thinking. In this view, the foundational element of good thinking is thinking dispositions and not skills. Human thought is influenced more by the intellectual character of the individual than by his or her thinking skills.

The dispositions approach attained independence – the status of an approach that sought to replace the skills approach – in two stages. In the first – in *the embryonic stage* – it was regarded as a source of energy for the skills approach. At a certain stage, theorists of the skills approached acknowledged that a person might have developed thinking skills but no impulse, desire, or motivation – in short, no disposition – to use them. When we say of someone, "He's capable, but he doesn't want to," what we really mean is that he has the ability or skill, but he has no desire to implement it. Hence, theorists of the skills approach added a list of dispositions to their list of skills.

In 1962, Robert Ennis, for example, published an impressive list of many thinking skills, which in his opinion were essential for critical thinking, and a generation later, after becoming aware of the importance of thinking dispositions, he added a short list of them (Ennis 1962, 1987). However, in the framework of the skills approach, dispositions resembled a Trojan horse. They conquered the besieged city – the skills approach – and in its place (if I may be permitted to diverge constructively from the Homeric original) established a new city, the dispositions approach. In the second phase – in *the independent stage* – dispositions demanded an independent definition: no longer an auxiliary to skills, encouraging them from backstage, but the basis, the essence, the substance of good thinking. "This conception [disposition]," wrote Perkins and his colleagues, "can function as a [main] unit of analysis for cognitive behavior" (Perkins et al. 1993, p. 3). In other words, the difference between good thinkers and bad ones is not the quantity and quality of their thinking skills but rather the thinking dispositions that motivate them. Dispositions, not skills, are what make all the difference.

What are thinking dispositions, and what thinking dispositions are vital for good thinking? The disposition to think is an intellectual trait – a characteristic that has *direct* influence on the quality of thought. A disposition to think can be positive or negative, one that motivates good or bad thinking – for example, a disposition to open or closed thinking, a disposition to systematic or capricious thinking, and a disposition to profound or superficial thinking. Perkins and Swartz (1991), for instance, distinguished four basic shortfalls of thinking: hasty thinking (impulsive or unconsidered), narrow thinking (clinging to just one side, "mine"), fuzzy thinking (unclear and confused), and sprawling (unfocused) thinking.

These shortfalls reflect, in the authors' opinion, negative thinking dispositions. The cure is positive thinking dispositions, which neutralize the negative ones.

One can view the source of thinking dispositions (and personality dispositions in general) from two perspectives. According to one view, thinking dispositions come "from below," from unconscious sources – from primary impulses, repressed emotions, and various mechanisms that shape the psyche, including the cognitive "tip of the iceberg." According to the second view, thinking dispositions come "from above" – from opinions, attitudes, values, decisions, and the like, which the

individual formed or chose after explicit or implicit consideration. Dispositions apparently take shape both "from below" and "from above" or from the connections between the two. However, teaching thinking strives to strengthen the second source – thinking dispositions that derive from conscious choice, from rational preference, and from reflective attitudes. One may thus define a disposition to think as a considered motivation for a certain pattern of thinking or quality of thought (openness, depth, etc.), motivated "from above."

The concept of a thinking dispositions can be classified with respect to two dimensions: (1) *Depth* – Thinking dispositions do not apply to the whole personality; they are not character or personality traits. The relations between intellectual tendencies and character traits are complex and not necessarily on the same continuum. A person may be very daring intellectually and a coward in personal life (proposing daring theories or writing hair-raising fiction but being afraid to leave his house). (2) *Breadth* – Thinking dispositions do not apply to all thinking. A person may tend toward deep thought in his scientific pursuits but be a shallow thinker when it comes to politics. Thinking dispositions depend on context.

One may also distinguish between *thinking dispositions* and *the disposition to think*. This distinction is by no means clear-cut – thinking dispositions include and encourage the disposition to think – but nevertheless the distinction has both conceptual and practical justification. Thinking dispositions, as we defined them, are motivation ("from above") to think in a certain way; the disposition to become involved in thinking, to immerse oneself in thought. Dewey, for example, thought that the disposition to think was the most important trait of good thinking, which he called "reflective thinking": "the kind of thinking that consists in turning a subject over in the mind and giving it serious and consecutive consideration" (Dewey 1933/1998, p. 3). The disposition to think, therefore, is expressed in the act of sinking into thought, of devotion to thought, of dwelling upon a certain subject, and of inspecting it from every side. The traditional school does not have a place for thinking of this kind. As John Holt wrote, "children in school are simply too busy to think" (Kohn 1999, p. 21). Michael Barber (1997, p. 180) illustrates the point with the following 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."

Only a school that allocates time to thinking and encourages students "to stop and think," as Hannah Arendt phrases it,[20] that is to say, one that fosters the disposition to

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[20] I will stray for a moment from the literature on teaching thinking to enlist Hannah Arendt in defense of the category, "the disposition to think." In the introduction to *The Life of the Mind* (1971), she explains what led her to devote herself to thinking about thought, explaining what motivated her to abandon "the relative safe field" of political science and take up the "rather awesome matters" of the life of the mind. The immediate motivation was the impression left upon her by the trial of Adolf Eichmann in Jerusalem. She expressed that impression in her highly charged and controversial concept, "the banality of evil": "Behind that phrase, I held no thesis or doctrine,

think, is worthy of being considered a school where thinking is enabled and encouraged, a school that Arthur Costa (1991) would call a Home for the Mind. Such a school would be an institution substantially different in character from a traditional school.

1.3.3   Understanding

There is more than some irony in the development of teaching thinking. Initially, the teaching thinking movement sought to circumvent knowledge or, rather, concentration on the transmission and acquisition of knowledge. In an era when knowledge is exploding, becoming obsolete, widely accessible, and relative, so argued the devotees of teaching thinking, there is no longer any need to acquire information. Rather than transmit information, one was to invest in inculcating thinking skills and/or dispositions to think. Teaching thinking was in; transmission of knowledge was out.[21] However, the intensive concern with research in good thinking, especially the

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although I was dimly aware of the fact that it went counter to our tradition of thought – literal, theological, or philosophic – about the phenomenon of evil" (ibid.). According to that tradition, evil is the product of deep and tangled feeling and thought: "However, what I was confronted with was utterly different and still undeniably factual. I was struck by a manifest shallowness in the doer that made it impossible to trace the uncontestable evil of his deeds to any deeper level of roots or motives. The deeds were monstrous, but the doer – at least the very effective one now on trial – was quite ordinary, commonplace, and neither demonic nor monstrous" (ibid., p. 4). What made him so shallow, so astonishing in his simplicity? "There was no sign in him of firm ideological convictions or of specific evil motives, and the only notable characteristic one could detect in his past behavior during the trial and throughout the pre-trial police examination was something entirely negative: it was not stupidity but thoughtlessness… It was this absence of thinking – which is so ordinary an experience in our everyday life, where we have hardly the time, let alone inclination, to stop and think – that awakened my interest" (ibid). Could it be, Arendt asked, that thinking of this kind – the habit of examining what happens to us and giving it attention – with no connection to the results or content, can be among the conditions for keeping people from becoming evil? Arendt does not speak about thinking on the simple level, because everyone thinks all the time. Rather she is speaking about the inclination to stop and think, willingness to become engaged in thought, to ponder or turn things over, to see new aspects, to invent possibilities, to deviate from patterns, to make an effort to think, to take the risk of thinking, to invest in thought, and to immerse oneself in it. She is also not talking about the quality of thinking – about critical or creative or any other kind of thinking. She is talking about stopping and thinking: "all thinking demands stop-and-think" (ibid., p. 78). She speaks of the possibility that such willingness could keep people from committing evil.

[21] In this (mistaken) spirit, in *Education for Critical Thinking* I wrote, "The question of questions of education – 'What knowledge is of the most worth?' as Herbert Spencer wrote in the mid-nineteenth century – has been replaced by teaching thinking with other questions: What is the knowledge and what is the model of teaching knowledge that can best develop thinking of the best kind? In other words, education for knowledge takes knowledge to be the goal, and education for thinking takes knowledge as the means. Education for knowledge focuses on the result, and education for thinking focuses on the process. Education for knowledge is aimed at remembering information, education for thinking is aimed at understanding, applying, and developing knowledge. Education for knowledge transmits an uncritical view of knowledge (knowledge reflects the world, is gradually accumulated, and is found among experts). Education for thinking presents a critical picture of knowledge (knowledge advances with reversals, is based on invention and not only on discovery, depends on

good thinking of experts, brought leading theorists to the conclusion that there is no escaping the need for knowledge; knowledge is a necessary though not sufficient condition for good thinking.

This was in no way a simple return to knowledge or the ordinary scholastic teaching of knowledge. Advocates of the understanding approach also believed that the routine teaching of knowledge in schools did not develop good thinking and that it might even damage it. Proponents of the understanding approach therefore asked, "under what conditions does knowledge indeed constitute a precondition for good thinking?" and they answered: "on condition that it is understood," i.e., only when the memory of information – retaining details of information separately from one another and from the interest of the knower – becomes understanding.

To demonstrate the relation between thinking and knowledge, we can differentiate three *conditions for accumulating knowledge*. "Knowledge in the solid state" is knowledge whose concepts are bound to each other in a rigid way and which does not pass out of the context in which it was acquired to other contexts; it is molded into one context. This kind of knowledge freezes and paralyzes thought (Whitehead called it "inert knowledge"). "Knowledge in a gaseous state" is knowledge whose concepts are scattered in space without any connection among them and without any framework to unify them. With knowledge in that state, thinking is difficult. It is weakened and diluted. Thinking has no links or connections to move across. "Knowledge in a liquid state" is knowledge whose concepts are connected in various ways and which moves from context to context. Liquid knowledge gives thinking flexibility and movement. Understanding is "the liquid state of knowledge." This state is a vital condition for good thinking.

The understanding approach rejects the dichotomy between the teaching of knowledge and the teaching of thinking, between the teaching of *what* to think about and the teaching of *how* to think. There is an inner connection between the *what* and the *how*. The relationships between thinking and knowledge are different from those between eating and food; the knowledge or, rather, its understanding constitutes the quality of thinking. There is no good thinking in a general way; there is good thinking by means of certain knowledge. When this knowledge and its domain – the field of knowledge or discipline – are understood, the thinking about it and through it will be good thinking – critical, creative, and effective; producing intelligent decisions, useful solutions, and productive ideas (McPeck 1981, 1994).

The inclusion of understanding among the three foundational elements of good thinking might seem surprising: we "invest" in thinking skills and dispositions in order to obtain good thinking; good thinking produces understanding; hence, understanding is the result of good thinking and not vice versa. We may call this logic *the*

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theory and is dependent on values. Education for knowledge is guided by the search for the right answer, and education for thinking is guided by the quest for correct explanations and the search for good questions; education for knowledge fosters a heteronomous personality; education for thinking develops an autonomous personality. Education for knowledge strengthens the foundations of the traditional industrial school; education for thinking challenges these foundations and offers the principles of a 'smart' school" (Harpaz 1996, p. 14). This is my chance to repent!

isolated line of thought. According to this logic, knowledge is "out there" and the mind is "here inside." The mind produces action – thinking – which is projected outward upon knowledge; thinking acts upon knowledge in order to bring it into the mind; when that operation succeeds, understanding is achieved. Thinking, therefore, is action and nothing more, knowledge is content and nothing more, and understanding is the result of the successful action of thought upon knowledge.

The understanding approach is based on a different logic. Let us call it *the unifying line of thought*. According to this line of thought, it is impossible to isolate thinking from understanding (though it can be useful to distinguish between them). Thinking is not exclusively action but rather action on and with knowledge; when this knowledge is understood, the action of thinking is better. Hence, understanding is not (only) the result of good thinking but (also) its source.

What is understanding and what kinds of understanding are vital for good thinking? In the literature of teaching thinking, several concepts of understanding are current. I shall point out two of them in order to emphasize the advantages of the second conception, which guides the activity of the community of thinking. According to one conception, understanding of a concept/idea/principle means locating it in a rich and relevant context; understanding as *location*: "To grasp the meaning of a thing, an event, or a situation, is to see it in its *relations* to other things; to note how it operates or functions, what consequences follow from it, what causes it, what uses it can put to" (Dewey 1933/1998, p. 137, emphasis in original). For example, a person understands the concept "democracy" when he sees its relations to other concepts such as direct and indirect democracy, separation of powers, fundamental rights, defense of minorities, and the crisis of democracy in the postmodern era. Understanding complex ideas is not a closed task – understanding them once and for all – but an open task: the network of concepts is enriched and the connections among them are constantly renewed. Understanding the concept "democracy," for example, is a lifelong project.[22]

Although understanding as locating, as placing in context (which sometimes creates that celebrated experience of a "click"), is a reasonable and workable concept of understanding, it suffers from weakness of application: other people's minds are not accessible to us (fortunately); hence, it is hard to see whether a student has understood or not – if his conceptual networks are dense or thin. Since it is hard to see understanding, it is hard to build it and evaluate it. What is to be done? How can understanding be translated into a public event? One redefines it. That is exactly what David Perkins did with the idea of "understanding performances." He defined understanding as the ability to perform cognitive processes with learned concepts/principles/ideas. Performances are public and available to all, and they can be evaluated and improved. Thus, understanding as locating became an understanding performance – one performance among several. "Understanding something is a matter of being able to think and act flexibly with what you know and are coming to

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[22] Dante wrote that "hell is a place where nothing connects with anything" (cited by Gardner 2006, p. 45). In this respect, school is a rather hellish preparation for life after death.

know" (Perkins 2001, p. 446).[23] "So let us view understanding not as a state of possession but one of enablement. When we understand something, we not only possess certain information about it but are enabled to do certain things with that knowledge. These things that we can do, that exercise and show understanding, are called 'understanding performance" (Perkins 1992, p. 77). A person understands something when he is able to express it in his own words, to present an example, to ask a question about it, and to carry out other understanding performances. Perkins proposes seven understanding performances (Perkins 1998, pp. 85–86). I propose 18 of them, divided into three categories (see Chap. 3 below).

Understanding a subject that is being thought about is a necessary but not sufficient condition for good thinking. Good thinking demands a new kind of understanding. We can distinguish between two types of understanding that together, according to the understanding approach, comprise the necessary and sufficient condition for good thinking: *substantive understanding* and *reflective understanding*. The first kind of understanding is that of the subject of thought (the *substance* that bears it). It may be pre-disciplinary, disciplinary, multidisciplinary, interdisciplinary, meta-disciplinary, or transdisciplinary. The higher it rises in the disciplinary hierarchy, the more it becomes a "higher-order" understanding. Understanding of the second kind – reflective understanding – refers to thinking itself or, more precisely, to the foundations and conditions that make thinking good (this is what teaching thinking deals with). According to the understanding approach, there are thus two conditions for good thinking: understanding of the subject and its discipline and understanding of the conditions under which thinking becomes good.

So far we have seen how the three approaches to teaching thinking answer the first part of the main question: what is the fundamental basis of good thinking? Let us now see how they respond to the second part: how does one develop the fundamental element of good thinking?

1.3.4 Instructional Systems of Approaches to Teaching Thinking

The approaches to teaching thinking (an approach = a fundamental element of good thinking + an instructional system) respond to the second part of the main question by means of their *instructional systems*. The instructional systems are conceptual and practical frameworks intended to impart teaching skills or to cultivate thinking dispositions or to structure understanding. What is an instructional system made of?

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[23] These understanding performances are likely to recall to us the thinking skills included in Bloom's famous taxonomy. They are also likely to remind us of what John Holt wrote more than three decades ago, before the appearance of the performance conception. Holt said that one feels that one has understood something if (1) one can state it in one's own words, (2) if one can provide examples, (3) if one can identify it in a variety of circumstances and disguises, (4) if one can see the connections between it and other facts and ideas, (5) if one can use it in various ways, (6) if one can predict some of its consequences, and (7) if one can say what is the opposite of it. Holt viewed that list as a tool for distinguishing real from apparent understanding (Holt 1964/1982, 136–137).

Following Lamm (2000), let us define instruction as "education through knowledge," meaning that the uniqueness of scholastic education is that it is done through knowledge; knowledge mediates between the teacher and the students (in the framework of family, for example, education takes place by means of relationships – an occasional conversation, a trip together, a hug, a scolding, etc.). An instructional system is thus composed of three basic components: a teacher, a student, and knowledge, or, more specifically, it is composed from *the organization of knowledge*, *the special activity of the teacher*, and *the special activity of the student*.

1.3.5 The Impartation System

What is the composition of the impartation system – the instructional framework intended to impart thinking skills? The impartation system consists of an *order* (taxonomic, hierarchical, or other) of thinking skills intended to be taught (organization of the knowledge); of *exemplifying skills* intended to be taught (special activity of the teacher); and of *exercising* (special activity of the students). That is, in teaching thinking skills, the teacher organizes the knowledge that is meant to be imparted (thinking skills) into some kind of list. This list could be based on logical connections (e.g., some skills are derived from others) or on a cluster of selected skills. Teaching of skills is based on exemplifying – the teacher demonstrates how one uses a certain thinking tool. Imparting skills includes more than that, but exemplifying is the decisive action in it. The students, for their part, practice the skill that has been demonstrated until they are able to apply it easily and independently (as Robert Marzano notes, "three things are important in learning skills: practice, practice, and practice"). Learning to use skills passes through four stages: unconscious absence of the skill, conscious absence of the skill, conscious mastery of the skill, and unconscious mastery of the skill. The ideal thinker of the skills approach, therefore, is an automatic, "thoughtless," skillful thinker.

The pattern of impartation can be presented mechanically: the pattern of impartation breaks thought mechanism up into a series of thought processes; it repairs (or upgrades) each thought process in turn by means of appropriate skills; it restores the thought processes – now trained – to the thought mechanism; it performs quality control (Beyer 1988, p. 52).

The impartation system is a type of instruction intended to inculcate thinking skills. Hence, it belongs to a broader type of instruction intended to inculcate skills of all kinds.[24] This type of instruction is usually disparaged. It is seen as training, as conditioning, as "drill and kill." However, this teaching pattern is not inherently bad. What is bad about it derives from the context in which it is applied. When thinking and other skills are imposed on learners, and they are detached from the learners' goals and choices, the instruction type used to impart them indeed damages intellectual development with its implicit and explicit messages. But when the

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[24] Zvi Lamm (1976) called them the "imitation pattern," Gary Fenstermacher and Jonas Soltis (1986) called them the "execution approach," and Israel Scheffler (1964/1989) called them the "impression model."

learners are interested in the skills, this type of instruction is the most effective way of imparting them. Since the students in a school generally have no interest in the skills offered to them, the criticism of this teaching pattern is justified. It is especially justified when we are talking about a system of impartation that pretends to impart skills of critical, creative, and independent thinking to school children.

1.3.6 The Cultivation System

Thinking dispositions are developed by means of a cultivation system – a framework whose goal is to cultivate thinking dispositions (or to form the intellectual character). The cultivation system is different from the impartation system not only in its components but also in its substance. The impartation system is a *direct* mode of instruction; the cultivation system is *indirect*. As noted, instruction was defined as "education through knowledge," but knowledge has a marginal place in the cultivation system. Lectures on thinking dispositions will not help very much to cultivate them; organized lectures on open thinking, for example, will not contribute much to its development. Dispositions are nurtured in people's minds only indirectly, not by transmitting knowledge about them, but by a "culture of thinking" that "transmits" thinking dispositions in various ways (cf. Tishman et al. 1995).

More precisely, the pattern of cultivation consists of *modeling* (the special activity of the teacher), *identification* (special activity of the students), and *explicit concern* with thinking dispositions (organization of knowledge). The model or modeling or personal example is different from the demonstration of behavior that is dominant in the impartation system. In the cultivation system, the teacher must embody in his personality and conduct the dispositions that he wishes to nurture (otherwise, as Robert Sternberg says, he is like a teacher preaching while smoking). However, a model is effective only when it arouses identification. If the students don't respect the teacher and don't want to be like him in any way, the teacher's model conduct or thinking has no value. Identification is required for internalization; internalization is the way that thinking dispositions and character traits are acquired.

As noted, the cultivation system is largely indifferent to knowledge; it is possible to foster thinking dispositions by dealing with any knowledge. However, the cultivation system is not indifferent to one kind of knowledge: about the thinking dispositions themselves. Explicit concern with thinking dispositions strengthens their influence; discussion of the concept "critical thinking," for example, helps foster it and promotes its intelligent internalization. Content itself is not entirely indifferent to thinking dispositions. Content that includes personalities (real or fictional) who model the exemplary dispositions or intellectual traits and arouse identification can be helpful. The dialogues of Plato, for example, whose hero, Socrates, is the "ultimate thinker," can have great cultivating power. Of course, good thinkers populate a variety of works of art.[25]

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[25] In my article, "Complementary Approaches to Teaching Thinking: The Landscapes of David Perkins' Thought about Teaching Thinking" (Harpaz 2000b), I suggested watching (several times) William Friedkin's 1977 movie, *Twelve Angry Men* (the original film directed by Sidney Lumet

The cultivation system seeks to foster cognitive traits or intellectual character and, thus, it belongs to a broader type of instruction that seeks to develop traits of all kinds or the character in general.[26] Like the type of instruction intended to impart skills, this type of instruction has also been disparaged in the climate of opinion prevalent in the past decades. It has been called "indoctrination" or "an effort to play God" (think of the educational maxim of S. Yizhar, a renowned Israeli writer: "Teach, don't educate!"). This criticism, however, is misplaced. The cultivation system holds that while it seeks to form intellectual character, this character is based on dispositions to critical and creative thinking, which is to say independence or autonomy of thought.

1.3.7   The Construction System

One teaches for the sake of understanding by means of a system of construction – a framework of instruction intended to construct understanding ("construction" here refers to encouraging building "from within" by the learner, and not "from the outside" by any authority).[27] The construction system imparts the following content to the elements of the instruction system: organization of knowledge – "*big ideas*" or "*essential problems*"; the teacher's special activity is *stimulating or undermining*; the student's special activity is *investigative learning*. The "big ideas" (such as Marxism, psychoanalysis, evolution, the theory of relativity, but not only mega-theories of that kind; "smaller" ideas also construct understanding) that address "essential problems" have great explanatory power and promote understanding – they explain many phenomena and assist in their comprehension. "Big ideas" place facts and events in context, a complex, a Gestalt, and give them meaning (God is in the whole, not just in the details). The distinct function of the teacher who teaches for understanding is to stimulate motivation for investigative learning by awakening interest or by undermining basic assumptions and preconceptions (see Chap. 3 on the importance of undermining). Because understanding is constructed, not absorbed, the most characteristic activity in classrooms where teaching for understanding takes place is active student investigation – the asking of questions and the search for knowledge that will answer them.

Understanding is not transmitted from one mind to another like an object. It must be constructed in every person's mind. As Duckworth said:

> Thoughts are our way of connecting things up for ourselves. If others tell us about the connections they have made, we can only understand them to the extent that we do the work of making these connections ourselves. Making connections must be a personal

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40 years earlier) to take inspiration from the good thinking of the hero of the film – a juror who, with sensitivity and intelligence, persuades the others to change their minds.

[26] Lamm called this the "formation pattern" (Lamm 1976); Fenstermacher and Soltis (1986) called it the "liberation pattern," and Kieran Egan (1997) called it the "Platonic pattern."

[27] Mortimer Adler (1982) called the structuring system "the meiotic method"; Scheffler (1964/1989) called it "the insight model."

Table 1.7 The basic components of the teaching thinking systems

The systems of teaching thinking → The components ↓	The impartation system	The cultivation system	The construction system
The organization of knowledge	Ordering	Explicitness	"Big ideas"; "essential problems"
Teacher's activity	Exemplifying	Modeling	Stimulating through undermining
Student's activity	Practicing	Identifying	Investigative learning

> elaboration, and sometimes a person is simply not capable of making the connections that someone is trying to point out. (Duckworth 1996, p. 26)

In short, no one can understand for you. Since this is so, the model of construction, like that of cultivation, is an indirect method of instruction, although knowledge does play a central role in it.

The construction system is attacked less frequently than the previous systems of instruction because it is difficult to oppose it: who can object to teaching for understanding? What teacher could say something like, "I'm teaching about processes that take place in the cell of an organism, and I hope that the students won't understand it!"? The construction system manages to tiptoe between the raindrops – between education in which the curriculum is central and education in which the child is central. The construction system respects cultural content, on the one hand, and the (primary or authentic) personal motivations of each student, on the other – and especially the connection between the two. Hence, the construction system is an integral part of the third model.

Table 1.7 summarizes the basic elements of the instructional systems.

1.3.8   *The Matrons of Teaching Thinking*

The approaches to teaching thinking are not oblivious to each other. Each approach believes that it encompasses the rivals, meaning that its basic foundation contains the other basic foundations or that, in any case, it leads to the results that the others seek to attain. Hence, it is necessary to make a reduction of the other two approaches.

To fully appreciate how the reductionist argument works, let us listen in on a rare recording of a tense encounter between the three matrons of teaching thinking – Madam Skills, Madam Dispositions, and Madam Understanding.

Madam Skills: You wouldn't believe how long I've been waiting for the opportunity to tell you, Madam Dispositions and Madam Understanding, how much I admire your contribution to our common concern – teaching thinking. Good thinking is without doubt a product of thinking dispositions and understanding, not to mention thinking skills, probably the most important foundation of good thinking. The three

of us are all vital to good thinking. But, you know, if any of us were to co-opt teaching thinking, teaching thinking, which is so precious to us, is liable to be injured. We have to pool our resources! I'm convinced that the best thing to do is to unite under my leadership, that is, to concentrate educational effort on imparting thinking skills. Not that I have any special interest in protecting myself, but skillful thinking on this matter will convince you that prolonged practice of thinking skills produces the appropriate thinking dispositions, and that, in any case, the result of skillful thinking is understanding. For example, when you endow a child with a skill like classification, comparison, or deduction, by the same token you develop within him the disposition to classify, compare, and deduce and, in addition, the disposition to suspend judgment. And when you teach them to apply those skills and others to a certain subject, in any case you construct understanding of that subject. So teaching thinking according to my approach will produce the same results as your approaches – dispositions and understanding. You, dear sisters, are welcome by-products of my actions. I invite you to come in under the wings of my approach.

Madam Dispositions: Thank you, Madam Skills, for your kind invitation. I would accept it willingly if I thought that I, with all my dispositions, could dwell with security in the shadow of your approach. I, too, have no special interest in preserving my independent existence at any cost. What motivates me is to protect what is precious to us all, teaching thinking, and that demands an independent dispositions approach. Why? Because Madam Skills can't guarantee proper thinking dispositions. Proper thinking dispositions are not the product of practicing skills, the way electrical energy is produced by a generator. Sometimes the enforced and wearisome practice of skills actually gives rise to the opposite thinking dispositions – negative ones. Ask schoolchildren. They'll tell you. And even if we assume for the moment that practicing skills creates appropriate dispositions – for example, that practicing the skill of making comparisons cultivates a trained disposition to compare – I have no interest in specific dispositions that depend on one skill or another. I'm interested in general, global dispositions, which produce many skills. For example, the disposition to critical thinking – which, by the way, is a disposition, as correctly argued by my friend John Passmore in his classic article on teaching critical thinking, and not a wearisome cluster of skills, as the champions of your approach mistakenly claim, e.g., Ennis[28] – will motivate the critical thinker to find and invent many critical thinking skills. And that's exactly the point: the impartation of skills does not produce a disposition, but the fostering of a disposition does produce skills – many skills. Anyone who has a disposition for something searches and finds the skills that will make it possible. Therefore, Madam Skills, I invite you to come into the shelter of my approach. In any event you're already there. And you, too, Madam Understanding, are also there. If a person has a disposition for something, she has understanding, at least an elementary understanding, of the subject of her interest, and that disposition motivates her to attain further understanding. Where there's a will, there's a way, as the saying goes. In short, unbiased thinking, that is, thinking

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[28] Passmore, J. (1980). On teaching to be critical. In *The philosophy of teaching* (pp. 166–182). London: Duckworth.

motivated by the disposition for intellectual honesty, and open-minded thinking, thinking motivated by the disposition for intellectual empathy, will bring you to the inescapable conclusion that teaching thinking must be committed to the approach that I proudly serve – the dispositions approach.

Madam Understanding: How interesting! A little while ago I met a woman. I got the impression that she wasn't a bad thinker at all. On the contrary, she was equipped with all the thinking skills you can imagine: skills in logical thinking, in critical thinking, in creative thinking, in problem solving, in decision making, and so on. Moreover, she was motivated by many excellent thinking dispositions: a disposition to systematic thinking, to adventurous thinking, to thinking about thinking, and so on. Yet, for some reason, she talked … how should I put it? … nonsense. Yes, her thinking was frightfully poor, lacking in creativity, criticism, or effectiveness. I wondered how a woman with such potential and her thought was so shallow. Why? Based on understandings that I constructed in the past, I reached the conclusion that what she lacked was understanding of the subject we were talking about. Yes, she simply didn't understand it well. She lacked vital concepts for understanding it, or else they were terribly weakly connected. Understanding, understanding the subject being thought about and with which we think, is the basis of good thinking! As my friend Robert Sternberg says, you have to know something about mountains before you set about leveling them. Madam Skills, you really must understand: if a person is equipped with understanding of the subject he's thinking about, he'll have no problem implementing all the skills you've worked on – sorting, analyzing, comparing, and the like. Madam Dispositions, you have to understand that all the dispositions you work on are included in understanding, because to understand something means to delve into it deeply, the disposition to think deeply; to take an interest in it, the disposition to curiosity; to see it from surprising angles, the disposition to daring thought; and so on. Furthermore, understanding arouses motivation; understanding is the disposition to act. In short, the concept of understanding includes your central concepts, Madam Skills and Madam Dispositions. Ladies, why fight? We're all members of the same family, the family of teaching thinking. Let's unite around me. No one will be slighted. My category – understanding – is rich and generous. It includes you, whether or not you agree.

Of course we could prolong the conversation among those ladies, but even without further elaboration, it's clear: each approach has an inherent tendency to include the other approaches and to argue that it's possible and correct to be content with it alone, because it and only it deals with the basic foundation of good thinking, and the foundations of the other approaches are included in or conditioned on it. However, this strategy of elimination by reduction doesn't work: the fact remains that there are three approaches to teaching thinking, not two and not one.[29]

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[29] In my book, *Fishing Pole, Bait, and Fish: Approaches to Teaching Thinking*, I tried to find justifications – hermeneutic and ontological – for the existence of the three, no more and no less, approaches to teaching thinking (2005, pp. 391–395).

1.3.9   Ideological and Metaphorical Biases

The controversy between the approaches to teaching thinking is not only ontological, that is, around the question of what is the fundamental element of good thinking, but also ideological, which is to say, around the question of who a good thinker is. Let us explain.

As Zvi Lamm has shown (2000; http://zvilamm-archive.org/contact_heb.html), educational theories have a conceptual structure similar to ideologies rather than to scientific theories. Educational theories are in fact ideologies disguised as scientific theories.[30] The conceptual structure of an ideology consists of four components or types of statements: *eschatology* (or *utopia*),[31] the image of the world as it should be; *diagnosis*, a description of the world as it is; *strategy*, the means of transforming the world that is into the world as it should be; and *collective*, the public that the ideology addresses and urges to implement its ideas and perfect the world. Let us take the example of Zionist ideology: the Utopia was for the Jewish people to establish a sovereign state in its ancient homeland; the diagnosis was that the Jews suffer from anti-Semitism everywhere; the strategy was Zionist education, illegal immigration, the establishment of settlements, adding "another acre, another goat"; and the collective was the Jewish people.

Educational theories have a similar structure to social ideologies, but their content is different. The theories of teaching thinking have content peculiar to them, as shown in Table 1.8.

The utopian component of educational theories (henceforth, we will call them ideologies) informs the image of the educated person or the desired graduate; the diagnostic component informs the theories about the nature of the child, of the society, of knowledge, and so on[32]; the strategic component informs the didactic methods; and the collective component informs an appeal to those in a society who are capable of effecting the change. When we want to observe the nature of an educational

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[30] In education people frequently claim that research has shown something, but it is doubtful whether research in education really shows important things. It certainly doesn't show what the goals of education are (see Egan 2002). Egan, by the way, argues that the source of educational goals is autobiographical: the image of the educated person, who embodies the goals of education, is in fact "people like us, but without our defects" (Egan 1999, p. 79). Lamm, as noted, argues that their source is in ideology. In short, education is an autobiographical-ideological business.

[31] I prefer the term "utopia," rather than "eschatology." The latter term is taken from the vocabulary of theology and alludes to passive waiting for redemption, whereas the former entails action and striving to achieve it. Perhaps the word "vision" would be better.

[32] According to Lamm, the essence of an ideology is the "infusion" of its four components. In this infusion, each component loses its authentic meaning and is distorted. Thus, for example, an appropriate diagnosis adapts itself to a utopia and a strategy becomes a tenet of faith from which one must not stray (in Zionism, e.g., the diagnosis – there is anti-Semitism everywhere – is incorrect, and the strategy, rapid establishment of settlements (known as "wall and watchtower"), assumed a ritual status and was extended beyond the period when it was rational). This infusion explains the diagnostic disagreement between the various educational ideologies. For example, according to some of them, the child is evil from birth (irrational, selfish, lazy – in short, "childish"), and according to others, the child is good from birth (curious, creative, honest, kind, etc.).

Table 1.8 The ideological structure of educational theories

Types of ideologies → Components of ideology ↓	Societal ideology	Educational ideology	Teaching thinking ideology
Utopia	An ideal image of the desired society	An ideal image of the "educated person"	An ideal image of the "good thinker"
Diagnosis	Description and analysis of the defects of the real world (in the light of the ideal image of the world)	Description and analysis of the defects of real students (in the light of ideal image of the educated person)	Description and analysis of defective thinkers (in the light of the ideal image of the good thinker)
Strategy	Means to turn the real world into the desired one	Pattern of teaching, method of assessment, organization of the curriculum, etc. that turn concrete students into educated persons	Pattern of teaching, method of assessment, organization of the curriculum, etc. that turn concrete thinkers into good thinkers
Collective	The deprived people or social order	The educators, parents, students, and other publics who can make the change	The educators, parents, students, and others who can make the change

theory (ideology), we must first identify its underlying utopian or ideal figure of the educated person.

The figure below presents three approaches – ideologies – to teaching thinking:
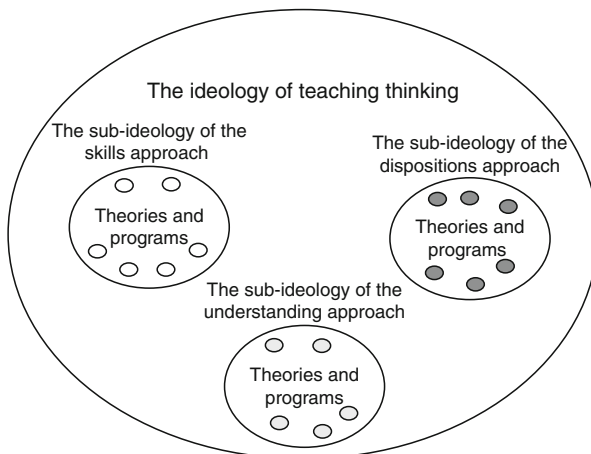
In summary, teaching thinking consists of three approaches; the approaches are ideologies; the ideologies of teaching thinking depend upon the three different ideal figures of the good thinker.

The skills approach rests upon the ideal image of a good thinker as a *practical* or *efficient thinker*. The efficiency of a good thinker, according to the skills approach, has an inner and an outer dimension. With respect to the former, a good thinker performs cognitive actions efficiently: making decisions, solving problems, making generalizations, classifying, comparing, and so on, with speed and precision. With respect to the inner dimension, efficient thinking is what helps a person attain his or her practical goals.[33]

The dispositions approach is guided by the ideal image of a good thinker as a *wise thinker*. The wise thinker is (mainly) judged by his thinking dispositions and not by his cognitive abilities (which can be measured by psychometric examinations). He or she is motivated by dispositions that have an intrinsic value that does not depend on utility or efficiency. Sometimes they even are opposed to the thinker's utility. The wise thinker's dispositions are embodied in values that a given culture holds in high regard. Western culture, for example, admires values like creativity, originality, criticism, independence, openness, depth, being systematic, awareness, empathy, and so on.

The understanding approach is guided by the ideal image of a good thinker who is an *expert* and *learned*. This thinker is a master of the subjects about which and by means of which she thinks. But she is master not only of them (for she is not simply an expert) but also of the basic ideas of the given culture. This cultural expertise permits her to think well, for a good thinker always thinks well within a given culture.

The approaches to teaching thinking, therefore, inevitably are ideologically biased toward a certain image of a good thinker. These biases are part of more general images of the good person or the good life. The controversy among the approaches to teaching thinking is, therefore, not only ontological (what is the basic element of good thinking?) but also ideological. People decide in favor of one approach or another toward teaching thinking based on their own ideological horizon. Ideological determinations in education are not irrelevant. They are, as Lamm taught, the epitome of relevance.

Inevitably, the approaches to education also have *metaphorical biases*; they tend toward certain metaphors of good thinking. According to George Lakoff and Mark Johnson, "Metaphor is for most people a device of the poetic imagination and the rhetorical flourish – a matter of extraordinary rather than ordinary language. [However,] the way we think, what we experience, and what we do every day is very much a matter of metaphor" (Lakoff and Johnson 1980, p. 3). Thus, for example, we talk about thinking using four fundamental metaphors: thinking as *moving*

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[33] Critical and creative thinking – the two forms of thinking that teaching thinking seeks to foster – are not necessarily practical or efficient (critical and creative thinkers do not always benefit from the fruit of their thinking – take the example of Socrates). However, in the framework of skills, the principle of efficiency influences the conception of them. That is, when forms of thinking undergo reduction to skills, the principle of efficiency or instrumentality is implicit in the concept of skills and takes control of them. See, for example, how Scriven (1993, p. 34) and Halpern (1965, p. 5) define critical thinking as effective and practical thinking and how de Bono defines lateral thinking – creative thinking – as effective and practical in all his books (if you apply the tools of lateral thinking, you'll make money).

(wandering, stuck, skipping, staying away, slowing down, following, reaching a conclusion, arriving at a point, etc.); thinking as *perceiving* (seeing, covering up, hiding, finding, pointing, shedding light, getting the picture, deaf to opposing ideas, etc.); thinking as *object manipulation* (playing with an idea, turning an idea over, exchanging ideas, hold ideas up to scrutiny, putting an idea under microscope, crafting, shaping, fashioning ideas, etc.); and thinking as *eating* (swallowing, digesting, chewing on ideas, thirst for knowledge, appetite for learning, half-baked ideas, warmed-over theories, etc.) (Lakoff and Johnson 1999, pp. 235–244).[34]

In order to understand theories and the questions to which they respond, we must identify the main metaphors that guide them. What, then, are the essential metaphors that guide the approaches to teaching thinking?

The main metaphor guiding the skills approach is the *toolbox*: the mind is seen as a bundle of instruments adapted to the treatment of given problems. Skilled thinking means thinking that makes correct use of thinking tools. This metaphor for good thinking as the skilled use of tools that are stored in the mind appears frequently in the writings of the theoreticians of teaching thinking, even those whose approach is not exclusively the skills approach (cf. Lipman 1991, p. 28; Perkins 1995, p. 15; Reid 2002, p. xi; Treffinger et al. 1994; Whimby and Lochead 1982; de Bono 1970).

The main metaphor that guides the dispositions approach is *deep currents*: deep, hidden currents of definite direction guide our intellectual behaviors. This metaphor is not used explicitly, but that doesn't lessen its power. On the contrary, an implicit metaphor has more power than an explicit one, for it cannot be criticized or controlled. The existence of this metaphor is evidenced by the essence of the dispositions approach, according to which thinking as a cognitive activity is a kind of surface phenomenon, an epiphenomenon, beneath which deeper forces swirl – dispositions, traits, attitudes, emotions. Whoever wishes to teach thinking has to direct his action toward these deep currents and not to the cognitive processes themselves.

The main metaphor of the understanding approach is the *network*: to understand something means to place it in the warp and weft of meanings. A concept is understood (not entirely; understanding is an open-ended task, it is always partial and labile; the network expands infinitely and the connections change) only in relation to other concepts. Good thinking is conditioned on a dense network of concepts that touch upon the subject about which one is thinking (cf. Boix-Mansilla and Gardner 1998, p. 174; Fisher 1990, p. 85; Salomon and Perkins 1996; Marzano et al. 1988).[35]

The disagreement between the approaches to teaching thinking is therefore deep. Each approach expresses a comprehensive world view with explicit arguments

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[34] One can of course think of further metaphors for thinking. Concepts such as "deep thought" and "superficial thought" are based on metaphors which, in Rorty's metaphorical language, are "dead metaphors" – metaphors that we no longer perceive as metaphorical. The very term "metaphor" is metaphorical.

[35] The performance conception of understanding, which supports the framework of teaching and learning in a community of thinking, is an alternative to the network conception of understanding. By the way, in the book edited by M. S. Wiske, *Teaching for Understanding* (1998), which is based on the alternative conception of performance, the network conception sneaks into several articles. It is very difficult to dislodge the conception of understanding as bound up in some sort of network of representations that we have in our minds.

and implicit biases that strengthen its foundational element. The essence of this disagreement can be summed up by a play on the familiar Chinese proverb "Give a man a fish and feed him for a day; teach a man to fish and feed him for a lifetime." As the preferred antithesis to "giving a man a fish" (the "old education"), the motto of the skills approach would be "give the child a fishing pole;" the motto of the dispositions approach would be "give the child bait;" and the motto of the understanding approach would be "show the child around the fishing pond."[36] The skills approach maintains that teaching thinking must give children tools (a fishing pole) for use with information of all kinds. The dispositions approach maintains that teaching thinking must give children motivation (bait) to implement thinking skills of one kind or another, to think in one way or another, or to think at all. The understanding approach argues that teaching thinking must give the children understanding of the fields of knowledge or disciplines (the fishing pond) to which the subjects they are thinking about belong.

1.3.10   Which Approach Is Correct?

Why get drawn into this barren controversy? Why try to decide who's right? Let's not be right, let's be smart! To be smart in this case means to do it all: to impart thinking skills, to cultivate thinking dispositions, and to construct understanding. If good thinking = thinking skills + thinking dispositions + understanding, then teaching thinking = a system of impartation + a system of cultivation + a system of construction.

What's so bad about that? Why not develop the three essential foundations of good thinking by means of three instructional systems? Indeed, one's heart is drawn to that harmonizing approach (Dewey thought that the source of all defective thinking is wishful thinking), but a simple combination of the three approaches won't work. Before dealing with that disheartening assertion, let's review what we've established up to now (Table 1.9).

The approaches to teaching thinking are like families (or metatheories or metaprograms), to which the theories and programs of teaching thinking belong. Some of the theories and programs belong to two or three of the families at the same time, but almost all of the theories and plans have one "true" family, that is, a dominant approach that is reflected in it more powerfully than the other two approaches.

Let us now return to the original question: why not combine the three approaches and impart thinking skills, cultivate thinking dispositions, and construct understanding? It may be possible and even worthwhile doing that, but not by means of simple combination, because each approach entails a general world view on teaching thinking and on education in general. If teaching thinking aims to be effective – to influence the learners' minds – it must be coherent and embrace one approach, that is, a theory or theories, a plan or plans that belong to the same family. But, one might object, when you stick to one approach, you neglect the development of the elements of

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[36] "Knowing your way around" is Perkin's metaphor for understanding. Understanding, as you noticed, is a metaphorical term.

Table 1.9 Summary of good thinking

Characteristics ↓ / 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	Disposition: motivation laden patterns of thinking; intellectual traits	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"	Practical and efficient thinker	Wise thinker	Expert and learned thinker
Metaphors for thinking	Toolbox	Deep currents	Network
Motto	Give the child a fishing rod	Give the child bait	Help the child know his way around the fishing pond
Theories, programs, ideas – examples	De Bono: CoRT Ennis: Taxonomy of critical thinking Beyer: Direct teaching of thinking Perkins: Thinking frames Perkins and Swartz: Graphic organizers Swartz and Parks: Infusion Sternberg: Intelligence Implied Treffinger, Isaksen and Dorval: Creative problem solving Johnson and Blair: Informal logic Chaffee: Thinking critically Whimbey and 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 and 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 and Brooks: Constructivist instruction Lipman: Philosophy for Children Harpaz: Community of Thinking

good thinking of the other two approaches! Not necessarily. You can adopt one approach and, *under its aegis*, develop the other two approaches.

There is no escape from the "tragic" decision, from preferring one of the approaches. *I believe that the third approach – the understanding approach – is to be preferred*. Why? There are four reasons:

A Theoretical Reason: More and more research and findings on good thinking indicate its clear dependence on understanding of the subjects that are thought about.[37] Paraphrasing Gardner, there isn't general intelligence but domain-specific intelligence – there is no general good thinking but good thinking in particular domains; the question is not how smart you are but how are you smart.

A Practical Reason: Schools teach knowledge; therefore, knowledge should be taught for the sake of understanding. Knowledge without understanding destroys thinking. If teaching thinking is to penetrate schools, it has to do so by means of teaching knowledge in the various fields (and not by the infusion approach).

An Ideological Reason: I favor understanding "big ideas" not only because it can contribute to the construction of good thinking, but because those ideas really are great, and it is important to understand them. In teaching for the sake of understanding, you get two shows – great ideas and good thinking – for the price of one.[38]

A Pedagogical Reason: Striving for understanding is the soul of the third model, the reason for its existence. Anyone in favor of the third model is necessarily in favor of teaching for understanding.

However, as noted, adopting the understanding approach does not mean forgoing skills and dispositions essential for good thinking. The child needs SDU (skills, dispositions, and understanding), the foundational elements of good thinking, what Perkins calls "mindware." Skill and dipositions should be delivered under the aegis of the understanding approach and a construction system. Thinking skills should be imparted in authentic contexts, when students need them in order to grapple with a

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[37] Hayes' "Ten Year Rule" (1989) states that a person must think about and investigate a field for about ten years in order for his thinking to be critical and creative. In his *The World is Flat*, Thomas Friedman presents a conversation with Bill Gates in which the latter dismisses the claim that the American education system neglects creative thinking, and he says that thinking out of the box is a result of understanding the subject being thought about and not of thinking skills. Yitzhak Rabin did not believed in thinking skills either. Haaretz (Israeli newspaper) reported (Oct. 4, 2002) that when the great chess master, Gary Kasparov, visited Israel, his hosts arranged a visit to the Golan Heights. In a meeting with Prime Minister Rabin he expressed his opinion. The reporter writes: "The breadth of the world champion's grasp of the data could not fail to astonish the people who had crowded into the room. Rabin listened attentively to the world champion's analyses, as he warned him not to risk Israel's security by withdrawing to borders that would be determined arbitrarily by the colonial powers. He responded, 'I know. I also played chess when I was young.' Kasparov never forgave Rabin for that remark, which he interpreted as undisguised contempt for his military-political analysis." Rabin (in light of his insult of Kasparov), believed that skills depend on context and cannot be transferred from one field to another – from chess to national security. Gabi Salomon and David Perkins (1989) gave the insight of Gates and Rabin a theoretical basis.

[38] "Teaching thinking," Perkins told me in an interview, "is not the only important educational goal. It is in the first row but not first in the line" (Perkins 2000, p. 458).

problem, and thinking dispositions should be cultivated in the framework of striving to construct understanding.

1.3.11   In Conclusion

When we ask the main question with regard to teaching thinking, the question that all theories and programs of teaching thinking grapple with – what is the basic element of good thinking, and how can it be developed? – we are offered three answers, which represent three approaches to teaching thinking. Each approach offers a basic element of good thinking and a system of instruction for developing it. There is tension among the approaches, because each claims preference for the basic element of its instructional system. For various reasons we have preferred the understanding approach, but this preference does not mean abandoning the other approaches. In the long run, good thinking is the result of skills, dispositions, and understanding. We also have preferred the understanding approach because it is an inherent part of the third model.

In essence, the third model is a framework that fundamentally strives for understanding. Understanding is a *bridging category*. It is "located" between the curriculum and the child, between the culture and the individual. The category of understanding has two poles: the external and the internal or the cultural and the psychological. With respect to the first pole, the cultural, understanding is rooted in cultural content that we understand and that is worthwhile understanding. With respect to the second pole, the psychological, understanding is rooted in the inner process that independently regulates the making of meaning. Understanding, if you will, is a matter of "do it yourself – buy and build." "Buy" ideas and inspiration "outside," from people, from ideas, from experience, and build meaning from the "inside," in your mind (that, of course, is a rough distinction between inside and outside). If you concentrate only on the first pole, you get the old, curriculum-centered education, and if you concentrate only on the second pole, you get the new, child-centered education. In education according to the third model and the third approach, neither the curriculum nor the child is central, but rather the encounter between them – an active, critical, creative, and thoughtful encounter. In this encounter both the individual and the culture are constructed; the individual constructs his identity and views, and the culture receives meaning and is enriched with new ideas. This encounter between the individual who creates meaning and the culture as the raw material for creating meaning is the essence of the third model and approach.

1.4   The Third Drive

"Whenever people divide things in this world into three or seven," Nietzsche wrote, "you should know that they're lying to you." The world, he explained, cannot be divided into the numbers consecrated by human beings. This book lies to

you too often – too many matters in it are divided into three. The third context of communities of thinking – which I won't expand – is the context of motivation: the third drive.

Motivation is of such great importance for education not only because it is the power behind learning, which is to say a means, but also because it is a goal. Education seeks to foster motivation of a certain quality, and good education, according to the viewpoint behind the idea community of thinking, seeks to develop intrinsic motivation – motivation driven by both enjoyment and value. Daniel Pink (2009) called this motivation, "the third drive." People motivated by the third drive not only learn more, but they also are better human beings, because their motivation – and people can be described and evaluated according to the quality of their motivation – is not (primarily) biological, the first drive, nor (principally) instrumental, the second drive, but also and mostly intrinsic: authentic and idealistic.

I argue that people motivated by the third drive both learn more and are better human beings, because the first and primary drive, if we adopt Pink's tripartite division, is mainly biological: the impulses to eat, sleep, have sex, etc. And the second drive is the result of classical or operant conditioning, which emerged powerfully following the industrial revolution, when a carrot and stick approach was used to motivate millions of workers to perform standardized labor. This is the motivation to which the behaviorist school has given exclusive rights: behavior is elicited or extinguished by means of positive or negative reinforcement.

The third drive, whose best-known researchers are Edward Deci and Richard Ryan (1985), contradicts common sense assumptions that were reinforced by capitalist and behaviorist logics. It turns out that reinforcement does in fact extinguish certain behaviors – complex, creative behaviors – that our challenging age and our individual well-being demand more than ever before.

The third drive, intrinsic motivation, is composed of two kinds of motivation (two, not three, thank goodness!). Let us call them *authentic motivation* and *idealistic motivation*. Authentic motivation refers to things people do because it gives them immediate, ongoing, deep satisfaction. Idealistic motivation refers to the things people do because they regard it as valuable, as something that should be done – even if it does not give them immediate satisfaction – for example, when a person practices violin or helps the needy.

Intrinsic motivation – authentic and idealistic – can arise only in certain circumstances. Deci and Ryan described these conditions in their self-determination theory (SDT), according to which intrinsic motivation arises when a person's basic needs have been satisfied – the need for connection, belonging, self-efficacy, freedom from coercion, and a sense of goal or meaning (Deci 1975; Deci et al. 1994).

Teaching and learning in a community of thinking seeks to develop the third drive, both as a means and as a goal. It strives to respond to the learners' basic needs and to stimulate them to study and explore out of authentic interest and idealistic commitment to the truth – its discovery and its invention.

Chapter 2
Teaching and Learning in a Community of Thinking: The Theory

One might say of the first part of this book that you can't see trees for the forest. In this part, we'll finally get to a tree – the community of thinking. Let us, however, begin with its narrative. We won't present the practice until the third part of the book. An impatient reader might ask: "Who needs this narrative foreplay? Why not go straight to the practice?" However, in education the narrative is not a cover story for the practice; the narrative is the essence; it constitutes the practice.

   The narrative of the community of thinking presents five basic pictures – "atomic pictures" – which support the third model and serve as an alternative to the five basic pictures that support the traditional and common schooling (first) model. The narrative of community of thinking can be translated into various frameworks of the third model; community of thinking is only one example.

<table>
<tr><td>Traditional pictures</td><td>Alternative pictures</td></tr>
<tr><td>

• Learning = listening

• Teaching = telling

• Knowledge = object

• The mind = container

• An educated person = a person who knows (or remembers; has a lots of objects in his/her mind)

</td><td>

• Learning = involvement (in the process) + understanding (as a product)

• Teaching = providing conditions for good learning

• Knowledge = structure or a story that works

• The mind = interpretative activity of making meaning

• An educated person = a person who knows how to work with knowledge and to relate to it

</td></tr>
</table>

2.1   The Pictures of the Community of Thinking

The recognition that the traditional school model has exhausted itself and that there is no sense in trying to improve it by doing more of the same is gradually penetrating the consciousness of many educational policymakers in the West and elsewhere. What Edward Fiske wrote about the "industrial school" in the United States is applicable to "industrial schools" everywhere (nothing is so universal, it seems, in our postindustrial age as the industrial school[1]):

> After a decade of trying to make the system work better by such means as more testing, higher salaries, and tighter curriculums, we must now face up to the fact that anything short of fundamental structural change is futile. We are trying to use a nineteenth-century institution to prepare young people for life in the twenty-first century. American public schools grew up around an early industrial model that has outlived its usefulness in education as well as in the industry that created it. The renewal of public education in this country requires nothing less than a frontal assault on *every* aspect of schooling – the way we run districts, organize classrooms, use time, measure achievements, assign students, relate schools to their surroundings, and hold people accountable. (Fiske 1991, p. 14, emphasis in original)

While it is increasingly apparent that the ordinary "industrial model" of school is on the verge of a fundamental structural change, the survival power of the school is far greater than what was thought by the thinkers who hastened to proclaim its demise.[2] Nonetheless, it appears that strong pressure *from the outside* (the information economy in a competitive world; a "democratic sentiment" that penetrates every social cell; new technological possibilities, especially in the area of digital communications; new and fascinating theories of learning; the negative public image of the school; and more) and *from within* ("impossible" crowding and heterogeneity in classrooms; disappointing achievement decidedly correlated with socioeconomic status, increasing problems of discipline, and outbreaks of violence; decline in the working conditions and status of teachers; an acute shortage of resources; and more) creates favorable conditions for "a frontal assault on *every* aspect of schooling."

Whereas the criticism of schools is convincing, persuasive alternatives are rare. Education is therefore trapped in a dead end: in the opinion of many critics – theorists and researchers, educational policymakers, parents and students, and

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[1] David Olson stated: "It becomes clear that schooling has long been a globalizing institution in that the forms of schooling are increasingly borrowed and imposed around the world. The rationality of school is not local or cultural but rather generic and to some extent universalizable […]. Consequently, schools in the modern world are increasingly alike. Schools are the vanguard of this universalizing function, not simply as a result of cultural imperialism but because they are effective and economical forms for introducing citizens to the norms, rules, and procedures for dealing with diversity within and between societies by making behavior more or less predictable and understandable" (2003, pp. 186–187). With respect to its spread throughout the world, the school is indeed a huge success, but it isn't clear that we should include it in the list of wonders of the world (Perkins 1992, p. 1).

[2] Zvi Lamm, for example, wrote more than four decades ago: "The school has not lacked detractors in any period of its history. What distinguishes our own period from previous periods is the fact that no one seems prepared to defend it any longer. The school as we know it apparently reached the end of one more stage in its history" (Lamm 1976, p. vii). There are countless predictions such as this made by frustrated educators.

Table 2.1 From selective admission to universal promotion

The process →		
The period ↓	Admission	Promotion
First period	Selective	Selective
Second period	Universal	Selective
Third period	Universal	From selective to universal

informed observers – schools "don't work." However, they do not suggest a realistic alternative for mass education. The voucher system, homeschooling, distance education, learning in the workplace, and other alternatives all point in possible directions, but so far they are not practical, in any event not on a national scale, as a solution to mass education. Nevertheless, there are signs of preliminary agreement regarding the general direction to go: the school has to be remade into a place that supplies critical conditions for good learning – learning bound up with involvement in the subjects of study and in understanding them.

Zvi Lamm argued (in conversation[3]) that the basic characteristic of such an alternative school is flexibility: for universal education to be universal, the school must make its structure more flexible and respond to the special abilities and dispositions of the students. He placed this statement in a historical context, dividing the history of the school into three periods: The first period – all those centuries when schools trained scribes for the monarch in antiquity, nurtured lovers of wisdom (philosophers) in classical Greece, and prepared clergy for the church. The school was selective in admission and promotion from level to level. The second period – from the last quarter of the eighteenth century until the mid-twentieth century, from the French and Industrial Revolutions and the advent of compulsory education. During this period the school was nonselective (universal) in admission but selective in promotion. In our time, the school is in transition: universal admission and a gradual transition from selective to universal promotion. That transition engenders growing pains of various kinds (Table 2.1).

Thus, there is reason to hope that the school is in the early stages of transition from a rigid system to a flexible one, from a uniform system to one that is adaptable, and from a system that does not make good learning possible to a system that not only makes it possible, but also encourages and guides it. What stands in the way of this transition are mainly the limitations of imagination and boldness.

2.2   Pictures from the Life of the School

When a teacher stands in front of her class, checks homework, lectures, writes on the blackboard, tries to calm students down, refers to the textbook, leads a discussion, assigns homework, announces that in two weeks there will be a test, etc., what "educational pictures" does she have in her mind? What pictures are reflected in her

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[3] My conversations with Lamm were published in *Pressure and Resistance in Education: Articles and Conversations,* Tel Aviv: Sifriat Poalim (2000).

actions about the elements – *the atoms* – of the educational process: *learning, teaching, knowledge, mind, and the purpose of learning and teaching?* One could of course ask her: "What do you think about learning, teaching…?" But the answers might not be relevant. More interesting are the answers reflected in her actions.[4]

People express and shape their thoughts on two levels – in words and action. Since people are not angels, there is always a gap between these two levels. A person says that he believes in some principle (such as moral equality between men and women), but his behavior indicates a different belief (male chauvinism). Do our actions alone reveal our true credo? In the educational context, we need not go that far. For our purposes, it is sufficient to recognize that action is determinative, and if we want to change action, we have to identify its underlying assumptions, beliefs, and dispositions, in short, what *pictures* (representations that shape, but do not necessarily mirror, reality) support and enable it.

Assuming that human behavior isn't entirely automatic or instinctive but, rather, shaped by pictures (assumptions, concepts, beliefs, etc.), it appears that the pictures that explain the typical behavior of teachers in their classrooms are the following: *to learn is to listen; to teach is to tell; knowledge is an object; the mind is a container;* and *the aim of teaching and learning is the creation of students or graduates who are knowledgeable* (or more precisely, remember the content studied in school).

These pictures are not clear and well articulated (exposing them triggers resistance; they are effective when they remain unarticulated), but they are deeply imprinted in the minds of teachers and students and in the patterns of action in school: teaching is lecturing for the examination; learning is drilling in preparation for the examination; assessment is summative and numerical; knowledge is organized into school subjects; the organizational structure is hierarchical and central; much group time is devoted to uniform assignments and there little time for individual tasks; space is defined and bounded; and so on.

The first two pictures are descriptive – they describe the given situation. The third and fourth pictures are metaphorical. The fifth picture is prescriptive (or normative) – it determines what ought to be, what the goal of education is as personified in the ideal of the educated person.

The basic pictures of schooling – let's call them *atomic pictures* – underlie the school and are supported by it. Though they are implied by what Seymour Sarason (1982) calls "regularities" – all the action patterns of schooling – they are "framed" by daily language in and out of the school. Teachers say, "If you don't listen, you won't know"; "I'm repeating this, whoever didn't understand should listen"; "that student catches on quickly"; "he absorbs slowly"; "you have to cover the material"; "this class isn't getting enough mathematics"; "I have to give a lesson on…"; and the like. These and other expressions convey prevalent images of instruction,

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[4] If, as contemporary philosophy tends to do, one rejects the notion that people have pictures in their minds, and these pictures guide their actions, one may ask: what are the assumptions about learning, teaching, knowledge, mind, and the purpose of the teaching and learning of information which are entailed by the typical "teacherish" action in the classroom?

learning, knowledge, the mind, and the goal of education. They are taken mainly from the realm of static material objects and they reify human beings.

The atomic pictures are consistent with common sense[5]; after all, what is learning without listening? If somebody wants to learn something, he has to listen to the words of somebody who knows it and to store them well in his mind. And what is teaching if not telling – to present your knowledge clearly (along with writing it on the board or a flashy PowerPoint)? What is knowledge if not a thing – an object, material, baggage – that can be transferred by means of speech from one mind to another (though that "object" has a magical property – the one who transfers knowledge is not deprived of it, and sometimes the act of transferring knowledge even expands it[6])? What is a mind if not a container for knowledge? And what is an educated person if not a person who knows, a person who has stored in his memory valuable theoretical and practical information that guides his behavior and thinking? Indeed, these pictures are not entirely unfounded. They are merely very simplistic and do not enable better instruction and learning.

The atomic pictures of schooling are bound up with each other and derive from one another. Together they form the big picture.

2.3   The Big Picture or the Mimetic Chain

Like the atomic pictures, the big picture is not explicit either but, rather, implicit in the practice of schools. The underlying principle is that of *copying.* According to this principle, everyone is engaged in copying: scientists copy the world; curriculum experts copy the sciences; teachers copy the curriculum; and the students copy the teachers and textbooks. (The students alone are forbidden to copy from each other.) After the students have copied the teachers and textbooks in school subjects for 12 years, they hold a predetermined representation of the world in their heads. They are educated graduates.

From the behavior of teachers in their classrooms and from the general conduct of the school, we can extract a comprehensive and systematic picture, a kind of philosophy of schooling that supports and enables the behavior of teachers and school administrations. In this big picture (see Table 2.2), (1) the world consists of facts, and facts have inner qualities. For example, the facts relating to the past of human groups are historical facts, the facts relating to the structure of society are sociological facts, the facts relating to the structure of the human mind are psychological facts, the facts relating to bodies in motion are physical facts, the facts relating to organic processes are biological facts, and the facts relating to relations between numbers are mathematical facts. (2) Scientists observe the

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[5] Which is often wrong, as Nelson Goodman said, "Much of common sense is actually common nonsense." Pierre Bourdieu defined common sense as the belief that what is also must be.

[6] Indeed, teaching strengthens learning. You learn well when you teach. You also can switch the pictures: to learn is to tell; to teach is to listen. These switched pictures have some validity (see Meier 1995, p. xi).

Table 2.2 The big picture of schooling
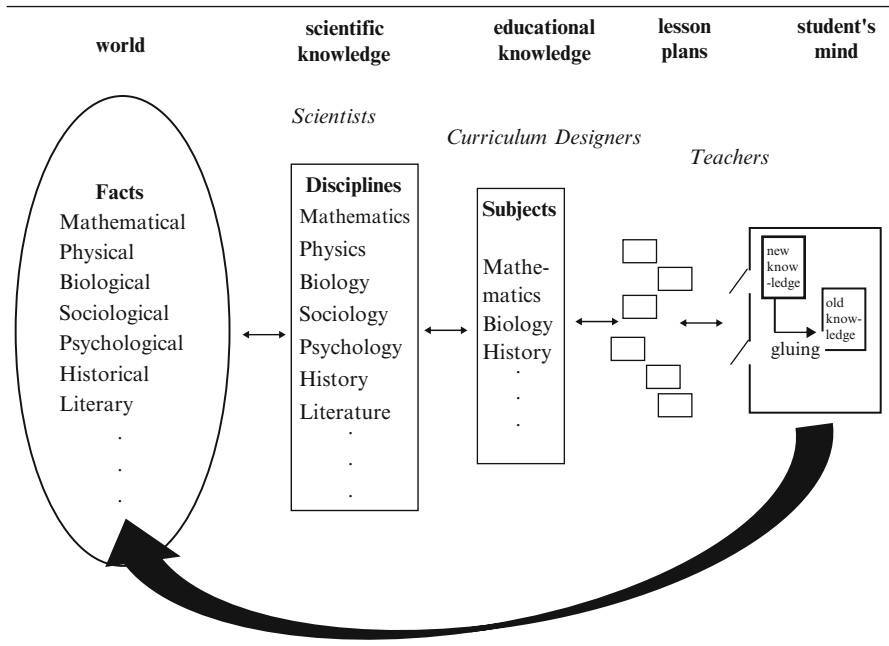
world (meticulous, objective observation[7]), more precisely, a certain segment of the world that contains the facts of interest to them, and they create the disciplines – the areas of knowledge that investigate those facts with their distinctive methods. (3) Now comes the turn of the educators responsible for designing the curriculum. They observe the disciplines, copy and process them, and create the school subjects – areas of knowledge intended for teaching and learning in schools (see the next chapter for the difference between a scientific discipline and a school subject). (4) And now the teachers: they copy and process the subjects of study and turn them into bits of information – lesson plans – and adapt them to fit the size of the openings in the students' minds. They must make these bits of knowledge enter the students' minds. However, there are gates at the entrances into the mind, and those gates are usually closed. You have to open them! To that end, the teachers employ various tactics whose purpose is to stimulate attention (e.g., the tactic of seduction: "Children, I want to tell you a very interesting story," and if that doesn't work, then there's the threat tactic: "What I'm telling you now will be on the final exam!"). Once the gates are open, you have to cram in a new bit of knowledge. And that's not all. The knowledge that has been crammed in can leak out. You have

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[7] Ernst von Glasersfeld, in his book *Radical Constructivism* (1995), chose two appropriate epigrams: one from Roland Barthes, "the only given is the way of taking," and the other from Heinz von Foerster, "objectivity is the delusion that observations could be made without an observer."

to glue the new piece of knowledge to the old ones that were crammed in during earlier lessons (e.g., chlorophyll, which was learned today, has to be connected to photosynthesis, which was studied last week). For that purpose, discussion is held in the classroom, homework is assigned and, above all, a test is given. In the course of preparing for the examination, the great gluing together takes place (Strauss and Shiloni 1994). (5) After a prolonged and difficult process of teaching and learning, the chain of copying reaches its successful conclusion: pieces of knowledge in one subject join together, and they join the pieces of knowledge in other subjects. The knowledge that has accrued over 12 years of learning creates a reliable picture of the world in the minds of students and graduates. They know the various aspects the world. They know how the world works.

This description of schooling, albeit satirical, is accurate enough: when you examine schools and their complex relations between learning, instruction, and knowledge, you find that this is more or less how schools "think."

The big picture (or the mimetic chain) authorizes the teacher to instruct everyone in a uniform, authoritative manner, and it underlies the practice that gave rise to the modern school: one teacher *manages* many students.[8]

2.4 Beyond the Pictures of the School

2.4.1 To Learn Is More Than Listening: To Learn Is to Be Involved and to Understand

Listening is an important component in study, but listening, especially the sort common in schools (fragmented and without interest[9]), is merely one component in the complex system of good learning. What is good learning?

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[8] Group instruction – one teacher instructing many students – is a relatively new method. Originally instruction was individual – one teacher taught one student while the other students in the class performed some kind of task or ran about unsupervised, as we can see in paintings by Ambrosius Holbein, "Schoolmaster's Signboard," 1516, or by Jan Steen, "A School for Boys and Girls," 1617 (Olson 2003, pp. 196–197). Group instruction emerged for reasons of economy and control (look at the commotion in Steen's classroom!) and not for pedagogical reasons. It generated new patterns of behavior in the classroom and new patterns of communication, thinking, and study. Someone once remarked that the teacher in her classroom, who teaches all the students the same subject in the same way, is like a doctor in a ward who, one morning, gives the order, "today everyone gets an enema," and the next day, "today everyone gets a transfusion." Just as Israeli bus drivers sometimes tell the passengers in the front of the bus to "move forward to the rear," we need to "move forward" to the past, to the individual instruction of former centuries.

[9] "Even when a teacher acts like a broadcasting station, it is doubtful that all the pupils are tuned in. A more plausible model is that the teacher is in communication with different individuals for brief, sporadic moments and that these pupils are responding to other stimuli the rest of the time" (Jackson 1968/1990, p. 83). It's possible that many learning disorders, including attention deficit, have a contextual, institutional dimension, and outside of schools they would not exist at all.

Let us define good learning as *involvement in the process and understanding as the product*. Mental events can be described from two perspectives – from the process and from the outcome. With respect to the process, good learning is engaged learning, learning in which the learner is interested in what she is learning, is excited by it, even – at its best – completely immersed in it, or, to use the language of Mihaly Csikszentmihalyi (1990), in a state of flow.

John Nicholls (1989) distinguished between two types of involvement: *ego involvement* and *task involvement*. In ego involvement, a person is motivated to do something by anxiety or hope that touches him: "What will happen to me if I do or don't do what has been assigned to me?" In task involvement, a person is motivated by interest in the task, and he tends to forget himself. School learning is mainly bound up with ego involvement. Good learning, in contrast, is bound up with task involvement. Task involvement means a positive experience of learning. A positive experience in learning stimulates the desire to recreate it, and it lays the foundation for lifelong learning.[10]

As we saw in the previous chapter, understanding can be conceived of as two different mental activities – *representational* and *presentational*. As a *representational event*, understanding is conceived of as *representation*: a person understands when there is a representation in his mind of a state of affairs in the world. For example, he understands how to get to the central bus station if he has a map of the city "in his head." The world, to use Carl Bereiter's terminology, includes "conceptual artifacts"[11] – ideas, attitudes, theories, etc. – and people also understand them when they are represented properly in their minds. The representation includes *location*, which is to say placing the understood concept within a complex of concepts (representations), which give it meaning (the representation "chair" receives its meaning from the representations "table," "furniture," and, ultimately, as Wittgenstein has taught us, from "the form of life"). The richer the network of concepts in which a person places a concept, the deeper is her understanding of it.

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[10] Study in school is alienating; alienation – and this is the trap – is a condition for success and survival in school. Imagine a student who is inspired by Dostoevsky's *Crime and Punishment.* That is, instead of reading some abridged version or summary to prepare for the test, she read the whole book and was swept off her feet by it. She asks her mother, "Did Dostoevsky write any other books?" Her mother gives her more books. Now the student is in trouble: she has over-invested in literature. What will happen to her now in her math, English, and chemistry classes? She starts to slip. Dennis Clark Pope's *Doing School: How We are Creating a Generation of Stressed Out, Materialistic, and Miseducated Students* (2001) describes alienated schooling in concrete and frightening fashion. Similarly, Robert Fried, in *The Game of School* (2005), shows how children play "the school game" without experiencing true learning, what he calls "authentic" learning.

[11] The "conceptual artifact," which exists in World 3 (see the chapter "A Community of Knowledge Building" in the previous part), is "dangerously" close to the metaphorical picture of knowledge as an object, which we wish to challenge. However, there is a principled difference between knowledge as an object, which we criticize, and Bereiter's idea of knowledge as a conceptual artifact. The former simply exists, with no connection to the mind. The latter is a product of the mind and meant to be dealt with by the mind.

As a *presentational event*, a person understands when he is capable of *performing* intellectual acts utilizing knowledge ("the performance conception of understanding"). The second approach[12] has a pedagogical advantage: by externalizing understanding and making it observable behavior, it allows teachers to work on, build, and evaluate it.

Three comments are in order regarding the definition of good learning: (1) The definition is value-laden[13] – it attributes value to involvement and to understanding and denotes the type of learning to strive for. In principle, there could be learning that did not entail involvement and understanding – in the case of a propagandist or a preacher, for example. (2) There is reciprocal dependency between the two components of the definition – involvement in the process and understanding as the outcome – because involvement facilitates understanding and understanding promotes involvement. (3) The definition of understanding as the desired outcome of good learning may seem "conservative." One might be inclined to define its outcome as critical and/or creative thinking. But, as stated in the previous chapter, as the infrastructure of thinking, understanding subsumes these and other qualities. Moreover, the aspiration that learning embody understanding is radical enough in comparison to what actually takes place in schools, where "material" is taught to be retained and recycled. Teaching and learning for the sake of understanding necessitates far-reaching changes in the patterns of work and organization of the school.

Good learning (involvement in the process + understanding as the product) is a complex process. It is difficult to plan it and ensure it, *but it is possible and necessary to provide the conditions for it*. What are the conditions vital for the emergence of good learning? Here, for example, are 12 conditions for good learning. Some of them encourage involvement, some encourage understanding, and most encourage both. This list does not exhaust all or even most of the conditions necessary for good learning.[14] In general, we may divide the conditions necessary for good learning into three categories – some relate to *motivation,* some to *congruity* (between the student and the contents, the student and the teacher, the student and the pattern of teaching, etc.), and some to *environment* (the organizational structure, the climate, etc.).

Relation Between Intrinsic and Extrinsic Motivation: People learn well when they are driven by intrinsic motivation (they do something because it is enjoyable or

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[12] This approach does not necessarily deny the representational conception of understanding, though it is certainly possible to understand in a behavioristic manner alone, that is, without any mental representations (e.g., to express oneself well without knowing the laws of grammar).

[13] Academic psychology makes use of general, "scientific" definitions of learning, which are not value-laden, but these are not very fertile with respect to education. In education, the definition of learning is necessarily value-laden.

[14] Recent noteworthy books that address other necessary conditions for good learning are David Perkins' *Making Learning Whole* (2009) and Daniel Willingham's *Why Don't Students Like School* (2009).

valuable) and by extrinsic motivation (they do something because they want a reward or fear punishment), but extrinsic motivation is much weaker than intrinsic, because strong extrinsic motivation destroys intrinsic motivation. That is to say, both motivations are important for good learning, but only on condition that the correct relation between them is maintained[15] (cf. Nicholls 1989; Perkins 1992).

Undermining: People learn well when they are undermined cognitively, when the "world" contradicts their schemas (concepts and expectations). People whose ideas have been undermined are motivated to learn so as to restore the cognitive equilibrium that was disturbed. In other words, people want to be happy. Happiness, in the cold terms of neo-Piagetist cognitive psychology, is a situation of cognitive equilibrium, in which the world behaves in accordance with our concepts and expectations. When the world contradicts them, we are motivated to learn in order to recover the lost equilibrium (cf. Fosnot 1996).[16]

Resonance: People learn well when the subject being studied resonates with their provisional thoughts and their inchoate aspirations (an existential resonance) or with their practical goal (a practical resonance). A subject is learned well if it is meaningful; meaning also derives, perhaps principally, from the "baggage" that the learner brings with him (the child is not a tabula rasa).[17] The concept of the resonance of learning is more positive than the concept of undermining, whereby a person learns when his preconceptions are upended. Rather than supplanting the concept of undermining, resonance offers a positive counterbalance.

Intelligences: People learn well when the content of what they learn is appropriate to their profile of intelligences. According to Howard Gardner's theory of multiple intelligences (1993, 1999b), people have eight distinct intelligences: linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial, interpersonal, intrapersonal, and

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[15] If, for example, the literature department of some university decides that it will only accept students with pure interest in literature (inner motivation) and, therefore, it does not offer a BA to its graduates (external motivation), it is doubtful whether it will attract candidates. And if, for example, parents who want their children to love reading (inner motivation) buy them a mountain bike after they've finished a book (external motivation), they will undermine their love of reading; the next time, they'll read a book on condition that they'll be taken to Disneyland. In short, the reward for reading is reading; the reward for learning is learning.

[16] For example, when a person goes to a restaurant, he employs the schema "restaurant" (not "museum" or "football field"). The restaurant schema arouses a series of expectations: a polite waiter will greet him and his spouse when they enter, and he will lead them to a vacant table; then, he will present them with a small text, the menu, and he will give them time to examine and discuss it; afterward, the dishes will appear in proper order, from appetizer to dessert; finally, the bill will be presented for a reasonable price…. But let us assume that when they enter, the waiter coarsely shoves the customer and his spouse to a table or disagrees with an opinion that the customer has expressed to his spouse, or he asks for an unreasonable amount of money or for no money at all ("On the house today!")…. Our customer will be shaken ("what the hell is going on here?"). He is *motivated to learn.*

[17] In response to the sparse demand for his books, Schopenhauer, the bitter philosopher of pessimism, wrote, "If a head bumps into a book, and a hollow sound is heard, that is not necessarily the fault of the book."

naturalist.[18] Among the criteria for a behavior to be regarded as an intelligence (defined by Gardner as the ability to solve problems or to create products valued by the community) is the expression or implementation of a symbol system. When a person learns some symbol system – a field of knowledge, an art, an activity – which is appropriate to her intelligence profile, the learning is more productive.

Learning and Thinking Styles: People learn well when their style of learning and thinking corresponds to the style of teaching and evaluation in which they are taught and evaluated. People process their experience in various modes and styles. Different theories of learning and thinking try to locate and describe the different styles of learning and thinking. According to Robert Sternberg's theory of "mental self-government" (1997), for example, learning and thinking styles are divided according to the forms of political regimes (we govern our minds like we govern our states): legislative, executive, judicial, monarchic, hierarchic, oligarchic, anarchic, liberal, and conservative styles of thinking and learning. People learn well when the style of teaching and evaluation takes account of their typical style of learning and thinking. For example, lecture-style teaching and multiple-choice tests requiring specific answers are suited to people with an executive, hierarchical, and conservative style.[19]

Stage of Development: People learn well when content is chosen and presented in a manner suited to their level of cognitive development and the characteristics of their understanding at a given age. For example, according to Kieran Egan's theory of cognitive tools (1997, 2008), there are five types of understanding, which develop with age and are appropriate to the developmental stages of human culture (recapitulation theory, which Egan revives): somatic, mythological, romantic, philosophical, and ironic understanding. When content of study is adapted to the typical type of

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[18] Gardner added the eighth intelligence, the naturalist, at a later date, a few years after publishing his important book, *Frames of Mind* (1983). I attribute its discovery (a conjectural, perhaps preposterous attribution) to a question that I asked him at the end of a lecture in which he presented the seven intelligences: "Professor Gardner, what kind of intelligence do you have?" (In other words, what is the dominant intelligence of a person who invents a theory like multiple intelligences?) Gardner said nothing at first, thought for a while, and then made some noncommittal answer. A short time afterward he published an article entitled "Intelligence Reframed," in which he added the eighth intelligence. He later published a book with that title (Gardner 1999). Despite the huge popularity of the theory of multiple intelligences among educators, its utility in the field of education has been limited, because it doesn't specify what to teach or which intelligence to develop. Moreover, in a classroom with 30 students or more, and as many intelligence profiles, it is difficult to do anything with this theory (except experience frustration). Gardner is well aware of this. Hence, in his books on education, *The Unschooled Mind* (1991), *The Disciplined Mind* (1999), and *Five Minds for the Future* (2006), the theory of multiple intelligences occupies a marginal place.

[19] There is no reliable research that supports the theory of multiple intelligences or (even more so) the theories of learning and thinking styles (cf. Willingham 2009, pp. 147–168). The main importance of these theories is that they call our attention to the personalized character of thinking and learning – that thinking and learning are conditioned by and vary according to the whole personality in its specific context. As one rabbi summed it up in explaining Judaism's view of the afterlife: "According to our religion, after death we all go somewhere to study Talmud. For some it's heaven, for some it's hell."

understanding and the given stage of development, the learning is better. For example, in the mythological stage, children respond best to a binary presentation of characters and events (good or bad), and at the philosophical stage – late adolescence – young people respond to schematic, abstract, and systematic presentations.

Positive Attribution Theories: People learn well when they develop theories that vest them with mastery over their lives and attribute learning to their effort. According to Carol Dweck's attribution theory (2000), "incremental learners" learn well because they attribute achievement, success, and learning to cumulative effort. "Entity learners," by contrast, do not learn well, because they see achievement, success, and learning as a matter of "either you get it or you don't." Learners of the first kind relate to their intelligence as a flexible and developing experience, whereas learners of the second kind tend to relate to their intelligence as an inborn and inflexible entity. Learners of the first kind are persistent; learners of the second kind give up easily.

Feedback: People learn well when they receive continuous, informative, and formative feedback (Perkins 1992; Brooks and Brooks 1993; Hattie 2012). Feedback is vital to good learning when it is continuous, an integral part of the learning process (and not a climactic event that occurs at the end – the examination); informative, providing the learners with precise information on the way they have performed some task (and not just an enigmatic mark in red ink); and formative, its intended purpose is to get the students to improve (and not to rank them).

Participation, Ownership, and Choice: People learn well when they share in the formation of goals and methods of study (Perkins 2009). When people choose what and how to study, their study has a different quality. People not only choose what they love; they love what they have chosen. Choice not only charges what was chosen with new meaning, it also enables people to take responsibility for the process of learning; responsibility is a sign of maturity.[20]

Apprenticeship: People learn well when they take part in the work of a master – a craftsman, professional, expert (Gardner 1991). During this participation, they move from the margins of the activity to its center, from simple to complex tasks (Lave and Wenger 1991). Learning, thinking, and understanding in the context of social action are qualitatively different from those that take place in school, which is an artificial environment, divorced of context.

Good Teachers and Effective Mediation: People learn well when contents are mediated to them by good teachers. A good teacher, according to Lamm, is someone who is endowed with four characteristics: positive involvement in the subject of study and the students' lives, awareness of the goals and purposes of instruction, flexibility in performance, and supportive leadership (Lamm 1976). Lee Shulman defines a good

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[20] Consider the difference between a recruit who runs around an army base and a civilian who runs in order to stay in good physical shape and look young. Both of them run, but there is a world of difference between the two kinds of running. The fact that the students do not participate in decision-making or assume responsibility in school infantilizes them. No wonder students at the age of 17 or 18 still call themselves kids.

teacher as someone who possesses "pedagogical-content knowledge," which includes knowing the field she is teaching, the representation of the field in the student's mind, and the bridge between the field and its representation in the mind (Shulman 2004). By either of these analyses, a student is likely to develop toward his "zone of proximal development" with the help of a guide who knows how to lead him to it (Vygotsky 2003) or how to mediate between new areas of knowledge and student experience (Feurstein 1998).

A Supportive Intellectual Climate: People learn well when they feel safe, when they are permitted, even encouraged, to make mistakes (Rogers 1969); when positive attitudes toward learning and intellectual effort are fostered within them (Marzano 1992); when they enjoy an intellectual environment that encourages dispositions to think deeply, systematically, critically, etc. (Ritchhhart 2002); and when they are the object of high expectations and belief in their ability to think and investigate and attain intellectual achievement: "The variable that has been found to be most influential on students' achievement is the social climate of the school" (Oplatka 2007, p. 68).

As noted, the aforementioned 12 conditions are far from exhausting the conditions vital for good learning; there are others (cf. http://yoramharpaz.com/pubs/en_leaming/good-learning.pdf) . However, this is the essential point: good learning is a process that involves thinking, imagination, emotion, and body with the content of study and in constructing its understanding. To motivate and shape such a process, the various components of the educational environment – teaching, evaluation, curriculum, students, organization of time and space, the climate, and more – must all be structured to provide the necessary conditions.

The call to establish a school based on the principle of conditions for learning is a call to stand the school on its head or, rather, on its feet. Traditional schools are designed on the principle of conditions for instruction, instruction of a certain kind – "talk and chalk" kind of teaching. Schools are arranged to have a teacher lecture to dozens of students, who are "packaged" in the unit of the class. This is (ostensibly) an efficient and inexpensive system of instruction. In such schools, the order of things has been reversed. Learning is in the service of instruction. This is like a shopping center where selling has priority over buying, where the conditions are good for sellers but not for buyers. However, instruction is a means for learning and not vice versa. In other words, priority should be given to learning over instruction. A rational shopping center is built on the principle of providing good conditions to the buyers: the customer is always right. Dewey wrote that only in a school was it possible to sell without buyers – to teach without learning. A logical school, one that served good learning, would be radically different from existing schools (Harpaz 2008).[21]

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[21] "The school is organized today mainly around the need to manage the many demands and the uncertainty that derive from universal education, and less around the question of the optimal organization of significant learning[…] In such a conception [which acknowledges and encourages differences among people] the question is not, what is the correct process of instruction, but what is the true process of learning. The accent must pass from questions of instruction to questions of learning. Not, how one teaches, but how one learns[…] The system of instruction must reflect the ways of learning and not vice versa" (Inbar 2000, pp. 13–21).

A good way to sum up this chapter is to recall the words of Jerome Bruner in his well-known article "The Will to Learn":

> The will to learn is an intrinsic motive, one that finds both it source and its rewards in its own exercise. The will to learn becomes a "problem" only under specialized circumstances like those of a school, where a curriculum is set, students confined, and a path fixed. The problem exists not so much in learning itself, but in the fact that what the school imposes often fails to enlist the natural energies that sustain spontaneous learning – curiosity, a desire for competence, aspiration to emulate a model, and a deep-sensed commitment to the web of social reciprocity. (Bruner 1966, p. 127)

The concept of good learning, therefore, refutes the first atomic picture: learning is listening. Learning that is based only on listening (typically shallow and distracted learning) is not only inefficient, it is also not educational, since it teaches young people shallow and obedient learning, devoid of interest and initiative.[22]

2.4.2 Teaching Is More Than Telling: Teaching Is Providing Conditions for Good Learning

As commonly understood, teaching is a complex of actions that are intended to advance learning. When learning is interpreted as listening, teaching, as its mirror image, is interpreted as telling. However, if learning is interpreted as involvement and understanding, teaching must be interpreted differently, as something more complex.

The second atomic picture – to teach is to tell – is based on our direct life experience: someone asks us, "What time is it?"; we answer: "Five o'clock"; he listened, we told, and he learned something new. Teaching and learning of that kind can succeed only when the subject being learned is contained in a simple unit of information, but if we want to teach a complex idea, not to mention a character trait or a value, stating it is insufficient (even when we bolster it by dispensing punishments and rewards to the learners). Good teaching is *indirect* and *comprehensive*. Rather than direct and limited instruction – reciting the "material" – it strives to create conditions for good learning. It does not entirely deny direct instruction. It merely limits its role in the complex of conditions vital for good learning. (Surely it is useful

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[22] In nineteenth-century England, there was a slogan: "It doesn't matter what you teach, so long as it's boring!" The logic behind that slogan was healthy: the schools prepared students for hard, boring work in the new industrial factories. But why do we continue to bore young people in our schools while life outside school might be so meaningful and interesting? Philip Jackson argued in *Life in Classrooms* that our schools do, in fact, prepare students for life. They teach them three important lessons: to stick with the crowd, to live in an evaluative environment, and to experience power relations. "Thus, school might really be called a preparation to life, but not in the usual sense in which educators employ this slogan" (Jackson 1968/1990, p. 33). The school of thought called "critical pedagogy" developed this theme – schools prepare students to play their role in the depressing capitalistic society mostly through their hidden curriculum.

and effective to hear an organized lecture by an expert in a field from time to time, but it's possible to gain even more from such a lecture if it is just one component in indirect and comprehensive instruction.) A basic assumption of good teaching is that it involves the learner. The essence of teaching, therefore, is not what the teacher does but what she causes the students to do.[23] And what the teacher causes the students to do derives from the complex of conditions for good learning that she creates.

The relations between teaching and learning are complex and dependent upon social and educational ideology. The first model of education (the "old education") assumes a positive causal relation between teaching and learning: teaching causes learning.[24] The second model (the "new education") assumes a direct negative relation between teaching and learning: teaching impairs learning, intervenes in the child's self-regulatory mechanism and subverts it. The third model, of which the community of thinking is one variant, takes a more complex view. It seeks to restrain teaching as telling but not to eliminate it entirely. It seeks to transform most of it into guidance (not therapeutic but intellectual, meaning guidance for the purpose of critiquing and creating knowledge), and it seeks to make guidance into one component in the complex of conditions for good learning.

Carl Rogers, one of the theorists of the second model, of open, child-centered education, despaired of teaching. He wrote, with typical candor:

(a) My experience has been that I cannot teach another person how to teach. To attempt it is for me, in the long run, futile.
(b) It seems to me that anything that can be taught to another is relatively inconsequential and has little or no significant influence on behavior […].
(c) I realize increasingly that I am only interested in learning which significantly influences behavior. Quite possibly this is simply a personal idiosyncrasy.
(d) I have come to feel that the only learning which significantly influences behavior is self-discovered, self-appropriated learning.
(e) Such self-discovered learning, truth that has been personally appropriated and assimilated in experience, cannot be directly communicated to another […].
(f) As a consequence of the above, I realize that I have lost interest in being a teacher.
(g) When I try to teach, as I do sometimes, I am appalled by the results […]. Hence I have come to feel that the outcomes of teaching are either unimportant or hurtful.

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[23] When the teacher enters the classroom with a question "What will I have the students do?" rather than with the egocentric question "What do I have to do?" her teaching, like her preparation for it and her evaluation of it, is likely to change in far-reaching ways.

[24] The pattern of teaching in the first model, the scholastic pattern of teaching, arouses a strong metaphorical drive among many theorists, who sought to explain it. As noted, Dewey compared it to a system of pipes with two lines of flow: pipes of one kind pushed material into the student's mind, and pipes of the second type pumped it out (Dewey 1933/1998, p. 261). Paulo Freire called the conception underlying this pattern of teaching the banking conception of teaching (Freire 1970/1993, pp. 52–67). Teaching is taken as making a deposit, the mind as a safe, and knowledge as money. Two metaphors had successful careers in the twentieth century: that of furniture and that of the muscle. According to the former, knowledge is like the furniture placed in the space of the mind. According to the latter, intelligence is like a muscle; if you train it to learn by rote, for example, you'll strengthen its memory muscle.

(h) When I look back at the results of my past teaching, the real results seem the same – either damage was done or nothing significant occurred. This is frankly troubling.

(i) As a consequence, I realize that I am only interested in being a learner, preferably learning things that matter, that have some significant influence on my own behavior.

(j) I find it very rewarding to learn, in groups, in relationships with one person as in therapy, or by myself.

[…] I am almost afraid I may seem to have gotten away from any discussion of learning, as well as teaching […]. If the experiences of others had been the same as mine, and if they had discovered similar meanings in it, many consequences would be implied:

(a) Such experience would imply that we do away with teaching […]
I think I had better stop here. (1969, pp. 152–155)

From the perspective of the second model, Rogers is right: the second model values "self-discovered, self-appropriated learning" that has "significant influence on behavior." (These terms received their systematic meaning from humanistic existentialism.) He doesn't value intellectual understanding of general truths that influence the way people interpret their world. (Dewey, as noted, was frightened by the anti-intellectual turn of the progressive movement, of which he was the intellectual leader.) The second model is indeed close in spirit to psychological treatment. (Fenstermacher and Soltis, as noted, called it "the therapeutic approach.") But an educational approach that values general truths and seeks to encourage their understanding asserts that teaching is important but has to be less direct (transmitting knowledge) and more indirect (guiding the construction of knowledge).

Ernst von Glasersfeld, whom I associate with the third model, believes that teaching has a place even when learning is interpreted, in terms of his radical constructivism, as a process of constructing concepts and the relations among them that takes place in the individual's mind. When learning is seen that way, teaching can and must guide it:

The fundamental principle from which most of my suggestions for practice of teaching derive is that concepts and conceptual relations are mental structures that cannot be passed from one mind to another. Concepts have to be built up individually by each learner, yet teachers have the task of orienting the students' constructive process. Clearly it is easier to orient students towards particular areas of conceptual construction if one has some idea of the conceptual structures they are using at present. In other words, in order to modify students' thinking, the teacher needs a model of how the student thinks. Because one can never get into the heads of others, these models always remain conjectural […]. Sensitive teachers will treat their initial model of a student like a weather forecast: generally useful, though no better than approximate. (1995, pp. 186–187)

The position of the third model with regard to the relation between teaching and learning thus maintains that teaching does not effectuate learning (the first model) nor does it necessarily impair it (the second model); when it is indirect and comprehensive – providing the essential conditions for learning – it is definitely helpful. When the conditions for learning touch upon direct interaction with students, teaching must be based on guidance; when they touch upon planning the entire educational environment, teaching must be comprehensive and shape an educational environment that enables and encourages good learning.

The general rule is that teaching for the sake of good learning does not generate learning directly; it mobilizes the learner's mind to that end. However, this does not make teaching superfluous. It only makes it more complex. Nicholas Burbules summed up this important matter as follows:

> In pedagogical encounters, we do not change other people. They change their minds, they decide on alternative courses of action, they redefine their priorities, and so on […]. But beginning from this vantage point leads to a fundamentally different teaching stance, one defined less by "giving" students certain things, "shaping" students in particular ways, or "leading" them to particular conclusions, and more by creating opportunities and occasions in which students will, given their own questions, needs, and purposes, gradually construct a more mature understanding of themselves, the world, and others – an understanding that *by definition* must be their own. (1993, p. 10)

In short, slogans such as "Teach less, learn more!" and "Teaching is dead, long live learning!" are justified when teaching involves routine, instructional lectures in preparation for an examination. But when teaching adapts itself to the conditions and goals of good learning, it promotes better learning and is worthy of praise.

Good teaching is derived from the conditions of good learning, but the manner of production is not as simple as many learning psychologists suppose. Robert Marzano, for example, makes that case as follows:

> I believe that the "heart of the matter" of any educational reform or restructuring is the relationship between the teaching and learning processes. We know that effective teaching mirrors effective learning, yet as educators we have not mounted a serious effort to organize teaching around the learning process. Instead, we have viewed education as an institution or an administrative system or a set of instructional techniques. We have not examined the learning process and then built instructional systems, administrative systems, indeed, entire educational systems that support what we know about the learning process. We have not built education from the bottom up, so to speak. (1992, p. 1)

Building education from the bottom up, meaning to derive guiding rules for teaching from the conditions of learning, is not a straightforward or simple action; it is not possible to distill teaching guidelines directly from the nature of learning.[25]

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[25] We must be careful to avoid reification – attributing concreteness to the word "learning" as if there is only one experience of learning in the world. Language is poor; reality is rich and varied. There is a single word, "learning," but there are many kinds of learning in the world: learning what processes take place in the cell of an organism, learning how to solve equations with two unknowns, learning how to drive a car, learning how to appreciate Oriental music, learning to be sensitive to the needs of the other, learning to be aware of oneself, and learning to think independently – all of these are kinds of learning bound up with various cognitive and psychological processes and guided by different world views. Among these kinds of learning, there is a family resemblance, but it is doubtful whether they have any common essence. Aharon Kleinberger classified the various kinds of learning according to their objects in the following way: learning how… how to perform, learning a skill; learning that… learning of verbal information, learning what is there; learning norms… learning what is proper; learning to… acquiring habits, to greet people with "good morning," to throw garbage in the pail; learning to understand and appreciate, for example, learning to understand the theory of relativity or learning how to appreciate modern dance (Kleinberger 1980, pp. 99–105).

Such derivation must undergo at least two stages of processing: *sublimation* and *realization.* Let us explain.

If, for example, research showed that electric shock had a positive effect on learning, that wouldn't provide guidance for teaching ("Shock your students at various times during the lesson…"), because teaching is subject to ethical conventions. Perhaps, after appropriate *sublimation*, it would be possible to educe some principles regarding the positive effect of punishments (reasonable ones, within normative limits) on learning. And if, for example, research demonstrated that students learn effectively when they enjoy a deep personal relationship with a sensitive, well-trained adult, we couldn't derive instructions for teaching from that in real-world schools, because in the real world it is not possible to develop a personal relationship with every student. If we demand such relationships, we have to change the reality of schools to effect a *realization* of the research findings so they take account of the importance of a personal relationship for learning. In short, the derivation of teaching from learning must undergo normative and practical processing.

Now, having addressed this reservation, we can present the following table with a clear conscience. It illustrates the derivation of principles for teaching from the 12 conditions for good learning mentioned above (and they, as noted, are merely a partial list) (Table 2.3).

These, of course, are rather preliminary guidelines for teaching, which do not take account of the ethical norms (sublimation) and practical constraints (realization). They are meant only to point out the logic of the process by which teaching is derived from learning.

Why don't we implement guidelines like these in schools? Indeed, why is it that almost everything that happens in schools contradicts them? It's not because teachers and principals are ignorant or ill-disposed. Rather, it's because the basic givens (e.g., the proportion of teachers to students) and the patterns of action (e.g., matriculation examinations) in schools do not make it possible (see below).

Indirect and comprehensive teaching, teaching in the strong sense, refutes the second atomic picture – teaching is telling – and posits an alternative definition: to teach well is to produce conditions for good learning. This definition elevates learning over teaching – the goal of teaching is to serve learning, to provide favorable conditions for it (cf. on the nature of teaching: http://yoramharpaz.com/pubs/en_learning/good-teaching.pdf; http://yoramharpaz.com/pubs/en_learning/teaching-and-learning-analysis.pdf).

2.4.3 Knowledge Is Not an Object: Knowledge Is a Structure or a Story That Works; The Mind Is Not a Container, the Mind Is Interpretive Activity

The third picture of schooling – knowledge is an object – is metaphorical: someone who possesses knowledge can transfer it as if it were an object to someone who does not possess it. Educated people maintain many objects in their head; ignorant

Table 2.3 Derivation of principles for teaching from the conditions for learning

Conditions for good learning	Principles for good teaching
Relation between intrinsic and extrinsic motivation	Make sure there is strong inner motivation and weak outer motivation; stimulate interest in learning the subjects and reward it proportionally
Undermining	Undermine the students' common sense assumptions with constructive provocations. Repeatedly facilitate restoration of cognitive equilibrium and undermine it again
Reverberation	Offer the students "stories" (fictional, historical, scientific) that will fascinate them and resonate with their initial thoughts and feelings
Intelligences	Design a curriculum, method of teaching and assignments that correspond to the eight intelligences
Styles of learning and thinking	Teach and evaluate the students in various styles that suit their learning and thinking styles
Stage of development	Design the contents of the curriculum and their presentation according to the students' developmental stage and their dominant type of understanding
Theories of positive attribution	Foster in the students' minds an existential attitude according to which their quality of life depends primarily on their intentions and efforts, that achievement is an incremental process
Feedback	Give the students continuous, informative, and formative feedback
Participation, ownership, and choice	Share the goals and means of teaching with the students
Apprenticeship	Let the students learn from participation in the work of experts and learn by doing
Good teachers	Develop a mechanism for selecting and training teachers, mainly in-service, to bring good teachers into the educational system
A supportive intellectual climate	Establish a supportive environment in which every student is valued and encouraged to think and to learn

people have empty heads. The metaphorical picture of knowledge as an object thus accompanies the fourth atomic picture (also metaphorical): the mind as a container. Just as the picture of teaching is a mirror image of the picture of learning, so, too, the picture of the mind is a mirror image of the picture of knowledge.

School instruction (the familiar IRE pattern: the teacher initiates, the students respond, the teacher evaluates) reflects this picture. One of the meanings implicit in the objectification of knowledge is that knowledge is understood as a thing that exists outside of any mind and is neither influenced nor touched by mind; it is merely stored there. The human mind, for its part, is not influenced or touched by "mindless" elements – drives, emotions, interests, and social and cultural environment; it is a pure container waiting to be filled by the objects of knowledge.

When teachers transfer "closed" units of knowledge to their students; play a perfunctory ping-pong game of questions and answers (or the game called "guess what I have in mind"); refer to "neutral" textbooks that don't reveal the authors' interpretative attitudes (which is why they are so boring); prepare for a test that gauges the students' ability to give uniform, predictable answers to uniform, predictable

questions (it is almost impossible to administer an examination comprised of original questions and answers); and evaluate them by means of a precise numerical grade, they transmit the message to the students that knowledge is like an object – something that exists "out there," with the concreteness of an object.

The teachers – more accurately the patterns of instruction and evaluation that they implement – transmit other messages. For example, questions are imposed externally, and they are intended to trip students up or test them; questions have correct answers, and someone is the repository of those answers; learning means to ingest and regurgitate, and it isn't pleasant; it is forbidden and certainly not worthwhile to try to develop ideas or to think independently; and so on. One of the messages is, as noted: "knowledge is an opaque object that doesn't speak and cannot speak to me, but I have to bear it in my memory and be prepared to demonstrate it in response to teacher or examination questions."

School knowledge is sealed at both ends: detached from the student and detached from the world. It is detached from the student because the student has no particular interest in it; it is detached from the world because it has no connection with reality. It is not a candidate for refutation or confirmation by observation or contemplation, and it is not intended to explain the world or apply to it. Hence, school knowledge is detached knowledge, devoid of affiliations. The student experiences it as something to be acquired and retained because that's what school demands. This demand is not capricious. It has instrumental logic: acquiring and retaining knowledge provides something that is "really" important: a high school diploma. A high school diploma confers access to institutions of "higher education" and the acquisition of a "respectable" profession. In brief, knowledge has secondary utility that is not connected with the knowledge itself; it is only dependent on it (the way the salivation of Pavlov's dogs was dependent on the ringing of a bell). In this respect, schools are cynical institutions, and perhaps the most anti-educational message that they convey is "education has no real value except as a means for achieving something really valuable – a lucrative career."

The most outstanding cultural project of the second half of the twentieth century was to challenge this "objective" picture, the "objective object" of knowledge. After Kant effected his "Copernican revolution," maintaining that "pure reason" constructs the world by means of the forms of time and space and a priori categories, and since Nietzsche asserted that reason is not at all pure, but rather driven by the will to power that splinters into an infinite number of tremendous and capricious wills at once, theorists and scholars in every discipline began to compete among themselves to reveal the arbitrary – subjective/interested/contextual/contingent – foundation of human knowledge. Philosophers, psychologists, historians, sociologists, and scientists all pointed out that knowledge was lacking the solidity, constancy, and disinterest of an object. Human knowledge is fragile, temporary, and conditional. It depends on weak foundations such as "categories" (Kant), "perspectives" (Nietzsche), "language games" (Wittgenstein), "paradigms" (Kuhn), "discourse" (Foucault), "contingency" (Rorty), and other "human, all too human" categories, to cite Nietzsche, the great founder of this movement. The insight that knowledge is conditional – that, in fact, there is no difference between knowledge

and opinion – has spread from university philosophy departments to the "street." Today, everybody knows that "everything is relative!" (This, of course, is dubious, popular knowledge.)

Not everybody. Schools haven't discovered this yet, although in fact they could gain a lot from this philosophical line of thought. Is knowledge relative? From an educational standpoint, the answer to that question is not the main issue. The main issue is what does education gain from recognizing the concept that knowledge is relative. The cultural shift that gave rise to the relativization (partial or absolute) of knowledge humanized knowledge. Now it is something that people invent, not just discover, to answer troubling questions and to act more wisely in the world. Such a picture of knowledge supports an educational attitude that encourages active, critical, and creative involvement with knowledge. By contrast, the dominant patterns of teaching and evaluation in schools transmit and support a picture of knowledge that is detached from human concerns. If knowledge is an objective object, a truth produced by the neutral and effective scientific method (a production line for truth) must be transmitted just as it is, top-down. Frontal teaching, therefore, is a direct outgrowth of an objective picture of truth – the repository of such truth is empowered, even obliged, to present it to everyone in authoritative lectures. The challenge to the objective picture of knowledge undermines this hierarchical view of teaching and opens up new educational possibilities.[26]

The alternative atomic picture proposed by the narrative of the community of thinking is *knowledge is a structure* or *a story that works*. Such a picture encourages the student to interpret and create knowledge. This alternative picture complements the alternative pictures of learning as involvement and understanding and teaching as an indirect and general activity: (1) good learning is active learning that creates knowledge or its understanding and doesn't simply absorb it as is; (2) good teaching encourages learners to create knowledge or its understanding. This kind of learning and teaching transmits a picture of knowledge as a human invention that is meant to advance familiarity with the world.

Knowledge as a *structure* reflects a constructivist view of knowledge: knowledge is not a replica of the world (the correspondence view of knowledge) but rather construction of the world by means of the categories that the human mind projects upon it. The definition of knowledge as *a story that works* alludes to the resemblance, in certain respects, of knowledge to a narrative structure. A story is a structure with a beginning, a middle, and an end. The beginning generates expectations, the middle spawns complexities, and the end resolves them and fulfills the expectations. This

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[26] According to Zygmunt Bauman (2003), in the era of "liquid modernity" knowledge is not an object anymore – it was liquidated and lost its solid value: "Knowledge was of value since it was hoped to last, and education was of value in so far as it offered such knowledge of lasting value. Education […] was to be an activity aimed at the delivery of a product which like all other possessions could, and would be desired to, be held forever. Here we come across the first of many challenges contemporary education needs to face and withstand. In our 'liquid-modern' times, durable possessions […] have lost their past attraction. Once seen as assets, they are now more likely to be viewed as liabilities. Once the objects of desire, they have turned into objects of resentment" (p. 19).

pattern has an emotional effect on the listener. A story has a unifying principle – all its parts are tightly interconnected. Indeed, a story is not "true," not a reliable description of reality. A theory has a similar structure: it starts with questions; the questions generate expectations and some tension; and the theory, which responds to the questions, fulfills the expectations and resolves the tension. With a theory as well, all its parts – the hypotheses, the propositions, and the arguments – are closely interconnected. Theories, too, like stories, are not entirely truthful, not entirely congruent with reality; they contain creative overflows that derive from the human mind. Stories and theories derive from the same human drive to understand, to bring order and significance into the world – man is *homo narrans*.

However, this narrative picture of knowledge does not lead to vulgar relativism, in which all stories are equal or unequal to the same degree, because the story has to *work* – it explains things and enables intelligent action with respect to them. So we must seek a more complex picture of knowledge, which avoids vulgar relativism (or "foolish postmodernism," Bruner 1996, p. 59) on the one hand and "dogmatic Platonism" (Rorty 1997) on the other. The price of liberation from naive realism, from the conception that knowledge is a reflection of the world, could be the epistemological nihilism of "anything goes!" Therefore, it must be shown – not by preaching but by experiencing the systematic creation of knowledge – that despite the inevitable subjective component of knowledge, not all stories are equally good, and there are accepted and justified standards (true, they, too, are relative) for distinguishing between a good and a bad story; if not like a mirror, then they must be like a key to a door that can be opened by more than one key (to use Von Glasersfeld's [1984] metaphor; but even in this metaphor, some keys work better than others and open doors effortlessly). In short, the old dogma of "seeing is believing" cannot be replaced by a new one, "believing is seeing." Between believing and seeing, between concepts and data, between theories and observations, and between people and the world, there are complex connections, and that complexity has to be transmitted to learners by means of experience and processing, criticism, and creation of knowledge according to agreed-upon rules for creating and justifying knowledge.

The metaphorical picture of knowledge as an object goes hand in hand with the metaphorical picture of the mind as a container, from which we must also free ourselves. "Here we are in the Information Age, relying on a theory of mind that is older than the wheel" – thus Carl Bereiter began his book *Education and the Mind in the Knowledge Age* (2002, p. ix). Cognitive psychology, "the mind's new science," consolidated the metaphor of the mind as a container by analogy to the computer. The mind, like a computer's memory, contains statements and logical rules to produce new propositions from old ones. "Yet a great deal of what we seem to know does not plausibly belong in either category" (idem, p. 30). Bereiter tries to liberate us from the metaphor of the mind as a container with a theory called "connectionism." This theory enables education to operate differently: "If, as some economists say, the main wealth-generating activity of the future is going to be knowledge production, it seems two things are required: (a) to conceive of knowledge as

something other than stuff inside individual people's minds, and (b) to understand the role of individual minds in societal knowledge production. Folk theory is not up to either of these requirements" (ibid., p. 55).

The folk theory of the mind as a container does not permit us to relate to knowledge as a conceptual artifact that one can improve. Nor does it permit us to grasp the process of work upon knowledge as a social process. In Bereiter's connectionist opinion, the conception of knowledge enables us to relate to thinking as a social process that is subject to refinement. Only that kind of education, in his view, is capable of meeting the challenges posed by our knowledge society.

Indeed, Bereiter does write about knowledge as an object, but as a conceptual object. The difference between an "object-object" and a "conceptual object" lies in the location of the former outside of our mind, while the latter is constructed by individuals, society, and culture. We discover the former; we create the latter.

The container metaphor of the mind, which predominates in schools, bases learning on listening and teaching on telling. Jerome Bruner writes: "Teaching, in a word, is inevitably based on notions about the nature of learner's mind. Beliefs and assumptions about teaching, whether in a school or in any other context, are direct reflection of the beliefs and assumptions the teacher holds about the learner" (1996, pp. 46–47). He continues:

> Stated boldly, the emerging thesis is that educational practices in classrooms are premised on a set of folk beliefs about learner's minds, some of which may have worked advertently toward or inadvertently against the child's own welfare. They need to be made explicit and to be reexamined. Different approaches to learning and different forms of instruction – from imitation, to instruction, to discovery, to collaboration – reflect differing beliefs and assumptions about the learner – from actor, to knower, to private experiencer, to collaborative thinker […]. Advances in how we go about understanding children's minds are, then, a prerequisite to any improvement in pedagogy. (Idem, pp. 49–50)

According to Bruner, four models of the mind guide teaching today, and each one entails a different educational goal[27]: (1) *imitative mind,* a model that encourages demonstrative education and learning by practicing skills; (2) *receptive mind,* a model that encourages lecturing (telling) and learning as absorption of (listening) information; (3) *thinking mind*, a model that encourages teaching and learning from the child's point of view; and (4) *knowing mind,* a model that encourages teaching and learning, the purpose of which is to help students distinguish between personal knowledge and justified knowledge – knowledge that has been confirmed by the culture (in Popper's and Bereiter's terms this model encourages transition from World 2 to World 3).

Two theories of the mind dominate these four models: *the external theory* and *the internal theory*. The former looks at the mind from the outside; it asks what adults alone can do for the child's mind; the latter concentrates on what the mind alone can do for itself.

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[27] I give these models somewhat different names than Bruner's.

Bruner believes that it is necessary to merge these four viewpoints (four models of the mind) into a single outlook: "In the end, then, the four perspectives on pedagogy are best thought of as parts of a broader continent, their significance to be understood in the light of their partialness" (idem, p. 65). A harmonizing approach like this one – all the models of the mind and the teaching and learning practices that derive from them are combined together – is a convenient way to circumvent the conflict but not one that is always possible or desirable. In any event, whereas the first model of education (the "old education") tends toward models 1 and 2 of the mind (and its external theories); and the second model of education (the "new education") tends toward model 3 of the mind (and its internal theories); the third model, that embodied by the community of thinking, tends toward model 4 and to an inner and outer theory of the mind – that is, a model according to which the mind is determined by the relations between the interior and the exterior. Unlike Bruner, who believes that "real schooling, of course, is never confined to one model of the learner or one model of teaching" (idem, p. 63) of the mind, I believe that good schools must adopt a dominant, if not an exclusive, model of the mind and corresponding models of teaching and learning. "Pedagogy is never innocent. It is a medium that carries its own message" (idem, p. 64), and precisely for that reason, education must convey a single clear and consistent message and not contradictory messages that derive from competing models of the mind.

The atomic picture of the mind from which teaching and learning in a community of thinking derives and the other four atomic pictures describe the mind as *interpretive activity*, as *making meaning*, or as *striving for understanding*. In other words, the mind is not a static entity (a container) but active and striving. (Postman and Weingartner [1969] suggest talking about "minding" rather than "mind".) The mind's main activity is interpretation for the purpose of understanding, interpretation of the data of the senses, phenomena, and ideas. Interpretation is neither the clarification nor illumination of that which is – a text or phenomenon – but rather its "creation," making it meaningful. Nietzsche's famous battle cry, "there are no facts, only interpretation," may have been exaggerated. Nevertheless, there do not appear to be facts without interpretation, and interpretation that strives for meaning and understanding is the main work of the mind. At any rate, it is the work that the community of thinking seeks to develop and guide.

Again, let us remember: in education, which is a practical area that seeks to change the world and not just to think about it, the truth of a theory or metaphor is not the only issue, nor even the most important one; the most important issue is what the theory or the metaphor enables us to accomplish and what quality of learning it advances. The mind as an interpretative activity is a "fact" that no longer needs justification; there is hardly any discipline in the natural or human sciences that does not contribute some aspect, meaning some interpretation, to this understanding. Moreover, and this is the main point, it enables us to deliver education in which the student is an investigator, a processor, and a creator of knowledge and not just someone who absorbs it passively. Such a student suits the needs and values of the democratic and humanistic knowledge society or a society that aspires to be such.

2.4.4   The Goal of Teaching Is Not a Student Who Knows a Lot But a Student Who Knows How to Relate to and Manipulate Knowledge

What influence do the pictures of knowledge and the mind have on the goal of teaching and learning knowledge? When knowledge is grasped as an object and the mind is grasped as a container, the goal of education is inevitably understood as the transfer of as much information as possible; the good student or desired graduate is one who knows a lot – he has a lot of objects in his container.[28] In such a case, a race develops in the precincts of curriculum (a running track, in Latin), in which the designers try to cram as much information as possible into the "containers," organized in linear fashion (the various contents are organized along some particular axis – a logical one in mathematics, a conceptual one in physics, a thematic one in literature, a chronological one in history, etc.). The principle is *cramming* and *accumulation:* to stuff as much "material" as possible into the curriculum, under the assumption that it accumulates in the student's mind and creates "cultural cargo" or a "broad education" or that the student ends up "knowing a lot." Here, in an imaginary discussion at the Israeli Ministry of Education, is what the curriculum based on the atomic pictures might look like:

> You have to learn how to read and write, and you have to learn arithmetic. That's clear! English is also important; English is a global language, the connection with the world. Arabic is also important, if there is ever going to be peace with our neighbors. Physics, chemistry, and biology, too. The natural sciences are known to be the basis of an advanced society and quality of life. (We have already won five Nobel prizes in science, and we can win more.) True, but history, literature, and art are also bases of quality of life. We want citizens with broad horizons and with a common cultural heritage. Our society is full of divisions and urgently needs a common cultural foundation. Of course it's also very important to learn Jewish history, with emphasis on the history of Zionism and the Holocaust… and also Hebrew literature (world literature is important, but less). And it's a good thing for the national spirit to include some Judaism: Bible and some rabbinic texts. Maybe students don't like that, but it's important. After all, we're Jews, not Japanese… But some of us are Arabs… right, so Arabs should study their own culture. The main thing is that they should respect the law…. All the subjects we've mentioned are important, without doubt, but sports are also important – "a sound mind in a sound body" (we've won some Olympic medals, and we could win more). Also, life skills are important. Not all the children will become athletes or physicists, but they'll have to relate to other people. So you have to teach them about relationships, about family life, about sex and things like that. And let's not forget, it's important to devote some lessons to road safety. Every day in the news we read about accidents. And also preserving the environment; they can go out to clean up a nearby beach or rehabilitate a ravine near the school… And drugs… Yes, today there are drugs in almost every school, and soft drugs lead to hard drugs. And what about computer science? We almost forgot! In the future our whole lives will be led on the computer; the computer

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[28] In this picture, the definition of the good student as one who knows a lot is not accurate. A good student is someone who knows the material that is taught in school – that is, someone who can demonstrate his knowledge in tests and someone who behaves according to the school rules. The definition of a good student is, therefore, essentially institutional.

is important! And what about philosophy? No discipline teaches people how to think well better than philosophy! You have to start with philosophy in elementary school, maybe even in kindergarten. And if you want to teach philosophy, why not teach thinking, directly?! We live in the midst of an information explosion. Information isn't so important. You have to inculcate thinking skills. But thinking isn't everything; there are also emotions. Emotional intelligence – remember? What do we do about emotional intelligence? You have to teach children to express their emotions, in writing, for example… Yes, you have to teach creative writing. And theater is also important: not just to see a lot of plays but also to learn to act, to teach children to express themselves. Cinema is also important. It's the most popular medium today. Not everybody goes to the theater or reads books, but everybody goes to the movies and watches television. You have to teach children how to express themselves by means of cinema. But don't forget, self-expression and all that won't pay your bills. You have to enable children to experience the high information professions of the future. For example… Yes, to teach them how to market; today everything is marketing. And also, what the stock exchange is and how to buy and sell stock (we can get support from a bank). True, marketing and stocks are important, but with all due respect, education isn't preparation for a career. Education is first of all the fostering of values. You have to inculcate values in the children… For example, tolerance of one another. True, tolerance of the Other… but if there's too much tolerance for the Other, young people may try to avoid serving in the army. So it's important to teach them love of country; why the fathers of Zionism yearned for this country and built it and what we're doing here. We have no other land…. (Harpaz 2005a, p. 70)

When the metaphors "knowledge is an object" and "the mind is a container" prevail in educational thought, curriculum planners – agents of the leaders, the elites, and the prevailing ways of thinking – try to cram all the "important" content into the curriculum. But when knowledge is interpreted as a structure and the mind is viewed as interpretive activity, the curriculum must undergo corresponding changes. In this case, the goal of the curriculum is not to transmit as much "valuable" content as possible but to encourage and guide students to interpret, process, and invent knowledge. The subjects and their contents will be considerably reduced (in the spirit of Sizer's famous dictum: "Less is more!"), and they will be organized around "big ideas" and "essential problems."[29] The curriculum will be open and flexible. It will not enforce covering as much "material" as possible, but it will

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[29] For example, it is possible to construct a curriculum around "eternal questions" that cluster into a single question: where do we come from and where are we going? John Casti built his *Paradigms Lost* (1990) in this spirit. He formulated six pairs of opposing claims and put them on trial in the light of evidence from the natural sciences and other disciplines. The pairs of claims are as follows: life emerged from natural processes on the earth/life was brought to earth from outer space; patterns of human behavior are dictated by genes/patterns of human behavior are dictated by the environment; linguistic ability comes from special properties of the brain/linguistic ability derives from learning; computers can think/computers are unable to think; there is other intelligent life in our galaxy/there is no other intelligent life in our galaxy; and there is objective reality independent of the observer/there is no objective reality independent of the observer. Peter Atkins (2003) organized his science book *(Galileo's Finger)* around "The Ten Great Ideas of Science": "Evolution proceeds by natural selection"; "Inheritance is encoded in DNA"; "Energy is conserved"; "All change is consequence of the purposeless collapse of energy and matter into disorder"; "Matter is atomic"; "Symmetry limits, guides, and drives"; "Waves behave like particles and particles behave like waves"; "The universe is expanding"; "Spacetime is curved by matter"; "If arithmetic is consistent then it is incomplete."

encourage actively dealing with what it does present. The "material" will not be a litany of facts, concepts, and laws in a given subject but presentation of ideas and problems in a given discipline with the aim of stimulating thought and inquiry in that area. The principle of *cramming* and *accumulation* will be replaced by the principle of *gaps* and *leaps*. The essence of the curriculum will be the lacunae, the facts that are missing: ideas and problems will motivate and guide the students to locate, process, and craft new knowledge – meaning that they will create the curriculum or "supplement" it in unexpected directions in light of questions they frame or actions they perform on it. This will accomplished on the assumption that learning is not based on the gradual accumulation of knowledge but, rather, on leaps of understanding and insight. These leaps are difficult to program, but favorable conditions for them can be created. (Postman and Weingartner wrote, in response to Bruner's well-known proposal to replace the linear curriculum with a spiral curriculum: "Unfortunately, students aren't spiral any more than they are sequential" [Postman and Weingartner 1969, p. 30]. In their opinion, children ask questions naturally and, therefore, the curriculum should be based on their questions.)

Hence, the focus of the curriculum will be shifted from the covering and recycling of content to its interpretation and creation. This shift is by no means a diminution in the importance of knowledge. As noted with respect to teaching thinking, the community of thinking subscribes to the third approach – the understanding approach. This approach regards the understanding of knowledge as the basis of the various qualities of thinking – complexity, depth, systematicness, criticality, creativity, and so on. The shift from cramming and accumulation of knowledge to gaps and leaps reflects the view that focusing on coverage of the fragmented curriculum to get through the content, rather than on the process of working with the content, sabotages learning. In other words, in a school where the curriculum is central, the curriculum is the victim.

David Perkins (1992) calls the knowledge learned in the traditional school, the curriculum-centered one, *fragile knowledge* and the thinking that is fostered *poor thinking*. In his view, the problem is not the lack of information, because the students are given a lot of information via the covering method[30]; however, school knowledge is in a state of "fragility." The students don't remember or understand the information they have supposedly learned, and they don't use it. Indeed, the problem isn't that the students don't think in school, but their thinking is "trivial." That is, thinking deals mainly with the search for more information without thinking about it or by means of it. "Fragile knowledge" – the product of schools centered on

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[30] Perkins writes about "the conspiracy of coverage" (1992, p. 33), which extends from the classroom to the textbook industry. Since we have entered the spirit of conspiracy, it is possible to speak of a conspiracy whose goal is to prevent thinking and to gloss over conflicts. The race to cover the material prevents thinking about the material and conceals the tensions inherent in it. Matthew Lipman writes: "A cynical commentator once observed that human beings invented speech in order to conceal their thoughts. The same observer might have added that they send their children to school to learn in order to keep them from thinking" (Lipman 1991, p. 1). The school of thought called "Critical Pedagogy" gave this cynical comment a rather serious basis.

the acquisition of knowledge – is *inert, naive*. and *ritualized* knowledge: knowledge that students don't make use of, intuitive and erroneous knowledge, which pre-school children produce and which remains in the mind during and after schooling (Why is it cold in the winter and hot in the summer? Because the Earth is farther away from the sun in the winter and closer during the summer. Why are there wars? Because bad people attack good ones.), and knowledge without understanding, detached from sensation, knowledge meant to be displayed during classes and on tests (a child reports her strategy for solving arithmetic problems: "If there are only two numbers, I subtract. If there are a lot of numbers, I add.").

In summary, we have posited that *the purpose of teaching and learning is not to know (remember) a lot but to know how to relate to and manipulate knowledge*. By *manipulate knowledge* we mean both thinking through knowledge about phenomena in the world and thinking about the knowledge itself – about its connection with other information, about its strengths and weaknesses, about ways of improving it. By *relating to knowledge* we mean mainly three kinds of relationships: *a favorable attitude toward knowledge*, i.e., curiosity, interest, and enthusiasm about new knowledge[31]; *a critical attitude toward knowledge*, i.e., healthy skepticism, cautious suspicion, to ask, "What are the sources of the information?" "Is this conclusion necessary?"; and *a creative attitude toward knowledge*, i.e., the desire to work with information, to contribute to knowledge, to improve it, and to ask, "What can I do with this argument?" "What is my position on this issue?"[32]

The concept of *manipulating knowledge* could be interpreted mechanically and, in fact, such an interpretation is liable to emerge from the conception of understanding as performance (Perkins 1992, 1998) – to understand means to perform certain thought processes with knowledge. Hence, it is worth emphasizing that the concept of understanding refers to a broader, more existential kind of understanding. A good student is someone who understands herself and the world deeply, someone who interprets herself and the world by means of complex systems of understanding and insight. The main object of *working with knowledge* is not the information but rather the world and the person we are trying to understand. In the final analysis, the purpose of teaching and even the essence of education are significant knowledge, or, in Dewey's words: "We thus reach a technical definition of education: It is that reconstruction or reorganization of experience which adds

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[31] Bernard Shaw once said, "At the age of six I had to cut my studies and go to school. The only time my education was interrupted was when I was in school."

[32] To encourage attitudes of this kind, I have developed "A tool for thinking while reading" (Harpaz 2004). Whenever students read a text in class, they should ask six questions of it: *Issue*: What is the main subject with which the text deals? *Causes*: What is the causal network described in the text, who or what acts upon whom or what? *Perspective*: From what point of view is the text written, and what position is it trying to strengthen or weaken? *Reasons*: What reasons and proofs does the text present for the information and opinion included in it? *Creation*: What can I, the reader, do and create after reading this text, and what was created in me? *Reflection*: What happened to me while I was reading this text (metacognition)?

to the meaning of experience, and which increases ability to direct the course of subsequent experience" (1916/1944, p. 76).

The disappointed reader is likely to ask: "Is this the only or main purpose of teaching – to impart the ability to relate to and manipulate knowledge? Do working with knowledge and developing some kind of relation to it exhaust the entire image of the educated person? What about molding character and teaching values, for example?" The answer is that, indeed, the main, albeit not the sole, purpose of teaching is to cultivate the students' ability to work with knowledge and to develop some relation toward it, because this largely is what characterizes the educated person. Character formation and inculcating values is effected by dealing with knowledge and not by transmitting it. Let us explain.

Teaching is education by means of, or through, knowledge. Some knowledge mediates between the teacher and the students. However, instruction is not just education through knowledge but also, and probably essentially, education by means of the method for dealing with knowledge – lecture, engaged lecture, guidance, facilitation, etc. Children are educated not only by means of knowledge but mainly by what they are encouraged to do with it. Compared to the dominant form of instruction, which transmits knowledge in authoritative fashion for it to be remembered (until the test), instruction that strives to develop the ability to manipulate knowledge and develop a good attitude toward it is an overarching and ambitious goal. A graduate who has learned that knowledge explains phenomena and makes it possible to interact intelligently with respect to them, and that knowledge is interesting, even if it is suspect (a principle of education for critical thinking is "all information is guilty – dubious – until proven otherwise") but always susceptible to improvement, has learned very important things, unimaginably important in comparison to what is learned today in school.

As to values formation, it bears repeating: values are not transmitted by direct messages (or, to put it bluntly, by indoctrination), but by the pattern in which teaching and learning take place. Values education is mainly indirect education; it is accomplished by the educational environment and the pattern of teaching and not by its contents. In McLuhan's famous words, "the medium is the message." He was referring to communications, but Neil Postman and Charles Weingartner applied it to education:

> "The medium is the message" implies that the invention of a dichotomy between content and method is both naive and dangerous. *It implies that the critical content of any learning experience is the method or process through which the learning occurs*. Almost any sensible parent knows this, as does any effective top sergeant. It is not what you say to people that counts; it is what you have them *do* […]. What students do in the classroom is what they learn (as Dewey would say), and what they learn to do is the classroom's message (as McLuhan would say). Now, what is it that students *do* in the classroom? Well, mostly, they sit and listen to the teacher. Mostly, they are required to believe in authorities, or at least pretend to such belief when they take tests. Mostly, they are required to *remember*. They are almost never required to make observations, formulate definitions, or perform any intellectual operations that go beyond repeating what someone else says is true. (Postman and Weigartner 1969, p. 19)

Zvi Lamm wrote something very similar in the same year:

According to McLuhan, a person is the product of the tools that he uses, first of all – the tools for transmitting information. This principle was accepted by educators long before McLuhan formulated it: the method is the means. But, since the principle was articulated, teachers know that the system, no less than the content that is taught by means of it, makes its mark on the learner's personality. That is, one does not only learn by means of it; it in itself is the content of learning […]. By means of the method the learner develops the ability to think, ways of learning, an attitude toward learning, the courage to examine the world and to construct a view of it for oneself, criteria for evaluation, criteria for examining the criteria one uses, etc. All of these things are not taught directly by virtue of some content. However, even though this principle is accepted by teachers, they tend to abandon it as the students grow more mature […]. The older the student gets, the more the emphasis is transferred from the method to the content, from the means to the messages. (Lamm 2000a, pp. 32–33)

The medium – the educational environment (Postman and Weingartner) or the pattern of teaching (Lamm) – is not transparent; the medium has its own messages, and they are more influential than the direct messages – the content – that the agents (principals, teachers, textbooks) transmit to the consignees (students) in texts, classes, and recesses. The medium of the community of thinking – the framework of fertile question, research questions, and concluding performances (see the third part) – is embedded with rich educational messages.

2.5   To Sum Up

Schooling is based on five atomic pictures that guide it and are reflected in all its actions. These five pictures are: learning is listening; teaching is telling; knowledge is an object; the mind is a container; and to be an educated graduate is to be a graduate who knows. In place of these five pictures, we propose: learning is involvement (in the process) and understanding (in the product); teaching is producing conditions for learning; knowledge is a structure or a story that works (explains phenomena, facilitates intelligent behavior); the mind is an interpretative activity (it creates meaning, going beyond information given); a good graduate is someone who knows how to work with knowledge (to locate it, apply it, criticize it, create it) in order to understand the world and to relate to it favorably, critically, and creatively.

The alternative atomic pictures are linked to an alternative big picture, which is at variance with the mimetic chain. According to that alternative picture, the world is not made up of objective facts that present themselves to the unbiased human mind, which copies them, and scientists do not copy a world which imposes itself upon them. Scientists do not merely discover the world; they *create* it by means of their theoretical structures. They *write* the book of nature – they do not simply read it. Curriculum designers do not copy samples of truths from the scientific disciplines and create the subjects of study. Rather, they organize the knowledge, which was developed by the theoretical disciplines, for pedagogical purposes, to think critically and creatively with knowledge (see below on the

concept of the "pedagogical discipline"). In the alternative big picture teachers do not cut little pieces of knowledge – lesson plans – from the school subjects and cram them through the closed gates of the students' uniform minds; they guide the students in working with knowledge according to the interests it arouses in them. The students do not glue new knowledge onto old knowledge. Rather, like scientists and theoreticians, they ask and then grapple with questions and create new knowledge (some is known, some not – "originality" is a relative term). They learn how to manipulate knowledge and how to relate to it. While doing so, they discover and cleave to their personal areas of interest and establish their identities.

At the beginning of the twentieth century, John Dewey wrote: "Why is it, in spite of the fact that teaching by pouring in, learning by passive absorption, are universally condemned, that they are so entrenched in practice?" (1916/1944, p. 38). Remarkably, a century later we are still asking the same question. We answer it with a well-known statement by Ludwig Wittgenstein: "A *picture* held us captive. And we could not get outside it, for it lay in our language and language seemed to repeat it to us inexorably" *(Philosophical Investigations,* no. 115). Schooling is imprisoned in five pictures and cannot free itself from them, because they dwell in the common sense and patterns of school action, and these patterns are invoked repeatedly. Only by liberating ourselves from those pictures by means of alternative pictures – pictures appropriate to today's more enlightened conceptions of learning, teaching, knowledge, the mind, and the purpose of education – can we create environments in which better learning flourishes.[33]

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[33] I am not arguing that the mind determines experience or vice versa. The pictures must be changed in the mind, and the experience – patterns of action in schools – must be changed at the same time. The current situation appears to be that many educators and teachers have changed the pictures (or the disk), but reality has not changed correspondingly, which weakens and confuses practitioners. Changing the pictures of reality does not assure a change in reality. A few more steps are necessary. (see below).

Chapter 3
Teaching and Learning in a Community of Thinking: The Practice

A community of thinking is a framework for teaching and learning that is meant to transform traditional classroom practice. It is a *community* because it brings together a group of learners to grapple with a common problem in accordance with agreed-upon rules, in a climate of reciprocity and mutual understanding; it is *thinking* because the main work of the group of learners is thinking or the systematic concern with knowledge.

Teaching and learning in a community of thinking passes through three stages: (1) *fertile question*, (2) *inquiry*, (3) *concluding performances* – team and communal. The transition through these three stages is accompanied by two continuous supports: *initiation* and *feedback*. This part of the book will describe each of these stages and the supports that underlie the framework of the community of thinking (Harpaz 2005b).
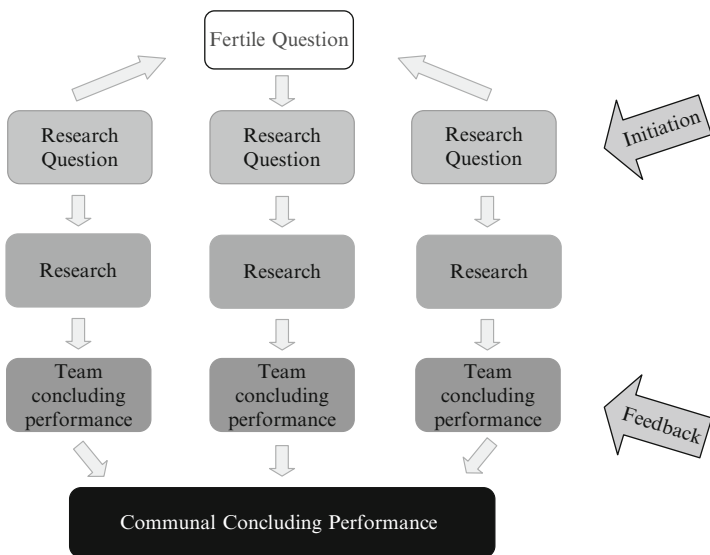
3.1 Community and Education

The sociology of the second half of the nineteenth century is sometimes called a "sociology of losses": Marx wrote of the loss of ownership of productive labor; Durkheim, the loss of community; and Weber, the loss of enchantment. Among these three, it appears that the loss of community is the one that has been most lamented in the past decades, as indicated by how frequently the term appears in academic and public discourse. If only we could restore the communal life we had lost, it is said, we could solve all the problems of modern and postmodern times – the problems of alienation, egotism, apathy, loneliness, and anomie – and perhaps the problem of education as well. Zygmunt Bauman wrote that the word "community" is "a word that feels" (Bauman 2001, pp. 1–2), that is, a word that makes us feel – longing for the warm and lost bosom of community.

In the context of education, the term "community" refers to a concept both outside and inside the school. In the first sense, it refers to the community that surrounds the school, supports it, or is supported by it; in the second sense, it refers to teachers and students who administer and experience community life as expressed in patterns of teaching and learning and in social relations.

With the advent of the third model, the concept of community is laden with particular and radical pedagogical meaning. At the very heart of that meaning is the idea of Lev Vygotsky, who claimed that the higher mental faculties are neither inborn nor the product of exposure or ripening; rather, they are the product of a certain cultural and historical development in which a person lives and acts (Eilam 2003, pp. 366–367). People, according to Vygotsky, are born in a preformed environment that contains natural and man-made objects, including cultural or symbolic tools. These cultural and symbolic tools – such as language – are acquired and internalized by means of reciprocal social relationships. These tools are integrated within cognitive processes – thinking, learning, memory, attention, and others – that facilitate and shape them.

The West's discovery of Vygotsky, some 50 years after his death, and of the connection between the development of human consciousness and society and culture has aroused great interest and stimulated much and varied research, which has split into numerous sub-streams. Common to all this research and the sub-streams is the idea that thinking is a social and cultural activity.[1] This idea was "translated" in education as follows: "Our thinking improves when it 'bumps into' others: it is sharpened and clarified when they ask for an explanation, it expands when they propose new perspectives, it examines itself when they level criticism. Hence, thinking is a kind of inner discourse that reflects the outer discourse to which the individual is exposed and in which he or she participates" (Lefstein 2000a, p. 33). From here the path is short to designing educational frameworks to structure social

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[1] Of course the idea that the individual and her thinking are shaped profoundly by reciprocal relations with the society and culture is not Vygotsky's alone; it expresses a general trend in the history of ideas in the second half of the last century. Postmodernism went "all the way" with it, with the notorious proclamation of the "death of the subject."

cognitive activity – various types of communities of learners/inquiry/knowledge building/thinking and the like.

However, these pedagogical and didactic communities are not solely the result of hard-boiled academic considerations (to form the thinking of the individual by structured group discourse). They also express longing for the lost community. In place of the competitive classroom, where each student thinks and is evaluated in isolation (the grade is relative, so the success of the individual student depends on the failure of his peers), educational thinkers, researchers, and practitioners sought to plan and operate a communal classroom grounded in a different spirit. Lefstein (ibid., pp. 34–41) set this new spirit on five foundations: *dialogue*, expressed in the pursuit of truth, rooted in mutual respect, and free of authority over knowledge; *intimacy*, expressed in group relations, by relating to each person in her fullness and with emotional involvement; *cooperation in decisions*, expressed in participation of the community members in its administration; *cooperation in action*, expressed in the various forms of cooperative learning and thinking; and *identification*, expressed in the sense of belonging to the group. The existence of such communal foundations in a community of thinking does not depend solely, or even principally, on the dictates of the framework but also, and fundamentally, on the communal quality of the entire educational environment.

One more comment before concluding this brief introduction to community and education: the concept of community gives new meaning to the central concept of this book – learning. Learning is grasped in a new way in the context of community. According to Anna Sfard (1998), contemporary theories of learning depend explicitly and implicitly on two metaphors: the acquisition metaphor and the participation metaphor. The former enjoyed unchallenged supremacy for a long time, and we would not mention it, were it not for the advent of the second metaphor. According to the former, learning is acquisition, accumulation, and absorption of information; according to the latter, "learning a subject is now conceived of as a process of becoming a member of a certain community. This entails, above all, the ability to communicate in the language of this community and to act according to its particular norms" (1998, p. 6). Thus, "While the AM [acquisition metaphor] stresses individual mind and what goes 'into it', the PM [participation metaphor] shifts the focus to the evolving bonds between the individual and others. While AM emphasizes the inward movement of the object known as knowledge, PM gives prominence to the aspect of mutuality characteristic of the part-whole relation" (ibid.).

Thus, the framework presented below – the community of thinking – advocates a new concept of learning with a new meaning: participation.

3.2 The Pedagogy of Questioning

Questioning – the intellectual activity of inventing questions – is a decidedly human trait; it embodies the special creativity of people. Humans, in addition to being *Homo sapiens*, as Carl Linnaeus classified us; *Homo faber* (man as producer), as Karl Marx called us; *Homo ludens* (playing man), as Huizinga called us; *Homo*

symbolicus, as Ernst Cassirer called us; *Homo combustus* (burning man), as environmentalists call us; *Homo internetus*, as media researchers call us; *Homo narrans*, as we termed it in the previous chapter; and other sorts of *homines*, might be called *Homo intrigens* – creatures who invent questions in their relentless quest to understand themselves and the world.

Questioning has several interesting characteristics that, in turn, have educational consequences:

Questioning Is a Creative Activity: Contrary to the common assumption that questioning is an insignificant, sometimes annoying, activity that does not attest to especially impressive human abilities, questioning is a wonderfully creative activity. Questions are human inventions; they do not exist as objects in the world. Objects in the world – mountains, buildings, people – do not appear along with the questions that relate to them. On the contrary, they appear complete and in their totality. The ability to ask questions about objects in the world is the ability to go beyond them – beyond what is present. In the act of questioning, that which is present is seen as incomplete, puzzling, and mysterious. The incompleteness, the puzzle, and the mystery are not experienced on the same level as we experience the object; they go beyond it and overshadow it. The act of questioning displaces what is in favor of what is not but could explain that which is. For example, when somebody asks, "Why did the child laugh in his dream?" he is going beyond what is there and present – the child's laugh – toward its possible causes, which are not present. Questioning, therefore, points to what is not, invents it, strives toward it, and creates "nothingness" out of what is.

Questioning as Knowledge of a Higher Order: It is commonly thought that someone who doesn't know will ask questions. Questions, therefore, are generally thought to indicate ignorance, even weakness – of intelligence or character. A student doesn't know because he can't or doesn't want to know. Talented and diligent students have answers; untalented, weak students have questions (they didn't listen to the teacher, they didn't prepare homework, they were absent from school or, even worse, they listened, prepared, and were present, but are unable to learn). In short, asking questions has a dubious image in schools and outside of them. It is seen as the deplorable result of "absences" – of the body (the student was not in school) or of the mind (the student didn't pay attention in class) or, perish the thought, of ability (the student cannot learn). However, at least in part, questions actually derive from presence and not from absence, from involvement in and understanding of the subject. Such questions have a special quality. Questions of the first kind – questions of absence – are trivial, seeking to obtain information that was missed because of some absence; questions of the second kind – questions of presence – illuminate the subject with an interesting light and open up thought to a new horizon. Questioning that belongs to this category of involvement and understanding is knowledge or understanding performance of a high order.

Questioning Shapes the Answer: There appears to be an absolute gap between question and answer: the question is known, and the answer is unknown and possibly to be discovered somewhere not inherently connected to the question. However, in

some sense the answer is encoded in the question itself (and vice versa – as Dewey said, we learn what the problem was after we find a solution to it). The assumptions implicit in the question make it possible and shape the conceptual framework of the answer. For example, when somebody in an ordinary context asks, "Where does Peter Jones live?" to a great extent the question dictates the answer and what would be considered an appropriate answer. The question assumes that people live in dwellings, that the dwellings have addresses, that the addresses enable us to locate the people who live there, and so on. An appropriate answer would be, "Peter lives at 5 Main Street, apartment 5B." An inappropriate answer would be, "Peter lives in his own world." Moreover, the assumptions and concepts implied in the question shape the hypotheses – possible answers that have not yet been confirmed – that the questioner wishes to examine. Hence, questioning is not merely the processing of prior knowledge; it also determines the fate of new knowledge, of the answer that will be supplied.

These traits explain why it is so hard for students to ask good questions (questions of presence): good questions are the result of creative thought (nothing from something) based on deep understanding of knowledge. Indeed, they explain why good questions play such a central role in learning and investigation: formulating a question is midway to finding the answer; the wording of the question determines the direction and the tools by which the answer will be found or invented. For these reasons, the pedagogy of questioning invests great effort in guiding teachers and students toward the creation of good questions. *The pedagogy of questioning places good questions*, *not correct answers*, *at the center*. It acts in different ways at every stage of the community of thinking. Let us now describe the first station.

3.2.1 The Fertile Question

The community of thinking begins with a fertile question. The teacher-facilitator invents a fertile question and presents it at the first meeting of the class. In advanced, experienced communities of thinking, students-learners will invent and propose their own fertile questions (henceforth, we will use the terms "facilitator," "learner," "meeting," and "community of thinking" instead of "teacher," "student," "lesson," and "class").

A fertile question has six characteristics: it is open, undermining, rich, connected, charged, and practical.

An open question is one that, in principle, does not have a single decisive or conclusive answer; indeed, it has several answers; the answers can be contradictory or at least different from one another. Let us explain. It is necessary to distinguish between a question that is open in principle and one that is open in fact. For example, the question of whether there is intelligent life on other planets is open in fact; in principle it could be answered, e.g., the first alien to land on our planet will provide a conclusive answer. In contrast, the question of what is a just society, for example, is open in principle. A conclusive answer will never be found.

Questions that are open in principle are the most interesting ones from a philosophical and existential point of view. (In the opinion of Albert Camus, in the *Myth of Sisyphus*, there is only one question that is open in principle, that of suicide, whether or not it is worth living this life. To phrase Camus' gloomy question differently, in a more positive way, there is only one question that is worth anything – what is the meaning of life? However, Camus got a bit carried away; some other questions are also worth asking.) Of course, questions that are open in fact can also be fascinating and very important. In some circumstances – for example, in communities of thinking in the natural sciences – one can ask fertile questions that are open in fact. In that case, it is necessary to distinguish between two kinds of openness: openness to the community of scientists (they have not yet found the answer) and openness to learners (scientists have found the answer, but the learners don't know it yet, and they have to discover it by themselves).[2]

The openness in principle of a question does not deprive the effort to answer it of value, nor does it give equal value to all the answers. Indeed, the openness in principle of a question has a democratic, pedagogical function: the facilitator does not know the correct answer (knowing the right answer would vest her with authority and control); therefore, she is a partner in the community's efforts to find answers.

An undermining question is one whose purpose is to upset the learners' preconceptions, their axiomatic assumptions, "Such ruling opinions which are no longer themselves seen, but that through which everything else is seen" (Talaska 1992, p. 251). The purpose of undermining is to motivate learning, on the assumption (see the previous chapter) that learning is a mechanism for restoring the cognitive equilibrium that was lost as a result of the undermining; the undermining was caused by the collapse of schemas (concepts and expectations) in their encounter with the world. Undermining creates "question distress," which seeks "resolution" in an answer that "satisfies the mind."

The principle of undermining causes a shift in the direction of teaching. Ordinary teaching in schools seeks to make the unfamiliar familiar; teaching by undermining seeks to make the familiar unfamiliar. School seeks to provide knowledge; the principle of undermining seeks to challenge "knowledge," mainly commonly accepted truisms, what goes without saying. Of course, there has to be some initial knowledge so that there can be something to undermine.[3] The principle of undermining common knowledge, therefore, depends on the principle of acquiring knowledge and vice versa; undermining stimulates motivation to acquire knowledge.

Undermining is a vital didactic strategy for developing critical thought and a skeptical attitude to conventional truths, but it also entails dangers. Undermining

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[2] Originality is relative. Suppose intelligent aliens from an advanced planet discovered the theory of relativity ages ago. Would that mean that Einstein wasn't original?

[3] A history teacher complained to me that he had taught the Zionist movement as a colonialist movement, and not a single student in his class objected. "I slaughter the sacred cows of Zionism," he said, "and the students are indifferent. They simply don't know about the sacred cows that graze in the fields of our history."

that is done too forcefully, with a sledgehammer, can drive students to closure and aggression. Therefore, facilitators should refrain from presenting "astonishing" provocations or from irresponsible slaughter of sacred cows. They must apply the strategy of undermining with sensitivity and take responsibility for rehabilitation. There is no substitute for pedagogical tact.[4]

The strategy of undermining can be promoted with various tactics: to ask an unexpected question, to cast doubt on an accepted truth or a sanctified value, to create a conflict between precious truths or values (liberty or equality? loyalty to a friend or to a principle? education for adaptation to society or to transforming it?), to present difficult dilemmas in various fields, to express a unique and surprising position, and so on.

It must be remembered that undermining is a relative matter: something that undermines the facilitator does not necessarily undermine the learners, and what undermines one learner does not necessarily undermine the others. For this reason, it is helpful to ascertain students' initial beliefs and assumptions during the process of initiating them into the fertile question: these beliefs and assumptions are those that we seek to undermine. Generally speaking, after several years of conventional schooling, learners tend to become immune to undermining, because it might crack the shell of indifference and require engaged learning (students, according to Perkins [1992], tend to run a parsimonious learning economy).

A rich question is one that can't be answered from one day to the next; it is a question that demands fundamental, prolonged research. It is rich because it is directed at highly significant content – big ideas or essential problems (below we will discuss the pedagogical unit of knowledge and see that a rich fertile question is addressed to insights – to the heart of knowledge). The rich fertile question has a very important characteristic with respect to ongoing work in a community of thinking: it breaks down into secondary questions; it is pregnant with sub-questions. This tendency makes it possible to establish research teams organized around sub-questions – research questions – that relate to various aspects of the fertile question (see below).

A connected question is one that obeys the (old but rarely applied) educational dictate, "Start from where the child is!" The connected question tries to connect with the learners' interests, to create a reverberation in the learners' mind. At the same time, "where the child is" is not static; it includes the ability and desire to depart for new places. Thus, the educational connection with the place where the child is implies connection to levers that can move him beyond that place, beyond

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[4] Willingness to undermine and to be undermined apparently is influenced by cultural character. In our work with Australian teachers, we noticed that it was hard for them to ask undermining questions, which seemed to be at odds with their easy-going temperament. In one case we told teachers in Catholic schools that they had to poke their fingers into the open wounds in the body of Australia (the attitude toward the Aboriginals and immigrants, sale of uranium to China, dismantling the welfare state), the way the doubting St. Thomas stuck his finger into Jesus' wounds after He rose from the tomb.

him or herself.[5] Questioning is connected not only to the child but also to her social environment as well as to the teacher and to the subject being studied.

A charged question is one that has an emotional, ethical, or existential dimension; it engages the learners and motivates them to ponder it. The previously mentioned characteristics of a fertile question – open, undermining, rich, and connected – probably guarantee that a fertile question will be charged; nevertheless, this characteristic is included in the list in order to emphasize its importance.

A practical question is one that makes for fertile inquiry. It is worded clearly and in a stimulating way, appropriate to arouse the interest of the facilitators and learners, directing them to resources and available sources (laboratories, experts, real and virtual sites, books).[6]

A few comments on the fertile question and its characteristics:

- Among the characteristics of the fertile question, there is a partial overlap: they depend upon one another and reinforce one another, but they do not render each other superfluous. Nevertheless, there is nothing sacred about them. Characteristics may be added to or removed from the fertile question.
- The characteristics of a fertile question derive their power from the circumstances in which the question is applied: for example, if it is introduced by a facilitator who knows how to pose a question so that it stimulates the learners' interest and connects with them (with a bit of malicious exaggeration, one might say that there is no such thing as an infertile question; there are only infertile facilitators); if the learners tend to be undermined, be connected, be charged, etc.; and if the educational environment allows for and encourages teaching and learning in a community of thinking. Hence, being undermined is not an internal characteristic of the question but primarily of the context in which it is asked.
- The fertile question is particularly important to the teacher-facilitator; she must know the characteristics of a fertile question and how to invent one, how to initiate it, how to help learners extract research questions from it, and so on. For their

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[5] The question is where exactly the child is. Kieran Egan claims that teaching and the curriculum adopted four ad hoc principles without sufficient scrutiny. "Educational development proceeds, these principles inform us, from the concrete to the abstract, from the simple to the complex, from the known to the unknown, from active manipulation to symbolic conceptualization" (Egan 1986, p. 6). Egan rejects these principles and demonstrates that young children are capable of abstract, complex thought that derives from the unknown (the imagination) and the symbolic. That is, the child is not in the place determined for him by the educational conventions.

[6] Neil Postman and Charles Weingartner suggested checking the characteristics of good (fertile) questions by asking the following questions: "Will your questions increase the learner's *will* as well as his capacity to learn? Will they help to give him a sense of joy in learning? Will they help to provide the learner with confidence in his ability to learn? In order to get answers, will the learner be required to make inquiries (ask further questions, clarify terms, make observations, classify data, etc.)? Does each question allow for alternative answers (which implies alternative modes of inquiry)? Will the process of answering the questions tend to stress the uniqueness of the learner? Would the questions produce different answers if asked at different stages of the learner's development? Will the answers help the learner to sense and understand the universals in the human condition and so enhance his ability to draw closer to other people?" (Postman and Weigartner 1969, p. 66).

part, the learners must know the characteristics of a research question, how to generate one, how to conduct the inquiry that follows from it and to return to it, and so on (see below).

- The traits of a fertile question – especially openness – make it more appropriate to the humanities and social sciences than to the natural sciences. Nevertheless, it is possible to "fertilize" questions in the natural sciences by placing them in a principled or ethical context. For example, "Is the human genome project good or bad for mankind?" demands both scientific and ethical treatment. However, as noted, it is also possible to ask questions that are open in fact, such as "why is the sky blue?" or "why do people sleep?" (open in fact to the students or to the teacher or to the research community).
- The fertile question binds the community of thinking together. A community of thinking begins with and revisits fertile questions. It should be displayed in prominent places in the classroom and corridors, framed and reframed, and charged with new meanings. However, remember that the learners concentrate on their research questions and not on the fertile question. From time to time, they must be brought back to the fertile question to make certain that their research question maintains a connection with it and, thereby, to the other research questions and to the other learners.
- The fertile question is not thrown at the learners: "This is our fertile question. Now generate research questions from it!" The fertile question is presented gradually in a process of initiation (see below).
- The fertile question is an encompassing question – it must include content from the curriculum. In other words, the fertile question is not presented in a vacuum; it plays on a specific field – the curriculum. It must cover at least some of the curricular topics.
- The learners do not grapple directly with the fertile question but with the questions that are derived from it or relate to it – research questions that they themselves generate. However, it is certainly possible that a few of the learners might grapple with the fertile question itself. Consequently, it is important for the fertile question to be practical – to be susceptible to inquiry.

Below is a list of fertile questions formulated by facilitators in a community of thinking (Table 3.1).

Let us demonstrate briefly some of the contexts in which a few of the questions were asked:

The first question was asked in a Jerusalem high school (the Rehavia Gymnasia) with the aim of examining the political slogan, "Jerusalem that has been joined together." A majority of Jerusalemites believe that the city has been united. This is the official national ideology. The two facilitators who guided this group of (tenth grade geography) thinkers began the community meeting at the Institute for the Study of Jerusalem. The students posed the question to two geographers from the institute. One of them said that, by conventional criteria, Jerusalem was united; the second said that Jerusalem was a city divided by an "invisible wall." A student expressed amazement that two respected professors couldn't give a clear answer to

Table 3.1 Examples of fertile questions that were invented by community of thinking facilitators in Israel, Australia, and New Zealand

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Schools in Israel

✓ Is Jerusalem united? (geography)

✓ Is a "New Middle East" possible? (geography)

✓ When was life better – in the Middle Ages or today? (history)

✓ Why did the peasant class accept the rule of the nobility and the church, although those classes oppressed them? (history)

✓ How did it happen that the generation that fought World War I ("the war to end all wars") started World War II within two decades? (history)

✓ Why should we study the nineteenth century at the beginning of the twenty-first century? (history)

✓ Has "progress" advanced humanity? (history)

✓ Has the Zionist project succeeded? (history)

✓ Israel's War of Independence is the Nakba (disaster) of the Palestinians – is that inevitable? (history)

✓ Can a Jewish state be a democratic state and vice versa? (civics)

✓ What is love? (from sociological, biological, psychological, and historical points of view)

✓ Israel – the next 50 years (a multidisciplinary question)

✓ Who is the "Other," and why, if at all, do we need him? (sociology and anthropology)

✓ Why do people marry? (sociology and anthropology)

✓ What is true friendship? (interdisciplinary)

✓ What makes a story good? (literature)

✓ Kings vs. prophets – who was right? (Bible)

✓ The human genome project – blessing or curse? (biology)

✓ Why do people sleep? (biology)

✓ Can we save the environment without changing our social structure? (biology and sociology)

Al-Qasemi Islamic Teachers' College in Israel

✓ Does the status of women in Islam and in the modern age compare or conflict?

✓ Does democracy fit Islamic doctrine or collide with it?

✓ Is there a Palestinian people?

✓ Is Israel a democratic state from the Israeli Palestinian perspective?

Schools in Australia and New Zealand

✓ Immigration – what should Australia do about it? (interdisciplinary)

✓ Australia – east or west? (interdisciplinary)

✓ Do the Olympics advance our values? (interdisciplinary)

✓ What lies beneath the truth? (interdisciplinary)

✓ What, if anything, does Australia owe the Aboriginals? (interdisciplinary)

✓ What, if anything, does New Zealand owe the Maori? (interdisciplinary)

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the question. The meeting elucidated the characteristics of the question and loaded it with meaning. At the second stage – that of research – the learners generated various research questions that would be probative of whether the city was united or divided from various aspects, which they investigated: budget allocations to the eastern, Arab part of the city; the kind of encounters between the residents of the eastern and western parts of the city; subdivisions of the western (secular, national-religious, ultra-orthodox) and the eastern parts of the city; cultures and styles of

buildings in the parts of the city; etc. They presented the results to an audience of students, parents, and experts in a communal concluding performance on Jerusalem Day. (The city, they found, was far from being united.)

The second question – Is a "New Middle East" possible? – was asked in the ninth grade at the time of the Oslo Agreements when many people in Israel (much less so in the surrounding Arab states) were talking about a New Middle East. The two facilitators and the learners in this community of thinking examined the chances for the Middle East to be a united geopolitical unit (like the European Union), based on mutual interests and on a shared tradition and vision. The answers that the research groups provided showed that the situation in the Middle East is very complex and that a New Middle East might yet have a long time to wait.

The facilitators in the history community (the Gvanim School in the Menashe District of Northern Israel) tried to place the Middle Ages in a context that provoke thinking and argument and asked when it was better to live – in the Middle Ages or today. Together with the learners, they developed a quality of life index (based on Maslow's hierarchy of needs), and they asked the learners to compare the periods on that basis. The learners formulated research questions that related to various aspects such as women in the Middle Ages and today, children in the Middle Ages and today, the attitude toward the environment then and now, the perception of the meaningfulness of life then and today, and so on. The concluding community performance was a public trial in which the research groups were called upon to testify for the prosecution and the defense, for or against the two periods. The surprising impression conveyed by the testimony was that life in the Middle Ages was no worse than today. The parents in the audience, who were invited to the concluding communal performance, were appointed as the jury and asked to deliver a verdict. By a margin of just a few votes, they decided that life today is better.[7]

The facilitators of another history community (in the Branco Weiss school in Beit Shemesh) asked why they should study the nineteenth century in the beginning of the twenty-first century and, in fact, why study history at all given that the present and the future are and will be extremely different. The learners showed that most of the ideas, scientific discoveries, and technological inventions that characterized the early twenty-first century dated to the nineteenth century and that the present is the product of the past – a basic insight into the discipline of history. The learners' research concentrated on the historical sources of present-day ideas, discoveries, and inventions.[8]

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[7] In a follow-up investigation performed by the disappointed proponents of life in the Middle Ages, it was discovered that the parents voted according to family loyalties. Those arguing in favor of the Middle Ages may have presented better arguments, but evidently they did not make the case forcefully enough to make the parents vote against their own children.

[8] The communal concluding performance was a film, which depicted a cabinet meeting at which the Prime Minister, in shock, announced a grave development in Beit Shemesh: at the beginning of the twenty-first century, high school students were studying the nineteenth century. "Because of that," the Prime Minister argued, "we will not be able to prepare young people for the new millennium, to cope with the unprecedented challenges of the future. We are a small country, surrounded by enemies, and our only resource is the brains of our young people. We must not squander that

An interdisciplinary group of facilitators (in the Rehavia Gymnasia in Jerusalem) decided to examine the question, "What is love?" from the viewpoint of the school subjects they teach. They concluded that love is an entirely different phenomenon from the perspectives of the different disciplines. For example, from the point of view of evolutionary biologists, it is a mechanism in the service of procreation; from the sociologist's point of view, it is a social construct; and from the psychologist's viewpoint, it is the result of projection, sublimation, and other unconscious processes. This demonstrated that the disciplines reflect different points of view on the phenomena in the world or, as Nelson Goodman said, that they are ways of creating the world. (Whereas interdisciplinary learning in schools is problematic since it is hard enough to gain disciplinary, let alone interdisciplinary, thought; multidisciplinary study is possible and desirable, not only because it illuminates a phenomenon from different points of view but also because it sheds light on the disciplines themselves).

In 1998, when the Israeli Ministry of Education declared that the central subject of study should be "The First Fifty Years" of the State of Israel, the facilitators in the multidisciplinary community of thinking decided to examine how Israel would look in the next 50 years and what had to be done to assure its future. The facilitators and the learners examined various research reports that dealt with long-range planning and formulated a systematic position paper that included a description and recommendations regarding various aspects of life in the country.

In the Islamic teachers' college Al-Quasemi students were asked to research "explosive" questions about Islam and modernity – Islam's attitude to democracy, human rights, women, and so. The joy of freedom to ask critical questions on the most sensitive subjects was palpable. The students, as they themselves commented, never were so involved in an academic course.

Without recounting the story behind each of the examples presented above, we can state that these stories illustrate the "pedagogical poems" that fertile questions can create. Each community of thinking is a world unto itself, and each one reinvents the framework of the community of thinking in its own way.

Let us look briefly across the Pacific at Australia and New Zealand, where a handful of schools have adopted the communities of thinking model. In Glen Waverly Secondary College they asked the question "Immigration – what should Australia do about it?" as one of the most urgent and tragic dilemmas the developed world faces and will face more fiercely in the future as a result of climate change. (In his book *What's the Point of School*? pp. 140–141, Guy Claxton describes some of the educational and public results of this community of thinking.)

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resource!" In the following scene, the learners were led to trial in the Supreme Court in Jerusalem. After a judge repeated similar accusations, the learners were asked to defend themselves. The research teams rose one after the other and proved, on the basis of their research, that the trends, ideas, and inventions that underlie the present age originated in the nineteenth century. They showed that they were learning about the present and the future by means of the past – and they were cleared of all charges.

The question "Australia, east or west?" was asked in a junior high school in Melbourne to grapple with Australians' identity crisis: culturally Australia is Western, but geographically it is in the Far East; the Orient is growing stronger (China) and pressuring Australia to define itself. Large-scale immigration from the East intensifies questions of national identity.

Australia seems to be the most enthusiastic sports-loving country in the world. During the 2004 Summer Olympic Games in Athens, teachers and students discussed the events with great excitement in class and during recess. At one of the workshops, Adam Lefstein and I suggested to the facilitators that they should plan a community of thinking around the fertile question, "Do the Olympics advance our values?" The purpose was to examine just what values the Olympics do promote. One of the facilitators said that it was "undermining with a sledgehammer"; a true Australian couldn't bear questions that undermined their love of sports. In the community of thinking (in an elementary school in Melbourne) that formed around this question, the research teams dealt with questions such as: What happens to the losers? What happens to the winners (after the moment of triumph on the platform)? What is gained by the countries that host the Olympics? Who really profits from the Olympics? What values are transmitted by competitive physical activity? This community of thinking somewhat "poisoned" the facilitators' and learners' experience of sports, but it taught them something worthwhile (much knowledge, much pain).

In New Zealand, students in a primary school examined the advantages and disadvantages of establishing a united country ("We would have a great football team!"). Another community of thinking examined the complex relations with the Maori – the indigenous inhabitants of New Zealand.

In Australia, too, a community of thinking examined the complex relations with the Aboriginal inhabitants of Australia.

3.2.2   The Playing Field of the Fertile Question: The Unit of Pedagogical Knowledge

In principle one could ask a fertile question and establish a community of thinking without a curriculum. Many think tanks operate that way very effectively. They ask a central question; split up into research teams that investigate aspects of it; and assemble the research teams from time to time to share the knowledge they have developed. Indeed, the principal and teachers of a school could act as a community of thinking. In fact, when we are invited into a school to guide teachers in turning classrooms into communities of thinking this is one of our strategies: we ask the principal and the teachers to establish a community of thinking. The fertile question that we propose is, "How can we adjust our school to the values and needs of our times?" Then the school's community of teachers divides up into research teams that examine the various aspects of the school – the educational purposes and goals, the organizational structure, the system of assessment, the curriculum, discipline

Table 3.2 Components of the
pedagogical knowledge unit

Insight	Concepts
Skills	Controversies
	Purposes

problems, relations with parents, and so on – and share knowledge. From the knowledge
they have constructed, the community of teachers produce practical recommenda-
tions for school improvement.

However, when we are introducing a community of thinking in a school, we have
to take account of the applicable constraints; one of them is a mandated curriculum.[9]
In reality, the fertile question is not simply posed; it is posed in the framework of a
given curriculum. The fertile question thus "plays" on a certain field, and in order to
play well, we must understand the structure of that field.

The field upon which the fertile question plays is a certain unit of knowledge that
is included in a certain school subject. What is a *pedagogical knowledge unit*, and
what is a *school subject*? We have redefined these concepts according to our educa-
tional goals. Let us begin with the first.

For the purposes of teaching and learning, we dissect every unit of knowledge
into five component parts and create a *pedagogical knowledge unit*. The five parts
are *insights*, *concepts*, *skills*, *controversies*, and *purposes* (cf. Karmon 2000). When
a facilitator wishes to teach some unit of knowledge – for example, the structure of
the atom, the industrial revolution, and currents in modern art – she must decon-
struct the unit of knowledge in order to develop the pedagogical knowledge unit
(Table 3.2).

By *insight* we refer to the pedagogical heart of the unit of knowledge, its "soul."
Insight is deep and influential understanding that the facilitators of the community
of thinking want the learners to carry with them over time, even after those learners
have forgotten most of the details included in the unit of knowledge. The facilitators
want this insight to accompany the learners over time because it explains a lot and
also because it will make them, in some sense, wiser and better people. Insight,
therefore, is a formative idea, an idea that makes a significant change in the way a
person grasps and relates to important subjects. It touches not only on what the
learners understand but also on who they will be. Of course, it is impossible to
guarantee the formation of insights – insights are formed spontaneously and they

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[9] Of course, one could ignore the constraints – the curriculum, matriculation exams, etc. We tried
to effect far-reaching change, but within the constraints. It is not clear that we were right. Perhaps
the implementation of our ideas requires a more radical approach. We adopted an approach we
called "pragmatic radicalism," meaning going as far as possible within the given constraints, but
the more we proceeded with our experiment, the more we recognized the need for greater radical-
ism and less pragmatism. Instead of trying to adjust the CoT framework to the school's structure,
we should adjust the school's structure to the framework of CoT.

have a subjective kernel that cannot be controlled – but it is possible to supply the essential conditions for their emergence.

Insight is a formative idea (1) with great explanatory power; (2) with an undermining element, contrary to common sense[10]; (3) central to the discipline; (4) interesting and important to the facilitator; (5) likely to be interesting and important to the learners; and (6) important for subsequent investigation and learning that will be conducted on and connected to pre-existing learning and investigation.

Insight is not an isolated entity; it takes place on a platform of *concepts*. The facilitator must choose the concepts connected logically to the desired insight, which are also likely to support its "spontaneous" emergence. But concepts have a value of their own, and they should be understood in the framework of the unit of knowledge unit being learned, even if they are not ultimately useful in promoting the desired insight. The concepts are the bricks from which the pedagogical knowledge unit is built.

The pedagogical knowledge unit includes not only "knowing that" (concepts) but also "knowing how" (*skills*). There are general skills (logical thinking skills, skill at paying attention, expression, and the like), and there are disciplinary skills (to multiply and divide in arithmetic, to use a map in geography, to perform an experiment in physics, and the like). In the framework of dealing with a certain unit of knowledge, the facilitator defines other skills – general and/or disciplinary – and inculcates them because they are vital for understanding the unit of knowledge, because they promote the development of insights, and also because they have value of their own.

The pedagogical knowledge unit is not a closed and static unit (an object); it is replete with more or less basic *controversies*. For example: Do leaders create historical circumstances or vice versa? Does art imitate reality or vice versa? Is survival the result of purposeful adaptation (Lamarck) or chance mutation (Darwinism)? And other controversies – not all of which are so "big." It is also a good idea to include controversies that have been resolved in the unit of knowledge, to demonstrate the dynamic, sometimes dramatic character of the emergence of knowledge.

People create units of knowledge to answer some question or to act more intelligently in the world. Units of knowledge thus have a human *purpose*. In Perkins' words, knowledge is a design, meaning that it is the product of a plan or intentional activity. Contemplation of the unit of knowledge from the viewpoint of its purpose – from the viewpoint of the question it is meant to answer and of the things it is meant to make possible – implies contemplation of knowledge from the "meta" level or from the outside. The purpose of *purpose* is to show that knowledge is human – created by people so they can understand better and act more reasonably.

Now, having described the structure of the playing field – the pedagogical knowledge unit – upon which the fertile question plays, let us see how the fertile question adapts to it. Let us take one of the fertile questions listed above, the

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[10] Insight can be consonant with common sense or our intuition, but the insight of a pedagogical discipline refers to one that contradicts or undermines them. The goal of undermining is to arouse motivation to learn and to advance thinking to a higher, disciplinary level.

question asked by the facilitators of the community of thinking in the Gvanim School in the eighth grade history curriculum, the subject of the Middle Ages: "Why did the peasant class accept the rule of the nobility and the church, even though those classes oppressed them?"

The insight that the facilitators in this community sought to arouse is that, throughout history, oppressed people have accepted and condoned the economic, social, and cultural order that oppressed them. This insight contradicts the intuition of young learners and undermines their common sense. According to the common sense intuition of most of them, oppressed people rebel against those who oppress them, and they, too, the students, certainly would do so! This insight explains many phenomena: the relative stability of regimes where a small minority oppresses the majority; the way that mentality (religion, ideology, prevailing opinions) serves the interests of the oppressor class; the complex relation of the oppressed to deprivation of their freedom (the escape from freedom); and so on. It also explains many historical phenomena; hence, it is central in the discipline of history. Moreover, it also explains the "transparent" oppression that characterizes our liberal, democratic, capitalist societies, which elevate the values of freedom and equality; and we learn about the past in order to understand the present and what is likely to develop from it. (At a meeting of the community of thinking that dealt with this question, one learner said that this insight also explains the oppression of students in school. This comment aroused a stormy debate in which learners and facilitators revealed the various scholastic mechanisms of oppression. In the end it was decided that some learners would propose a suitable alternative for schools, in which there was no oppression.)

The insight is connected with *concepts*, some of them general and some dependent on the specific historical context. The facilitators of the community dealt both with concepts of the first kind – such as hegemony, rationalization, ideology, means of production, oppression, and exploitation – and with those of the second type such as feudalism, chivalry, serfdom, and the Catholic church. The guiding idea was to teach the general concepts in a specific historical context.

The facilitators chose to concentrate systematically on certain skills that seemed vital to them for dealing with the unit of knowledge – both general skills and those related to the field. For example, one general skill that was chosen was the ability to *summarize* an article or a book and *present* it in a clear and interesting way. A skill related to the field was to interpret a historical event from several points of view – economic, cultural, and so on.

The facilitators did not indoctrinate the learners with the thesis of oppression. They sought to promote *controversy* about it. They presented contradictory views or reservations and encouraged the learners to relate to them critically (in fact, people sometimes do rebel against those who oppress them; they don't merely condone them).

Central to the fifth component of the pedagogical knowledge unit – *the purpose* of the unit of knowledge – was the hypothesis that oppressed people tend to accept and condone their oppression. This issue was discussed in various ways with the aim of revealing the questions that the unit of knowledge was meant to answer and the phenomena it was supposed to explain.

Thus, the fertile question plays on a fivefold field, the five-part unit of knowledge. The unit of knowledge is not presented in its entirety in the curriculum; it is produced by creative interpretation of the subjects contained in the curriculum. In the case discussed just now, for example, the curriculum subject was the Middle Ages, but the pedagogical knowledge unit – the Middle Ages from the standpoint of the thesis of oppression – was designed by the facilitators. They made it into what it was with a fertile question. (The facilitators in a community of thinking do not copy the curriculum; rather they create it. See Table 2.2) Thus, the fertile question shapes the curriculum just as it is shaped by it. The curriculum, if you will, is the matter; the fertile question is the form.

One further comment before concluding the section on the pedagogical knowledge unit: creation of the unit is not based solely on the understanding that we want to encourage in the lesson or series of lessons but also on what the learners have in their minds. That is, in planning the pedagogical knowledge unit according to its five parts, the facilitator must estimate what the learners think, their intuitive or naive theories. In the example presented here, the naive, intuitive theory held by most of the learners is that oppressed people tend to revolt against their oppressors and to strive for freedom. This theory imparts the undermining impact to the fertile question and the unit of knowledge. Thus, the general rule is that learners are not a tabula rasa; they come to the encounter equipped with pseudo-theories about the world. They already "know" what war is, why objects are attracted to the earth, why it's hot in the summer and cold in the winter, why couples divorce, and so on. When a unit of knowledge is planned and taught, one must try to gauge what the learners already "know" and to connect with that and undermine it.[11]

3.2.3   A Climate of Questioning

In *The Unschooled Mind* (1991), Howard Gardner describes a pedagogical dream (educators have strange dreams): he appears in a school and asks the students, in class and during recess, what question disturbs them, what question are they dealing with? Instead gawking at him in amazement and wondering whether to call for help, the students answer him immediately, as if nothing were more natural, and share

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[11] Piaget investigated the naive theories of children, but recently they have been rediscovered, as it were, and have been the subject of much fascinating research. Gardner (1991) was impressed by the persistence of these ideas. Students, he wrote, slam the door behind them when they leave school; the act of slamming the door shakes the dust off their naive theories – the theories with which they came to school – and they once again take over their minds. Twelve years of school, so it seems, did not change the theories with which they arrived in school. Here are some naive beliefs held before schooling, before the encounter with the disciplines, which he lists: it's hot in the summer and cold in the winter because the earth moves nearer to the sun and farther from it; heavy objects are attracted to the earth with greater acceleration than light objects; evolution is a purposeful, intentional process (belief in Lamarckism or simply theism); wars break out because bad leaders attack tranquil nations; a work of art is good when it describes reality exactly.

their questions with him. An Intel-Lect School based on communities of thinking is an attempt to fulfill Gardner's dream. In such a school, the children deal with questions and struggle with them all the time with the help of facilitators and colleagues (okay, not all the time; one hopes that they also deal with other things, but for a large part of their study time they are involved in efforts to answer questions posed to them and others which they themselves raise).

Since people tend to be lazy (as Nietzsche wrote at the beginning of his book, *Schopenhauer as Educator*), and since students in school are educated to be lazy, "to do school" with the minimum effort, it is no easy matter to encourage learners to pose meaningful questions. Questions consume mental energy; they unsettle the mind and require the questioner to struggle, to investigate, to locate knowledge, to understand knowledge, to create knowledge, and to articulate ideas. In order for learners to ask questions without inhibition, a climate that encourages questioning must be created. To that end, one can employ various strategies. For example:

Making Questioning an Explicit Topic: To make vigorous use of terms and statements taken from the semantic field of questioning. For example, "questioning," "a fertile question," "a barren question," "an open question," "a closed question," "an undermining question," "a predictable question," and also "what questions can we ask about the text?" or "what are the questions that the text is asking us?"

Making the Question Central: To start every meeting with a question – of the facilitators or of the learners. For example, "At this meeting, I want to ask the following question…"; "Let's start this session with the challenging question that Sara asked last time." And at the conclusion of every session, a possible answer to the central question should be given or possible answers to questions that branched off from it.

To Undermine by Means of Questions: To motivate discussion by casting doubt on accepted truisms – prevalent truisms or those that learners agree upon during a meeting. To preserve the cycle of undermining: undermining preconceptions, creating a new consensus (or restoring the cognitive equilibrium), undermining it, creating new consensus….

To Turn Knowledge into Questions: Instead of giving lectures about knowledge, pose questions that will lead to knowledge – the unknown part of it. The point is not to interrogate – to ask a question with the purpose of getting to the "correct" answer that the teacher has in mind. (Answers are not hidden treasures. One stand-up comic, responding to a teachers' strike, said that if the government would pay the teachers better, they would tell the students the correct answers.) Rather they are open questions that provoke controversy, and the answers to them are not predictable.

To Establish a Question Bank: To document the good questions that arose during a meeting on a poster or smart board and to invite learners to "borrow" research questions from the "bank" (they will be returned with interest: good answers). To encourage the learners to increase the bank's capital by depositing good questions.

To Excavate the Archaeology of Knowledge: Where there is now knowledge, there were once questions, but the questions became petrified and were forgotten, and the knowledge is transmitted as though it were detached from them. We must excavate that knowledge and lay bare the remnants of the questions that produced it. These remnants should be presented, and it should be shown how knowledge relates to them, to show that knowledge is an answer to questions that disturbed people and still disturb them – and that can still disturb learners.

To Make Questioning an Ongoing Task: To ask the students to generate questions on various occasions. To invent questions during classroom discussion, in homework, in an examination (if there is one), and in research. For example, an extra credit question in a take-home examination might be: "Write a question that puts the topic of study in an interesting light."

To Suspend or Even Proscribe Answers: Not to rush to offer answers or to provide answers at all. (Why make an effort if the teacher will give the "correct" answer in the end? Someone once said that a school is the only place in the world where somebody who knows asks somebody who doesn't know.) To transfer the function of providing answers to the students. Not to be afraid of long silences. And, even more, to forbid giving answers. To wean the students away from dependence on answers by forbidding them from giving answers for a certain time. To reward only the finding of questions. And, most importantly, not immediately judge answers as "correct" or "incorrect."

To Celebrate Good Questions: To give enthusiastic, positive feedback to good questions asked on various occasions. For example, "Great question, Henry! It's one of the questions that has disturbed many thinkers. Let's write it on the board." One could also shake Henry's hand. "A fine question, Anne! It sheds new light on the subject." (The entire session could be devoted to Anne and her question.) Celebration must be accompanied by an explanation of what makes the question so good – what's the reason for celebrating?

However, for all their importance, the tactics for encouraging questioning cannot by themselves create a climate of questioning; the entire educational environment must help. Organization of the space and time, the method of assessment, relations between facilitators and learners, patterns of leadership and administration, the connections with the parents, and so on – all of these are vital for promoting a climate of questioning, of study steeped in thought. In such a climate, the facilitators and the learners think, inquire, discuss, and philosophize because they are interested, because they want to understand, and because "life without investigation isn't worth living."

The pedagogy of questioning is the living pulse of the community of thinking; it throbs in all of its components – in the fertile question, the research, the concluding performances, in initiation, and in feedback. We will encounter it repeatedly as we deal with these components. The questions – the fertile question and the research questions – are not given in advance. They have to be invented. Hence, the answers and solutions are also not given in advance, and they, too, must be invented. All this gives the community of thinking a spontaneous character, unexpected and

Table 3.3 From given problems and solutions to invented problems and solutions

	Problem	Means	Solutions
Level 1	Given	Given	Given
Level 2	Given	Given	To be found
Level 3	Given	To be found	To be found
Level 4	To be found/invented	To be found/invented	To be found/invented

improvised to a large degree. This requires a period of time – at least two years – for adaptation on the part of the facilitators and learners. The leap from Level 1 (see Table 3.3), which typifies teaching and learning in a traditional classroom, to Level 4, which typifies teaching and learning in a community of thinking, calls for a leap of both faith and practice. Just as one cannot expect a smooth and painless transition from years of playing in a military band to playing in a jazz ensemble, one cannot expect such a transition from the framework of a traditional classroom to that of a community of thinking.

3.3   The Pedagogy of Inquiry

The second stage in the community of thinking is that of inquiry.[12] This is the most important and difficult stage to implement. After the facilitator has presented the fertile question to the learners and initiated them (on initiation, see below), the learners generate research questions and organize around them in research teams of two to three researchers. (If a learner insists on working alone, that's okay. Though we support team work since it enhances each one's intelligence and willingness to share, there are "introvert" students who work better alone.) The research questions relate to the fertile question and are derived from it; they are its sub-questions. One of the attributes of a fertile question is, as noted, that it is rich, that is, it tends to be divisible into sub-questions (the question is indeed fertile – pregnant with sub-questions).

3.3.1   The Research Question

A research question has four basic characteristics: it is interesting, open, connected, and practical.

Interesting: A good research question is an interesting question both subjectively and objectively. Subjectively, it simply has to grab the learners. Often learners ask questions that don't really interest them – because they want to please the facilitators, because the questions seem easy to them, and/or because they don't know what

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[12] In educational literature that seeks to encourage active investigative learning, three terms are current: research, discovery, and inquiry. For our purposes, there is no need to go into the slight differences among them. In our context the goal is not to produce future researchers but to make the process of learning as meaningful as possible.

interests them. Objectively, a good research question has to arouse general or principled curiosity. That is, it must offer a new point of view on the subject, turn thinking around, suggest new hypothetical issues, and the like.

Open: The openness of a fertile question and that of a research question are similar but not identical. An open research question is essentially one that has no unequivocal answer that depends on missing knowledge that can be supplied. Such a question requires taking a position: "What do I think about this matter?" "Why do I disagree with that position?" "What is my interpretation of the text?" and so on. Students in schools tend to engage in what Bereiter and Scardamalia (1987) call "report writing," the essence of which is to collect an assortment of factual findings. The facts don't affect the writer. They are described in books or other sources, and the writer recycles them. The openness of a research question seeks to wean learners away from this refusal to take a position and to force them to state and justify what they think (and this is harder than one might imagine).

Connected: This characteristic refers to the connection of the research question to the field of knowledge being studied and to the fertile question. Our experience shows that learners tend to leap to all sorts of questions that aren't connected to the field of knowledge or to the fertile question. The connection of the research question to the fertile question is one way to discipline student thinking (disciplinary thinking is guided by the rules of a given field of knowledge, and therefore, it is disciplined).

Practical: The practicality of the research question is identical to that of the fertile question. Here, too, our experience shows that learners generate questions without considering time and space limitations, limitations of their ability and that of others, and similar constraints. But practicality is not a given; what seems impractical at first glance could seem practical after some actions have been taken in the right direction. Making a question practical is part of the *processing of the question*.

These four characteristics do not ensure that a good research question will be generated. It is not enough to tell the learners, "These are the four characteristics of a good research question; get to work!" Making the learners' initial question into a research question is sometimes a prolonged process that requires systematically *upgrading the question*. In the process of upgrading the questions, facilitators help the learners reformulate raw questions, erroneous questions (questions that imply faulty conceptual knowledge), and trivial questions into good research questions. The facilitators work with each learner and research team, and they invite the whole group of learners to discuss the research questions that the various teams have raised. In processing the question, care must be taken to avoid generating a model research question so far removed from the initial question that the learners have lost interest in it.[13]

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[13] One girl in a lesson on the history of the Middle Ages suggested the question: "How many doors were there in a castle?" The teacher understood that what interested the girl was life in the castle – just how did people live within its walls? The question about the way of life in the castle was upgraded into a question about the history of castles: what caused the rise and decline (with the invention of the cannon) of the castle in the Middle Ages? The girl wrote an excellent research paper on that subject.

Learning in a community of thinking is based on the cycles of work in teams and work in the whole group. The whole group is enlisted at various stages to help the research teams. During the discussion of the teams' research questions, for example, the teams present their questions, and the whole community examines them in the light of agreed-upon criteria, improves them, or suggests alternative questions.

As noted, the quality of the research question is critical for the research to which it leads. Hence, a great deal must be invested in processing it. However, even after investing the processing, the connection with the research question can be severed. Research teams can "divorce" a research question in favor of a better one or they can change their research question in various ways.

Like the characteristics of the fertile question, those of the research question are not carved in stone; they can be changed, added to, or whittled down.[14]

3.3.2   The Research

After the facilitator and the learners have approved the research questions, the research teams set to work by themselves according to the following general guidelines:

1. Formulate your research question.
2. Suggest hypotheses, assumptions, and preliminary speculations that answer the research question.
3. Divide the research question into sub-questions.
4. List available and possible sources of information.
5. Identify your research tools.
6. Present preliminary research proposals.
7. Make a preliminary decision regarding the concluding performance.
8. Set a schedule and define the long- and short-range tasks; divide tasks among yourselves according to interest and ability.
9. Examine your research question again – is it interesting, open, connected, and practical?
10. Prepare a list of theoretical and practical questions for the facilitator in order to receive assistance as the work proceeds.

These guidelines intentionally combine instructions derived from a version of the scientific method and instructions derived from the need to work effectively as individuals and groups. Remember: the goal of the community of thinking is not to produce future researchers – physicists, historians, sociologists, etc. – for society;

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[14] Once when I was guiding teachers in a workshop on fertile questions, the teachers were not satisfied with the fertile question they had invented, because it lacked one characteristic. I told them that the question was quite fertile, even though it lacked that characteristic. One teacher said, "But it's written in the article that a fertile question has six characteristics!" I told her, "It's okay. I wrote the article." That didn't make much of an impression on her. "It says six, and we have to find a question that has six!" she insisted.

its purpose is to enable the learners to develop while dealing with knowledge – to work with knowledge, to work with other people, to plan, to take responsibility, to think independently, to discover areas of interest and meaning, and so on. Therefore, the above guidelines do not derive only, or mainly, from the research methods of the disciplines but also, and principally, from pedagogical considerations.

The first guideline calls for formulation of the research question. It is not at all clear what the question is and whether the members of the group like it. The second guideline is akin to the scientific method, where it is common practice to formulate a hypothesis and to try to confirm or refute it by experiment and observation. However, this guideline is written somewhat loosely, because the goal is to help the teams think and investigate, not to implement the scientific method. The initial hypotheses speculations play an important role in the process of investigative learning, because they guide it and lay the foundation for surprises when different or contrary results are attained. The third guideline does for the research question what research questions did for the fertile question. The goal of dissecting the question is to make the work systematic and also to enable each student on the research team to concentrate on a single question, which is a sub-question of the research question. The fourth guideline seeks to distinguish between available sources of information (the school library, another library, home, the Internet, etc.) and sources of information that are not available but which can be accessed with some imagination and effort.[15] The fifth guideline is quite rigid methodologically. It calls for the investigators to explain what tools they plan to use to create knowledge that will answer their research question, because the research tools vary from discipline to discipline. The sixth guideline sets a primary goal. It is important to recall that a community of thinking, like other frameworks of the third model, is "freedom within a framework." That is, the learners have many levels of freedom (to find or generate research questions, to manage the research in various ways, to initiate a concluding performance, and so on), but this freedom is subject to a strict framework of rules of work, schedules, and intellectual standards. Regarding the schedule, it is important that the first proposal be submitted on the set date. After the first proposals have been presented to the facilitators, the whole community of thinking meets to discuss them, mainly from a positive point of view – what might be done to improve the planned research? The seventh guideline influences the character of the research. It is possible (and desirable) to submit a written research report for the concluding performance, but it is possible to produce a film, organize a seminar, hold a public trial, and the like (see below). The eighth guideline is intended to make the work more efficient. The ninth invites the investigators to reexamine their question and research proposal: do they still approve of them, or do they want to rethink the whole business? The final guideline directs the investigators to continue their work full steam ahead.

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[15]A research question in a community of thinking in an Israeli school asked what would happen in Hong Kong when it was restored to China in 1997. Three of the learners traveled to Hong Kong, interviewed some experts, surveyed opinions in the street, and brought back video evidence from the arena of events (most of them predicted a catastrophe). Today such a trip could be made on the Internet.

In their application, the guidelines are influenced by the area of knowledge within which the research is being conducted. The questions, the hypotheses, the sources of knowledge, the tasks, the concluding performance, the research tools, the tools for confirmation and refutation – all of these depend to one degree or another on a given field of knowledge and its internal standards for what is regarded as knowledge. Nevertheless, fidelity to the field of knowledge is not the sole or even the most important criterion for evaluating the research. The measure of successful research should focus on the learning process of the student investigators and what they have achieved personally.

The guidelines, like the characteristics of the fertile question and the research question, are the product of our experience in facilitating communities of thinking. In a different context, one can expand or limit the guidelines.

Gail Talshir (2000a) has described several models of team research. According to the first model – the *autonomous model* – the community of thinking breaks up into research teams, and each one manages its inquiry in its own way. This "classic model" raises typical problems, such as the difficulty of the facilitators to reach each group and guide it, the possible disintegration of the common denominator of the community, and more. It appears that this model is suitable for advanced communities of thinking, where the facilitators and learners have already accumulated many hours of experience in a community of thinking. The other models, which restrict the freedom of the research teams, also present typical problems. The second model – the *scaffolding model* – structures the stage of inquiry according to the stages of writing the report: the facilitator teaches how to formulate a research question – and the teams meet to do so; then she teaches how to raise a hypothesis – and the teams meet to develop hypotheses. The teams have freedom with respect to the content, but the scaffolding is common to them all. According to the *breadth model*, the facilitators make several basic demands upon all of the teams, for example, to formulate a research question and defend it (to show why it is a good research question) and to prepare a research program and bring it to the plenary for discussion, and the like. The *methodological model* structures the community according to the research method. For example, in a community of thinking in sociology, one can choose deep interviews, surveys, and observation as three methods of research that are to be learned and with which one gradually progresses. The *disciplinary model* of the research stage is arranged around a certain discipline. In a community of thinking in biology, for example, the teams choose an ecological project, and they might be asked to present an analysis of non-biotic and biotic factors, an analysis of the food chain, a description of an ecological problem, and a description and analysis of human's influence on the ecological system. According to another model, the *jigsaw model*, each research team concentrates on part of the fertile question, and the sum of the parts completes the picture. There are other models and they can be combined. Some models make decentralization possible and grant maximal autonomy to the research teams, and others are centralized and directed by the facilitators. The framework of the community of thinking can thus be opened and closed, decentralized or centralized, depending on the circumstances and the facilitators' judgment.

The research stage is the hardest to orchestrate and guide. At the stage of the fertile question, the traditional structure of the class is more or less preserved – one teacher teaches many students. At the research stage, this structure disintegrates.

The learners work in teams in the classroom, the library, at academic institutions, at observation posts, and in other places, and the facilitators help them with organization and guidance. Since leaving the school grounds may pose a difficulty, the school must be properly equipped for the activity of the communities of thinking – with a rich library, computers, work spaces, experts, etc. Above all, there must be a culture of inquiry in which the learners assume increasing responsibility and initiative.

Communities of thinking stand or fall at this stage – that of research. There are many difficulties: learners of all ages do not know how to work individually and in groups; the facilitators find it difficult to reach the research teams frequently enough; students, and facilitators, lose the plot; leaving the school for laboratories, observation sites, interviews with experts, etc., is complicated and expensive. Undeniably, there are problems! However, the essence of the problem does not derive from the situation we are striving to attain, where most of the learning takes place in the framework of largely autonomous research teams. This is a situation that some schools have achieved, and it works well, sometimes very impressively. The difficulty derives from the transitional stage between a traditional school and an Intel-Lect School (see below). People have to know how to implement and handle that transitional stage. Impatient principals, facilitators, and learners, with no vision, find it difficult to negotiate the transitional stage, so they rush back to the teaching and learning familiar to them. Indeed, the gravitational field of the familiar is extremely powerful.

After the research question has been formulated and the research program has been presented and confirmed, the teams begin research, the purpose of which is to answer the question in accordance with their research plan. Work in the whole group continues in parallel with the research work of the teams. It is dedicated to various manners of initiation, central to which is the mutual presentation of the state of the teams' research. The cycle of work in the teams, assembling with the whole group, then work with the teams again, epitomizes the dynamics of work in a community of thinking.

3.4   The Pedagogy of the Concluding Performance

The main goal of the third stage in the community of thinking is to encourage the learners to act with and upon knowledge by organizing it in order to present it to others – according to the rules of organization and presentation of knowledge in the given field. Organization and representation are interconnected: we (also) organize knowledge so that we can present it comprehensibly to others. The organization of knowledge is performed according to the rules of given genres – research in one field or another of knowledge, a work of art in one area or another, and so on. The knowledge is presented according to rules of presentation – the principles of a lecture, of a

dialogue, and so on. In the concluding performance, the learners build their insights by organizing and presenting them to an audience in various ways – an academic research paper, a position paper, a film, a conference, a debate, and the like.

The final performance is intended to replace the traditional examination, the pencil-and-paper exam, which represses work with and upon knowledge. The examination expects the person being examined to recycle knowledge; it is the lowest level of the learning that preceded it, because that learning might have included cognitive activity more sophisticated than accumulating knowledge. Moreover, the examination is bound up with common anxieties, which stifle thinking and make learning burdensome. The concluding performance, by contrast, encourages creative activity by means of knowledge, and it has the capacity of making learners fond of learning. It is also an opportunity to provide learners with further feedback – formative feedback and not a summative grade (see below) – regarding their achievements.

While the concluding performance occurs at the end of the research process, it shapes the process: the decision about the character of the concluding performance dictates the character of the research – the method and also the content. To a large degree, therefore, the concluding performance dictates the curriculum.

3.4.1   The Concluding Performance as a Complex Demonstration of Understanding

The team and community concluding performances are complex demonstrations of understanding. As noted (see Sect. 1.2), demonstrations of understanding represent thinking with and about knowledge. In the words of Tina Blythe: "The performance perspective says, in brief, that understanding is a matter of being able to do a variety of thought-provoking things with a topic, such as explaining, finding evidence and examples, generalizing, applying, analogizing, and representing the topic in new ways" (Blythe 1998, p. 12). To understand a concept or principle means to be capable of explaining it in a clear and original way, to present examples of it, to apply it in various contexts, and so on. Perkins, the father of the performance conception of understanding, proposes seven performances of understanding; we have expanded his list to 18, divided into three categories. There can be a slight overlap among the performances included in each category (Table 3.4).

These understanding performances do not exhaust all the possibilities for such performances, and it is doubtful whether the possible understanding performances exhaust the mental phenomenon we call "understanding."[16] However, even if

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[16] Grant Wiggins and Jay McTighe write that there are six "facets of understanding." A person understands when she *can explain*: provide a comprehensive and well-grounded report about a phenomenon; *can interpret*, tell significant stories, offer a fitting translation, provide a historical or personal dimension for the ideas or events, and make it a personal and accessible topic by means of images, anecdotes, analogies, and models; *can apply*, use the concept, idea, or principle in

Table 3.4 Understanding performances

To present knowledge	To think on and with 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 example, metaphor, analogy, and comparison	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 contradictory knowledge
To present perspectives on knowledge	To predict on the basis of knowledge	To create knowledge on the basis of knowledge

"understanding is a complex process which is not itself understood" (Gardner 1991, p. 179), the performance conception of understanding is productive from the pedagogical and didactic point of view, and it makes it possible to deepen and sharpen the learners' understanding.[17]

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various contexts; *can have perspective*, listen to opinions critically and see the big picture; *can empathize*, find value in what others might see as strange or unlikely; and *can have self-knowledge*, be aware of the style, prejudices, projections, and patterns of thinking that mold and block her understanding and, thus, to be aware of what we don't understand and that understanding is difficult to achieve (1998, p. 44). The aspects of understanding cannot be fully reduced to understanding performances; they are more complex and general. Even performance plus facets of understanding do not exhaust the phenomenon we call "understanding."

[17]A lovely example of understanding performances appears in Alexander Calandra's "The Barometer Story" (*Current Science*, Vol. 49, No. 14, January, 1964, pp. 6–10). Murray Gell-Mann quotes this story in his book *The Quark and the Jaguar* (1994): "Some time ago, I received a call from a colleague who asked if I would be a referee on the grading of an examination question. It seemed that he was about to give a student a zero for his answer to a physics question, while the student claimed he should receive a perfect score and would do so if the system were not set up against the student. The instructor and the student agreed to submit this to an impartial arbiter, and I was selected […]. I went to my colleague's office and read the examination question, which was "Show how it is possible to determine the height of a tall building with the aid of a barometer." The student's answer was, "Take the barometer to the top of the building, attach a long rope to it, lower the barometer to the street, and then bring it up, measuring the length of the rope. The length of the rope is the height of the building." Now this is a very interesting answer, but should the student get credit for it? I pointed out that the student really had a strong case for full credit, since he had answered the question completely and correctly. On the other hand, if full credit were given, it could well contribute to a high grade for the student in his physics course. A high grade is supposed to certify that the student knows some physics, but the answer to the question did not confirm this. With this in mind, I suggested that the student have another try at answering the question. I was not surprised that my colleague agreed to this, but I was surprised that the student did. Acting in the terms of agreement, I gave the student six minutes to answer the question, with the warning that the answer should show some knowledge of physics. At the end of five minutes, he had not written anything. I asked him if he wished to give up, since I had another class to take care of, but he said no, he was not giving up, he had many answers to this problem, and he was just thinking of the best

The performance conception of understanding helps the community of thinking at each stage of its work. It is a good idea to write the 18 performances of understanding in prominent places in the school, to discuss them with the learners, and to set them as standards for understanding toward which one should strive in discussions in the whole community and in groups, in the process of research, and in the concluding performances.

The standards of understanding have an advantage in principle over ordinary standards that check knowledge (the memory of knowledge) and skill (regulated action – often lacking understanding – in some field): it is impossible to learn the standards of understanding in a technical, outward way, to be demonstrated in tests, as is the case with ordinary standards, because *the standards of understanding require understanding that derives from independent and creative thought*. It is difficult to falsify understanding but easy to falsify knowledge (students make a specialty of this during 12 years of study and reach a peak in the matriculation exams). It is difficult, for example, to take an understanding performance such as "to repeat the idea in your own words," "to craft a metaphor," or "to create knowledge on the basis of knowledge." The standards of understanding are standards or general definitions that require achievement, but they do not stifle the learner's independent thinking and expression; moreover, they enable, guide, and encourage them to go beyond information given. Therein they not only "save" learning from the shallow, external experience of the school; they also save teaching from

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one. I excused myself for interrupting him and asked him please to go on. In the next minute, he dashed off his answer, which was: "Take the barometer to the top of the building and lean over the edge of the roof. Drop the barometer, timing its fall with a stopwatch. Then, using the formula $s = 1/2at^2$ [distance fallen equals one-half the acceleration of gravity times the square of the time elapsed], calculate the height of the building." At this point, I asked my colleague if he would give up. He conceded and I gave the student almost full credit. In leaving my colleague's office, I recalled that the student had said that he had other answers to the problem, so I asked him what they were. "Oh yes," said the student, "there are many ways of getting the height of a tall building with the aid of a barometer. For example, you could take the barometer out on a sunny day and measure the height of the barometer, the length of its shadow, and the length of the shadow of the building and, by use of simple proportion, determine the height of the building." "Fine" I said. "And the others?" "Yes," said the student. "There is a very basic measurement that you will like. In this method, you take the barometer and begin to walk up the stairs. As you climb the stairs, you mark off the length and this will give you the height of the building in barometer units. A very direct method." "Of course if you want a more sophisticated method, you can tie the barometer to the end of a string, swing it as a pendulum, and determine the values of g; the height of the building can, in principle, be calculated." Finally, he concluded, "if you don't limit me to physics solutions of this problem, there are many other answers, such as taking the barometer to the basement and knocking on the superintendent's door. When the superintendent answers you speak to him as follows: 'Dear Mr. Superintendent, here I have a very fine barometer. If you will tell me the height of this building, I will give you this barometer.'"

From the understanding performances perspective, the heart of this story is not that the student understood the relevant concept and then manifested it in various ways (solutions), but that each way (solution) is an understanding performance – mainly of the creation of knowledge on the basis of knowledge – which is understanding itself. We may continue the discussion of this case and ask, is this student a good thinker? According to Matthew Lipman (1991, p. 116), one of the characteristics of a good thinker is "sensitivity to context." Our student lacks this virtue.

"teaching for the sake of standards," that is, teaching whose sole purpose is to prepare for the examinations that verify the meeting of standards (the inevitable distortion that any system of standards imposes on teaching and learning).

As noted, the concluding performance is *a complex understanding performance*. Indeed, it includes at least two complex understanding performances: the *team concluding performance* and the *community concluding performance*. The former is the product of the research team. It can be an academic research paper or some other product.[18] The second is a joint production of the community of thinking, at which the teams present their concluding performances. The two concluding performances are complex understanding performances that incorporate many understanding performances, some of which are not purely cognitive. For example, arranging a conference around a fertile question includes planning, organization, and presentation which are not solely intellectual activities but also practical tasks. These actions create understanding no less, and perhaps more, than "pure" understanding performances.

3.4.2 The Concluding Performance as a Motivation for Learning

Carol Ames was not exaggerating much when she stated that there were three important things to remember regarding education: the first is motivation, the second is motivation, and the third is motivation (Ames 1990, p. 409). One can summarize the efforts of enlightened educators throughout the generations and especially in recent times as a frustrated effort to stimulate students' intrinsic motivation to learn.[19] It is also possible to summarize all of those efforts as failures, because it's impossible to foster intrinsic motivation in a traditional school that forces students to be present (compulsory education, which is regarded as an achievement of modern states, destroys internal motivation), to follow a curriculum alien to their interests, and to take examinations that breed anxiety.

One must not conclude from this, as did the proponents of the second, child-centered model, that children's primary or authentic motivations are not amenable to intervention. In fact, they are, first, because there is no such thing as authentic motivation – all motivations have an acquired or cultural component – and second, because it is

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[18] I support "academic" and "conservative" research papers of the position paper genre. A position paper is a description of a given situation, the desired situation, and a series of recommendations for transforming the present situation into the desired one. My colleagues have expressed more "advanced" positions, according to which one should allow the teams to sum up their research in various ways that fit their propensities and abilities – to produce a film, a play, a presentation, a display, a conference, a trip, etc.

[19] This book is a minor part in this effort, but perhaps we, the educators, should give up this utopian vision and be more realistic. Alexander Sidorkin (2002), for example, gave up and claimed that since there is no demand for the students' products, there is no chance that they will be intrinsically motivated to learn. (He offers instead a more utopian Utopia – a school based on Buberian relations.)

Table 3.5 Foci of intrinsic motivation

Stage	Foci of motivation
The fertile question	Undermining accepted knowledge and beliefs, which thereby motivates learning through a desire to restore equilibrium; presenting the fertile question as the program for the next month(s), as the whole game
The research	Choosing the topic of inquiry, investing the "self" in the research topic (cathexis), gaining interest
The concluding performance	The process of production, self-expression in front of an audience
	And throughout there is the social interest of collaborating with one's peers

possible to nurture primary, authentic motivations, in the weak sense – the sense of motivations experienced by the student as his own desires, desires that have a relation to his choice of a life plan.

The framework of teaching and learning in a community of thinking accords a central place to the effort to arouse primary motivations (in the weak sense) in the students' minds. At every one of its stages, the focus of motivation is in a different place. At the stage of the fertile question, the focus of motivation is in undermining – the teacher must undermine the naive beliefs of the students and upset their cognitive comfort to motivate them to learn. The question itself is also supposed to stimulate motivation to learn, because it presents the plan for work during the coming months and marks the horizon which one hopes to reach; in Perkins' words, it "plays the whole game." At the stage of research, the motivation is inherent in the very choice of the research question and in the gradual connection with the subject of research; in Freud's terms, it is in the charging of the object of research with libido (cathexis). At the stage of the concluding performance, the focus of motivation is in the process of producing the team and community events and in presenting the research and the insights that the students have gained to an audience that provides positive feedback (Table 3.5).

3.4.3 An Example of a Team and Community Concluding Performance

Let us take the example of the fertile question, "Has the Zionist project succeeded?" These days in Israel, this question and its answer are especially challenging. It was presented in an eleventh grade Zionist history class. The facilitators of the community decided to use this existential question to teach the founding doctrines of Zionism. The research stage of this exercise is presented in Table 3.6.

What was the concluding performance like? The facilitators of the community asked each research team to present a written report along with some demonstration – a presentation, a film, an exhibition, or the like. The facilitators and their facilitators were in favor of a written report for two reasons: (1) writing is an excellent tool,

Table 3.6 Example of the research stage

| Has the Zionist Project Succeeded? |

From Herzl's point of view?

From the point of view of post- or anti-Zionism?

From Jabotinsky's point of view?

From the point of view of the fathers of socialist or religious Zionism?

From the point of view of scholars?
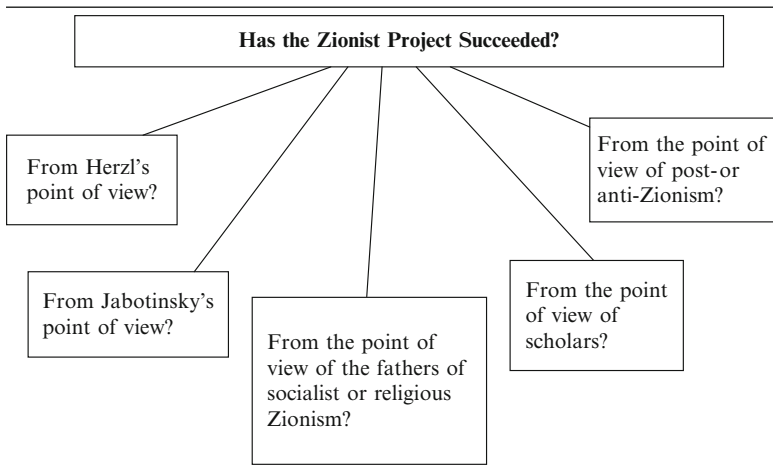
perhaps the best one, for developing conceptual thought, because it forces the writer to express herself and to think more abstractly and logically (spoken language, by its nature and the actual context in which it takes place, allows for imprecise expression and thinking), and (2) expression in writing is a vital tool for success in matriculation exams and in many real-world jobs.

The concluding performance was "basic," meaning that the teams presented their research papers to the audience in brief lectures, most of them accompanied by PowerPoint presentations. The audience included parents, students, teachers, and guests. After the presentations, one of the learners moderated an open discussion regarding the fertile question, the success or failure of the "Zionist project." The discussion was emotional, sometimes vociferous, and some of the learners realized only then that the question wasn't simply an "academic" one, but a question with the capacity to stir the minds and emotions of adults.

Two caveats in connection with the concluding performance: (1) Since learning in school tends toward "reduction to activities" (Bereiter 2002, 267), we should bear in mind that the concluding performance is not an end in itself; it must advance learning, understanding, and inquiry! (2) In school, students relate to learning tasks as work that has to be done, which has no goal beyond the doing; hence the vital importance of an audience (from this point of view, a school actually does prepare them well for the labor market). Performing tasks, and not learning itself, becomes the goal of the effort (Denise Pope [2001] called this "doing school"). To prevent the deterioration of the assignments, "intentional learning" must be developed (Bereiter and Scardamalia 1989), in which the students set their minds beyond the tasks – to meaningful concern with knowledge. In other words, the facilitators and learners must avoid vigorous but empty activity around the concluding performances; one must remember that the concluding performances are a means, not an end.

3.4.4   Initiation and Feedback

The three stages of teaching and learning in a community of thinking are accompanied by two adjuncts: *initiation* and *feedback*. The term "initiation," borrowed from R. S. Peters, refers to ushering learners into a specific field of knowledge, a world of concepts and skills with which they must have basic familiarity to conduct research in that field. The ultimate purpose of initiation is a primary level of "knowing your way around," a metaphor for understanding proposed by David Perkins (1995, p. 243). What does "knowing your way around" mean? When someone says, "I'm familiar with my neighborhood," he means that he knows its buildings, streets, and many of the people who live there; that he is able to get to almost every place in it, sometimes along familiar paths and sometimes with improvised shortcuts; that there are places in the neighborhood that he is especially fond of; and that there are places he avoids. Familiarity with a field of knowledge, like familiarity with a neighborhood, is bound up with the ability to maneuver in it freely, to think about it flexibly, to combine concepts in the field in response to chance circumstances, and the like. Familiarity with an area of knowledge is an open task (unlike a closed task such as fixing a flat tire), in which one can constantly improve. It is not only an ideal of initiation, but also of the entire community of thinking. Initiation strives to bring the learners to initial familiarity with the field of knowledge – two or three walks around the neighborhood – so they can start the research, asking questions, locating information, and thinking decisively with and about knowledge.

Initiation continues in every stage – initiation to the fertile question, initiation to research, initiation to the concluding performance – and it is performed in various ways. At the stage of the fertile question, the facilitators dissect the question to reveal its concepts and supply appropriate background information, the sort of information without which the fertile question would not be open, undermining, rich, etc. At the research stage, the facilitators provide the learners with information regarding the conduct of research in the given field of knowledge. At the stage of the concluding performance, they help the learners organize the research for the purpose of presenting it and producing the community concluding performance.

Initiation is not necessarily the direct transmission of knowledge, but such transmission in appropriate amounts and contexts is definitely desirable.[20] Gail Talshir (2000b) described some possible models of initiation, for example, the *hologram model*, in which every meeting is a kind of mini-community: the facilitators present a question to the learners, and they deal with it in the whole group and in teams;[21] and the *colleague model*, in which the initiation is based mainly on lectures and instruction by the learners. Initiation is thus a flexible stage during which it is pos-

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[20] "Teachers must continually choose between teaching something directly or leaving it to be acquired incidentally through indirect learning activities. This ought to be a strategic issue, not an ideological one" (Bereiter 2002, p. 271).

[21] Talshir writes: "The facilitators and the community derived great satisfaction when, at the beginning of one of the meetings, a learner complained that no question was asked at the beginning of the encounter, and the facilitators dictated 'material,' like in an ordinary class" (Talshir 2000a, p. 115).

sible and desirable to bring the learners into a field of knowledge in various ways. Care must be taken to avoid prolonging initiation that is based entirely on frontal instruction (inexperienced facilitators are afraid to give the learners slack and cling to secure ways of keeping the class together).

Generative feedback is the substitute that we propose in principle for routine assessment in the school – various kinds of tests. Scholastic evaluation (the tail that wags the dog) has three main functions: ranking the students, creating (extrinsic) motivation (or imposing discipline), and feedback to students and teachers. The pedagogical logic of the community of thinking denies the necessity of these three functions. There is a contradiction between *ranking* and learning, and we prefer learning.[22] Evaluation creates *extrinsic motivation*, which neutralizes intrinsic motivation; we are in favor of intrinsic motivation. Students and teachers can receive *productive feedback* from constructive sources.[23]

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[22] Imagine that you watch some television series regularly, let's say on Tuesday nights between 9 and 10. The series is done well; it is insightful and enjoyable. Then, one night, someone knocks at the door. A man comes in, wearing a gray suit, holding a briefcase. "Who are you?" you ask, angry at being disturbed. "It's nothing, nothing. Don't let me disturb you. I'll just sit here quietly on the side and observe you," the visitor answers politely. "What do you mean?" you object. "Look," he answers, "I'm a taste examiner from the Minister of Interior. I was sent here just to see whether you understand the series that you're watching – if you laugh at the right places, mumble correctly…. At the end of the program, I'll give you a short questionnaire. That's all. You can calm down and go back to the program." What happens to your beloved program now? It becomes burdensome, a source of tension and anxiety. And what about your learning? It becomes superficial and external. You're all set to demonstrate your understanding: you laugh out loud "at the right places" to impress the examiner and you try to learn from the expression on his face what he is likely to ask at the end of the program. All the insight, to say nothing of the pleasure, that you formerly got from the series has dissipated irretrievably.

[23] "This is the paradox of evaluating the achievement of individual students (with matriculation exams, for example) or of an entire school (international achievement tests): it wants to be invisible and all-seeing, but it is visible and blind; it wants to evaluate a certain reality, but that reality detects it and reorganizes itself especially for it. Moreover, the evaluation tools can only evaluate – define and measure – certain aspects of reality, so that even if that reality didn't detect it, the evaluation would only consider certain aspects of that reality, and not necessarily the most important ones. If the evaluation does not evaluate what it aims to evaluate but only itself – that is, the reality that organized itself specially for the evaluation or the aspects of reality that it is capable of evaluating – why then should we evaluate at all? Who needs an evaluation that distorts reality instead of reflecting it? There are two answers to this question – one is naive, the other is cynical. The naive answer is that evaluation, although it influences reality, teaches us about something beyond that influence. The matriculation exams, for example, evaluate not only the students' ability to take matriculation exams; they also inform us about the level of understanding of the content, about skills such as reading comprehension, the solving of problems in mathematics, and so on, and about character traits such as diligence, perseverance, and the like. The cynical answer is that if there were no evaluation, the entire system would collapse. Students come to school in order to get diplomas that will gain them entry to institutions of higher education, which will provide them with further certificates, which will avail them of a good profession. Without that incentive, the students wouldn't go to school – they would, of course, study for the examinations. Evaluation, therefore, is important because of its byproducts. Is there a better answer to why to evaluate? The answer to the question 'Why evaluate?' is 'How to evaluate?' That is, it makes sense to evaluate if you know how to evaluate – to evaluate in a way that will be beneficial both to the evaluators and to those who are graded" (Harpaz 2007).

Formative feedback is inseparable from the process of learning, just as it is an integral part of all its activities: we act on the environment and receive various kinds of feedback, some of which we are aware and others not, and they all shape our actions and our personalities. Feedback is different from judgmental evaluation (an A- or the grade of 87); it seeks to help, to direct, to shape – not to sort. Adam Lefstein (2000b, 2000c) formulated ten rules for giving feedback of this kind. Among them are the following: *Refrain from judgment*: relegate judgment to the margins of the process, and emphasize that it is your point of view alone, subject to change, etc. *Ask many questions*: replace comments with questions. For example, "What is your central idea on this subject?" "What would someone who disagrees with you argue?" *Listen to the learner*: don't talk a lot. Try to understand his or her thinking and judgment. Check now and then whether you have understood correctly by making short, probing comments. *Aim at what can be improved*: direct the feedback to elements that can be corrected and not to deep traits that the learner cannot change under these circumstances. *Encourage self-criticism*: direct the learner's attention to some matter that warrants criticism and let her develop self-criticism from that point.

Under ideal circumstances, and according to the logic of the community of thinking, it would be right to abolish examinations of all kinds and exchange them for formative feedback. However, under present circumstances, in which a school is essentially an evaluative environment and a classifying mechanism, one must set realistic goals. (To alter a famous saying, we might say that "reality is the last refuge of scoundrels." Those who don't wish to change anything speak in its name: "Be realistic; there are constraints."), which means to minimize damage and to make examinations as full of thought and understanding as possible. For the sake of damage control, care must be taken not to make evaluation a central event that preempts all instruction and learning; students must be able to take the examinations on a number of different dates, rich verbal comment must be given in conversation with the learners, and so on (cf. Lefstein, ibid.). In the framework of making examinations rich in thinking and understanding, an effort should be made to give open-book examinations and access to a computer, with questions that demand deep thinking and understanding and, better, to replace some examinations with research papers.

We have surveyed the three stages of the community of thinking: *the fertile question*, *research*, and *the concluding performance*. We have also described the supports that accompany them: *initiation* and *feedback*. An effort to learn how to apply these from our overview would be a bit like learning how to swim by correspondence. Teaching and learning in a community of thinking demand extensive experience, sometimes painful experience. Here is a flowchart of what we have surveyed in this part:

Initiation

Fertile Question
Open
Undermining
Rich
Connected
Charged
Practical

Initiation

Initiation

Team Research Question

Team Research Question

Team Research Question

Team Research Question

Team Research Question

Initiation

Research

In accordance with the research methods of the disciplines

Initiation

Team Concluding Performance

Team Concluding Performance

Team Concluding Performance

Team Concluding Performance

Team Concluding Performance

Communal Concluding Performance

Conference, Book, Magazine, Movie, Debate, Public Trial, PowerPoint…

Presentation
1. The question
2. The hypotheses
3. The process of research
4. The answer
5. What I learned

3.5   A Broad Picture of the Intel-Lect School

We called our model for a school based on teaching and learning in a community of thinking Intel-Lect School, in recognition of Intel, Israel's support for the development of the model. Whatever the name of the school may be, one thing is clear: communities of thinking can succeed only in an appropriate and supportive educational

environment. To become such an environment, a school must undergo far-reaching organizational changes. The model of the Intel-Lect School offers the general outlines of a school that supports and sustains communities of thinking.

Anyone who wishes to alter schools fundamentally must change the two axes upon which they are constructed: *the system of instruction* and *the organizational structure*. Any other change, such as a change in the content of the curriculum, is of secondary importance and leaves the school intact (which is why school systems like to change the curriculum – to add or subtract a subject, to add or subtract a chapter; it looks like a change). In the previous chapter, we explained the importance of the system of instruction: "the medium is the message" – the system of instruction is the (true) content of instruction. That means that students learn from the way they are taught more than what they are taught; and the way they are taught – by means of authoritative lectures or study in small groups or in communities of thinking or in any other way – determines the meaning of what they are taught. That is the reason why changing the organizational structure of the school is important: the organizational structure can support a particular method of instruction or undermine it; a particular system of instruction demands a corresponding organizational structure; moreover, the organization itself – like the method of instruction – contains messages with great educational influence.

In this section we will concentrate mainly on one dimension, a critical one, of the educational environment's organization: *the institutional organization of knowledge* (cf. Karmon 2000, 2007).

3.5.1   The Institutional Organization of Knowledge

The teacher organizes knowledge for teaching and learning based on the knowledge that was organized for him in the curriculum. That, so it seems, is the whole story of the organization of knowledge for the purpose of teaching and learning in schools. However, there's more to it: beneath these two strata of the organization of knowledge – by the teacher and by the curriculum – there is another organizational stratum: the institutional organization of knowledge. The school itself organizes knowledge and to a large degree dictates its pattern of organization to the curriculum and, in turn, the teacher. In other words, a school is not a vacuum that you can fill with whatever you want; a school is essentially certain organizational patterns that shape everything that exists and takes place in the school, including the knowledge.

It is also possible to explain the idea of the institutional organization of knowledge as follows: every act of teaching and learning requires the organization of knowledge – choice of specific content, processing of the chosen content, setting the pace of instruction and learning, the way it is presented and treated, and so on. The pattern of the organization of knowledge has far-reaching influence on the meaning of the knowledge, on the conception of the knowledge and, in general, on the ways it is taught and learned. The concept "institutional organization of knowledge" is meant to

point out the way that the school or any other instructional institution organizes knowledge and shapes its content and conception; to show how this primary organization of knowledge influences the secondary organization of knowledge of the curricula and the teachers, as well as the quality of teaching and instruction.

Two institutions that deal with instruction – the school and the university – have created two prominent models of the organization of knowledge: the *school subject* and the *discipline*. The former is the organization of knowledge with the goal of transmitting existing knowledge, and the latter is the organization of knowledge with the goal of creating new knowledge (especially in the pursuit of advanced degrees). One can distinguish between these two models according to six basic characteristics: preferred cognitive performance, the structure of the questions, rules for choosing knowledge, sources of knowledge, the distribution of knowledge along the curriculum, and the attitude to what is learned.

In more detail:

Preferred Cognitive Performance: Institutions that deal with education by means of knowledge – with the goal of transmitting or developing it – determine the peak cognitive performances according to which the performers, pupils or students, are evaluated. These performances usually come at the end of the educational process and constitute its climax; they affect the process from the start. The preferred cognitive performance of a subject studied in school is the examination; the peak is the matriculation exam. The preferred cognitive performance in the university discipline is the research paper. The goal of the first performance is to reproduce knowledge, and the goal of the second performance is to create knowledge.

The Structure of the Questions: The questions typical of a school subject are closed questions and those of a research discipline have the character of a scientific riddle. The structure of the questions is very important, because it creates the first connection between the mind and information. The closed school question suits the characteristics of the school – authoritative instruction, the summative assessment, the cumulative curriculum, the fragmented schedule of instruction, and so on – indicating that it belongs to the category of the institutional organization of knowledge. A similar fit exists between scientific riddles and the characteristics of a university institution. The answers to the scientific riddles are unknown, and they demand research, for which the university environment is intended to supply the conditions.

Rules for Choosing Knowledge: In the framework of a school subject, the rule is to choose the conventional and basic knowledge in the given field; in the framework of a research discipline, the rule is to seek differences of opinion and gaps of knowledge in the given area. Scholastic knowledge is presented as a multitude of details of information gathered into a uniform continuum, without controversies. This, of course, is a false appearance, because not all knowledge is agreed upon and there is not always a consensus regarding the essence of basic knowledge. At the university, on the other hand, knowledge is concentrated in areas of disagreement and problems, where there are inconsistencies between theories and data, among interpretations of

a text, among various theories and interpretations. In such areas research can flourish.

Sources of Knowledge: A school subject is nourished by secondary sources and a research discipline by primary sources. A school creates a whole world of secondary sources – textbooks, Internet sites, and the lectures of teachers. The sources of information for a discipline are those that it establishes – experiments in physics, documents in history, the field in anthropology, etc. The source of knowledge is not the summaries of teachers and textbooks but "reality," as it is conceived and constructed by researchers and the tools of their disciplines. Whereas the subjects studied in school transmit a smooth and comprehensive picture of knowledge, the disciplines transmit a fragmented and diffuse picture of knowledge – every discipline has its own world of knowledge.

Distribution of Knowledge Along the Curriculum: The knowledge included in a school subject is distributed along the curriculum differently from that in a discipline. The difference in distribution is connected logically to the various patterns for the organization of knowledge in subjects and disciplines and the different epistemic manifestations that support them. Thus, for example, knowledge in schools progresses to an increased number of topics and subjects of study, whereas knowledge in the university advances from a plurality of subjects and disciplines to fewer subjects in one discipline (specialization).

The Attitude to What Is Learned: Although the attitude toward knowledge is a subjective matter, it also has an objective or institutional dimension: the institution requires a certain attitude toward knowledge in order to function – to implement its pattern of action. It therefore assumes in advance a desired attitude toward knowledge and binds its "clients" to it. The school subject forms an inert and predisciplinary attitude toward knowledge. That is to say, the knowledge acquired in school does not tend to move out of the context in which it is acquired into other contexts; indeed, it is consistent with the "common sense" or the "natural intuition" of the pupils and neither departs from them nor challenges them. By contrast, research disciplines create a disciplinary attitude toward knowledge, that is, an interpretative conception of knowledge from the point of view of a particular discipline. Whereas the subject leaves the pupils with knowledge essentially similar to that with which they entered school, the discipline limits the researcher's outlook to the size of the window through which it observes the world.

In short, although the subjects and disciplines have the same names – mathematics, chemistry, history, etc. – they are different patterns for organizing knowledge. Neither, as we shall see below, *properly serves education that seeks to develop learning steeped in thinking and understanding* (Table 3.7).

The characteristics of the organization of knowledge create an *epistemic environment* that projects a certain picture of knowledge and also a picture of learning and teaching that derive from it. The epistemic environment transmits hidden messages to the students regarding the nature of the knowledge – what is regarded as knowledge and what is not, what is the relation of the knowledge to the world and to

Table 3.7 Basic characteristics of school subjects and research disciplines: the organization of knowledge

The organization of knowledge →		
Basic characteristics ↓	School subject	Research discipline
Ultimate goal	Transmitting existing knowledge	Creating new knowledge
Preferred cognitive performance	Matriculation examination	Research paper
Rules for choosing knowledge	Closed questions	Scientific riddles
Sources of knowledge	Secondary sources	Primary sources
Distribution of knowledge	From fewer topics in fewer subjects to more topics in more subjects	From more topics in more disciplines to fewer topics in one discipline
Attitude toward knowledge	Inert and pre-disciplinary	A single disciplinary perspective

people, what knowledge is valued more or less, how knowledge is produced, and who is qualified to produce it and also what are "true" learning and teaching.

The epistemic environment is formed by many practices that shape the learners' conception of knowledge and learning. (In the school, for example, such practices might include which lessons are easily canceled and which are not, which subjects are studied early in the day or the week and which at the end of the day or the week, which subjects are concluded with matriculation exams and which are concluded simply with in-school examinations, and so on.) These general conceptions have far-reaching influence on the learners' grasp of the world and on their development. School practices transmit many conceptions – for example, that knowledge is a snapshot of the world and that learning is the absorption of that photograph in the mind. It is, of course, possible that many principals and teachers might have other conceptions of knowledge and learning, but the messages embodied in the daily practices of the school, messages that are repeated day after day during all the years of schooling, are far stronger than their verbal messages. (In other words, the hidden curriculum is more influential than the visible one.)

This distinction has consequences for the strategy of change that should be adopted: *a fundamental and permanent change in the school must concentrate on a change in the practice of the school and*, *in the present instance*, *on a change in the institutional organization of knowledge*. As long as the practical infrastructure of the school exists, no real change can be effected in the school. When, for example, one brings learning by inquiry into the school but leaves the characteristics of the school subjects as they were, learning by inquiry cannot succeed; the institutional organization of knowledge will reject it or cause it to wither.

Change in the institutional organization of knowledge is a difficult matter. Schools are robust institutions. In the years of their existence, they have developed *maintenance mechanisms* that reinforce them and reinforce one another. Take, for example, the teachers' salary structure. In Israel it is calculated according to the

hours the teachers are actually present in the classrooms, because, according to the prevailing educational world view, transmission of information is the essence of the teaching profession. While this world view has been shaken, the mechanism for maintaining the salary structure has become established and autonomous; it does not sanction initiatives based on other world views. It does not, for example, permit multidisciplinary or interdisciplinary teaching that requires cooperation among teachers in the classroom (team teaching) and outside of it (many meetings).

Consequently, it is necessary to reorganize knowledge in the school, which means to reorganize the school. We called the reorganization of knowledge the "pedagogical discipline." In some respects, this name is problematic, because the concept of discipline implies meanings from which we want to free ourselves, but in another respect the term contains valuable meanings, especially this one: *disciplines are the best means we have to think about the world and understand it*, *and any effort to forgo them entails forgoing one of the most important achievements of human culture*. Hence, when one wants to understand the structure of matter, it is a good idea to consult physics, chemistry, and mathematics; when one wants to understand the structure of society, it's smart to consult sociology, anthropology, and history; and when one wants to understand the psyche, one should turn to psychology, literature, and art. We do not possess better tools for understanding the world and ourselves. However, the concept of "pedagogical discipline" opposes binding teaching and learning closely with a discipline; it refers to teaching and learning with a *disciplinary anchor*, meaning teaching and learning that emerge from a *dominant discipline* or that drift – if there is a need – from the original discipline to others that can contribute to the subject being investigated.

However, let there be no mistake: this does not refer to interdisciplinary teaching and learning – an unrealistic ambition in the framework of school studies (a person is capable of interdisciplinary thinking if she has mastered several disciplines, and that is a rather rare achievement) – but rather teaching and learning with a disciplinary anchor, which could be turned into *multidisciplinary* teaching and learning. Multidisciplinary teaching and learning exposes the learners to various points of view on the phenomena of the world and contributes to developing the insight that disciplines are essentially different points of view on the phenomena of the world (see above, the fertile question, "What is love?"). Moreover, the addition of the adjective "pedagogical" seeks to convey that the *guiding and conclusive consideration is pedagogical*, meaning sensitivity to the learner's situation – what his inclinations and interests are, what he is capable of, and so on – and not disciplinary rigidity (as the well-known motto has it: "We teach kids, not disciplines!").[24]

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[24] David Olson writes: "Pedagogy is thought of in terms of the structure of knowledge itself or the modes of apprehension that the child brings to the encounter" (Olson 2003, p. 203). That is to say, does pedagogy focus on knowledge or on learning, on content or process, or on the material or on the child? The pedagogical discipline organizes knowledge by concentrating on the learner's ways of thinking, feeling, and learning.

Table 3.8 Basic characteristics of the pedagogical discipline

The organization of knowledge →	
Basic characteristics ↓	Pedagogical discipline
Ultimate goal	Development of the thinking, understanding, and identity of the learners
Preferred cognitive performance	Working with and on knowledge and grappling with the question from various points of view, especially that of the learner-investigator
Character of the questions	Fertile questions and research questions
Rules for choosing knowledge	Choose knowledge on the basis of the structure of the pedagogical knowledge unit
Sources of knowledge	Flexible, appropriate for the interests of the learner and related to the discipline
Attitude toward knowledge	Positive (sympathetic, not defensive), critical, and creative

The pedagogical discipline is meant to replace the research or scientific discipline, which was and remains the ideal of intellectual education.[25] The ideal of the pedagogical discipline is neither the transmission of knowledge (a school subject) nor the creation of disciplinary knowledge (a university discipline) but, rather, critical and creative activity with knowledge for the purpose of developing thinking and understanding and creating a positive learning experience, an experience that will lay the foundation for lifelong learning. These are the basic characteristics of a pedagogical discipline (Table 3.8).

When the ultimate goal of instruction is the development of the learners' thinking and understanding, that goal dictates the characteristics of the organization of knowledge. *The preferred cognitive performance* is neither test taking (as in a school subject) nor producing a disciplinary research report (as with an academic discipline) but, rather, a varied and personal research report that grapples with a problem from different disciplinary points of view (more or less) and from a personal point of view – What is my opinion about the subject? What has grappling with the subject done for me? What must I do as a consequence of conclusions that I reached while dealing with it? For this reason, I prefer the genre of the position paper to that of the academic research report: it allows the writer to analyze the present situation and to describe the desired situation – there is a connection between these two descriptions, of course – and to propose steps to improve the present situation, which means to commit oneself to act. *The questions* are not closed (as with a subject), nor are they scientific riddles (as in the university), but fertile questions and research questions as defined above. *Knowledge* is not chosen because it is conventional and basic (a subject), nor according to areas of disagreement and

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[25] This ideal relates to the school subject as a discipline for beginners and idealizes scientific thinking and the image of the scientist. Even if this ideal is valid for some people, true scientific research is impossible in the school, and any effort to perform it in the school only produces various caricatures of it.

conflict (a discipline), but based on pedagogical considerations that are guided by the components of the pedagogical knowledges unit (see above), especially the component of insight. *The sources of knowledge* are mainly neither secondary (a subject) nor primary (a discipline), but flexible, as dictated by pedagogical considerations – what interests the learner, what are his or her unique skills (or intelligences), what is useful to deal with now, and so on. *The distribution of knowledge* is not from less to more or vice versa, but according to three (or perhaps more) communities of thinking that are coordinated among themselves (see below). *The preferred attitude toward knowledge* is positive – interest in knowledge, the desire to understand; critical – healthy suspicion, suspension of judgment; and creative – the desire to innovate or improve knowledge (cf. http://yoramharpaz.com/pubs/en_ learning/good-contents.pdf).

Here are some guiding principles for dealing with knowledge in the framework of the Intel-Lect School:

Long Meetings: Teaching and learning in a community of thinking takes time. A meeting of a community of thinking can take as long as five hours and a minimum of three. Thus, it is possible to do away with the distinction between classes and recesses and allow the learners to be in various places at various times, according to the demands of the situation. Since the meetings (lessons) are long and the number of pedagogical disciplines is small, it is possible to devote an entire day to a single community of thinking, for example, Monday, the community of thinking in history, and Tuesday, the community of thinking in physics. In an experiment we performed in a certain school, we found that the teachers became very creative in the ways they taught when a lesson lasted five hours. After all, how long can the teacher lecture without interruption?

The Longitudinal Axis – Up to Two Communities of Thinking per Year in a Single Pedagogical Discipline: In one year it is a good idea to work in no more than two communities of thinking in a single pedagogical discipline, that is to say, two fertile questions, two research projects, and two concluding performances in a single pedagogical discipline. It is possible, and this might be the best option, to participate in one community of thinking in one area per year. Various combinations are possible, such as a demonstration community of thinking in the first trimester, to give the learners a taste of the framework, and a real community of thinking for the second two trimesters. Of course such decisions, like all educational decisions, depend on the particular situation.

The Latitudinal Axis – Up to Three Communities of Thinking at the Same Time: A student can be involved simultaneously in three communities of thinking and three concluding performances. Beyond that the burden is likely to be too heavy. In any event, the facilitators must regulate the burden. For example, they can decide that in one half year, one community of thinking will be the central one, in which the learners are expected to submit deep research reports, and the two others will be secondary. In an Intel-Lect School, even classes that are not strictly communities of

thinking borrow many elements from that framework and are different from ordinary lecture-and-examination classes.

Allocation of Time for Joint Teacher Work: Planning a community of thinking and teaching in it are complex tasks that demand cooperation among the teachers. Teachers must plan the curriculum jointly and coordinate among the various communities of thinking. Hence, the job of the teacher has to be redefined, and a great deal of time must be devoted to staff meetings, guidance of teams, and other components that are not contact hours with students.

Application of the Principles of the Community of Thinking to the Organizational Structure: The pedagogical principles underlying a community of thinking must be extended to the entire school, especially the principle of freedom and its concomitant, responsibility. Just as learners are free to choose their research question and manage their research in the framework of the community of thinking, which motivates them to take responsibility for their learning, so, too, they have to be given maximal areas of freedom in the school, so that they will take responsibility for their learning (e.g., to choose which communities of thinking to join and to include them in planning the communities of thinking and in producing the concluding performances).

Application of the Principles of the Community of Thinking to the Physical Structure: The basic principles of teaching and learning in a community of thinking must also be applied to other organizational dimensions of the school, including the physical plan. One possible structure of this kind, which reflects these principles, is that of "houses," "apartments," and "rooms." Below is a schematic diagram of this form of organization (Table 3.9).

The diagram should be viewed as an ideal model and not a requirement: the number of learners can be increased and the number of facilitators can be decreased. This model assumes a school with 900 learners.[26] So this is a rather big school (by Israeli standards), though dividing it up into buildings neutralizes its size and makes it possible to enjoy various advantages of scale. The learners are divided into three two-age houses – one for grades 7 and 8, one for grades 9 and 10, and one for grades 11 and 12 – and each house is divided into four apartments; each apartment is divided into three rooms. Each house contains 300 learners, each apartment has 75 learners, and every room has a community of thinking of 25 learners. The basic unit is the apartment, which is administered by a community of six teachers – representing the disciplines studied. Each community of teachers takes full responsibility for the apartment. This structure creates conditions for the involvement of the teachers in education and instruction and for flexibility in planning each week and the entire school year.

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[26] "Most writers point out that it is preferable to make the school smaller. However, there is little agreement regarding the influences of the size of the school or about the mechanisms by which the size of the school influences the teachers and students. In a series of studies that examined the influence of the size of the school on several variables, it was found that students learned best in a school with between six and nine hundred students (that is to say, small schools, but not too small)" (Oplatka 2007, p. 54).

Table 3.9 Outlines of Intel-Lect School: houses, apartments, and rooms

House No.1, Model House   **House No. 2, House Composition**

Apartment A	Apartment C
Teachers' Center	
Apartment B	Apartment D

Administration Laboratories Library Gymnasium

300 Students 4 Apartments 24 Teachers

House No. 3, Model Apartment

CoT No. 1 25 Students	CoT No. 2
Shared Space for Work	CoT No. 3
	CoT No. 4

In conclusion, does consciousness change existence, as the idealists claim, or does existence change consciousness, as the materialists claim? This is an ancient question, worded rather heavily, but nevertheless it is a rather fertile question. In the earlier part of this book, emphasis was placed on the consciousness – we will change the atomic pictures in teachers' minds – and they, in turn, will change existence: the school. We will change the pictures by undermining them and replacing them with other pictures. This course of action was supported by a new language, as shown in Table 3.10.

The emphasis in this chapter has been on existence – let us change the organization of knowledge and all the practices that it embodies, and that will change the consciousness of principals, teachers, students, and parents. Of course, the change must take place on both of these levels and at the level of relations between them. Moreover, the change cannot be solely on the level of the individual school; it requires a general change in the system of education and, perhaps, even more inclusive systems (cf. Ettinger 2000). At any rate, our experience of 12 years and the experience of others have taught us that changing a school on the level of consciousness and existence is a difficult process, and few have succeeded in carrying it through. It is certainly possible that we, too, the developers of the Intel-Lect School and of the community of thinking, will join the long and respectable list of disappointed reformers.

Table 3.10 The language of community of thinking

The third model, *the third approach*, *the third drive*: The meta-narrative of the community of thinking and the Intel-Lect School.

The atomic pictures: Basic images of learning, teaching, knowledge, the mind, and the purpose of teaching and learning that guide the behavior of teachers and students in the school. These pictures are the narrative of the community of thinking and the Intel-Lect School.

The community of thinking: The framework of teaching and learning that is intended to replace the traditional classroom. Teaching and learning are based on posing fertile questions (to the community), research (in teams), and team and community concluding performances.

The fertile question: A comprehensive question – an overarching question; the community of thinking deals with various aspects of it by means of research questions. The fertile question has six characteristics: it undermines, it is open, it is rich, it is connected, it is loaded, and it is practical.

Initiation: Creation of a knowledge basis and of a culture of learning, which are vital for dealing with the fertile question, with the research question, and with the concluding performances. Initiation continues throughout the teaching and learning in the community of thinking.

The research question: The research question is generated by the research teams and touches upon a certain aspect of the fertile question. The research question has four characteristics: it is interesting, open, connected, and practical.

The pedagogical knowledge unit: A concept that organizes the knowledge being studied for the purpose of teaching and learning, indicating the "playing field" upon which the fertile question unfolds. The pedagogical unit of knowledge has five components: insight, concepts, skills, disagreements, and purposes.

The team concluding performance: A written report or some other kind of performance by the research team that deals with a certain aspect of the fertile question. The work grapples with the research question and builds and reveals the learners' understanding.

The community concluding performance: An event produced by the learners in the community of thinking to include learners, teachers, and parents in their achievements. The event builds and reveals the learners' understandings.

Generative feedback: A complex of actions intended to give formative evaluation to the learners.

Understanding performances: Intellectual actions on and by means of the knowledge that reveal the level of the learners' familiarity with the subject with which they construct understanding.

Pedagogical discipline: The organization of knowledge with inner and outer characteristics whose purpose is the development of the learners' thinking and understanding.

The Intel-Lect School: A supportive educational environment for teaching and learning in a community of thinking that embodies the principles of this framework in its organizational structure.

3.5.2 *In Lieu of Conclusion: A Conversation Between a Skeptical reader and the Author*

At first glance, you have a good story: third model, third approach, third drive, five "atomic pictures" of traditional education versus five pictures of advanced education, and a working framework for teaching and learning – the community of thinking. But if it's all so great, why doesn't it work? Why isn't the world covered with communities of thinking?

True, the world isn't covered with communities of thinking. But what does that prove? Maybe the model is good, but it hasn't been applied properly? Maybe it's only good for certain schools? Maybe it's good, but the educational system, in its present state, isn't ready for it? Maybe it isn't meant for immediate application, but simply to establish a paradigm against which it is possible to observe the traditional school and spark the development of alternatives. We never expected the world to be covered with communities of thinking. We wanted there to be some Intel-Lect Schools here and there, based on classes that were transformed into communities of thinking, and these would encourage people to create different frameworks for teaching and learning, better than the ordinary classroom and school, frameworks in which the third model and third approach are applied in various ways.

Still and all, unlike you, I take your idea about a thinking school and a community of thinking seriously and literally, as a practical framework that should replace the traditional school and classroom, and it simply won't work! Because there are matriculation exams, and there are crowded classes of thirty or more students, and there are students and teachers who aren't ready for such complicated learning and teaching, and there are prejudices – what you call "atomic pictures" – about learning, teaching, knowledge, and so on, that are deeply embedded in everybody's mind. Listen, with all due respect, it just won't work!

The factors you mentioned – and you could add a few more – definitely militate against our proposal, but there are also factors that work in its favor. For example, more and more people think that the existing schools do not suit the basic values of democracy and the demands of the knowledge society and that they do not produce graduates capable of and inclined towards independent thinking. Many people are convinced that schooling is inefficient and meaningless, which is a problem in itself, but it causes a much more burning problem – that of discipline. Because students do not experience learning in school as meaningful, they are not willing to play the game of schooling. In many schools there are discipline problems attributable to lack of meaning, which makes makes school life unbearable. The schools are gradually losing the public and parental trust that is vital to their functioning, and they are also losing the trust of teachers and students. I don't want to demonize the schools. Without doubt they do important educational work. However, in general, it seems as if the system is collapsing under its own weight.

I'm not at all convinced that "the system is collapsing under its own weight." The constant attacks of people like you are bringing the system down, and then you claim that it's collapsing by itself. But go on, please.

Many of the factors you mentioned are not fixed givens, and they can be changed. You can find some substitute for matriculation exams – research works, for example, or other concluding performances. A teacher-student ratio of one to more than thirty is certainly a problem, but it is possible to find organizational arrangements that will improve that ratio and, of course, it is possible to increase considerably the national investment in education. Perhaps the use of laptop and tablet computers with appropriate programs will enable a more personal online relationship, not to mention further changes in the patterns of teaching and learning that technological advances could make. As to a community of thinking meeting the needs or

circumstances of all the teachers and students, there is no doubt that it isn't suitable for everyone, but neither is a traditional classroom. A community of thinking is a much more flexible framework than a traditional classroom, so that it is likely to suit more teacher and students. If it seems unsuitable, that's because teachers and students have been trained over the years in patterns of teaching and learning, and these patterns are regarded as normal. With respect to prejudices, it seems to me that their grip on general consciousness is loosening. In professional educational discourse, they have long since lost their grip. In short, I agree with you that implementing the idea is not simple, but I think it's possible, and the possibility depends mainly on our will and not on external circumstances. Regarding our criticism and the criticism of others, they may hasten the collapse of the school and its replacement by a better educational framework, but I'm afraid you're giving us credit that isn't due to us.

Sorry, you still haven't convinced me that this framework is appropriate to different types of students and teachers, to students at different ages, to different subjects, to the structure of the school, to the demands of the Ministry of Education…

The framework of learning in a community of thinking has to be adapted to come to terms with the factors you mentioned. The framework is undoubtedly suitable for highly intelligent and motivated students; those are the ones who shouldn't be taught in any other way, unless you intend to impair their intelligence and motivation. And who said that students with "average or below-average" intelligence and motivation have to sit in a classroom, store meaningless information, and then be tested on it? Students like that need more support so they can reach a stage where they can formulate a good question and grapple with it rationally and effectively, but there's no reason why they can't reach that stage. Aside from that, even if all students aren't "suited to this framework" (an expression whose meaning I don't completely understand), an effort has to be made to adapt them. Quite similarly, one could say that not every student is suitable for independent thinking. If that's so, they have to be made suitable for it. After all, education aims to change the students, not to suit them. Students aren't customers whose every whim has to be satisfied, though there is a tendency to relate to them and to their parents that way.

The same principle applies to different ages: in the lower grades, more support and direction must be given. (Our most successful communities of thinking were actually in primary schools, far from the influence of matriculation exams.) As for teachers, they, too, need support and direction: guided experience in teaching in a community of thinking and internal and external arrangements in schools that will allow and encourage them to teach differently, in a less egocentric and more dynamic way. (Instead of asking themselves before each lesson, "What am I going to say to them today?" the teachers should ask, "What am I going to help them do today?") Regarding the subjects of study, they have to be recast into pedagogical disciplines, meaning that they have to be adapted for teaching and learning in a community of thinking. As I wrote earlier, by definition pedagogical disciplines are suited to teaching and learning in a community of thinking. True, there is a difference among communities of thinking in the various subjects (pedagogical disciplines) and especially between communities of thinking in the social sciences and the humanities, on the one hand, and those in the natural sciences, on the other. However, there is

nothing in the content of the various sciences to prevent teaching and learning them in one or another manifestation of a community of thinking.

With respect to the school, its structure does indeed reject or distort any educational logic or model of action different from its own logic and model of action. Therefore, if we want a community of thinking to function well, we have to change the school and transform it into an Intel-Lect School.

As for the Ministry of Education (in Israel, at least), as a centralized government bureaucracy, it prefers traditional, uniform schools, because it is easier to control them, but it seems to me that many people in the Ministry of Education also understand that these schools do not serve society well, just as they do not serve well the individuals who study in them. If a proper alternative were offered, I believe the Ministry of Education would accept it. For the moment, it sends contradictory messages to the field. Most of these messages imply imposed, uniform learning and others, independent and flexible learning. These mixed messages are a sign of true confusion. The Ministry of Education – here I am speaking specifically about Israel – has not managed to define goals for the national educational system at the beginning of the twenty-first century. Not only does the school reflect the society, but so, too, does the Ministry of Education – and it is confused. In the terms of Zvi Lamm (see Chap. 1), we may say that the Israeli educational system (and other systems as well) is suffering from triple schizophrenia – it does socialization, speaks acculturation, and thinks individuation.

Fine, fine, I understand. Would you mind giving me shorter answers? So let's say that all the students study, teachers teach, and subjects are taught in the framework of a community of thinking. Why do we need all this sophisticated production – the fertile question, research, the concluding performance? People can learn and investigate without all the rigid processes you've developed.

Our framework, like a good teacher, strives to makes itself superfluous. It is a kind of scaffolding that can be removed and should be removed after indirect teaching and good learning become a routine and self-evident matter for everyone. That's actually what happens. In advanced communities of thinking, where the teachers and students have been experienced in different ways of teaching and learning for two or more years, teachers developed an intuition for fertile questions and no longer needed the six characteristics that define them, and learners developed intuition regarding good research questions and effective management of research. In some communities of thinking, the learners themselves proposed fertile questions. The other instructions for research and the concluding performance were also absorbed in the shared activity, and they were forgotten. In short, after two or three years of experience in a community of thinking, the whole business becomes quite fluid and functions on its own, without clinging to the dictates of the framework.

Okay, let's say I'm interested. Do you have research on teaching and learning in a community of thinking that can convince me?

I'm afraid we've been negligent on that account. We never obtained a grant for research and evaluation. Here and there research has been done and studies have been written about communities of thinking, but there's no comprehensive, systematic research. We were satisfied with the empirical evidence. In the places where it

worked, we saw teaching and learning of impressive, exciting quality; where it didn't work, we saw confusion and longing for the good old system. I'm convinced that when communities of thinking enjoy good conditions, they flourish; there's no need for research to confirm that. The reason why many communities of thinking foundered is the lack of the vital conditions for their success. In most cases, they acted within the framework of a traditional school and that context distorted their meaning. For example, the freedom that a community of thinking gives to students was seen as an opportunity to go wild; the facilitation of the teachers and the lack of authoritative frontal lectures were interpreted as lack of skill and expertise in the subject (I remember that students wrote feedback about two teachers in the community of thinking in sociology – two university lecturers with doctorates – to the effect that "they were okay, but they didn't know the material"); the assignments – the concluding performances – didn't seem serious to them (a test is something serious); and the work demanded of the students – to ask a question, to locate, to criticize, and to create knowledge – was seen by them as unfair, as demanding too much thinking and work. In short, when the traditional school is the dominant paradigm, it is very difficult to teach teachers and students in the school to work in a different paradigm. But, in any case, the whole model was built on others' research so it is definitely not research-less.

That means that the effort to introduce communities of thinking in an existing school and to change it from within is doomed to failure.

I'm afraid so, but I'm not sure. Schools have very strong gravitational fields, and everything that enters the schools' force fields crashes there. I tend to think that if we want a school where students learn and investigate out of real interest, we have to erect it from the foundations to the rooftop on the basis of the principle of creating conditions for good learning. A school based on that principle would be a very different institution from a traditional school, which is based on providing conditions for a different kind of teaching. Of course, a school does not function in a vacuum; it is subject to innumerable constraints. If I were the Minister of Education, I would free selected schools from constraints such as the national curriculum and matriculation exams and give them a supplementary budget for several years, so they could demonstrate that a different kind of learning is possible. I would attach researchers to those schools and ask them to observe what was going on there – whether a different kind of learning was developing, learning bound up with involvement and understanding. By the way, I'm not claiming that this kind of learning doesn't take place in existing schools. In many schools it is possible to see excellent classes in which high caliber learning takes place, learning connected with the lives of the students, building them up and built up by them. The challenge is to make these chance occurrences routine in all the schools. In my opinion this is the educational challenge facing any minister of education who cares about education and not only about the political advantage that can be derived from it: to establish conditions throughout the educational system in which students can learn and flourish in their interactions with knowledge.

Suppose, for the sake of argument, that you succeed. So what do you get? A student who understands knowledge. What's all the effort for?

That's no small thing, if the understanding is deep and the knowledge is valuable. Understanding is the basis for good thinking – critical and creative. But it's definitely possible that the understanding of valuable knowledge doesn't justify all the effort. Understanding has to motivate the students to take meaningful action, to make the world a better place. That means making their lives richer and more exciting and making the society better and more just. I think that motivation to action is inherent in understanding and, if not, ways must be sought to motivate action. Understanding of great ideas and stories is not the only goal of education. There are others. It is in the first rank, but not necessarily first in line. Along with intellectual education, i.e., education for understanding, there has to be aesthetic education, essentially the students' participation in artistic activity – cinema, theater, music, dance, painting, and the like; there is social education, which is mainly motivation for social involvement and responsibility.

Listen, you still haven't resolved several of my principled and practical doubts regarding your idea. I still find it hard to envision mass education administered in Intel-Lect Schools and communities of thinking.

I also have doubts. I only propose that we try – let's try, slowly and gradually, to build our educational system on the basis of the principle of creating conditions for good learning of valuable content – learning of content that supports the intellectual, emotional, and moral development of the students. An Intel-Lect School and a community of thinking try to provide such conditions and content. There are other frameworks for education, maybe better ones. The time has come to act upon them.

Chapter 4
An Inside Picture: Conversations with Teachers of Communities of Thinking

Some readers might complain, understandably, that this book is too conceptual and analytical, that it lacks the inside picture, a description of the lives of teachers in communities of thinking. To give an inside picture, I held conversations with a few facilitators of communities of thinking in schools and in other frameworks in Israel.

4.1 A Trojan Horse

Amnon Sadovsky, a teacher in the Hebrew University Secondary School in Jerusalem, a middle school and an upper school with a thousand students, is a facilitator of instructors in a community of thinking, and he also trains teachers in instruction in a community of thinking.

Q. You're one of the most experienced facilitators of teachers in guiding a community of thinking. You've led communities of thinking in two schools: the Branco Weiss school in Beit Shemesh (a small city southwest of Jerusalem) and the bilingual school in Jerusalem (a primary school for Jewish and Arabs pupils). Currently you direct the community of thinking in the Hebrew University Secondary School and train teachers in facilitating communities of thinking. I've known you as a teacher since your first year in the Branco Weiss school. Compared to other teachers, you adapted to this method very naturally. What prepared you for it?

A. I think that what prepared me for teaching in a community of thinking was my extended experience as a guide in the scout movement. As a youth movement counselor, you absorb the pattern of "you don't talk here, you activate." After years of running activities with the scouts and motivating them to experience, to think, to discuss, to understand, and to do, I couldn't paralyze pupils in school with endless lectures. So when I heard that they were going to start a school in Beit Shemesh based on a community of thinking – an idea that I didn't really understand in detail, though I caught its spirit – I applied for a job and was accepted.

   As I speak with you, I remember a unique, formative experience. Once I had a friend who was a teacher in a democratic school, and I sat in on a teacher's meeting. The principal came to the meeting, threw a bunch of newspapers into the middle of the room, and said to the teachers: "Do something with this." The teachers fell on the newspapers and did all kinds of things with them, with the idea of doing them next week with the students. For example, one teacher asked the other teachers to defend a political position opposite to theirs, using a few of the articles that appeared in the newspapers. Another teacher asked the teachers to form pairs, to get close to each other so that only a newspaper was separating them, and then he held a conversation with them about that experience. It was a strange teachers' meeting. The teachers didn't talk or complain; they just used their educational imaginations and created all sorts of activities that they would do with their students. That was a formative experience for me. It strengthened my insight that the job of a teacher is to activate the students and let them learn by themselves from their own experience. That insight is one of the bywords of a community of thinking: "The essence of teaching isn't what the teacher does but what he makes the students do."

Q. That activity is appropriate for a youth movement or a democratic school, but not for regular schools based on authoritative teaching for the test.

A. Right, and that's why I didn't want to be a teacher in a regular school. But after Prime Minister Yitzhak Rabin was assassinated on November 4, 1995, I thought that something had to be done so that such a tragedy would never happen again, and that what had to be done was to go to regular schools and not to youth movements or democratic schools where mainly children of the elites study, children who are on the right ideological and political side, the side that knows how to express its positions democratically. I decided to go to an ordinary school and change the system of education and the pattern of study so that students would learn history and civics – the subjects I teach – with activity and experience. That kind of teaching produces students with a humanistic, democratic consciousness.

Q. So then you went to the Branco Weiss school in Beit Shemesh, and you met students who weren't from the elite, students who mainly come from a low socioeconomic class. Can students like this learn in a community of thinking? Can they ask questions, investigate, present a concluding performance, take responsibility for learning, study with inner motivation, and act in a relatively open and free space?

A. You're asking whether students from weak or weakened social strata can study. Are you sure you want to ask that question?

Q. I'm asking whether they can learn in the framework of a community of thinking.

A. To my mind that's like asking whether they can learn. If they're human beings, then they can learn, and they want to learn. Why don't you ask whether students like that can learn in ordinary classes, where the teachers wear them out with abstract lectures about remote subjects.

Q.   Ordinary practice doesn't need explanations or justifications.

A.   It's exactly ordinary practice that needs to be explained and justified. It needs explanations and justifications because it's ordinary practice and never gets explained or justified, because it's ordinary. At any rate, the advantage of a community of thinking is that it's like an accordion – you can open it and close it, tighten and loosen it, depending on what you need. In a community of thinking with students who find it hard – students who come from homes without much cultural capital, without much ability to defer gratification, with habits and conceptions that aren't appropriate to the framework of school – I prolong the initiation stage, help them more with asking questions, give clearer directions for the research, and I'm in closer personal contract with the students.

Q.   So communities of thinking with weaker students require clearer and more personal direction?

A.   Yes. Strong students move into this framework more easily, even with joy. You give them a little push, and they roll along. Weaker students require a lot of very well-planned pushes and constant support.

Q.   Did teaching in a community of thinking in two different schools – the Branco Weiss school in Beit Shemesh and the elitist Hebrew University High School in Jerusalem – bring to light differences between the two types of student?

A.   Yes, the students in the Branco Weiss school – and I'm making rough generalizations – were put off by open questions. When I asked them fertile questions, some of them would respond with anxiety, sometimes with aggression. They wanted a headline and not an open, challenging, charged question. They wanted simple, absolute answers and not complex or ambiguous ones. They wanted an authoritative, all-knowing teacher. When I told them I didn't know what the right answer was to a fertile question or to their research questions, and maybe no one knew, they would react with mistrust, as if I was joking. In their eyes it's an oxymoron: a teacher who doesn't know is like a married bachelor. After experiencing several communities of thinking, they learned that adults don't have answers to the really interesting questions and maybe they'll never have them. They learned to live with open questions. Strong students aren't afraid of open questions. They immediately rush into their own special fields of interest. But they're very much soloists, and they find it hard to work in a group. With students like that I get to very high levels of learning, sometimes truly astonishing. It's hard to find fields of special interest for weak students. You have to work with them personally and more closely until they discover a subject they want to ask about and investigate. Their research questions are very concrete. You have to work a lot with them to open up and expand their questions.

Q.   How do you cope with the challenge of matriculation exams, high-risk examinations in the upper school?

A.   I don't try to cope with them, because I think that preparing for them and good learning can't go together. I think that high-risk examinations destroy the vital conditions for true learning. So I always stay in middle school and refuse to

teach in the upper school. Sometimes it's sad for me because actually in the upper classes, when the students are more mature cognitively and emotionally, you could have excellent communities of thinking. In the middle schools the students are in the throes of puberty, and their minds are distracted by all the pressures of that age.

Q. You also taught communities of thinking in a very special primary school, the bilingual school in Jerusalem, where Jewish and Arab children study together. What did you do there?

A. This was a classic opportunity for having a community of thinking, because two communities of students were studying there, from ethnic groups that are in conflict. The parents who send their children to that school want to solve the conflict by means of dialogue and mutual understanding. Open and charged questions from life, which have no single answer or that have contradictory answers that emerge from different points of view, arise there naturally. You don't have to make an effort to invent them. Also, there are two teachers in every class – a Jew and an Arab. So there are good conditions for a community of thinking. The obvious fertile question was: "1948 – how does it look from two different points of view, Jewish and Palestinian?" The students from the sixth grade, Jews and Arabs, interviewed their relatives and brought back moving stories. I invited two old grandmothers – a Jew and an Arab – to the class to tell at length how that decisive year was for them, with what the Jews call the War of Independence and the Arabs call Nakba, the catastrophe. The children learned that there are two different points of view on that event, and only someone who can observe critical issues from two different points of view is capable of thinking critically.

Q. Are 12-year-old children able to think critically? Is it a good thing for them to think critically at that age?

A. My impression, or maybe my educational outlook, is that children can see reality in a complex way. Regardless, they're exposed to arguments coming from different points of view – at home, in school, on television. And that's the essence of the culture of a community of thinking – arguments about burning issues on the basis of willingness of sides to the dispute to try to understand the rationale of the opposite view.

Q. Culture?

A. Yes. To my mind a community of thinking is not a method – fertile question, initiation, research questions, concluding performances, feedback – but rather a culture, a culture of engaged thinking. What's important in a community of thinking is its hidden curriculum, all those messages that create a climate of dealing with important questions in which the students ask, investigate, understand, and are opened up to new points of view. I get to classes half-baked and let the class develop. I lie in wait for demonstrations of understanding, going beyond the information given; I enable, empower differences of opinion. There are lessons when I almost disappear. If you were to come into the classroom, and if I looked younger, you wouldn't know I was the teacher. The students lecture, argue, lead the lesson.

Q. Can you give an example of a fertile question and research questions that you have dealt with?

A. Right now I'm leading a community of thinking in history, maybe in metahistory, in tenth grade. The fertile question was: "What drives history?" The field on which the question is playing out is the twentieth century. The students ask research questions about the personalities of the leaders – Hitler, Stalin, Mussolini, Churchill, Roosevelt, and others – and about their ability to alter the course of history. They ask questions about economic, social, and cultural crises, about technological inventions, about class and national conflicts, and they see how they shaped history.

Q. Is the fertile question important in motivating a community of thinking?

A. Yes, of course, it's very important. If it's really fertile, it's like a wave that sweeps the students along. You feel that the students are swimming well in it. There's a kind of heat in the classroom that comes out, to the corridors, sometimes to their houses.

Q. The questions get to their houses?

A. Yes. It's an indication that they're effective – the students ask them at home and involve their families. I tell the students that I'll give them an extra five points on their grade if they discuss the fertile question at the dinner table at home.

Q. You give grades?

A. That's just a joke. The insider humor of the community of thinking. I don't give grades at all. Grades kill the spirit of the community of thinking. The students understand that quickly and don't ask for a grade. I cure them of that addiction. They get feedback on their work, from their colleagues and from me, during the classes.

Q. Doesn't that detract from their motivation to study?

A. It detracts from a certain kind of motivation – extrinsic motivation – and it strengthens another kind of motivation – intrinsic motivation. The students want to get a grade from the inner criteria of their historical research. The ones who get deep into research stop being interested in grades. Or, to be precise, the grade doesn't motivate their research, but rather the feedback they get at the end. I give them some grade, because the school demands it, but it ranges between 90 and 100. It's not an issue.

Q. You also teach schoolteachers how to work with a community of thinking – you do workshops with them, observe their lessons, and give them feedback. How does that work?

A. It's not easy. I try to wean the teachers away from the illusion of traditional instruction, from the idea that if they have taught, the students have learned. The teachers feel that they have to say everything they have to say on a subject, otherwise the students will go out into life ignorant and uncouth. I tell them, "Great, you've said everything about a subject, so what happens? At best the students will be able to reconstruct something of what you said on the examination." I try to teach the teachers to teach from the viewpoint of the student's consciousness – what happens after a traditional lesson, where the student is passive, and what happens after a lesson when she's involved?

Q.   Do the teachers resist? Do they cling to the traditional pattern of teaching?

A.   Sometimes very strongly. Some veteran teachers don't work with a community of thinking and apparently never will, teachers that I have no working relationship with, but they don't talk to me. They treat me like a Trojan horse that has been brought into the school to destroy it from within. I understand them. I threaten their patterns of work, the way they've been teaching for more than 20 years. The teachers who have gone over to communities of thinking also don't make my life simple. The principal tells me very once in a while, "You're burning up my teachers." Maybe I also threaten the principal. I have to be careful. He's got to lead the process, not me.

4.2   Education for Humanity

Ofra Leibowitz and Batya Hori-Yafin lead communities of thinking at the Hebrew University Secondary School in Jerusalem, middle school and upper school, with 1,000 students.

Q.   You two have been co-teaching a community of thinking in Bible for several years.

Batya: Yes, a few years ago there was a program in our school called "The Challenge of the Bible," and extra hours were allocated to teaching Bible. Amnon Sadovsky brought the idea of teaching and learning in a community of thinking, and we decided to give it a try.

Ofra: I always wanted to teach with another teacher in the classroom – and with a teacher like Batya. So I was glad to get the opportunity. The extra funds of teaching the Bible in the framework of a community of learning made it possible for us to co-teach.

Q.   Why were you interested in co-teaching?

Ofra: I felt that teaching alone behind a closed door was thin and one-dimensional and that co-teaching could be enriching. I also thought that when you're alone in the classroom, you tend toward authoritarian teaching, whereas when you're with a partner in the classroom, you tend to converse dialogically, and the climate becomes more democratic. A single teacher in the classroom is pushed into being an authority figure. Two teachers in a classroom are pushed into joint and sharing facilitation.

Batya: I was also glad to escape from the isolation of traditional instruction and from the anxiety it causes you, anxiety that strengthens the dictatorial facet of teaching.

Q.   And how is it to co-teach?

Batya: It's a lot of fun – fun to think together, to plan together, to draw conclusions together – much of it in front of the students in the classroom. Complete transparency. It had an immediate influence on the class and on the quality of the students' learning and work.

Ofra: They saw teachers, one of us religious, Batya, one of us secular, me – and we argued during the class right in front of them. And we didn't present the expected positions at all – Batya, a religious position, and I, a secular one. Our arguments went beyond the standard patterns and broke all the stereotypes. The students saw a fertile discussion, where the participants didn't entrench themselves in their own positions.

Batya: This year Ofra's on sabbatical, and I'm all alone. It's really hard for me.

Q.   Does co-teaching have a decided impact on the students?

Batya: The medium is the message, the method of teaching is the content of teaching, without doubt. Co-teaching created a different kind of classroom – open, flexible, active, involved, argumentative, and critical.

Ofra: The method of community of thinking itself is also a medium, which is a message. The fertile question shed new light on subjects that I had taught for years. The fertile question as well as the research questions took the commentary on books of the Bible in new directions. The community of thinking constantly invites surprises. The students investigate, and the teacher is condemned to a life of uncertainty.

Q.   The school and classroom regime is built on certainty. (Almost) everything is planned and anticipated. How is it to live in uncertainty?

Ofra: Where there is certainty, there is no creativity, and there's no joy. I discovered that I like the uncertainty of co-teaching in a community of thinking. I also discovered some unpleasant things that it was important to discover and that I could only have discovered through dialogical teaching in a community of thinking. For example, what interests me, and what I thought for years was interesting to the students as well, doesn't interest them. Only teaching that enables students to follow their own interest can reveal that. Otherwise you're trapped in self-deception. I discovered that what I assumed the students knew and understood they don't know and don't understand. For years I largely spoke over their heads, to myself. When you expect the students to write up a research project and not to repeat what is written in the textbooks or what was said in class, you discover their enormous lacks.

Batya: The students also live in self-deception. They do well in tests that demand of them to remember and recycle, and they think they're excellent students and smart people. One girl told me, and many other students repeated the same thing with variations: "In ordinary classes, I did well on tests with no problem. But here I couldn't fool the teacher or myself anymore. Here I had to learn in depth and develop my own ideas, to offer original interpretations."

Ofra: Students said things to me like: "With all due respect to Rashi (the most important medieval commentator on the Bible), that's his interpretation, and this is mine."

Batya: "And my commentary is better, because I know more than he did. He lived in the eleventh century, and I live today, in the twenty-first century."

Q.   Shouldn't we develop some modesty with regard to the cultural heritage and the great commentators?

Batya: We should, and we worked on that. We required the students to base their interpretations on the great commentators. We taught them to read "with compassion" – a reading that respects other interpretations and tries to understand why the commentator thought what he did. Many students fell in love with Rashi.

Ofra: And also with Martin Buber and Franz Rosenzweig and other interpreters of the Bible. Each of us made the students like the commentators we admire.

Q.   How was the division of labor?

Batya: Not just in the content. In everything. We met often to prepare the next lesson, and we held endless conversations on the Internet. A second teacher shows you how to consult, how to think together and learn together. She reins in your egocentricity, your desire to control the classroom.

Ofra: Two teachers in a classroom can also get to all the students. In a community of thinking, the students work in class, so it's important to get to them all and encourage them.

Batya: It was fun to invent fertile questions together.

Q.   Can you give an example of the fertile questions you invented?

Ofra: For example, we taught Genesis using the general question: "How do people make decisions?" Genesis is a book about making decisions – God, Abraham, Sara, Jacob, Joseph – they all make fateful decisions.

Batya: And some of them aren't understandable, or they're wild. For example, to leave your homeland, or to be willing to sacrifice your beloved only son, or to give your maidservant to your husband…. These aren't simple decisions, and they invite interpretation.

Ofra: The students asked interesting research questions. For example, do the men and women in Genesis have different patterns of decision-making and, if so, accordingly, does God's decision-making process indicate that "he" is a man or a woman? During the stage of initiation, the school psychologist gave a lecture on the unconscious gender dimensions of decision-making.

Batya: On Exodus we asked, "How do people go from slavery to freedom?" We thought that was a wonderful question, because it's what happens in Exodus and it's what happens all during life. But we didn't manage to get the students to share our enthusiasm for that question. After a couple of failed efforts to link up with it on their part, they said they would invent fertile questions, and they would choose them democratically. They invented four questions and chose: "How do you turn a group of slaves into a nation?" That question isn't very different from ours, but it was their question, and it sparked good thinking in the community. This year I'm working with my community of thinking on Exodus with the fertile question, "Who is a leader, and can anyone become a leader?" Moses and Pharaoh are two models of leaders. Moses appears to be the more successful model, because he liberates his people, and Pharaoh destroys his nation,

but when you examine Moses' leadership, you see that it's far from perfect. Moses is not a very independent leader. He's dependent. At every crossroads, when a leadership decision must be made, he turns to God in a panic.

Q. A religious teacher is shattering the myth of Moses the leader?

Batya: A religious teacher can be and should be critical, and Moses isn't a perfect leader. He's a human leader.

Q. Aren't the students running away from the field, taking the easy way out? I mean, instead of struggling with difficult Biblical Hebrew, they're dealing with all sorts of subjects that preoccupy us today – gender, decision-making, leadership, and so on – without any connection to the Biblical text?

Ofra: Not at all. The requirement is – and everyone knows it and agrees – to base every hypothesis and argument on the Bible. We didn't waive the requirement of reading the material. True, we didn't cover all the material, because we went deeply into certain issues and let every student develop his own interpretation, but we didn't allow anyone to run away from the Bible.

Batya: We didn't manage to "cover all the material," but we did manage to make the students like the Bible, to teach them to philosophize, to advance an argument, and to listen. Isn't that important?

Ofra: We taught them the difference between Midrash (homiletics) and commentary, and how to embellish a text and how to comment on it. Until now, other people wrote homiletics and commentary, and students memorized. We taught them to write homiletics and commentary by themselves and for themselves.

Q. Do you also teach ordinary classes?

Batya: For me there aren't any more ordinary classes. I implement components of community of thinking in my ordinary classes. For example, a lot less lecturing and a lot more dialogue. My lesson plans are guided by fertile questions and research questions. The assignments that I give are little research projects. In small classes we sit in a circle and discuss. This morning, for example, in one of my classes, we discussed whether God wanted Adam and Eve to eat from the tree of knowledge. Voices were raised!

Ofra: What's missing for me in a regular class is metacognition about the processes of thinking themselves. Communities of thinking are naturally reflective; questions about our teaching and learning arise all the time – how we think alone and in a team, what helps us learn and what doesn't, what it's important to know…. In a regular class that whole metacognitive stratum is absent, and I miss it a lot.

Q. What do students say about learning in a community of thinking?

Ofra: Usually they say that it demands a lot more work, but the work is interesting. That's a question that's repeated often. Students stay in the library, they study at home, and they pay other prices, but they say that it's interesting to them. That the time they devote to work in a community of thinking is longer, but it passes more quickly.

Batya: An intense group dynamic is formed that's found only in a community of thinking. The students get to know each other, and they often visit each other and even sleep over so they can work on the shared research project. There are all sorts of extra values in a community of thinking. If it weren't too bombastic, I'd say that teaching and studying in a community of thinking is education for humanity.

4.3   A Gamble That Pays Off

Gila Dror is an instructor in communities of thinking in literature, Bible, and history and a teacher trainer in the Branco Weiss school in Beit Shemesh, the middle school and the upper school with 1,200 students.

Q.   I remember a conversation we had 10 years ago where you explained rather convincingly to several teachers why it's hard for you to give up the traditional position of the teacher, the teacher who controls the class with the IRA pattern of teaching (teacher initiates, students respond, teacher assesses).

A.   True. It was very hard for me to give up the position of the authoritative teacher who controls everything during her class by supervisory teaching. Even after years of instruction in communities of learning, I was nostalgic for the big advantage of traditional teaching – control over the class. But, despite nostalgia for obedient and quiet classes (which I never had), I prefer classes that are a bit more anarchic, where teaching encourages questioning, carrying out research, and demonstrations of understanding that are expressed in concluding performances. I prefer teaching that transfers the initiative to the students in an intelligent way.

Q.   At the same time you also teach in a regular school, where you can satisfy your nostalgia for ordinary classes.

A.   The traditional school is in the town where I live, and it's within walking distance from my house. It's also a school attended by an affluent population, and it's easier to teach them. After 12 years of teaching in communities of thinking in a school where the classes are very heterogeneous, I let myself work part of my time under less demanding conditions… I wonder why I'm apologetic…

Q.   Did you go back to traditional teaching in the traditional school as if you'd never experienced communities of thinking?

A.   No, you don't get over teaching in a community of thinking very easily. I bring many elements of it into my traditional teaching and try to pass the initiative over to the students. I also try to push the teaching staff that I'm working with to experience teaching in a community of thinking. But so far they've been defensive. The teachers in that school, as in other schools, know that they're being evaluated by the principal, by the parents, and by the students on the basis of their ability to manage the class and maintain quiet. In traditional teaching the authoritative gaze of the teacher lands on every student, while in

a community of thinking, the students can avoid that gaze, and that's dangerous. I understand the teachers, and I don't pressure them to change their way of teaching. Teaching and learning in a community of thinking and any other progressive kind of education are demanding, and they can't be done at the initiative of a single teacher in her classroom. The whole school has to be structured for it. In the other school where I teach, the Branco Weiss school in Beit Shemesh, things are partly arranged for it comprehensively. The school supported – not as effectively as it should – the communities of thinking. Even then it's not simple. Communities of thinking are a risky gamble… but one that pays off.

Q. A risky gamble that pays off.

A. Yes, I remember wonderful communities of thinking that achieved peaks in teaching and learning. For example, there was an interdisciplinary community of thinking in an eleventh grade where the fertile question was: "Why do people do bad things?" The students struggled with that question using research questions that played on the fields of three disciplines: history, psychology, and literature. Some students dealt with the Holocaust, other students observed children during recess and asked where the violence and sexual harassment came from, and yet others dealt with different manifestations of human evil and tried to explain it.

Another fertile question that gave rise to infinite arguments and investigations was: "What makes people happy?" The whole world of the adolescent students' concepts of happiness was brought out in this community. Many students gradually changed their raw idea of happiness – "to be rich and famous" – for deeper and more subtle ideas.

Another fertile question, which I asked in a history class about the Middle Ages, was less successful. I asked something about wars, and the question didn't work; it didn't motivate a critical mass of students to ask, to investigate, and to argue. But the community did end with a fertile communal concluding performance: the students wrote a textbook about the Middle Ages. Every research team wrote a chapter. That book is in the school library and students use it. I remember the joint work on the book as an exciting experience. I'm sure that all the students who took an active part in planning, writing, and designing the book remember that performance as a significant experience.

Q. What makes some communities of thinking successful and others less so?

A. My most successful communities of thinking were interdisciplinary or, rather, multidisciplinary – some under my guidance and some in cooperation with teachers from other specialties. The viewpoints of different disciplines makes the research questions more fertile. Less successful communities of thinking have been in a single discipline – communities where the basic concepts of the discipline took a central place. People, especially young people, are more interested in ideas, themes, and narratives than in abstract technical concepts. In general, the literature curriculum is imprisoned too much in an outmoded critical approach, whereas in the university literary criticism takes place in a

richer perspective – the politics of identities, neo-Marxism, postmodernism, etc. Such perspectives make possible more vibrant communities of thinking.

Q.   What else do you need so that communities of thinking can flourish in a school?

A.   You need large physical spaces that are comfortable and quiet. Our schools are crowded and noisy. It's really a fantasy of mine to see children working in groups or alone in a comfortable, aesthetic environment.

You have to be careful about ritualizing the community of thinking, about a situation where the questions, the research, and the concluding performances become a ritual for the purpose of demonstration – children ostensibly ask, ostensibly do research, ostensibly understand, and they submit a project they've done in haste in order to impress and to get it over with. You have to preserve the authenticity of the thinking community, the true spirit of learning and investigation.

Q.   How do you do that?

A.   Surprisingly, to preserve the authentic spirit of the community, learning from inner motivation, you actually have to preserve the framework. A clear framework – practical guidance, logical rubrics, high standards – they are the scaffolding of authentic learning. A digital portfolio can help with that. When there's a clear framework, the students feel more secure to set out and get going.

But once again, the teacher can't maintain a community of thinking by herself. This is not a matter of a single subversive teacher. The whole school has to be set up for it. The involvement of the school principal is critical. She has to believe in this form of learning. She has to think that learning in a community of thinking is the foundation stone of the school and that other aims of the school, such as training to pass the matriculation exam, are secondary or less important educationally. This has costs that the school principal has to be aware of and ready to pay – it could be that average grades on examinations will fall, that there will be unbearable noise in the corridors, that the inspector won't be pleased, that the parents will grumble…. A principal that wants to go for communities of thinking or some variation of the third model has to have a very strong pedagogical backbone.

Q.   The teachers too.

A.   Mainly the teachers. Until the students internalize the framework of this kind of work, and even afterward, the teachers can expect lots of problems: loss of control of the classroom, complaints from the students ("We're not learning anything with this method" "We're working too hard with this method" "I'm the only one in my research team who's working"), too many students in the class, lack of good access to sources of information, lack of time to plan alone or with other teachers, being overburdened with work to check, lack of financial compensation for extra work, etc. Almost all the teachers I know fantasize about a different way of teaching, but they forget that traditional teaching is the most economical from the point of view of their effort and that of the students.

Q.   So why try to turn the traditional classroom into a community of thinking?

A.   Because traditional teaching and studying doesn't work. They are not only inefficient, they're also not ethical. It just isn't fair to require a student to sit all day for 5–7 hours and hear lessons that he didn't choose and that are mainly cut off from the questions that concern him. I think that coming generations will be shocked morally when we tell them how children were once forced to study. Students are not only bored in most of the lessons, but they also don't understand what's being taught to them. They drill and recycle for the tests, and they even succeed at them, but they don't understand. That's a cognitive and ethical scandal. We make culture, all the marvelous achievements of humanity, into something repulsive, a punishment. I'm not sure that teaching and learning in a community of thinking is the right recipe for making a positive connection between children and culture, but it's the right direction.

Q.   In another kind of school, on the third model, will children enjoy going to school?

A.   Not always, and that's a good thing. I love to teach. I chose education. I love students. I love the subjects that I teach. I love my colleagues, the other teachers. I get a salary – and I'm not always glad to go to school. A third model school won't be a country club. It had better not be a country club and be part of the entertainment factory that surrounds us. It will demand an effort and sometimes even suffering – but meaningful effort and suffering, effort and suffering for the sake of a goal that the students value. A third model school can restore to study and to the contents of culture the value they have lost in the traditional school and in our society's mass entertainment. It won't completely do away with the human urge to be lazy, to be entertained, to have fun – but it will offer a worthy alternative. That's something, isn't it?

4.4   No Room for Compromise

Dr. Avraham Frank is the principal of the Gevanim school in the center of the country, a middle school and an upper school with 300 students.

Q.   When I visited your school 12 years ago in order to present the rationale and the praxis of an Intel-Lect School and of teaching and learning in a community of thinking, you responded immediately and took your school into an expensive, demanding, and risky experiment. Why? What grabbed you about the idea?

A.   Before you came to our school to promote the idea of teaching and learning in a community of thinking, we had already implemented project-based teaching and learning in many classes in the school, where the students did various projects, mainly research, on subjects that interested them. Though we had achieved results, we felt a lack of a more structured approach anchored in a strong educational narrative. So we were ready for your visit. I remember very well the first lecture you gave to us. We invited students, teachers, and parents

to the auditorium, and you spoke about the atomic pictures of learning, teaching, mind, and the goal of teaching and learning and the method of teaching and learning in a community of thinking. Most of us felt then that this philosophy and praxis was tailor-made for us.

Q.   Until the moment you started to implement the idea of a community of thinking, you were a regular school principal occupied most of the time with operating and maintaining the school. After that you started writing articles and books about education, and then you retired from administration and got a doctorate. Your publications deepen the narrative of the third model and improve our practice.

A.   No doubt the encounter with the idea and the fact of the community of thinking sparked a process of systematic thinking about education in me and aroused an urge that I hadn't known before to express my thoughts in writing. That was perhaps one of the immediate advantages of absorbing the idea of the community of thinking in the school – the principal and teachers start to be interested in education. Teachers, so it is said, are professionals who aren't interested in their profession – in teaching, learning, motivation, assessment, etc. At best they're interested in the subject they teach. When we brought the communities of thinking into the school, the teachers started to show interest in various aspects of education and to see an alternative to the practice in the school. Suddenly the teachers' room was full of discussions about educational issues, and the teachers wanted to expand their knowledge of the field.

Inevitably, that happened to me too, because when you act in the ordinary way as a school principal, you don't need arguments and justifications, but when you make a change, a second-order change, you need good arguments to justify it to the teachers, the students, and the parents and also, mainly, to yourself.

Nevertheless, as I said, these ideas about a community of thinking fell upon very fertile soil. Even before we met I was convinced, as a teacher and principal, that the traditional school and instruction were ineffective and that we educators had a duty to invent an alternative. Not that I was very original in being convinced that we needed an alternative. Don't forget that our school is a kibbutz school where students from several kibbutzim study, and I myself was born and brought up on a kibbutz. From their first establishment about a century ago, the kibbutzim tried to establish alternative schools where significant learning took place. The main idea of those schools was called the themes method, where students from first to twelfth grade investigate various aspects of a central theme. So in our school we were entirely prepared to absorb the story and the framework of the community of thinking. By the way, in one of the communities of thinking in history that I facilitated in the eleventh grade, we dealt with the fertile question of why one idea is absorbed and spreads and why another idea – no less correct and true – isn't absorbed. The students investigated all sorts of ideas and found out how economic, sociological, and psychological conditions prepared a certain society for a certain idea; that is,

an idea is absorbed and has influence not because it is correct or true in some way, but because there are conditions for absorbing and circulating it. Of course, I don't mean to suggest that the idea of communities of thinking isn't correct and true….

Q.   You were a very committed school principal who tried to make his school an Intel-Lect School and the classes communities of thinking. Was your deep involvement necessary or should a principal observe the changes in his school and guide them from above?

A.   The effort to make the school into an Intel-Lect School and the classes into communities of learning is a very radical move in the reality of our schools and classes. The agenda of our education system in the past decade has been conservative and rigid – assessment, measurement, standards, accountability, outcomes, etc. – to improve our position in the international tables of international testing (PISA, TIMMS, and PIRLS) and in national tests. The change that we made in our school, therefore, was very subversive, and without the most intense involvement of the principal, it had no chance. When a school change is structural, a second-order change, the principal has to be very involved and support the teachers and their creative spirit.

Q.   You have trained teachers in facilitating communities of thinking, and you have taught history in communities of thinking.

A.   And I chose the most difficult classes. In some of the classes where traditional teaching ran into difficulties because of discipline problems with the students, I replaced the teacher and tried to solve the discipline problems by changing the rules of the game – I made the class into a community of thinking. In some classes that deep change opened up a new leaf for them, and most of the students began to study and investigate, and in others the change was less successful. So it's impossible to attribute the success, when there was success, to the authoritative figure of the principal. Success and failure are the result of many factors – students, teachers, parents, the school, etc.

Q.   Did the teachers follow you and make an effort to convert their classes into communities of thinking, or did you encounter open or latent opposition?

A.   As in most educational experiments, the beginning is usually a success. The leaders of the experiment – in this case instructors from the Branco Weiss Institute – worked in the school for the first three years, when we received a special budget allocation for that purpose. After three years the professional instructors and the budget allocations left, but the theory and practice of communities of thinking hadn't been absorbed in the teachers' consciousness and the regularities of the school, so the school didn't have the power to neutralize all the many pressures from the outside – the mandated curriculum, matriculation exams, the teachers' habits, and the competitive educational and social regime. In the end, only the best teachers continued to implement the idea in their classrooms, and they even improved it.

Q.   What, in your opinion, are the vital conditions for implementing the idea?

A.   The most general condition is to make communities of learning into the dominant pedagogical culture in schools. This would mean that the students inter-

nalize the idea that learning – involved, deep, significant learning – is their
business and that teachers internalize the idea that the purpose of their business
is to make learning like that possible and to encourage it. The school culture
and the community of thinking culture are contradictory and cannot be com-
bined, and they can't coexist. You have to make one culture prevail. Here
there's no room for toleration or compromise.

Q. In your opinion, what are the conditions external to the school that can make
possible the victory of a different educational culture?

A. The first condition is to give autonomy to the school. Our Ministry of Education
must trust the schools – the principals, teachers, the community of parents –
and allow them to chose and develop a pedagogy that suits them. In the existing
conditions, in which the policy of the Ministry of Education is to do even more
schooling and tighten the school regime, it's very hard to get out of the trap of
traditional education. As usual, the tail that wags the dog is the requirement
of matriculation exams. There should be only three matriculation exams:
in Hebrew, English, and mathematics. Most assessment should be left in the
hands of the school – by means of examinations, research projects, portfolios,
or other ways. Only under conditions of that kind can a school decide that it's
going for communities of thinking. By the way, I have almost no doubt that
if there were autonomy in the schools, most of the schools, at least most of the
good schools, would adopt some variant of the third model.

4.5   There Were Many Difficulties

Zohar Ben Shimol facilitates communities of thinking in the seventh to ninth grades
in the Gevanim school, in the center of the country, with 300 students in the middle
and upper schools.

Q. Tell me a little about the communities of thinking that you've facilitated so far.

A. I have good memories of some of the communities of thinking that I've led and
not such good memories about others. I very much liked the community of
thinking that we led in the seventh grade about the frontier issue in the history
of the United States and in general. The fertile question – I don't remember
exactly how I worded it – had to do with frontier societies, societies that live
near an alien and hostile space. We were studying the United States, the
conquest of the frontier from the east to the west, but we thought a lot about
ourselves as well, about Israeli society as a frontier society that's trying to
maintain a democratic, Western society that borders on a nondemocratic, Oriental
society. This was an extremely productive community of thinking. The con-
cluding performance, in which the students presented the American Wild West
in contrast to our Wild East, was very exciting.

Q. Some communities of thinking that you facilitated were less successful?

A. There were a lot of difficulties.

Q.   What caused them?

A.   Mainly the fact that we were an island in the school – an island of communities of thinking surrounded by a hostile sea of ordinary classes. The principal did support us in various ways, and the island gradually expanded and included other classrooms, but we didn't manage to create a critical mass that would overcome the traditional school culture and create a different one.

Q.   What else?

A.   Another problem arose because communities of thinking are suitable for students with a relatively high level of intelligence and motivation. Students who come to school with a strong cultural background and who are stimulated intellectually join the game of communities of thinking enthusiastically. In contrast, other students, the weaker ones, get lost when you expect them to study and conduct research on their own. They need a tighter regimen of study. I haven't researched this systematically, and I can't say for certain that communities of thinking are suitable for students of a certain kind, but that was my impression from the communities of thinking that I instructed.

Q.   What else?

A.   Another difficulty arose because communities of learning are very demanding for the teachers. A teacher controls the situation when he has a defined lesson plan and he knows what to expect. A traditional class is run under conditions of relative certainty – the teacher controls the situation, and there are no surprises. In contrast, a teacher who sets a student in motion with a fertile question, initiation, and research questions doesn't know what to expect, where the class is going. He has to be able to act under conditions of partial control. Experienced teachers, with an authoritative presence, who are very familiar with their field of study and aren't afraid to say "I don't know" can feel good in that kind of environment. I've seen teachers who were born for communities of thinking, and I've seen teachers who couldn't manage in them. Some of them were really stressed out and went back happily to good old teaching.

Q.   What else?

A.   Another problem arose because communities of thinking are very demanding of students. Traditional classes don't demand very much of students – mainly to remember what the teachers said and what's in the textbooks and to repeat it for tests. Students of average intelligence and proper student behavior manage in school without much effort. In contrast, communities of thinking require the students to study seriously – to ask a question, to do research, to write a report, and to rewrite it in light of the comments of their colleagues and teachers. Students aren't used to that, and some of them rebel and refuse to cooperate. It's very frustrating, because communities of thinking are mainly an effort to stimulate learning on the basis of inner motivation, on the basis of the students' real interest, and students reject it and want to go back to the alienating and superficial learning they were used to: cut and paste.

Q.   So why bother with communities of learning?

A.   Maybe because of those peak moments when a few students learned, investigated, and produced excellent concluding performances. Those students will

never forget that experience of learning, and they'll want to repeat it. Maybe under certain conditions all or most of the students can have that kind of learning experience. We mustn't give up trying or give into the gravitational force of the school that drives every effort to teach better back to the scholastic teaching that everyone knows is neither effective nor educational.

4.6   A Rare State of Mind

Ido Argaman is the principal of the Mevuot Hanegev school in the south of the country, a middle school and upper school with 750 students.

Q.   As a school principal who, like all school principals, is under budgetary pressure and the pressure of sometimes contradictory expectations from the Ministry of Education, the local authorities, teachers, students, and parents, why did you take on such an expensive, demanding, and risky project?

A.   I thought at the time, just as I think today, that the idea of an Intel-Lect School and community of thinking has a convincing theoretical rationale and an effective educational praxis. A lot of things appealed to me in this program, but it could be that the thing that appealed the most was the concept of understanding. I thought then and still think that the goal of education, at least the cognitive goal, has to be a state of mind that is rather rare in traditional schools. At best we teach students to remember, which leads to forgetfulness (let's hope not before the test). Students tend to forget because they don't understand. Students who understand don't forget, and if they do forget, they can easily reconstruct the forgotten content. So understanding is good both for life and also for examinations, and the risk that I took in teaching and learning for understanding wasn't so great. As for the financial cost of the project, I found that it wasn't very expensive and that I could find money for it within the school budget and even get additional funding from the local council, which was encouraging innovation in education.

Q.   Did all the classes in your school become communities of thinking or just some of them?

A.   All the classes were influenced by communities of thinking and took various parts of them, for example, the pedagogy of questioning and the concluding performance and other things. But not all the classes underwent full conversion to communities of thinking. We built a gradual model, according to which every student would experience one community of thinking in some subject and parts of it in other classes. The idea of understanding performances was implemented in all the classes. In fact, it became an integral part of teaching and study in our school.

Q.   You're a principal who defines himself as a pedagogical principal, that is, a principal who's deeply involved in the processes of teaching and learning in his school. How can a single principal be involved in so many classes?

A.   He can't, and for budgetary reasons, he can't hire external pedagogical advisers from some college or institute. So we developed a model of internal pedagogical advisers. Our advisers for teaching and learning in a community of thinking and in study for understanding are teachers in the school who have a special interest in pedagogy and who have received special training. These advisory teachers enter the classes of other teachers and guide them. It works well, though not without problems. We have a professional core of committed teachers who carry along the other teachers. Without that core, the school might go back to its former situation. You have to keep that spring of a different kind of teaching and learning, not scholastic, even anti-scholastic, under constant tension. Maybe in a few years this philosophy and practice will be established, and we'll have to invest less energy in maintaining our revolution in teaching and learning.

Q.   A lot of pressure to restore the school to the old ways comes from the matriculation exams. How do you manage with that?

A.   There's no contradiction between teaching and learning for understanding in a community of thinking and matriculation exams, but there certainly isn't full harmony. Matriculation exams demand a lot of superficial knowledge; we demand deep knowledge. At the same time, when the students understand the content of what they're studying, that is, when they can do an understanding performance on it and with it, they easily do well on matriculation exams. The matriculation exams mainly pressure the eleventh and twelfth grades. In the lower classes, we can have communities of thinking without any threat of matriculation exams. In the upper classes we withdraw partially to teaching and learning for the test, but we try to do it as little as possible and only with students who have more trouble with investigative, independent learning.

Q.   Along with the pedagogical revolution, there's also a technological revolution: every teacher and student has a portable computer, and there's a smart blackboard in every classroom.

A.   The technological revolution made the pedagogical revolution possible. A large part of learning takes places on the network or in what we call the virtual campus. The students put research questions, hypotheses, and research plans on the network, and the teachers and other students respond. Enabling instruction and active learning requires a lot of teacher-student time. The network makes it possible for us to do that.

Q.   How do the students respond to your pedagogical creativity and that of the teachers?

A.   The response isn't unequivocal, but there are clear tendencies. At first the students were glad to get "toys," but then they discovered that a lot of work came along with them. Studying in a community of thinking is hard. We got students used to sitting passively in class and paying attention – in the best case – to the teacher's lecture and taking notes. It isn't always interesting, but it doesn't demand special effort. Investigative learning, where the student asks a serious question, tries to answer it, and presents his findings to the community, requires

involvement and investment. But after a year or two, the students understood that those were the rules of the game in our school, and they accepted it and even became addicted to it. Most of them are no longer satisfied with passive, alienated study. They want to act – to ask, to seek information, to process information, to discover knowledge. Perhaps – and then I'll finally be able to retire as school principal – they'll get to the point of no return after which scholastic study won't be an option.

4.7 Arab Spring in Education

Muhammed Zaed is a teacher of Islam in the Aljazali junior high school with 750 students in Umm al-Fahm, a large Arab city in the center of the country.

Q. What motivated you to implement the idea of teaching and learning in a community of thinking in your school?
A. I came to the idea from your course at the Al-Quasemi Academy (an Islamic teachers' college in Baqa al-Gharbiya), where you taught about the framework and in the framework of the community of thinking. You asked fertile questions about Islam and modern life, and we asked research questions and thought about them. That experience shook me up.
Q. Why?
A. Not only and not mainly because you asked critical questions about Islam – about its relation to freedom, to women, to other cultures, etc. – but because that method of teaching, which encourages students to think by themselves, to ask questions, to cast doubts, was the method I was looking for.
Q. Please explain.
A. I attended a traditional school in Baqa al-Gharbiya (an Arab city in the center of the country). A traditional school in Arab society is a lot more traditional than in Western societies – it's a very rigid kind of school where the teacher is an authority figure standing at the blackboard and dictating sentences that the students have to memorize and regurgitate in classes and on tests. And when I say that the teacher is an authority figure, that includes corporal punishment.
Q. Did you get beaten?
A. Once, and that was a painful and formative experience. It happened at the end of the school year in 1989, when I was in seventh grade. I think that to this day, 24 years afterward, I'm posttraumatic from that event. Not because of the physical pain, but because of the humiliation, which was double. I was humiliated because of the beating and because the beating wasn't justified. I was a quiet, diligent pupil, but the teacher thought mistakenly that I was involved in some event, and he hit me with a stick. I didn't realize that his blows still hurt me until I became a teacher myself in a Bedouin city in the south of the country. In that school the teachers also tyrannized their classes, sometimes with corporal punishment. The teachers were judged by the discipline they imposed in their

classrooms. I also wanted to be an outstanding teacher, and once when a student was making trouble, I picked up a stick to hit him. I waved the stick in the air and burst out crying. Then I told the astonished class about the blows I had received from a teacher when I was a child. I swore to the students that I'd never raise a hand against them, and from now on we'd learn in a different way, without threats and without intimidation. At that moment I decided that I had to find or maybe even invent a different kind of teaching.

Q.   What did you do?

A.   That very day I decided to change the pattern of my teaching, and I shared my goal, thoughts, and feelings with the students. It wasn't easy for me and for them. Together we underwent a deep mental change, a real conversion. From home, from the tribe, and from school, the students only knew one paradigm, and they thought it was the only possibility. They admired and respected tough authority. I also grew up on that paradigm. We all had to be reeducated.

At the same time I started reading educational literature intensively while I was looking for an alternative system of education. I registered for a master's degree in education at the Al-Quasemi Academy, and when I got to your course, where we studied in a communities of thinking, I was completely prepared. The third model met me at the right moment. I discarded the violent, authoritative Arab version of the first model long ago. I freed myself from the image of the good teacher as an authoritative teacher, which many Arab teachers have in their minds, and I set out on a new path.

Q.   You took my course, "Teaching and Learning in a Community of Thinking," and while you were taking it, you applied the idea in your school.

A.   I was so hungry for a new kind of teaching that I couldn't wait – maybe I should have waited a little – and I ran to my school with the model.

Q.   What did you do?

A.   I went to the principal and told him that I wanted to teach differently, that I wanted to make my classes into communities of thinking. I explained what it was to him, and he said that he didn't fully understand it, but he trusted me. If I wanted to teach differently, he would depend on me and, more than that, he wanted to help me and become my partner. He said I could teach our excellent classes, because it would be easier for me to work with those students.

Q.   You wanted to change the paradigm of instruction – and in the most sensitive subject you teach, Islam.

A.   Because the area is so sensitive, it's easy to find good questions – undermining, rich, charged, etc. questions. Usually, maybe always, the teaching of Islam is indoctrination, brainwashing with Islamic doctrines. Islamic culture was in the forefront of humanity until the thirteenth century and was rich with critical and creative thinking. Today it can't tolerate critical thinking. Without cherishing critical and creative thinking, Islam would never have made the achievements it made in the past, in philosophy, science, art, administration, and technology. The subject really is sensitive, and the school principal was also somewhat put off later on and asked me to modify my questions and give a test. The students also were afraid to express their thoughts – in every area, but especially in the area of religion.

Q. What did you ask the students?

A. Questions like the one you asked us at the academy, because it's the most urgent question of all for Islam and for Muslims today: "Is the Muslim religion appropriate for the modern world, or does it oppose it?" The students in the seventh, eighth, and ninth grades discussed that question, and then they asked research questions about the attitude of Islam and the attitude of modernity toward children, women, thinking, religion, etc. One research team even asked directly, "Does God exist?" And it considered arguments from the viewpoint of religion and from the viewpoint of modern secularism.

Q. Aren't you playing with fire?

A. I'm not playing with fire, because I believe in Islam with all my soul, and I know that it isn't afraid of difficult questions, even questions about the existence of God. Questions like that were asked in the history of Islam, and it was capable of dealing with them and being strengthened by them. Critical thinking is an integral part of Islam although, most regrettably, it isn't an integral part of the Muslims' way of thinking today. For example, in Arabic we make a distinction between *tafkir* (thinking) and *tafkor* (thinking about thinking, reflective thought, critical thought). The term *tafkor* appears 35 times in the Koran, but the word *tafkir* doesn't appear even once. What does that mean? It means that the Koran invites believers to apply critical thought in order to reach the truth.

Q. Still, the principal was a little reluctant and so were the students, and we haven't mentioned the parents and the leaders of Umm al-Fahm, which is the most religious Arab city in Israel.

A. Maybe I started off too enthusiastically and made a frontal attack on the common sense and taken-for-granted beliefs of the students and their parents. You have to move forward more slowly. There's got to be an intermediate stage. Today I think that if a teacher wants to make a class in an Arab school into a community of thinking, in the first year he has to preserve the traditional structure of the class and soften it gradually – to ask questions that don't have a "right" answer, to expand the discussion part of the class at the expense of lecturing, to invite the students to criticize the words of the teacher and of other authorities, to give research projects instead of tests, to evaluate the research projects according to their understanding performances, etc. Only after a year like that of an open traditional classroom is it possible to break things down and work in a community of thinking. The transition from the first to the third model has to be done gradually and with great sensitivity.

Q. That's the lesson you learned last year. What are you doing this year?

A. This year I did start an intermediate stage, though a bit differently. In the first year I didn't include the students in the process – I entered the classroom with a fertile question, I initiated the students to it, I had them ask research questions, etc. This year I included them in the process. I told them that the kind of class they were used to wasn't the only possible way of studying, and there were other kinds of classes. I told them about the idea of the Intel-Lect School and the community of thinking, and I asked them what they thought about it and whether they'd like to try it out.

Q.   How did they respond?

A.   Enthusiastically. These are the outstanding students, who are hungry for a different way of learning, challenging learning. They feel that the school is spoiling their joy in learning. They want to do things differently: to ask, to investigate, to create, to present their insights and discoveries. After years of oppression, they're a little afraid to think for themselves, but they're thirsty for it. I told them, "criticize me, criticize your books, try to ask what's not correct in what the books and I claim." At first they responded with astonishment, but then they started to think and criticize, and I encouraged them: "Excellent; don't be afraid; what isn't right about what I said?"

Q.   An educational revolution.

A.   We need an Arab spring in education, not just in society. And there's a connection between those two springs, the political and the pedagogical. In both of them, adults and young people discovered it was possible to do things differently, that it's possible to live in freedom, to think, to criticize, to create, to be a complete human being.

Q.   Do the teachers also need an educational spring?

A.   First of all the teachers. The Arab teacher is used to receiving instructions and following them. He also imposes instructions on his students. If we want a different kind of teaching and learning, if we want a different kind of society, we need teachers of a new kind – teachers who can think independently, teachers who express independent opinions in class and encourage the students to do the same.

Q.   How do the teachers in your school respond to your experiment?

A.   Some of them are worried and others are sympathetic. Most of them tell me: "It's not hard to succeed in your classes of excellent students. Let's see you create a community of thinking in ordinary classes." That, in fact, is my next challenge. I have to show that the approach works both in the excellent classes and in the ordinary ones. At this time I'm doing research on the subject – my master's dissertation, which examines the process of learning in my communities of thinking. Using qualitative and quantitative methods, I'm seeing whether good learning takes place in the communities of thinking – learning that is involvement in the process, task involvement, and understanding in the product. In the aspect of involvement, I examine the quality and intensity of motivation, and in the aspect of understanding, I examine the quality and quantity of understanding performances. My control group is the traditional classes. My hypothesis is that good learning does take place in the communities of thinking. I don't really need research to be sure of that.

4.8   Freedom to Teach

Iris Tesler is the director of training for the teaching staff in the Israel Prison Service.

Q.   Communities of thinking in the education centers of prisons? That's surprising. How did you get involved in education in the prison service?

A. For nine years I was a literature teacher in a traditional school. I felt that, like the students, I was locked in a prison, teaching the same curriculum every year for the same examinations – I looked for a place where I'd have more freedom to express myself in teaching, and I found it in prison.

Q. You found freedom in prison?

A. Yes. The prison education system is more autonomous, perhaps because the prisoners are not as important to the state as the normative citizens and their kids. So here's another paradox: the less a certain population interests the state, the less it intervenes in its education and, thus, allows teachers to educate. And the more important a certain population is to the state, the more it intervenes in its education and prevents the teachers from educating.

Q. Can you tell me something about the prison schools?

A. There are more than 10,000 prisoners of various kinds in Israeli prisons. About a third of them study in two complementary educational systems: formal and informal education. The main purpose of the prison education system is to give the prisoner attitudes, norms, habits, information, and skills that will help him fit into society after his release. The prisoners come to the education system out of choice, and what they get from it depends on their wishes. Most of the students undergo a remedial experience in our education system, after negative experience in school as children and adolescents. The prisoners get education according to their level – some of them learn to read and write, and some of them study for national examinations that will enable them to acquire a profession. Some of the teaching staff are prisoners with appropriate skills. It goes without saying that teaching in the prison education centers requires special sensitivity and skill. The teachers make an effort to teach every prisoner according to his situation. More than 70 % of the prisoners suffer not only from various learning disabilities (the connection between learning disabilities and crime has been proven) but also from a very difficult past and painful experiences. Most of the education centers in the prisons are equipped with classrooms, computers, and libraries. The framework of communities of thinking is in operation in several education centers, and it is regarded by the prison education system as an especially effective educational framework.

Q. The education system is voluntary – only the prisoners who want to attend come to it; there's teaching by colleagues – prisoners teach prisoners; instruction is adapted to the learner's needs – the teachers teach every prisoner according to his situation. If only our state education system were like that!

A. Now you understand why I went from one education system to another!

Q. In prisons (as in schools) there are conflicting logics: the logic of punishment and the logic of rehabilitation. Your education system reflects the logic of rehabilitation.

A. Certainly. Our purpose is to send the prisoner back to proper functioning in free society. The educated person that guides our education system is a person who is able to act constructively outside of the walls of the prison, to contribute to society and to himself.

Q.   More than 10 years ago, you came to a training course for teachers in communities of thinking, and you decided to try to apply it in your work in the prisons.

A.   Correct. After two years of teaching in a prison, I decided to look for new ideas. I felt that our teaching systems in the prison service weren't effective enough. The prisoners had trouble remaining attentive with frontal education, and they also had problems with individual study. I took a short leave without pay and started wandering among educational centers in Israel. Once I visited the Branco Weiss school in Beit Shemesh, and the teachers there suggested that I should join a training course for teaching and learning in a community of thinking. I took part, and I was very surprised. I didn't imagine that our centralized and conservative educational system allowed for educational experiments like that. Then I went to a prison – the Ma'asiyahu Prison in Ramle – and I told the director of the education center there that I had to try it.

Q.   What was special about Ma'asiyahu Prison?

A.   The prisoners there are drug-free. There are all kinds of prisoners there – from those condemned for life to white-collar criminals – but no addicts, and that means you can do educational work there.

Q.   So what did you do?

A.   I conducted an experiment. I took 15 prisoners on the literacy level of the upper classes of elementary school, I asked them a fertile question, and we started to work.

Q.   What did you ask them?

A.   I wanted to have them discuss the meaning of life, but not in the metaphysical sense, but in the sense of, "What's a meaningful life? A life that's worth living?" A life it was worth getting out of prison for. The discussion about the meaning of life began in class, and it concentrated on competition – was it useful or damaging to life? From that discussion I produced the fertile question: "Is competition useful or damaging to life?" I did an initiation, the prisoners asked research questions, and they did a concluding performance.

Q.   What was the concluding performance?

A.   The prisoners prepared a sports day for the whole prison and ran it. They checked on what was positive competition – competition that gave motivation to individuals and groups to fulfill their abilities, to excel, but without harming other individuals and groups, beyond the disappointment of loss. The fertile question and the research questions were a bit forgotten that day, but it was worth sacrificing them for the true victory, to see the prisoners produce an exciting day for the whole prison after careful planning and with cooperation.

Q.   What happened after that?

A.   After that experiment I said to myself that now I was going to do it on a large scale. I gathered some teachers and taught them how to work with a community of thinking. They experienced quite a few difficulties, but they were pleased. Afterward, we thought about how we could make the education center of Ma'asiyahu Prison into a center that works on the basis of the principles of communities of thinking, communities of thinking for all the prisoners, on every level.

Q. Even illiterate prisoners?

A. Certainly. A group of illiterate prisoners did some wonderful learning about the fertile question, "Can protection of nature and development go together?" At that time no one was talking about sustainability in Israel, the way everybody talks about it today. In that community of thinking – prisoners who couldn't read or write – they anticipated the whole environmental discourse that's going on today. The prisoners heard lectures from academic experts and from the Society for the Protection of Nature. They listened and argued. I got special permission, and we left the prison for tours of the country. We spent a special day with the national water company, and they explained the problems of water in the country. The subject of water interested the participants, and everyone investigated the water situation in the area he came from and where he hoped to return.

Q. What was the concluding performance?

A. The prisoners prepared a national campaign for saving water. We brought in experts in publicity, and they explained to them how to prepare a campaign and reach the target audience. We displayed the results of that campaign – pamphlets, posters, and slogans – at an exposition in the Azrieli Towers in Tel Aviv at a conference of the prison education centers.

Q. The prisoners thought about how to save the environment of the society who put them in jail.

A. That's just the added value of communities of thinking in our context – they remove the prisoners from their constant concern with themselves, with their troubles, with their complaints, and fantasies. They start to deal with normal issues that concern the entire society, and they get involved with it. By the way, the prisoners learned to read and write while they were involved in the project.

Q. I assume the prisoners didn't see the exhibition at the Azrieli Towers.

A. True, but they exhibited it at the education center the week before. You should have seen them…. Like grooms at their weddings…. Afterward they themselves suggested a fertile question: "What is love?" The question caught on easily. We saw movies, we listened to psychologists, we investigated…. The prisoners did a survey in the prison; they went around with a camera and a sound recorder and interviewed prisoners and guards, even the director of the prison. They all told them what love was, and they tried to analyze the answers and get to some insights. We also had a community of thinking on freedom and respect – two things that are taken away from prisoners.

Q. What happened after the big conference at the Azrieli Towers?

A. After the conference of education centers in Tel Aviv, all the educators of the prison system heard about the idea of communities of thinking, and I started to train teachers from the other education centers in teaching in that framework. It ran for a few years in the prison system education centers. Then I was promoted to another job, and there was a certain fatigue. Now there's a new generation of young teachers who have heard about the good old days of teaching and learning in communities of thinking, and they'd like to renew them. I support them from above.

Q.   Why?

A.   Because I think it's a framework that suits us very well. We don't have any pressure to cover the material, and there are no national or international examinations. We have freedom and time to improvise in teaching and to get into questions that interest us. This framework respects the students a lot and enables them to experience success – in his own way the student goes deeply into a subject that speaks to him, he teaches others, he presents a concluding performance…. This framework leaves room for everyone and also ties together the community of thinkers. You have to see a whole prison dealing with the same question…. It's a true pedagogical poem. By the way, one of the communities of thinking received a prize from the Ministry of Education. The prisoners attended a special conference where they presented their performances. They received a certificate and a prize and returned to prison to show it to everyone. Can you imagine what an education prize means to a prisoner?

4.9   A Hard, Dark, and Frightening World

Dr. Moshe Shner, a lecturer at the Oranim Teachers' College in the north of the country, facilitated a community of thinking on the Internet on the subject of the Holocaust.

Q.   Your work with communities of thinking was exceptional. It was on the Internet and spanned several continents. Tell me about it briefly.

A.   The project that I ran was called the Book Sharing Project, and it was run according to the community of thinking method and with its inspiration. The project began in 1997 at the Ghetto Fighters Museum in Kibbutz Lohamei Hagetaot [Ghetto Fighters Kibbutz], and involved the GFM educators and teachers from Israeli and American schools who were ready to explore new ways of teaching a complex subject of the Holocaust. During the first year, the project included a single community of thinking comprised of junior high school students in Israel and in a school in New Jersey. In the second year, it included three communities, and in the third year, seven communities. At its peak it included 40 communities with students from 80 schools – 40 in Israel and 40 in the United States and Canada. The communities dealt with shared questions – fertile questions and research questions – in the field of Holocaust studies, and there were concluding performances that included research, reading diaries, art, and more.

Q.   What were the questions that the communities dealt with?

A.   Some of the communities of thinking were intended for junior high school and some for high school. In the junior high schools, the title was "Children of the World Learn About Children," and there we asked two very general, essential questions: (1) How did children cope with the Holocaust? (2) How do children deal with the memory of the Holocaust today?

In the upper school the title of the project was, "Is This a Man?" It referred, of course, to the book by Primo Levi, *If This is a Man,* and here the main question also was very general: "How did people deal with a situation of extreme distress?"

These general questions were divided up into a great many research questions that the students from the schools in Israel and the United States investigated jointly.

Q. What was the outcome of this process?

A. First of all, and mainly, the process itself. The international communities read the relevant literature and discussed it on the Internet. In some cases they met face to face in the wake of the Internet meetings, with great interest and depth. They wrote reading journals, sent them to each other, and exchanged thoughts and opinions. They read texts and connected them to their own inner world by means of personal and group interpretations. During the process and at the end, they created physical and virtual presentations and sent them to each other by mail and by the Internet. This was a sweeping international dialogue.

Q. The Holocaust is probably the most charged historical topic there is, certainly for the nations that were involved in it as murders, accomplices, witnesses, and survivors. You don't have to make a big effort to find fertile questions in that field.

A. True, the Holocaust provides comfortable ground for uncomfortable questions, challenging, connected, charged, etc. questions. That is to say, fertile questions. The questions that it raises fall into two basic groups: historical questions about the past and current questions that touch upon what should be learned today from the Holocaust, which took place, by the way, not so long ago. The projects, like my own research, intentionally avoided dealing with the world of the murderers – with which wide-ranging research literature has dealt – but with the world of the victims. Evil is a fascinating subject and has attracted many researchers, but the world of the victims is difficult, dark, and frightening, and that's where the Holocaust lives. Therefore, the questions – both the fertile questions and the research questions – dealt with the way children and adults dealt with the horrible conditions of life that were imposed on them.

As I said, we didn't deal only with the past, but also, and perhaps mainly, with the influence of the past on our world here – on our understanding of humanity, on Western culture, on our ability to educate in a world after the Holocaust. Therefore, the general question was, "Who is man in the world after Auschwitz?"

Q. Is the framework of teaching and learning in a community of thinking appropriate to teaching a subject as complex and sensitive as the Holocaust?

A. Because the subject is so complex and sensitive, the framework of the community of thinking is appropriate for dealing with it. The rapid growth of communities of thinking in the framework of the Book Sharing Project is an indication of that. The method of the community of thinking was very effective in developing understanding and insight into the questions we were dealing with. It turned out that during and after the process, the texts – especially the

texts that were intended for this – were extremely appropriate for systematic communal treatment. In the framework of communities of thinking, they became significant, challenging, and very touching. Traditional teaching wouldn't have succeeded in doing this.

Q.   Is the medium of the Internet appropriate for running a community of thinking?

A.   Our experience shows that an Internet community of thinking works effectively if it is constructed properly – with a fertile question, research questions, and concluding performances – meaning that there is someone facilitating the community with skill. When conditions are appropriate for the existence of an Internet community of thinking, it works well and becomes a significant pedagogical framework.

Q.   Did a trans-Atlantic community of thinking have special advantages?

A.   Certainly. International communities of thinking in which students from different countries take part raise special questions and answers. The multiculturalism contributed to varying and deepening thought and conversation on the various subjects. There was the problem of language – the meetings took place in English, and the students from Israel had some difficulty. But along the way, because of their involvement in the conversations, their English improved a lot.

Q.   What were the main difficulties?

A.   The main difficulty wasn't pedagogical or methodological, but financial. An Internet community of thinking in one, two, or more countries requires financial support.

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