EDUCATIONAL LEADERSHIP
Volume **58** Number **3** November 2000

The Science of Learning

Communities of Thinking

Yoram Harpaz and Adam Lefstein

Twelve Israeli schools created communities of thinking to explore how a pedagogy based on questioning can transform teaching and learning.

> John Dewey . . . asked a class, "What would you find if you dug a hole in the earth?" Getting no response, he repeated the question; again he obtained nothing but silence. The teacher chided Dr. Dewey, "You're asking the wrong question." Turning to the class, she asked, "What is the state of the center of the earth?" The class replied in unison, "Igneous fusion." (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956, p. 29)

The ability to pose questions to understand ourselves and our world is at the heart of what it means to be human. Unfortunately, this essential human trait is distorted in many schools by what we term an "answering pedagogy."

In an answering pedagogy, answers largely eclipse the questions. Knowledgeable teachers ask the ignorant students questions primarily in the form of an examination. In this context, teachers often use questions to exercise control over the classroom. These questions are predictable and rarely relate to deliberation or thinking, except in the narrow sense of recall. Questions of this nature are distortions of authentic questioning that occurs outside of school.

What is the nature of questioning, and what is its potential as a base for a powerful questioning pedagogy? We are attempting to explore these questions in Communities of Thinking, a K–12 school reform model that the Branco Weiss Institute for the Development of Thinking is implementing in a dozen Israeli schools.

The Nature of Questioning

Authentic questioning has some paradoxical characteristics that suggest its potentially powerful, yet problematic, role in pedagogy.

Questioning is a creative activity. The answering pedagogy is based on the belief that questions are superfluous, unimpressive, and sometimes annoying. On the contrary, however, questioning is a creative activity—maybe even the epitome of human creativity. The ability to ask questions is a human invention that allows us to use creativity and imagination to see beyond the given and to search for missing

information, physical reasons, and human purposes that will complete and explain the given.

Questioning is a special elaboration of previous knowledge. In an answering pedagogy, the ignorant ask the questions. Thus, questions indicate lack of understanding, incomplete knowledge, weakness of mind or of character, and sometimes even ill will—for example, a perceived desire to bother the teacher, disturb the flow of his or her lesson, or expose his or her ignorance. Clever students have answers; lazy students have questions.

In a questioning pedagogy, good questions do not indicate deficiency; rather, they reveal involvement in and a deep understanding of the subject. Good questions indicate an active, critical, and creative attitude toward knowledge. The questioner is knowledgeable, not ignorant.

Questioning awakens motivation. The answering pedagogy is comfortable or, at least, nonthreatening. It tends to create a climate in which students, and often teachers, are neither enthusiastic about their studies nor particularly bothered by them (Goodlad, 1984). Constructivist theory explains this state of mind as the direct result of the answering pedagogy: It does not threaten our basic schemes. People tend not to ask big questions about the world because such questioning undermines our schemes and upsets the cognitive equilibrium to which we aspire—a state in which experience may be assimilated by mental schemes without difficulty. Most people tend to avoid the loss of equilibrium because it creates distress.

In contrast, authentic questioning may be a source of energy for investigation. Striving for renewed equilibrium—for an acceptable answer or solution—motivates human learning. Paradoxically, the craving for equilibrium that can prevent questioning can also encourage a struggle with questions and may lead to powerful learning.

Questioning fashions the answer. The gap between a question and an answer is not as great as might be assumed. The answer to a question is embedded inchoately in the question itself. The concepts of the question and the suppositions concealed in them shape the answer's possibilities. For example, when we ask "Where does Mark live?" in the context of an everyday conversation, the question dictates to a large extent the appropriate answer. The question presupposes that people have addresses that let others find them. Thus, within the context in which the question was asked, "Mark lives at 5 Willow Street" would be a more appropriate answer than "Man (or Mark) lives within himself." The question is not only an expression of previous knowledge, but also sets the boundaries within which new knowledge is possible.

The Questioning Atmosphere

Questioning involves an ability to transcend given information, an understanding of knowledge, and a mental willingness to undermine and rebuild existing knowledge structures and to set up the conceptual framework in which to answer the question. Learning and teaching must focus on questioning rather than on producing correct answers. Such learning and teaching must be adapted to the basic characteristics of questioning and all that they imply. They must

- create an educational atmosphere that enables and encourages creativity through respect for learners' autonomy and questions;
- facilitate the acquisition of knowledge in a way that will lead to understanding (for example, by questioning and other flexible thinking performances);
- undermine learners' cognitive constructs to motivate learning; and
- bind knowledge to questioning to show how knowledge is conceptually and motivationally determined by the questions that preceded it and made it possible.

A Community of Thinking

Five years ago, the Branco Weiss Institute for the Development of Thinking in Jerusalem, Israel, launched Communities of Thinking, a holistic, school-reform program motivated, in part, by the issues discussed above.

We organize teaching and learning in a community of thinking into three stages: the fertile question stage, the research stage, and the concluding performance stage. In the *fertile question stage*, the teachers—whom we call facilitators—pose a fertile question that stimulates and motivates the students—the learners—to engage in a problem at the heart of the studied discipline. The question is accompanied by initiation into the subject matter: background, basic concepts, disputed issues, central sources, and research methods. The fertile question has six characteristics:

An open question. A question that in principle has no one definitive answer; rather, it has several different and competing possible answers.

An undermining question. A question that undermines the learners' basic assumptions, casts doubt on the self-evident or commonsensical, uncovers basic conflicts lacking a simple solution, and requires the critical consideration of origins.

A rich question. A question that necessitates grappling with rich content that is indispensable to understanding humanity and the world around us. Students cannot answer this question without careful and lengthy research; such research tends to break the question into subquestions.

A connected question. A question relevant to the learners, the society in which they live, and the discipline and field they are studying.

A charged question. A question with an ethical dimension. Such questions are charged with emotional, social, and political implications that potentially motivate inquiry and learning.

A practical question. A question that can be researched in the context of the learners, facilitators, and school facilities and from which research questions may be derived. (Some examples of fertile questions and the subjects they address are shown on page 56.)

In the *research stage* the community of thinking undertakes cooperative research of the fertile question. Learners divide into teams that pose and investigate research questions—subquestions that are derived from the fertile question. Each team researches the question that most interests them. Learners pose hypotheses, gather information, interpret data, and draw conclusions in accordance with the scientific procedures customary in the discipline being studied. The facilitators support the learners' research by continuing to expose them to the context of the fertile question, teaching research skills, creating situations for productive team interaction, and coaching the teams individually. During the research stage, the learners experience a communal learning process common in academia and information-oriented companies: Research teams facilitate one another's learning (reciprocal teaching), share ideas and dilemmas, and solve problems together.

In the *concluding performance stage,* each research team presents its conclusions in a performance. Concluding performances take many forms, including research papers, three-dimensional models, group discussions, computer presentations, dramatic skits, and exhibitions. The community as a whole also engages in a communal performance that synthesizes each team's findings into a comprehensive exploration of the fertile question. Ultimately, the learners are encouraged to apply their new knowledge in meaningful ways both in and out of school.

The learning process in the community of thinking is based on cycles of learning in research teams and discussions within the whole classroom community. Evaluation of the learners' work is based on feedback given to the learners at various crossroads in their work, after the facilitators and learners together have developed evaluation criteria. Implementing a community of thinking involves reforming the whole school structure, including organization, curriculum, and classroom culture.

The Questioning Pedagogy

Clearly, the community of thinking framework is committed to a questioning pedagogy. The fertile question drives all learning. Fertile questioning is a major step toward transforming a learning culture characterized by an answering pedagogy; however, fertile questioning

is not sufficient in and of itself. A questioning pedagogy further influences learning and teaching in a community of thinking by

- *Recreating the fertile question.* The learners receive the fertile question in a context that moves them to ask the question themselves. Puzzling ideas, contradictory judgments, and counterintuitive events undermine learners' initial ideas and create a sense of wonder, thereby recreating the fertile question.

  In a 9th grade geography community of thinking, for example, the facilitators posed the fertile question "Is Jerusalem united?" To recreate the question, the facilitators invited two guest lecturers who were experts on the topic. The first expert explained that Jerusalem is a united city and noted the city's joint municipal services and open borders. The second expert contended that Jerusalem is a divided city and described the many symbolic and physical divisions that separate Jerusalem's sectors. At the end of the debate, one of the students requested that the guest speakers settle the issue between them because, after all, the experts were obviously very knowledgeable. The speakers were taken aback by the student's request, but left the students to sort out the issue for themselves over the course of the semester.

- *Undermining students' assumptions.* Facilitators undermine learners' preconceptions and commonly held beliefs. Learners are taught to question one another's ideas and their own ideas in the context of research team presentations to the learning community.

- *Honoring and celebrating questions.* We bestow much attention and respect on questions and their creation. Communities discuss the characteristics of good questions and deposit useful and insightful questions into a question bank, from which learners may withdraw research questions later in the learning process.

  For example, a 10th grade history community of thinking investigated the fertile question "Why did the peasants obey the gentry and the church, even when those institutions exploited and oppressed them?" One of the research teams enthusiastically embraced its research question, "How did the church exploit apocalyptic visions as a means of exerting control?"—until their first visit to the library. Upon their return, they announced that they had changed their question to "What was the relationship between church and state in the Middle Ages?" During the team's brief inquiry, they had encountered problems finding resources to investigate the first question and had derived their new question from the literature on hand. The facilitators led a discussion on the traits of good questions, noting that a good question challenges you to keep pursuing it.

The team members decided to revert to their original question, a decision for which they were applauded. Three other research teams changed their questions in the wake of that lesson.

- *Imparting knowledge questioningly.* Every lesson is based on a specific question that the community investigates. Students gain knowledge that is framed in the question's context and uncover the questions that gave birth to ideas. Knowledge is never presented as complete and sacred; rather, it is always open to further question and criticism.

  For example, an elementary school community of thinking studying the question "Is competition good for us?" read a summary of a social science experiment in which the researcher compared children's self-esteem in competitive and cooperative environments. As they read the research report together, the facilitator directed the children to question the researcher's assumptions, motives, methodology, and conclusions. Learners suggested ways to improve the research design and questions demanding further attention.

- *Coaching research questions.* A good research question is interesting to learners and the rest of the community; open—requiring that the researcher not only report facts but also take a position; rich—requiring deep and lengthy research; connected to the main fertile question and to the disciplinary field; and practical in respect to the context of available tools and material. Posing a high-quality research question is not easy. Often facilitators and other community members coach research teams in elaborating on overly simple or vague questions.

  A typical coaching conversation will include these and similar questions: What sparked your interest in that question? What do you mean by _____? What are your initial speculations about the answer to that question? Are all of the research team members in agreement? What other possibilities might be worth checking into? How do you think one might go about researching that question? Why are you asking a question to which you know the answer? Who do you think might benefit from an answer to your question?

- *Keeping the research questions in focus.* The research path is frequently winding and unpredictable. Learners will occasionally lose sight of the question, either because new questions have arisen or, especially in the case of beginners, the learners have been lured off the path by easily found answers. This dynamic is exacerbated by the prevalence of answer-oriented textbooks and the tradition of report-writing, in which students list all they have ascertained about a topic without reference to any particular question or problem (Bereiter &

Scardamaila, 1985). The facilitator's role includes assisting the learners in keeping their inquiry focused on their questions.

- *Enabling open questions and controversy.* Controversy and constructive disagreements tend to grow in the context of fertile questions. Controversy indicates a good open question. Facilitators should seize opportunities to use learners' controversies to encourage deliberation—a source of leverage for further learning. Concluding performances often highlight controversies among various research teams and the ways in which learners' findings support their claims.

  For example, an 8th grade community of thinking studying medieval history conducted a public trial around the topic of whether the Middle Ages was a dark period in Western Civilization. The learners divided into prosecution and defense teams, prepared arguments, gathered evidence (from their research reports), prepared witnesses (historical figures they had studied), and wrote speeches. Parents, teachers, and other students attended the trial as jury members and voted at the end of the trial.

Some Further Fertile Questions

As our Community of Thinking program evolves, we observe learners who are excited about their research questions and who are developing deep and lasting understandings as they grapple with those questions. What are the chances that this framework can replace the traditional classroom on a wide scale? Is such a transformation worthwhile? What are its implications for school structure, curriculum, teacher training, and educational policy? These and other fertile questions still await answers. They require communities of thoughtful and motivated educators committed to transforming schools into places in which real learning can take place.

Sample Fertile Questions
• The Human Genome Project—a curse or a blessing? (biology) • Why do we sleep? (biology) • Human beings—a product of environment or genetics? (biology) • Why is the sky blue? (physics) • Is Jerusalem united? (geography) • Is there a geographic entity called "the Middle East"?

(geography)

- Is it possible to establish a "new Middle East"? (geography)
- Why did the peasants obey the gentry and the church, even when exploited and oppressed by them? (history)
- Why did the same generation that called the First World War "the war to end all wars" initiate the Second World War within two decades? (history)
- Is Israel on the verge of a civil war? What can we learn from the cases of Spain and France? (history)
- What is love? (from a sociological point of view)
- What is love? (from a biological point of view)
- What is love? (from a literary point of view)
- What makes a story good? (literature)
- Why do people travel? (sociology, anthropology)
- Is competition good for us? (multidisciplinary)

Authors' note: Amnon Karmon, Gayil Talshir, and Liah Ettinger at the Branco Weiss Institute for the Development of Thinking have participated in the development of the ideas and programs mentioned here, which is only a small part of a work in progress.

References

Bereiter, C., & Scardamalia, M. (1985). Cognitive coping strategies and the problem of inert knowledge. In J. Segal, S. Chipman, & R. Glaser (Eds.), *Thinking and learning skills* (pp. 65-80). New Jersey: Lawrence Erlbaum Associates.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (Eds.). (1956). *Taxonomy of educational objectives.* New York: Longmans, Green.

Goodlad, J. (1984). *A place called school.* New York: McGraw-Hill.

Yoram Harpaz (yoram@pz.harvard.edu) is a former and founding Director and *Adam Lefstein* (adaml@netvision.net.il) is the current

Director of the Communities of Thinking educational reform program at the Branco Weiss Institute for the Development of Thinking, P.O. Box 648, Jerusalem, Israel 96782.