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MISSION STATEMENT

Thinking Classroom serves as an international forum of exchange among teachers, teacher educators, and others interested in promoting democratic teaching practices. The publication encourages professional development, research, and reflection. *Thinking Classroom* features articles that foster learner-centered teaching strategies including critical and creative thinking, active and cooperative learning, and problem solving. The journal also publishes articles about the institutional structures that support these practices.

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THINKING Classroom

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of the RWCT International Consortium

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The Gift of ‘Co-Thinking’

Dear Readers,

Let me offer you my warmest wishes for the New Year. Our small and close-knit editorial team of *Thinking Classroom/Peremena* wishes you steadfastness, wisdom, and infinite patience—because sometimes the teaching profession exposes us to so many challenges that we simply cannot do without these qualities.

The New Year is the time to sum up the past and to develop plans for the future. But for us, teachers, the January report is always an interim one, because a new academic year never begins in January. It begins in September, as the calendar year used to do in ancient times. This is when it was celebrated in my country and in many other countries centuries ago, because the change of years accorded with the turning of the seasons and with harvest time.

As for interim results . . . In fact, the last 12 months have proved to be a difficult but productive period for our journal. Since the beginning of 2006 *Thinking Classroom/Peremena* has been published under the aegis of the RWCT International Consortium, and in a way it has been a homecoming, because seven years ago our journal began as a publication of the *Reading and Writing for Critical Thinking* project (in abbreviated form—RWCT).

The RWCT project itself actually started 10 years ago, in 1997. So now, I am seizing this opportunity to congratulate all our colleagues in the Consortium, and all the former and current participants in the RWCT project on this anniversary. The Consortium, too, is acknowledging the anniversary year with noteworthy achievements. It is now a registered international organization offering the services of certified teacher trainers working in English, Russian, and 20 other national languages. These trainers are able to assist educators in actively promoting the development of critical thinking (through course modules for elementary and high schools and for universities), in supporting the development of innovative curricula in various content areas, in organizing anticorruption activities in the sphere of education, and in working with parents.

In the meantime, the policy of our journal in its eighth year of existence remains unchanged: Our

pages are open to colleagues from all continents, to teachers and faculty who are ready to share their practical experience and reflect together with readers about various topics—topics connected with encouraging critical and creative thinking, and with introducing active forms of instruction. As ever, we are interested in how fresh green sprouts of innovation take root in the consciousness of teachers, in the achievements of students, and in the attitudes of society towards schools.

We sincerely hope that the circulation of both the English and Russian versions of the journal will grow considerably in the coming year. We are planning to add a Spanish-language version as well. We have published, in Russian, four thematic collections of the best articles from issues appearing since 2000, and we plan to do the same in English. And we are always awaiting your articles and ideas. We appreciate it when our readers become our authors, and we are always prepared to support you as beginning writers and to learn from you as experienced and innovative teachers.

We are sure that all those who are holding the journal in their hands at this minute are our fellow supporters. Your dedication is an astonishing gift. It has even led one of our readers to spend a week of her life persuading her university’s authorities that their library needs to subscribe to *Thinking Classroom* without delay. We probably have more than one such supporter, since recently quite a few school and college libraries have subscribed through either the EBSCO or SWETS subscription agencies. Subscription is also available through our website (www.rwct.net). Another “co-thinker” of ours—one of our readers and authors—is now trying to secure a modest grant for *Thinking Classroom*, which won’t be unwelcome at all. Thanks to everyone!

As you see, my “interim report” is somewhat unbalanced: less about results, more about plans for the future. And this is quite understandable. The year has already begun. It’s time to get to work.

Olga Varshaver
Publications Committee Chair
RWCT International Consortium

Perspectives Perspectives Perspectives

What is *democratic culture* and how do you nurture it in the classroom?



*Jeannie L. Steele,
Professor,
University
of Northern Iowa,
United States*

Democratic culture is a culture that facilitates contributions and ideas from all people in the culture. It is nurtured in the classroom by creating an environment that supports the voices of all who share in that environment. The interaction style is one in which all parties are contributors and all are supported in their endeavors. In a practical sense the culture respects all parties and releases the free potential of all. There is a clear understanding of the rights and responsibilities of each member of the classroom.



*Ondrej
Hausenblas,
Charles
University,
Prague, Czech
Republic*

Democratic culture means that people think and act respectfully, quite automatically, toward the rights, opinions, and personalities of others—of individuals as well as groups of people. In class, the style of teaching provides the main model of democratic culture: Children have rights and they know their rights; they enjoy personal liberty while also accepting responsibility for others and treating others with respect. That is why teaching in a democratic culture cannot be either teacher-centered or content-matter-cen-

tered—it must be student-centered. Constructivist pedagogy is the best way for the teacher to maintain that kind of teaching: It fosters individuality, responsibility for work and community, and positive feelings

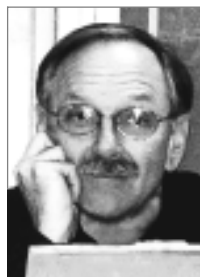


*Pavol Panik,
President
of the Orava
Association for
Democratic
Education,
Slovakia*

Democratic culture is based on equality of opportunity to express our views and, in the life of a school group, to defend and protect the following principles:

- Cooperation through agreed-upon procedures;
- Conflict resolution based on rules and principles;
- The right to make mistakes;
- The right to express one's views, or even not to express oneself;
- Taking responsibility for our actions, behavior, and work.

A true democratic culture does not exist. . . There is just an idealized concept, which is characterized by efforts to keep these principles alive in public life.



*Kurt Meredith,
Coordinator,
Literacy
Education,
University of
Northern Iowa,
United States*

When approximating democratic culture in the classroom, students are simultaneously recognizing and appreciating their individual purpose and worth, while also understanding their responsibility to the class. They

have an awareness of the importance of their unique contribution to the class. Support for a democratic culture should involve clearly informing students of their significance to the community, assuring equality of power and privilege, and allowing the exchange of ideas in an environment of trust and fidelity.



*George Hunt,
Department
of Educational
Studies,
University of
Edinburgh, Great
Britain*

Do we need to think about *the* democratic culture, or are there many ways in which democracy can be achieved and maintained? I would agree with John Dewey's conception of democracy as practices that "aim at a greater variety of mutually shared interests in distinction from those which aim simply at the preservation of established customs." These practices have as their ideal "a continuous reconstruction or reorganizing of experience, of such a nature as to increase its recognized meaning or social content, and as to increase the capacity of individuals to act as directive guardians of this reorganization." In the classroom this implies learning driven by curiosity about the natural and social world and aimed at making that world a better and more interesting place for everybody. Clearly it's difficult to keep such an ambitious aim in view when dealing with the minutiae of teaching, but it's one that should be explicitly stated, and one that teachers and learners should remind each other of, particularly when they are being steered towards practices that betray it.

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Teachers, Classrooms, and Change

Nurturing Democratic Citizens in the Writing Workshop

Four young people sit together at a table in the classroom, with a paper written by one member of the group as the topic of their conversation. Each person has read the paper carefully, and has come to the meeting with a copy of the paper marked up with comments, questions, corrections, and suggestions for revision.

For 20 minutes the four students dig into the paper, starting with a discussion of the writer's thesis, and moving on to questions of organization and development. They put forth many ideas for revising the paper, and when members of the group disagree about the best way to improve it, they talk through the advantages and disadvantages of each approach until the author begins to see which revision will help the paper best achieve his intentions. The writer leaves the meeting with a clear agenda for revising the

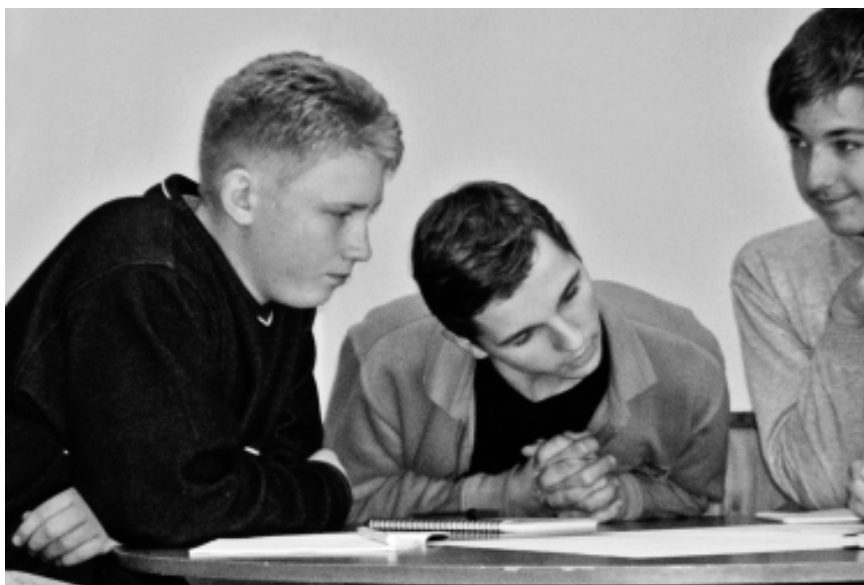
paper, and each of the readers departs with better skills in analysis and problem solving.

Teachers who have adopted the writing workshop as a central part of their approach to the teaching of writing know that scenes like this one can happen when their students are deeply engaged in writing, motivated to help each other improve their work, and well trained in the group processes that help such meetings succeed. Those of us who use the writing workshop know that many students can become dramatically better writers through repeated experience in both the writer and reader roles of the workshop. The work of Lucy Calkins at the elementary-school level, Nancie Atwell in middle schools, Tom Romano in high-school settings, and Donald Murray and others at the university level have guided a generation of teachers to effective

use of the writing workshop to enhance student writing (Atwell, 1998; Calkins, 1994; Romano, 1987; Murray, 2003).

This scene can feature students as young as 8 or 9, doing less complex analysis, through graduate levels, where the work of the group is complex and the sessions last much longer than 20 minutes. It can feature students writing in the disciplines of science, history, or literature. Certainly the argument we are making about writing workshop applies to many well-designed group projects. But the writing workshop, when the work is thoughtfully and fairly done, is one of the best tools we have to teach another set of skills: democratic practice.

Consider the workshop from a slightly different point of view. Well before the students gather around the table in the classroom, several essential democratic habits have been enacted. The writer takes a position, one that has emerged over time (days or weeks) of reading, listening, talking, and reflecting. Out of the give and take of ideas in the classroom and in the student's life, the student writer has become convinced that a particular idea, a particular thesis, is interesting and right and in some sense her *own*. It is essential that students regularly have the opportunity to choose their own topics, and that they develop their own ideas in writing. The student writer's individuality—a habit of thought, a personal frame of reference, a distinctive use of language—is expressed on the page, and the writer has assumed the responsibility to express her ideas as well as possible. Several core democratic values have been called on in this stage of writing: the individual's right to free expression, the



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**David J. Klooster
and Patricia Bloem**



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expectation that opinions and ideas will be informed by free reading and inquiry into the ideas of others, and the conviction that the individual human being *matters*, that her voice can be heard, respected, even treasured.

Also, before the students gather at the workshop table, the student readers have enacted a set of skills essential for democracy: they have listened and read respectfully, open to the ideas and words of another. They have read critically, responsibly, and questioningly, assuming their own right to interrogate the ideas and the authority of the writer. They have acted with individual and communal responsibility as they have used their acquired skills to read and critique the ideas of a classmate. They have assumed a stance of equality—and not superiority—with the writer, since the workshop can only operate successfully if it is a gathering of peers who have jointly assumed responsibility for the work. This is power that arises from the people, from the citizens of the classroom. (Notice that the teachers have not really appeared in the scenario we are examining, except as the background figures who have organized the learning experience. But now they are the lucky ones who get to read and grade papers that have been labored over and that have already been shared with an audience.)

When the students sit together at the workshop, still another set of democratic values is practiced. Now the work shifts from individual to group; the preparation that the writer and the individual readers have brought to the table informs and enriches their work together. For the workshop to function well, they must be able to trust one another, and to count on the good

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will of their peers. All members of the workshop will benefit when their papers come up for discussion, and the growing skill and knowledge of each member will be used for the good of the others. The group must listen keenly to one another, weighing ideas, considering alternative approaches, reflecting on how different solutions can be put into place in the paper. The student author retains authority for the paper, but the deliberative work of the group helps to build the democratic practices that will make each participant a stronger citizen.

If the process has enabled the student to write a strong paper, the workshop peers and teacher may encourage the writer to publish the paper for a wider audience of readers. Whether this is formal publication in a local or school newspaper, publication on a website, or informal publication in the classroom, the writer experi-

ences another democratic virtue—the opportunity to influence others through a free press.

Although we value publication as the end result of writing, we want to make a case for the process of the writing workshop as itself a democratic experience. When each writer selects his own topics, explores the possibilities and implications of the topic with peers, engages in research, tries out a draft on a writing group, and maintains responsibility throughout the process—that's a democratic experience, one that respects the rights and duties of the individual in a group setting. It's not the outside authority (teacher or textbook or test) that dictates what should be said and how, but the student writer. And the writer discovers that not only the teacher but also a larger audience of peers has a role in judging the effectiveness of the writing. If we want our students to become citizens who respect the democratic processes of



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Teachers, Classrooms, and Change



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our society, then it makes sense that we make the experience of those processes a regular and respected part of school life. The writing workshop is an especially good way to do so.

These are difficult days for democratic values. Although *democracy* is still regarded as an unequivocal good, the practice of democracy is in trouble, it seems to us. We're going to leave aside for now our current U.S. political climate, because it is almost impossible to talk about politics today without lurching immediately into vituperation, defensiveness, accusation, and other forms of dysfunctional dialogue. We'll just note that the public seems more distraught, discouraged, and disengaged from the political process than it has been for a long time. And while democracy may feel particularly imperiled in our own country, it's also true that worldwide there has been a decline in voter turnout in elections since the 1990s (International Institute for Democracy and Electoral Assistance, 2004).

But more dismaying for those of us who teach writing is

the reality that our students have very few experiences in their daily life of hearing rational, reasoned arguments on matters of shared public concern. If we want our students to value logical argument and disciplined research and the clear and responsible presentation of ideas, we ought to be able to point to many places in the world around them where such values are practiced effectively. But where would you point your students to find examples of this kind of good writing? To the world of advertising, with its barrage of distortions and exaggerations and illogical claims? To the world of the news media, with its over-simplified pro/con, right/left take on every issue, or its "let us do the thinking for you" sessions of expert analysis after every political speech or debate? Or to the world of popular entertainment—music videos or movies or television shows—for fair and responsible representations of gender relationships or material goods or nonviolent living or responsible citizenship? Hardly!

In short, the values we hold in the academic world, the values we teachers prize and try to pass on to our students, are not the values our students see around them in the worlds of entertainment, media, or politics.

Since we cannot rely on the support right now of our surrounding culture, it becomes essential that we create classroom environments in which the democratic values of dialogue, reasoned discourse, and engaged participation are practiced every day, so that our students can experience these values firsthand, and learn of their effectiveness in their own lives. More than ever, our class-

rooms need to be democratic places, where power is shared, where many voices are heard and respected, where reasoned debate and dialogue and deliberation are learned and practiced.

As teachers of language and literature, the two of us find that the writing workshop is an excellent way to help our students achieve the immediate goal of becoming better writers as well as the long-term goal of becoming better citizens of a democratic culture. Teachers of history, science, mathematics, and the arts can create versions of workshop teaching or other democratic approaches that allow their students to meet the immediate goal of learning the discipline but also make progress toward the longer-range goals of citizenship. If we want our schools to graduate students who will assume their roles as our neighbors and co-workers in democratic society, then we owe it to them to create daily opportunities, from elementary school through graduate school, to grow in the individual habits of mind and community practices of democratic life.

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Documenting Learning Through Drawing



Photo from the author's archive

Sharon Connelly has been teaching for nine years and currently teaches grade 1 in Surrey, British Columbia, Canada.

It is Monday afternoon and the six- and seven-year-old students are all at their desks drawing. It is not an art lesson nor is it “centers time.” This is a science lesson. Although many students in science draw for research reports, posters and diagrams, these drawings are different. These students are working on pictures of fish. The students have ideas about how a fish looks and these come out in each individual drawing. The class has not been to the aquarium or the beach; there are no ocean books or posters out in the classroom. These “before” drawings are their first impressions based on their prior knowledge about fish.

As the unit progresses the students are engaged in many activities about fish and the ocean. Books are brought in and shared, videos are watched, and the students travel to the aquarium for a first-hand look at ocean animals. Fast-forward several weeks to another afternoon. Again the students are at their desks drawing pictures of fish. These “after” drawings are their impressions based on what they now know about fish and their habitats. It is quiet and the students are all working carefully on their pictures. This time the drawings are more detailed and drawn with more confidence. This is not a test but the students will use these before and after drawings to discuss and reflect on what they have learned about fish. This is documenting learning through drawing.

Discovering documentation

During a master’s course in 2004, I began reading about the documentation practices of the Reggio Emilia preschools in Italy, and I was inspired to begin exploring different types of documentation in my own classroom. Drawing, in the Reggio Emilia setting,

is a “graphic language” through which students express ideas (Katz, 1998, p. 34). A set of drawings about moose, which I had done on a whim with my class, sparked my interest in using before and after drawings to document learning in science. The conversations I had with the students after the second drawing revealed to me the importance of comparing before and after work and the importance of letting my students tell me and show me what they had learned. When “a young child draws they are offering us a window into their own developing understanding of their world and their relationships to significant people, things and places around them” (Anning & Ring, 2004, p. x). Helm, Beneke, and Steinheimer (1998) state that documentation can also provide “the evidence needed for reliably assessing children’s progress” (p. 15). By capturing “evidence of children’s knowledge and skills at the beginning of an ongoing learning experience” (Helm et al., p. 114) teachers create student-specific base-line data from which they can gauge learning and growth throughout a unit of study or over the course of a school year. Documentation using drawings provides opportunities “to examine the individual child’s growth and development” and it can “show how children’s thinking [has] changed” (Helm et al., pp. 132, 135–136). The changes that are visible in a collection of drawings “are a direct reflection of the changing child” (Lowenfeld and Brittain, 1982, p. 426).

Finding a place for drawing

Drawing, whether it is with crayons, markers, or pencils, is not a special skill reserved for those gifted in the arts. Drawing is not just a form of artistic expression; it is a form of communication. Every day in primary classrooms students communicate through the pictures they draw. They draw for journals, math, social studies, and art. Students draw during free time, during centers, and as part of lessons. Children draw with simple crayons or fine-tip markers. The drawing tool, though, is not the key, nor is the accuracy of the drawing, because “for a child, art is primarily a means of expression”

(Lowenfeld and Brittain, 1982, p. 7). Golomb (2002) states that drawings are “expressive statements about what one knows, feels, and wants to understand” (p. 43). Children draw to show what they know and to tell stories. Students use drawings to express themselves and to “communicate understandings” (Campbell and Fulton, 2003, p. 31). A “drawing creates an imaginative representation of an aspect of the child’s world” (Golomb, p. 43).

Teachers have an important role to play in helping students use drawing as a way to communicate learning but they first need to acknowledge the potential of drawings to “reflect a child’s development honestly” (Lowenfeld and Brittain, 1982, p. 217). Teachers can provide children with opportunities to use “drawing to explore, to problem solve, or simply to give visual form to ideas and observations” that create “uniquely personal statements” that communicate what they know, think, and wonder (Malchiodi, 1998, p. 1). Whether children are drawing for fun or for a purpose, their “drawings reveal their skills and knowledge” (De Boo, 1996, p. 24). Drawings offer “a powerful vehicle for hearing what young children are telling us” (Anning and Ring, 2004, p. xi).

Teachers often fail to realize the value of drawings. They may expect each journal entry to have an accompanying picture. They may plan art projects so there will be something on the wall for parent night. In all too many schools, however, “children’s graphic representations [drawings] may be treated as mere decorative products to be taken home at the end of the day, most likely never to be discussed or looked at again” (Katz, 1998, p. 34). By limiting the use of drawing in the classroom, teachers ignore the power of drawing as a learning and assessment tool.

For the last two years I have been using before and after drawings to document student learning in science and to examine how children use their own drawings to reflect on, assess, and communicate what they have learned. Through the use of before and after drawings, completed during a theme or unit, teachers can assess the acquisition of knowledge and the growth of understanding on a given topic. Many insights can also be gained by talking with children about their before and after drawings. What children recognize in their own drawings can illuminate their growth and understanding on a given topic or theme. Before and after drawings are not a test of artistic skill or a quest for realism but a record of learning and growth.

Drawing is an “accessible language” for children (Steele, 1998, p. 20). Many primary children use drawings to express what they cannot express through the written word. Children believe that their “ideas can be ‘spelled’ either as words or as pictures” (Kress, 2000, p. 177), so drawings can take on a vital expressive role for young children who have a limited vocabulary or beginning writing skills (De la Roche, 1996). Students rely on drawings to communicate what they want to say and to show what they have learned. Children who are “experienced in drawing, but new to the conventions of the written word” can find “drawing a far more comfortable, fluent, and flexible medium of representation” (Thompson, 2002, p. 134). Student drawings can provide students with a tool to examine and discuss their learning progress. They can point to parts of their pictures and explain what they drew or why they drew a fish with two fins when now they know a fish has seven. For children who are just learning to read and write, drawings and conversations with peers and teachers are a valuable and necessary part of knowledge acquisition and knowledge sharing. When children attempt through drawings to express feelings and ideas that they cannot through writing, it becomes the job of the teacher to listen (Steele, p. 21) to the ideas that are spoken through both pictures and words.

Before and after drawings are useful tools for student expression of learning, but the drawing itself cannot be the only measure of growth. Evaluation cannot be based solely on “how the product looks” for “it is the child’s process—his thinking, his feelings, his perceiving, in fact, his reactions to his environment—that is important” (Lowenfeld and Brittain, 1982, p. 9). The true value of the drawings can be lost if teachers do not take the time to listen to students discussing their learning aided by their drawings. I could look through stacks of before and after drawings, making my own judgments and assumptions about a child’s learning, but the real value for the students and the teacher is in sharing and hearing the learning that has taken place. It is in hearing the thought processes of students that we as teachers can truly understand what our students know. My students are frequently surprised to see how much they have learned when they are given the opportunity to sit back, look at, and discuss their work. Simply asking students “to talk about the drawing[s] can lead to unexpected” and revealing results (Coates, 2002, p. 22). We must be cautious, though, of engaging

students in discussions as an afterthought or as something we do only if we have time. Coates (2002) writes:

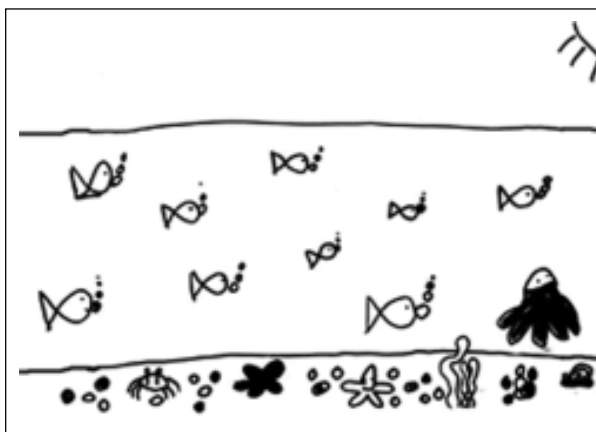
It is possible that children from an early age are being conditioned into the format so familiar in educational settings. They come to expect to be asked about the drawing's content and a routine of drawing, telling the adult about the picture and the adult writing a sentence about it, is established. (p. 24)

Discussions about drawings must push past the routine in order to be truly meaningful and enlightening for both the teacher and the student. Asking children to tell you about their drawings is a good way to get started, but a discussion that strives to understand what the child was thinking while drawing will provide greater insights into the child's learning process. By having students compare and contrast two drawings from the same topic, teachers provide students with a starting point for a discussion that can lead to questions like "Why do you think it is different?" or "What would your teacher/parent notice?" Gallas (1994) writes that "conversations about learning, when focused on the arts, enable children and teachers to speak together in new ways about content, forms of expression, communication, and excellence" (p. 113). When "teachers and children begin to speak about learning" by using drawings, "they initiate new kinds of conversations" (Gallas, p. 113).

Documenting learning through drawing

In the spring of 2005 my Grade 1 and 2 students began a theme unit on the ocean. Their first task was to draw a picture of a fish. They were given only an 8 1/2' x 11" sheet of white paper and a black fine-tip felt marker. Some students began drawing right away, while others hesitated and then slowly began drawing. The room was quiet and the students were focused on what they had to do. But even for those who loved to draw, this was not an easy task. I was asking them to draw a picture of something they had only a general idea about but not many specifics. Many students drew their *before* fish with a circle or an oval body and a triangular tail (see Dr. 1). The fish had eyes and a tail but in many cases all other fins were absent.

When it came time to draw the after pictures at the end of our unit, it was a very different experience for the students. They were eager to get started and the students showed different emotions as they drew their after pictures. I saw concentration, determination, and satisfaction. All the

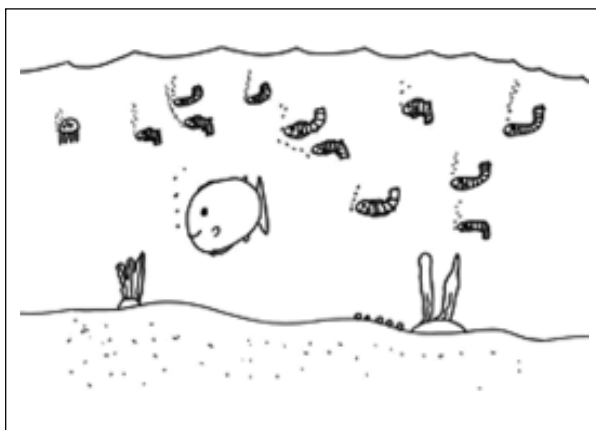


Drawing 1. A *before* drawing of fish by a Grade 2 student.

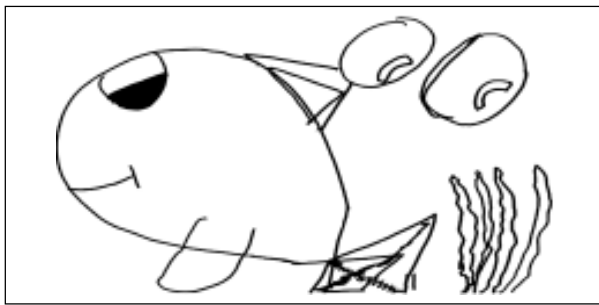
students drew with much more confidence and assurance bolstered by all the information they had learned over the last month. The drawings were more specific and detailed (see Dr. 2).

As the students handed in their pictures they could not help but begin to share stories about their drawings. They were excited and proud of what they had done, and they wanted to share it right away. Even as they drew, the students whispered to one another about the details in their drawings. The only disappointment this time was when I said time was up after 30 minutes.

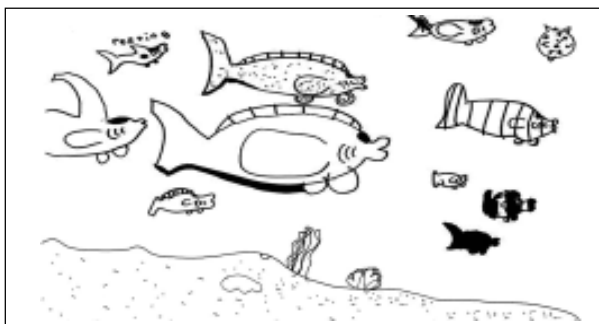
As part of my final master's project, I interviewed my students about their drawings with a partner. The first emotion all the students expressed was surprise. As I placed their before and after drawings in front of them, the look of "Aha, look how much I learned!" was clearly evident. Some students sat back and looked back and forth between their two drawings as if taking in all the details both similar and different. It was evident by the look in their eyes that the students knew they had learned something. As we began to discuss their drawings they expressed thoughtful and truthful



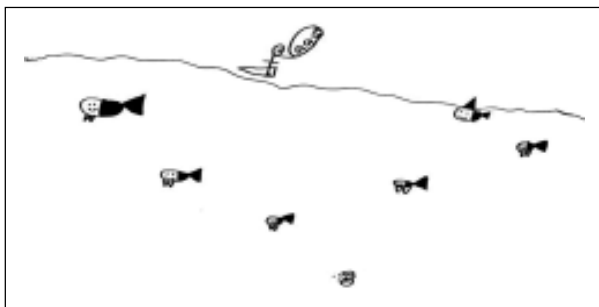
Drawing 2. An *after* drawing by a Grade 1 student.



Drawings 3 and 4. *Before and after drawings by a Grade 2 student: They're better than it was before. I only put 3 fins on this one [before] but I put the right amount on this one [after].*



Drawings 5 and 6. *Before and after drawings by a Grade 1 student: There's more fish on the after picture. I didn't do any extra fins on my before picture and I didn't do gills. That means they can't breathe.*



answers about what they saw in front of them (see Dr. 3 and 4).

It quickly became evident to me that the students could easily identify the similarities and differences between their drawings. I found that the students also gave reasons why they added different aspects to their pictures. They were using what they saw as differences as an opportunity to explain the thinking processes behind their drawings (see Dr. 5 and 6).

I was getting to hear the learning that had taken place and the students were able to share this learning by explaining their drawings to me. If I had just looked at their pictures I would have seen visible changes but I would not have fully understood the learning that had taken place. The students were able to explain why they added or omitted details because having the before and after pictures in front of them helped the students focus on what they used to know and what they now knew.

- *What is different?*

Grade 1 student: *In my first picture there are fish and they don't have no gills or scales. And in the before I didn't put seven fins on my fish but now I do know that there are seven fins on my fish. Now I do lots more pictures of fish and stuff.*

- *What is the same?* (See Dr. 7 and 8)

Student: *There are fish.*

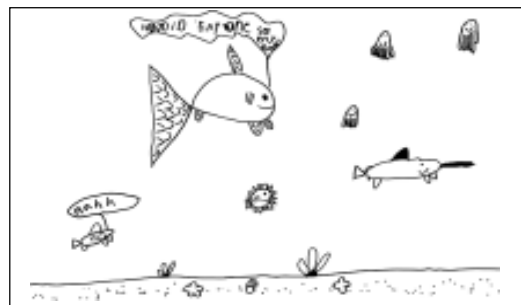
- *What is different?*

Grade 2 student: *The before one had bubbles coming out of the fishy and the second one has a seahorse. This one had four fins and the after had seven. On this one there was no eggs on the seaweed and this one there was eggs.*

- *What is the same?*

Student: *There's lots of scenery.* (See Dr. 9 and 10)

Not only did the students use their drawings to illustrate the changes in their thinking, they recognized why they had made the changes in their drawings.



Drawings 7 and 8. *Before and after drawings by a Grade 1 student.*

Grade 1 student: *Because we learned about fish more because before when we didn't learn about fish we just drew them we didn't know much about fish.*

Grade 2 student: *Because it's better than the first one because I drew this one [before] when we didn't learn anything and I drew this one [after] when we learned lots and it was better.*

When discussing how the after drawings would have looked if we had not learned about fish, the students generally agreed that the two drawings would have looked quite similar. This recognition that their learning had an effect on their drawings was key because it showed the students that knowledge changes through the addition of new information. It was a realization "that understanding things often means changing your words and thoughts" (Reggio Children, 2000, p. 50).

The students were also asked, "Which drawing do you like best? Why?" The majority of the students chose their after pictures because they liked how the fish looked, they liked their details or they felt the drawing was better because they knew more.

Grade 1 student: *It has way better touches.*

Grade 2 student: *I did a better job on that one since we learned about fish. And before I didn't really know about fish so I didn't do it good.*

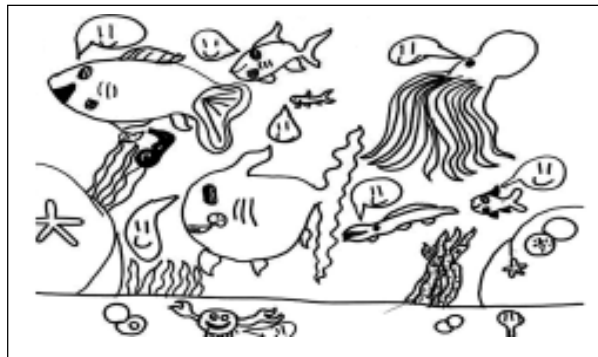
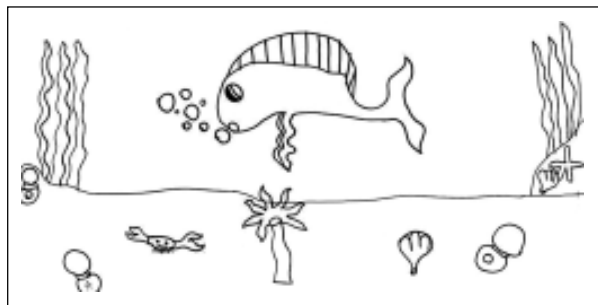
Grade 1 student: *It's better than my before picture because it has more things because we learnt about fish because when we didn't learn about fish I just drew normal fish that people normally draw. (See Dr. 11)*

I also wanted to know if the students thought that before and after drawings were a good way to show their teacher what they had learned. The students gave several different reasons about why they thought before and after drawings were an effective way to show their teacher what they had learned.

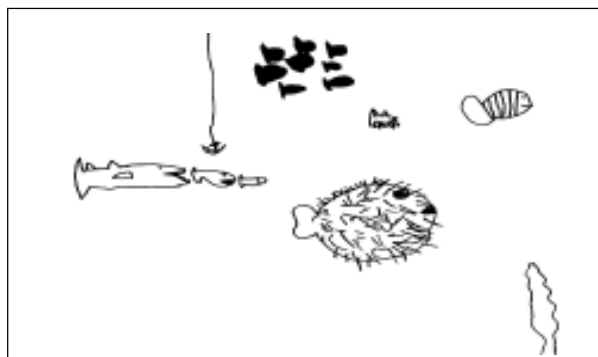
Grade 2 student: *You would notice what we learned about fish.*

Grade 1 student: *Because you would understand what we drew.*

By sharing the drawings with me, the students wanted me to understand not only what they drew but why they had made the changes they did. The drawings and our time together were seen as a time to show what they had learned and a time to explain what they had learned. The students gave the impression that I could not fully understand the drawings if they did not talk about them with me. By sharing the drawings with me, the students could tell me about their learning process and make clear to me what they felt their drawings did not explain. (See Dr. 12 and 13)



Drawings 9 and 10. *Before and after drawings by a Grade 2 student.*

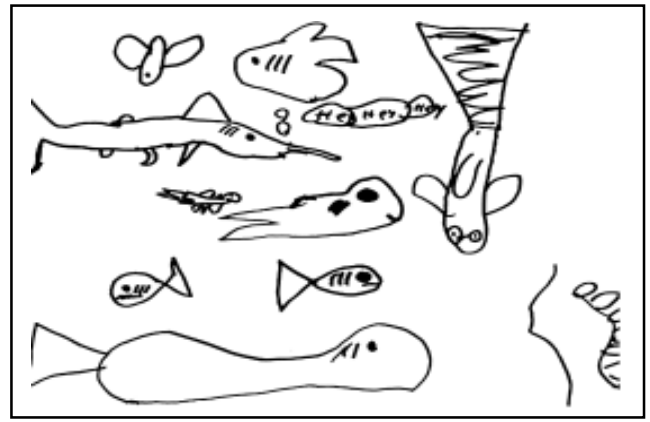
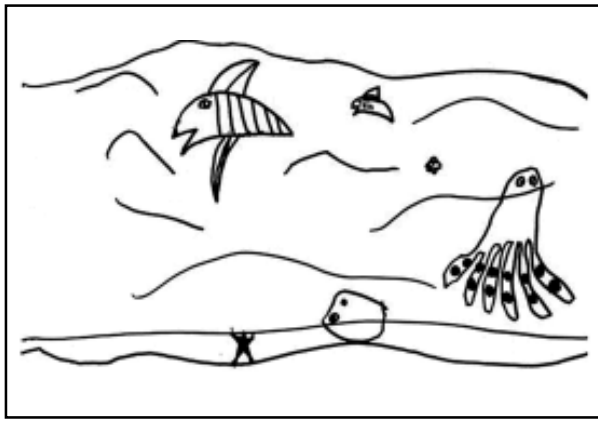


Drawing 11. *After drawing by a Grade 1 student. They were now able to draw and name specific fish: It has a puffer fish and they are poison and goldfish are my favorite fish and clown fish they're cool and they have stripes like a zebra.*

For many students the before picture was the guess, or the prediction, and the after picture was more accurate or faithful to what the students wanted to represent. The drawings gave the students confidence to speak about what they knew about fish.

Practical documentation

I continue to use and explore the use of before and after drawings in my classroom because it is clear to me that before and after drawings can "reflect a child's development" in science (Lowenfeld and Brittain, 1982, p. 217). It is not a search for "a faithful copy" (Smith & the Drawing Study Group, 1998, p. 27) of a fish or a moose so I can have something to check off on the



Drawings 12 and 13. *Before and after drawings by a Grade 1 student: The after one shows more about fish and the first one doesn't really show how much you learned about fish.*

report cards. The value of before and after drawings lies in the reality that students draw not what they see but what they know and learn as a result of their observations, explorations, and discoveries (Wenham, 1998, p. 67). Including drawing in science should not be about having students copy objects realistically; it should be about how they use their knowledge to draw their representations of objects. Eisner (2002) writes that “the changing features in children’s artwork are the result of changes in the way in which they think about what they are doing” (p. 146). The before and after drawings allowed the students and myself to see how their learning had changed. The discussions allowed the students and myself to hear how their learning had changed. Documenting learning through drawing means that instead of my telling my students what they have learned, they tell me what they have learned. My job then is to make time to sit back and listen.

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Cross-Age Tutoring: When Fifth Graders Become Teachers of Writing

Photo from the author's archive



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Theory and background of peer/cross-age tutoring

Cross-age or peer tutoring has been around a long time. Lilya Wagner (1990), who researched the history behind *peer tutoring*, defined it as “the practice of students teaching other students in a setting directed and planned by the teachers” (p. 21). In this definition, the terms *peer* and *cross-age* are interchangeable. According to Wagner, Aristotle in ancient Greece and Quintilian in ancient Rome both used this type of tutoring. Both believed that much younger students could learn from older ones. Peer teaching was also used during the Renaissance and Reformation. In fact, the term *head boy* comes from the use of the older boys as tutors to the younger during this period. In 1531, Valentine Trotsendorf, who started the Goldberg School in Europe, felt the best way to learn was to teach (Briggs, 1998). He used peer tutors for the benefit of both the tutor and the student being tutored.

In the late 1700s, Joseph Lancaster, an educator, developed a practice of using *monitors*. These students who “knew little” were charged to tutor those who “knew less.” Around the turn of the 19th century, Lancaster brought his practice to the United States. He ran the Lancaster Institute using his peer monitors. Apparently his practice caught on quite well.

By the early 20th century, older pupils were used as teaching assistants with regularity in the United States. In fact, teachers were highly dependent on the use of cross-age tutoring. By the 1930s the practice began to receive recognition in

educational literature. Researchers in Ohio found that tutoring was beneficial to the older tutors in that it allowed the students to develop a sense of responsibility (Foot, Morgan & Shute, 1990).

Studies done in the 1970s concluded that children actually learned more from other children than from the teachers. The tutors benefited in that they developed higher self-esteem. What is so interesting about these studies is the premise that peer tutors can communicate with children better than can adults. This premise is supported by other, more recent, studies.

In “Theoretical Issues in Peer Tutoring” (Foot et al., in Foot, Morgan & Shute, 1990, pp. 65–92), the authors support the fact that children relate better with children because their interactions are qualitatively different from those they have with adults. These peer to peer interactions bring with them opportunities for both the tutor and the student. The younger students benefit from the modeling of the older ones, while the tutors benefit in that they put more effort into problem-solving tasks when with younger children. In addition, they grow socially and emotionally because their repertoire of social skills expands through these interactions. Many take on nurturing roles, which increase their ability to empathize with others. However, the socio-emotional growth isn’t the only benefit for these tutors. They develop many learning strategies and have a deeper understanding of the content. This belief is supported by qualitative studies done in different schools.

“We learn 90 percent of what we teach.” This is the premise behind a peer and cross-age tutoring program in the Chicago Public Schools. The program, entitled “Time Dollar Cross-Age”, promotes tutoring among elementary school children by paying the tutors *time-dollars*. After they earn 100 time-dollars, they “purchase” an IBM-donated computer. Why is this school district spending so much time, money, and energy on such a program? The school representatives cite research from

B.S. Bloom, among others, when they say, “research studies on peer-tutoring approaches have found higher levels of academic and social development gains in students” who are tutored. This study found that the tutors made the greatest gains.

In Cleveland, several teachers created a *Literacy Club* where younger students were paired with older students to “talk about books, identify good books to read, and discuss how little children learn to write” (Urzua, 2005). Again, teachers observed that the older students benefited greatly from the experience. They gained in self-esteem, confidence, and academics. In addition, the students became better risk takers.

Page Kalkowski (2004), author of “Peer and Cross-Age Tutoring” from the *School Improvement Research Series (SIRS)*, identified benefits from cross-age tutoring in academic skills, social behaviors, classroom discipline, and classroom atmosphere. The positive results included improved attitudes of younger students to older ones and an increased internal locus of control in both younger and older students. In addition, positive results were discovered in language arts, specifically in the area of reading.

Apparently, the positive effects of these programs were evident even if the older students were second-language learners and hadn’t yet mastered English. As long as the older students felt confident that they could help, it worked. It was noted, however, that the older students would need to be guided as to the strategies they would use in their tutoring (Foot, Shute, Morgan, & Barron, 1990).

Peer and cross-age tutoring has long been thought of as a positive practice among educators. There is much evidence that this practice benefits both the tutor and the student in a variety of ways. As a teacher with 15 years’ experience, I have utilized peer tutoring every year. However, I have not done it to the scale on which I did last year while working as a fifth-grade teacher in an elementary school.

Context of the study

I was in my third year of teaching fifth-grade bilingual education. Because the school had only one bilingual class at each grade level, many of the students were together for the duration of elementary school. This was true of the majority of students I received in 2004–2005. Sometimes the combination of students can make for a fantastic class personality. At other times, the overall classroom commu-

nity can be complicated, as was the case with my students that year.

As a group, the students were bright and verbal with a great deal to say. As well as being talkative, they were also highly emotional. It was difficult for this group to follow classroom procedures. As is typical of this age group, the students tended to engage in social interaction, sometimes at the expense of required core curriculum. Although I believe it is important to provide them opportunities to voice their opinions and concerns, I wanted to guide that process to help them develop an inner sense of responsibility to themselves as students in an academic setting.

The students’ writing scores from the previous year were generally low. They didn’t seem enthusiastic about writing, either. On the other hand, I found that many of the students were quite outspoken. Some often questioned the validity of classroom activities and lessons. It seemed that once they formed an opinion about an area of the curriculum, that opinion determined the amount of effort they would exert in that area. It took a long time for them to transition and focus. Before any significant growth in writing could occur, I felt I would have to persuade them that writing was important to them. For their writing to truly change, they would need to buy into the idea that we needed to focus on writing in all areas.

The previous year, I had sent selected students to two different kindergarten classes to tutor the kindergarten children in a writing workshop. Selection was based on the students’ academic ability, as well as their ability to behave appropriately independent of me. At that time, I didn’t really track the progress of either group. The kindergarten teachers asked for the help and I gave it. The students went in the morning and the kindergarten teachers would give me updates as to the success of their participation. I was mostly concerned with the behavior of my students while out of the classroom.

In planning for this event last year, I casually asked Mrs. Watson, my kindergarten partner, how she felt about implementing a cross-age program with our two classes where all the students from my class would be involved with all the students from her class. My plan was to utilize both teachers to teach the older students the strategies necessary to be effective tutors in writing for the younger students. She was enthusiastic because she also was having problems with her kindergarten students in writing.

None of the students knew the entire alphabet. We decided to have the students meet three times a week and work on specific skills in writing.

The students were given a set of guidelines to be reviewed at the end of each session with the younger students. One side of the page provided a checklist for the fifth-grade students, while the other side was for the kindergarteners. The fifth graders were to read the list with their younger partners and both would determine if they had completed everything on the list. For example, the kindergarten checklist related to putting detail in their drawings and writing at least one sentence to describe their pictures. There were also comments associated with sentence beginnings and endings. On the fifth-grade side were all the things they were to do with the younger children, such as guide them to add detail in their drawings, to leave proper space between words, to sound out words as they spelled them, and to help them associate the letter sounds with the letters of the alphabet using a guide.

The specific weekly lessons revolved around one or two of the six traits of writing as defined by the state guidelines (ideas and content, organization, voice, word choice, sentence fluency, and conventions). In addition the lessons focused on specific writing modes, such as descriptive or expressive. Both classes would hear the lesson together. The fifth graders would sit next to their partners during these lessons to encourage them. Either Mrs. Watson or I would teach the lesson. Typically, we used literature to illustrate the different traits. Then we gave the older students suggestions for how to help the kindergarteners with the traits. For the kindergarteners, we focused mainly on ideas and content in the first quarter. We added word choice, sentence fluency, and conventions throughout the rest of the year.

During the time my students were working together we often went from table to table giving support to the older children. When we saw similar problems with most of the pairs, we would stop them all and have a mini-lesson. One such time was when we found the older students sounding out the words or saying the words aloud for the younger children. What we wanted at that time was for the younger children to begin doing this for themselves. These were the real teaching moments, following which we could immediately see a change in the techniques and strategies the older students used.

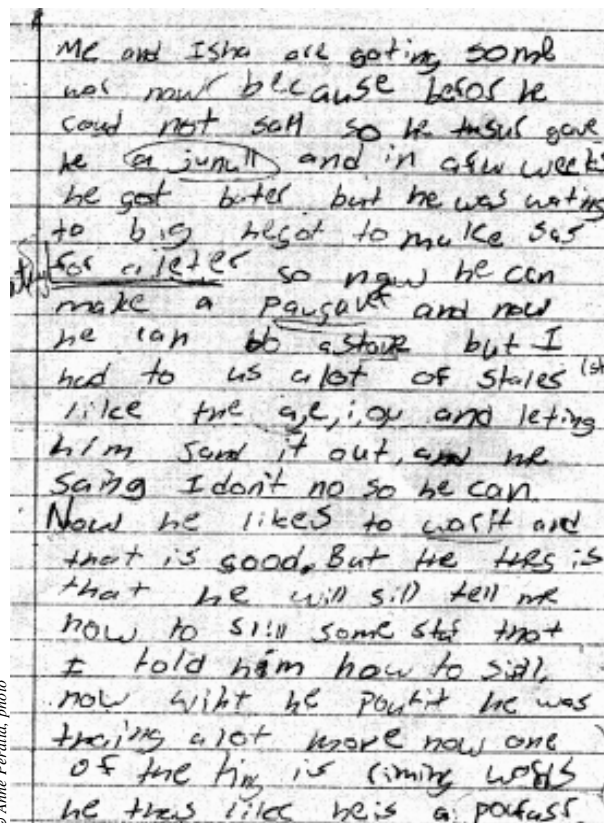
Questions for investigation

I began to be really curious about how this extensive tutoring program would benefit my students. After all, I was giving up quite a bit of learning time. I decided to use this opportunity as a subject for the teacher research class I was taking at the University of Arizona. I began by asking questions. What happens when fifth-grade students become teachers of writing for kindergarten children? Will they treat the younger children appropriately? Will the kindergarten students learn from the fifth graders? How will the partnership affect the different social/behavioral issues in the fifth-grade class? How will the partnership affect the fifth graders' desire and ability to write? At what point, if any, will the students recognize the connection between their work with the kindergarteners and their own achievement in writing?

While I never doubted that the kindergartners would benefit from this partnership, I truly wondered whether the amount of time I was planning on taking would be worth it for the development of the fifth graders.

Research process

The fifth graders kept a reflective journal on their work with the kindergarteners. They also reflected on their own writing development and the connection between their



Me and Isha are getting some
was now because before he
could not say so he has to go
he is a jumbly and in a few weeks
he got better but he was writing
to big he got to make say
for a letter so now he can
make a pause and now
he can do a story but I
had to us a lot of stories
like the age, you and leting
him send it out, and he
saying I don't no so he can
Now he likes to write and
that is good. But he has is
that he will still tell me
how to still some stories that
I told him how to still.
now with he point he was
trading a lot more now one
of the kids is writing words
he has like he is a postcard.

© Anne Peralta, photo

My reflections about E

E __ is so mature when she works with the kinders. Then, when we are in other situations, she is giddy and emotional. What a difference. I know the activity with kindergarteners is good for her.

I finished the book *Walk Two Moons* today. I cried. E—cried. Some other girls cried too. I think the boys were sad at the ending also. I think reading this book really bonded us.

writing and their work with the kindergarteners. I collected writing samples from the students throughout the year. In addition, I also kept a reflective journal.

Initially, the fifth graders went to the kindergarten class to help their partners write in their daily journals. The first journals were constructed by stapling together 12" x 18" drawing paper and adding a cover of construction paper. Each quarter the journals evolved in terms of the allocations of lines for writing and space for drawing. By the fourth quarter the paper was half drawing and half guided writing lines. Each day the kindergarteners first drew, then wrote about their drawings.

The fifth graders were instructed by the kindergarten teacher to encourage the younger students to put details in their drawings. When it came time to write, the fifth graders were to help them come up with a sentence to write by asking them about their drawings. As the kindergarteners began to write, the fifth graders would help them sound out words and show them an alphabet to reinforce sound symbol relationships. As soon as our time with the kindergarten class was over, my students would write about their experiences, focusing on strategies they used to help the younger students and the growth they saw in these students. This process went on through the first quarter.

During the second quarter, the kindergarteners had to become more independent. Every Monday, Mrs. Watson and I would have a mini-lesson focusing on a writing trait or word of the day. At this time we would give the fifth graders more strategies and make subtle changes in things we observed them doing. By the end of the second quarter, the kindergarten students were writing two and three sentences. They were sounding out their own words and had even mastered the spellings of some words.

In the third quarter we began to focus on

organization as a trait, and the kindergarteners were writing stories with a beginning, middle, and end. The fifth graders were also reflecting about their own writing and how the experience of working with the kindergarteners helped them to become better writers. During the fourth quarter, the fifth graders transitioned from being solely teachers of writing to becoming teachers/partners in writing. The students collaborated on a book for which they first needed to research habitats and the animals that lived in different environments. It was interesting to see the fifth graders teaching the kindergartners how to conduct research on the computer, as well as in books. Finally they wrote a poetry/counting book about their habitat using patterned language.

E's reflections about her partner

J __ has gotten comfortable and is not liesning; sloply hand writing and no space between her word. It's just like a whole bunch of letters. It takes forever for her to get started and when she does it, time to go.

I was late so B—helped J—till I came in. First I sat down, she was ready to write. She told me what she was going to write. I turned around to help another kid named F__. I turned around to find J—half way throo with her sentence. I was amazed my mouth doped opened cause All the word where spelled correct?

Throughout the entire process, I took notes reflecting on my students' behaviors and writing.

Findings

In my data analysis, I compared the students' reflections about their kindergarten partners with their self-reflections. I also compared their reflections with mine. In addition, I looked at student writing samples throughout the year employing a rubric used by the state of Arizona to score the state writing exam. In the rubric each of the six traits previously mentioned is divided into six points. Each point from 1-6 is accompanied by an explanation of that score, with 1 being the lowest. If writers score 4 or higher on the rubric, they are considered proficient for that trait. This rubric is used from second through twelfth grade. Therefore, the teachers also consider the state standards for writing at each grade level along with the rubric when scoring. There is a different six-point, six-trait rubric for the K-1 stu-

E's self reflections

... Now Im in 5th and grades gone down Im talking and I don't know when to quiet. It's going to effect me in middle school.

My voice has in proven miraculously. For example in a story I wrote called The Divorce, I used my punctuation and thoughts. The kindergardens taught me to not slack off cause if you do your wrighting slacking off it's not nearly as good as it could be

dents. The fifth graders needed to learn both rubrics. It was beneficial for them, because the K-1 rubric is a simplified version of the second- through twelfth-grade one and it helped them understand the expectations for their own writing.

In their first journal entries, I noticed that their comments were primarily related to conventions, even when the Monday minilesson was on other writing traits. For example, when the focus was word choice, the students I chose for the study all wrote about spelling in their reflections that week. It is interesting to note that even though I'd spent the better part of this year trying to get them to focus on all six traits as an indicator of good writing, their reflections illustrated they still felt spelling was the most important indicator of good writing.

In December the students wrote about how their work with their kindergarten partners helped them in writing. Most of them commented that their spelling had improved. Others commented that they could come up with more ideas for writing because of their tutoring experience. One of the students, K, wrote, "Working with the Kinders it just [helped] me think about more ideas. It helps me know [exactly] what I want to write about. [A] helps me to talk to myself when I have a problem with voice and she helps me with sentence fluency, like when she writes down a [sentence] it just really [flows]."

E wrote, "The kindergarteners taught me not to slack off, because if you do, your writing is not nearly as good as it could be. When I work with J and she doesn't do her best, I push her to do more. That's what I'm doing with myself now." D was really specific with his comments. In an interview, he identified the three traits we've been working on with the kindergarten students. Of the three (ideas and content, word choice and organization), D stated that working on

organization had helped him to understand that trait. In April, D commented on the growth of his kindergarten partner. He commented that his partner had gained a great deal of confidence as a writer over time. What I find really interesting about this reflection is that D provides evidence of the statements he makes about his partner. This is good writing, even with the spelling errors. (See Fig. 1 p. 15)

Another student, M, said that working with his partner had helped him with his reading. M has struggled with both reading and writing over the years. Last year he received extra help in both areas. D also had many problems with reading and writing. Both of them told me they gained confidence in themselves as writers and readers through this experience. "Before I didn't think I could do anything in writing," M commented.

In comparing the students' reflections about their kindergarten partners with their self-reflections and my reflections of them, I found some interesting similarities. Their reflections and mine were parallel. Also, in their self-reflections, they identified how their work with the kindergarteners influenced their own writing. This was powerful evidence of the positive effects of the partnerships.

I was not surprised to find that the kindergarteners' writing improved. In the beginning, many had not known the alphabet. By May, they were typing their own stories. On the other hand, I was surprised and impressed at the professionalism with which the fifth graders worked with the kindergarteners. Their reflections indicate that they took their work in tutoring serious-

K's reflections

Today my partner was not so lazy as last time, but she was still lazy. Also today the word was Organization, the organizations words are, first, then, and last. What my partner wrote today is... "What I want to be when I grow up is a doctor. Then I can help kids just like me."

A—was not here today but, A—has been doin party good. Sha like to read to me, much she did not like to do. I have been helping her by, making her sound out the words and she likes to write a lot. She would always tell me that she cant read, write or do anything like that, but deep down she can do it, and she found it. She love to red to me, but you know she reminds me a lot about myself.

My reflections

One thing I have noticed is that the writing prompts are no longer threatening to my students. Everyone writes, even E. The kids are very interested in composing a quality piece. The prior week, I gave them samples of descriptive writing to analyze. They identified the qualities of this type of writing. Of course certain features, like specific grammar, we had to go back and learn: "What is a verb?"

ly. At times, their reflections are so similar to mine that I might think a teacher wrote them. It's apparent they felt responsible for the success of their little partners.

Finally, in comparing writing pieces across time, it was evident that the fifth-grade students' writing improved considerably. More importantly, their reflections are better examples of "good writing" (based on the six-trait rubric) than their writing assessments, which were responses to a predetermined prompt. For me this was an important discovery in guiding my instructional practices.

Implications

Pairing older students with younger ones for tutoring in writing affects both groups positively. It provides an authentic environment for writing and thinking about writing for the older students. When the age difference is dramatic as in this case, the experience also enhances the emotional growth of both groups. The fifth graders were role models for the kindergartners, which helped the younger students. The older students grew because of the level of responsibility they felt in the experience.

In assessing students' growth in writing, it is important to provide authentic activities

in addition to mandated or periodic evaluation exercises. When students write for a reason, they put more of themselves into it. This belief was confirmed, as I could note obvious differences in the depth of student writing in the journal entries compared to the writing-prompt exercises. The students also thought a lot more about writing, since they needed to instruct other children. Through this experience, the students learned because they needed to teach.

In reflecting on this project, I remember being overwhelmed with the idea of collecting data and recording my findings. Then as time passed, the process became a part of me and of my classroom community. The students felt what they were doing was very important because we went through this process together and because they were responsible for their younger students' learning experiences. Since I believe this is what we want our students to feel about their work in school, I thought the time spent was well worthwhile.

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Learning as Acquisition or Learning as Participation?



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Introduction and background

The metaphors we choose and use can *shape* as well as *reflect* our perceptions (Reddy, 1978). I was curious, therefore, to learn more about how students' accounts of their learning would relate to metaphors commonly used in the professional literature to describe learning. My interest was sparked, in part, by an ongoing debate in the professional literature about the relationship of two seemingly distinct metaphoric representations of learning: learning as acquisition and learning as participation. Although these metaphors are prominent in the literature, I wondered if they would be evident in the way students framed their discussions of learning. I was also interested in whether these metaphors reflect contradictory and incompatible views of learning (and thus imply different actions and behaviors), or whether they can be productively integrated to offer a more richly informative perspective on the complexities of learning as actually experienced.

To explore these questions, I undertook a research assignment at Oestfold University College in Norway that enabled me to interview 24 pupils aged 16 to 20 about their school stories. In selecting participants, I sought those who indicated they had experienced, either presently or in their past, difficulties with reading and/or writing. My assumption was that such students would be more likely to have reflected on my questions than those who had never struggled with learning.

Once the national Social Science Data Services had agreed to the plan, I sent an

introduction letter and a letter requesting parental consent to schools and asked the headmasters to give me an opportunity to interview pupils for an hour or two. My introduction letter stressed a particular interest in descriptions about how and when learning is going on, how to describe good instruction, and what situations encourage learning.

During our conversations, all informants received the following questions:

- *How would you describe your school history?*
- *How would you describe good education or good learning situations?*
- *How do you learn?*
- *What characterizes good instruction?*
- *What characterizes a clever teacher?*

This article presents the theoretical background and methodical considerations for the study and a summary of how 24 pupils, classified on the basis of their responses into two groups, answered the presented questions. The underlying goal of this study was to obtain information that would help me evaluate whether it is worthwhile to promote conceptual unification between cognitive and situated theories of learning.

Theoretical background

I have chosen to focus on an acquisition metaphor and a participation metaphor as they together and separately embrace, mask, and delimit the main distinctions between the two most important learning theories of our time. The debate in question deals with different aspects of a formative *cognitive* and a formative *situated* perspective on learning.

A cognitive point of view attends to internal structures/representations and to thinking processes. From this perspective, human learning is about uncovering intellectual, not observable, behavior within each individual (Brown, Bransford, Ferrara, and Campione, 1983). It is generally acknowledged that those subscribing to a cognitive orientation have succeeded in describing important aspects of individual thinking and of how knowledge is

stored. It is also generally recognized that those subscribing to such an orientation seem to have neglected or failed to describe human beings as participants within social and cultural contexts.

A situated point of view deals with the implications of being a participant within a social community. As presented by Lave and Wenger (1991), a situated perspective is tied to the concept of *legitimate peripheral participation*. Children in their communities and schools, for instance, have legitimate access to the intellectual and physical instruments of their own culture; learning is conceptualized as a progression from legitimate peripheral participation towards full participation. The focus is on the social context, and on human and social cooperation. Knowledge is conceived of as decentralized and socially distributed. A situated perspective focuses upon environments and participants as learning resources. Learning is understood to occur through practical experience, and to involve the activation of implicit knowledge, imitation, repetition, and identification. Learning is acquired when *apprentices* compare themselves with their *skilled masters*. Participation is focused; verbal reflection and supervision are not. While this orientation to learning and knowledge is generally credited with recognizing the socio-cultural complexities of learning, it is found wanting for failing to adequately address individual thinking and individual understanding.

In an article titled "On Two Metaphors for Learning and the Dangers of Choosing Just One" (1998), Anna Sfard used both

an acquisition metaphor and a participation one to illustrate her question: In research on learning, is it worthwhile to struggle for a conceptual unification of the cognitive and situated theories? The article has a basic message: "As researchers, we seem to be doomed to living in a reality constructed from a variety of metaphors. We have to accept the fact that the metaphors we use while theorizing may be good enough to fit small areas, but none of them suffice to cover the entire field." (p. 12). Sfard's first aim was to elicit learning metaphors that guide our work as learners, teachers, and researchers. She identified two: learning as acquisition and learning as participation. But she cautioned that too great a devotion to any one metaphor could lead to theoretical distortions and undesirable practices. Metaphorical projection is a mechanism through which a given culture perpetuates and reproduces itself in a constantly growing system of concepts, and there is a thin line between theory and metaphor (Scheffler, 1991, p. 45).

An acquisition metaphor conceives of human learning as the process of acquiring something. "Since the time of Piaget and Vygotski, the growth of knowledge in the process of learning has been analyzed in terms of concept development" (Sfard 1998, p. 5). A human mind is envisioned as a container, and a learner is considered to be an owner of skills, knowledge, and concepts. Once acquired, knowledge may be applied or transferred or shared. The metaphor applies to both the passive reception and to the active construction of knowledge. The learning processes of

interest are those of concept development and knowledge accumulation.

The acquisition metaphor has a long tradition and is strongly entrenched. The participation metaphor is more recently introduced (Lave and Wenger, 1991), and is closely allied with apprenticeship models of thinking (Rogoff, 1990). All key words associated with participation indicate action. Participation is synonymous with taking part and being a part; learning is thus viewed as connecting to a greater whole, and the focus is on the mutuality of relation-



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Fig. 1

The Metaphorical Mappings

	The acquisition metaphor	The participation metaphor
Goal of learning	Individual enrichment	Community building
Learning	Acquisition of something	Becoming a participant
Student	Recipient (consumer), (re-)constructor	Recipient (consumer), apprentice
Teacher	Provider, facilitator, mediator	Expert participant, preserver of practice/discourse
Knowledge/concept	Property, possession, commodity (individual, public)	Aspect of practice/discourse/activity
Knowing	Having, possessing	Belonging, participating, communicating

ships and the evolution of bonds between an individual and others.

Most conceptual frameworks cannot be regarded as pure. The dichotomy between acquisition and participation metaphors should not be mistaken for a well-known distinction between individualist and social perspectives on learning. The individual/social distinction rests on different visions of the mechanism of learning. The acquisition/participation division is, according to Sfard (1998, p. 7), ontological in nature. It draws on to two different answers to a fundamental question: What is this thing called learning?

Sfard concludes that both perspectives are necessary: "Each has something to offer that the other cannot provide. Moreover, relinquishing either AM [acquisition metaphor] or PM [participation metaphor] may have grave consequences, whereas metaphorical pluralism embraces a promise of a better research and a more satisfactory practice. The basic tension between seemingly conflicting metaphors is our protection against theoretical excesses, and is a source of power" (p. 10).

However, Sfard points out that cognitive and situated perspectives are not measurable by the same standard. A participation metaphor has a normative message of collaboration, togetherness, fellowship, and solidarity, while an acquisition metaphor promotes separation and competition between human beings, between those who are gifted and those who are less gifted.

Method

I used a semi-structured interview, which may be defined as exchange of standpoints between two or more persons talking with each other about a theme of common

interest. Kvale (1996) defines such a semi-structured interview as "an interview whose purpose is to obtain descriptions of the life world of the interviewee with respect to interpreting the meaning of the described phenomena" (p. 5).

A research interview is based on daily life conversations. It is a semi-structured, professional discourse with a purpose that goes beyond spontaneous exchange of everyday views. Although a research interview promotes descriptions, it is not a question of free speech, nor a narrative or an ethnographic method. The purpose is to access accurate, tested knowledge within a situation controlled and defined by the researcher. The knowledge gained however, is entirely based upon statements from the informants who have agreed their comments have been accurately represented.

As an interviewer, I emphasize openness. I did not seek certain results or certain conclusions. In many ways, the final outcome is created between the interviewee and the interviewer as a result of a time-regulated interplay within a certain context. I have a special responsibility to make a good working situation. Being an interviewer and interpreter, I am a participating co-producer of the presented text. Questions were modified in response to body language, omissions, laughter, modulation, and glance. The process is an interpretive one. While I assumed that comprehensibility and experience were shared between interviewee and interviewer, this must be acknowledged as an assumption. I know that an interviewee may choose to tell or not to tell the interviewer about life experience, while I, as an interviewer, in the end

decide the relevance of received information. Analyzing what the informants had expressed, I looked for distinctive statements and representative quotations from each informant. The information obtained was condensed in order to get an overview, an entirety. I looked for a concise and personal overview precisely defined by distinctive statements and representative quotations. I then developed and categorized themes, reading the texts again and again, using distinctive statements to evaluate my categorizations and seeking what I may have overlooked.

Each informant was invited to evaluate the session. Most appreciated my written and oral activity; a large majority had experienced the interview as a skilled conversation. Within a week, a transcript of the interview was sent to each informant. Each participant was encouraged to use e-post, a letter, or a phone call to clarify misunderstandings and to change the transcript. Four informants used the opportunity.

The informants

Nine female and 15 male interviewees were selected by drawing lots from the list of names of the 143 pupils who had indicated readiness to participate. All were asked to describe their school stories and how they had experienced the different school levels. Twenty-four pupils reported limited or continual reading and/or writing difficulties. Nine described experiences with dyslexia, with five providing a fairly precise diagnosis. Eight informants described their reading and/or writing problems as a traumatic but temporary phase, but also as a stimulus to work on their language skills. Five pupils were seeking or planned to enroll in a university college or a university; 12 wanted a vocational occupation.

Summary of the groups' responses

The following descriptions are based upon a thorough analysis and interpretation of what the informants reported during the interviews; representative quotations are provided where viewpoints were concisely expressed.

Learning: Seventeen of the 24 informants seem to value learning as an opportunity for action. All members of this majority group frequently used phrases such as “to do something” and “to partici-

pate within the classroom or group community.” Several members of the majority group of 17 also spoke about acquisition of knowledge and skill, but merely as an aspect of a working practice such as conversation, participation, and cooperation. All 17 described good instruction as creating commitment, and/or as structuring the educational arrangement to give pupils the opportunity to work in groups to discuss a theme or topic. They talked a lot about “getting help to find a read thread” and stressed that “it is important to get a copy of important stuff” and find and focus on the main ideas. Although the problem generally seems to have been worse some years ago, 10 pupils still would do a lot to avoid having to read aloud in front of their classmates.

A minority group of 7 of 24 informants valued “distinct and explicit messages from teachers who have something to tell.” They all talked about “teachers that use examples to help us understand.” All seven focused on learning as the acquisition of something.

The goal of learning: To members of the majority group, the goal of learning is partly about “being seen by teachers and schoolmates.” It is important “to be regarded as an adequate member of the group.” They all focused upon learning as community building. The goal of learning is about being regarded as an adequate participant. It is important “to belong and to be taken seriously.” It is “very important” to experience oneself as a pupil equal to other pupils. Five out of 17 pupils explicitly talked about individual acquisition of knowledge and skill.

A minority of 7 of the 24 informants were relatively clear that the goal of learning is about acquiring knowledge and skill: They should all “be able to do something useful later in life.” Three included learning as a result of group work with schoolmates and teachers. Four pupils out of seven hardly mentioned a participation role at all. All members of the minority group focused upon the goal of learning as individual enrichment. They talked about acquiring enough knowledge and skill “to be able to compete in school and within working life.”

Being a student: Four majority group informants described their position “as a fight to be accepted.” All four reported

rather severe reading and writing difficulties. They talked about the importance of “being treated as a useful member of the group” and of being able “to do something useful together within a group.” “It is important to belong.” They all used “some energy to reduce or to avoid situations” where they might “lose face.” All four indicated that “loss of face problems” had been worse a few years back: “It is easier these days. My problems are recognized by teachers—not all teachers though.”

All minority group members described pupil activity as important. They talked about how to receive and how to use knowledge, concepts, and skills, as well as how to create/recreate skills, concepts, and knowledge within new contextual frameworks. Four pupils were sceptical about group work and problem-based learning activities. They all felt it necessary “to give and help a lot.” One of those four added, “and not ever receive any gratitude at all,” seemingly implying little payoff for the efforts made.

Being a teacher: Majority group members described a good teacher as “helpful,” “a competent participator,” and capable of “seeing with insight.” A good teacher should be “a grown human being who initiates and preserves communication, activity, and cooperation.” “A good teacher would not force a pupil to read in front of classmates.” A good teacher is “cheerful, smiling, and fair towards everyone.” The participation perspective is obvious.

All seven members of the minority group valued a teacher as an informer and a provider. A good teacher should be an intermediary. “A good teacher knows his subject, and knows how to treat pupils.” Every group member stressed that a good teacher should be “an organizer and a collaborator.” Collaboration is a key feature of a participation perspective. This suggests that the distinction between the acquisition/participation orientations is one of differing emphasis rather than definite boundaries.

Knowledge/concept: Challenged about how to acquire knowledge, concepts, and skills, majority group members spoke about these as aspects of practices such as conversation, participation, and cooperation. Several informants mentioned that learning by heart or memorizing was connected to suffering and defeat.



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Minority group members clarified the importance of the acquisition of skill and knowledge, and how this should be carried out: “Schooling is about acquiring knowledge, concepts, and skill.” They all talked about concepts, skill, and knowledge as being of great value, as “a property,” as “enrichment,” and as “a possession necessary to compete.”

Knowing: Most majority group members described knowing as a result of “knowing by doing.” They talked about knowing as a result of doing something alone, or even better: “Doing something together with schoolmates and friends.” Knowing was regarded as “a result of group work” and “intelligent communication” and “organized education.” Nine out of 17 members underlined participation as an important component of practical experience.

To all seven members of the minority group, knowing is “something useful to receive as a result of hard work within school and in leisure time.” It is a possession, necessary to compete in society. One talked about learning as a process of growing into and appropriating the culture that surrounds you. Some talked about acquired knowledge, but not about practical experience.

About group classification

My placement of participants into the two groups is open to discussion. Predictably, there were informants with mixed views that overlapped both categories. All informants talked about skills and knowledge that are useful within new contextual frameworks. Some who were classified in the majority group 1. Many members of the majority group seem to be successful pupils; their futures appear bright. This information weakens a hypothesis that pupils with reading, writing, or other difficulties display a one-sided focus on participation in order to become adequate

members of a community. Successful members of the majority group generally focused upon participation, cooperation, and activity within social practice. Generally speaking, successful members of both groups focused upon participation, especially when they spoke about organized classroom and outdoor activities. Because of the frequent references to both skills and participation, it could not be said that focusing on participation was a key characteristic of poor learners.

Conclusion

The debate in question deals with different aspects of a formative cognitive and a formative situated perspective on learning. A cognitive point of view is known to focus on internal representations and thinking processes. A situated point of view deals with what it implies to be a participant within a social community. Although each perspective discusses theoretical and practical questions in different and complementary ways, both perspectives contribute to developing theoretical understanding and improving educational practice.

Sfard (1998) draws a clear distinction between an acquisition metaphor that embraces all learning theories in which learning is understood as individual acquisition of skill, knowledge, and concepts, and a participation metaphor that understands learning as legitimate peripheral participation where the participants gradually achieve complete participation within a specific organization or community. Sfard claims that each metaphor reveals different fields of human learning. In my opinion, Sfard regards cognitive and situated perspectives as complementary but distinct approaches to human learning, representing very different and competing discourses of learning. However, in my view, it is not a question of competition. Different metaphors should be able to blossom side by side.

An acquisition metaphor represents and informs extremely different learning theories. It implies different forms of construc-

tivism as well as socio-cultural learning theories. An acquisition metaphor represents passive acquisition of information and active construction of knowledge; it implies conceptual transference through interaction from a social level to an individual level. According to Sfard, an acquisition metaphor represents every form of individual acquisition of skill, concepts, and knowledge. A participation metaphor involves learning understood as increased participation within a social community, focusing upon situated practice.

The contentious and amplified division between a cognitive and a situated perspective on learning seems, on first consideration, to be reasonable. However, I would argue that our learning and actions are part of the world, born out of earlier experiences and our viewpoints of reality. Thinking, communication, and physical action are always situated within contexts. A crucial point here is that human beings are not simply influenced by contexts; rather we all are part of, and constituted by, different contexts. This point of view challenges dualism. Within a cognitive perspective, context is what surrounds the human being. Action and knowledge must be related to connections and activities outside of a human being. However, cognitive perspective focuses cognitive processes and structures within a person (Greeno, 1997, p. 5). A cognitive informed researcher may ask questions about context, but these questions typically presume a distinction between individual knowledge and the current context; in contrast, the situated researcher assumes that activities within the social system are the focus of what is to be explored. Within a situated perspective, human beings are not influenced by contexts because action and understanding are part of contexts. It is not first a question of context, and then a question of action. Parts and whole define each other and constitute an identified entirety (Cole, 1996, p. 131). Analytically it may be possible to divide different contexts. It is not easy in practice (Duranti and Goodwin, 1992).

It is certainly possible to work within and develop a perspective of learning understood as individual cognitive processes, or to work within and develop a perspective of learning understood as social interaction or practice. However, when one is chosen over the other, the chosen one will be regarded as fundamen-



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tal and given priority. In my opinion, this is likely to promote competition between, rather than lead to integration of, the two perspectives. My teaching methods would depend on the curriculum, the number of hours available and other expressed and implied terms, but first and foremost upon my pupils. The most important question is how I as a teacher am going to teach in a way that benefits every single pupil within my classroom. In my opinion, the choices ought to be based upon knowledge about relevant learning theory as well as current metaphors.

Despite presumably knowing little about a concept called acquisition metaphor or one called participation metaphor, and knowing little of differences between a formative cognitive and a formative situated perspective on learning, all 24 informants nevertheless seemed to know a lot about their practical contents—not as characteristics, not as types, but as different ways of learning.

My selection criteria and methodology may have influenced the results. Nevertheless, all 24 respondents, to a greater or lesser degree, conceptualised learning as participation and described it as involving: community building; the importance of becoming a participant; apprenticeship as a way of learning about by doing; problem-based education; belonging and cooperation. Their schooling experiences appear to reflect implementation of both situated and cognitive learning theories: the descriptions of 17 reflected a social perspective on learning; seven placed more emphasis on individual orientations to learning. Through the current national state school system, interviewed pupils seem to be familiar with learning activities suitable to a participation metaphor.

Although all school information may be conceptualized in terms of an acquisition metaphor (Sfard, 1998), most informants described the goal of learning as community building, but also to some extent as individual enrichment. To members of the minority group, the goal of learning is definitively about acquiring knowledge and skill. Seventeen majority group members talked a lot about learning as becoming a participant, but also a bit about learning as acquisition of something. Seven minority group members focused on acquisition of concepts and knowledge, but a few talked also about teamwork and learning by doing. For members of the majority group, a pupil



is described as a co-operator, an apprentice, and an important participant; however, the pupil is also described as a recipient and a re-creator/creator. Seven minority group members focused upon a pupil as a recipient, a re-creator/creator. Majority group members described a good teacher as a preserver of practice, even as an expert participant, and as a provider and a mediator, while minority group members focused upon the good teacher as an organizer, collaborator, mediator and provider. All majority informants talked about knowledge and concepts as an aspect of practice, an aspect of activity, but also as a possession. Minority group members described acquisition of skill and knowledge as an important possession necessary to compete in society, and as a valuable property. To members of the majority group, knowing is about learning by doing, about belonging and a lot about participating. To members of the minority group, knowing seems to be something useful to receive as a result of hard work, something you may obtain and possess. Conceptualised in terms of the acquisition metaphor, social perspectives on learning seem to embrace the participation part of the metaphorical mappings presented by Anna Sfard (1998, p. 7).

One out of four majority group informants who looked upon the school experience “as a fight to be accepted” was describing a participating learning perspective. Using gardening with his parents on the farm as his example, he expressed this as follows: “I just know what to do. It is not easy to explain what I do and how I do it. My mother, father, and I played with flowers and flowering shrubs. We developed functional procedures as the years went on... Teachers may call the activity a voluntary apprentice[ship], but I was playing and I am playing, really.”

My recommendation to teachers would be to discuss, read, and learn a lot about the theoretical distinctions between learn-

ing theories within a cognitive perspective and learning theories within a situated perspective. Teachers should discuss and even challenge the theoretical distinction between the metaphors. Sfard (1998) claims that the acquisition metaphor contains every form of individual acquisition of skill, concepts, and knowledge; if so, this would include socio-cultural learning theories inspired by Vygotsky that imply transmission of concepts through interaction from a social to an individual plan with internalization of knowledge as a final result.

Teachers should examine their assumptions about the transmission of learning. Teachers inspired by cognitive approaches seem to accept the idea that knowledge can be transmitted more or less intact across context. This is based upon an assumption that knowledge and context may be separated. Cognitively oriented teachers ask themselves about what is going on inside the head of each individual, while teachers who are oriented to situated theoretical positions focus on observable social interaction. They ask themselves how their pupils may succeed next time based upon successful engagement in learning activities.

The questions are different!

It is extremely important to ensure that both kinds of questions are formulated. It is important that teachers attend closely to the social needs of their pupils as they help them to acquire knowledge.

Time spent on building community is neither a peripheral concern nor a luxury. Time spent on building community is a vital foundation for learning. I suggest that pupils and teachers together work out *a learning curriculum of practice* where didactic situations evolve out of participation in a specific community. *A community of practice* (Lave & Wenger, 1991) is a set of relations between persons, tools, and activities over time, in relations with overlapping communities of practice. Each

community of practice involves different viewpoints and different interests, but also provides an intrinsic condition for acquiring what is traditionally understood as knowledge.

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Active Learning Through the Creation of a Textbook



Photo from the author's archive

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One of the important goals in teaching university students is to help shape their professional views and outlook. Accordingly, one of the primary aims of university faculty is to do their best through lectures and seminars to prepare students for their future professional work. Such is the traditional attitude in the system of higher education. More often than not our students learn only to passively reproduce other people's "wise ideas" and memorize facts. Much less time in professional training is allocated to their creative activities within educational contexts. However, it is this aspect of professional preparation that should lay an important foundation for their active participation in their future workplace. A proactive and creative approach is especially crucial in the work of those teachers who tutor children with learning difficulties and disabilities. Our Remedial Pedagogy Institute of the Samara State Pedagogical University prepares specialists in this particular sphere.

Posing questions of varying complexity, designing tasks, developing the basics of research and design skills—this is only a partial list of the many capacities we strive to develop in our students.

We realize that an important principle of higher-education instruction is achieving coherence between students' learning and scholarly activities. We need to spur students' interest in research and give them the experience of participating in a joint project. One good way to do this is to organize a group session at which students create a model of a textbook for future students, based on one of our course topics. We took this idea from *Games—learning, teaching, leisure* (Petrusin-

sky, 1994, p. 22). Unfortunately, the authors do not give a detailed description of the suggested strategy, so what follows is my own elaboration.

In this article I would like to share my experience of implementing this idea within the course titled *Pedagogical approaches for teaching children with intellectual disabilities* (a third-year class for students specializing in the teaching of such students). The theme of the session was *Methods for teaching children with intellectual disabilities*.

The combination of this theme and the format I chose for working with students were called forth by several factors. Devising a model of a textbook allows students to carry out an analysis of quite a few general pedagogical sources connected with the topic and to get acquainted with different definitions of such constructs as *teaching method* and *instructional strategy*. It enables students to consider different classifications of teaching methods, to synthesize this material, and to develop a structural design. But the main reason for choosing such a task is that, while analyzing materials on general pedagogy, students can come to realize the remedial nature of methods used in working with children with intellectual disabilities. Also they learn how to apply individual instructional strategies. Unfortunately, in the sources available on the topic, this kind of information is missing or insufficient. However, group work and other opportunities presented by the RWCT allow students to elaborate on the theme, take necessary notes, and form independent conclusions. This instructional approach highlights active learning and critical thinking and incorporates the ERR framework (Evocation—Realization-of-meaning—Reflection) for instructional design (Steele, Temple, and Meredith, 1997).

Besides, our experience shows that the topic *Methods for teaching children with intellectual disabilities* is difficult for students, since they consider it too "theoretical" and tiresome, if not boring. The chosen format of the session makes it possible for us not only to reach the stated goals, but



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also to overcome the seeming tedium of this important theme.

The primary objectives of the professor in offering this activity may be subdivided into:

Instructional objectives, which include brushing up the background knowledge on the topic gathered from literature in general pedagogy, and forming ideas of specifics in using teaching methods at a remedial school.

Educational objectives, which imply forming active learning skills and the ability to acquire knowledge on a topic independently.

Developmental objectives, which include supporting the skills for creating written text, fostering the ability to work independently and in groups, developing critical thinking, encouraging imagination, and improving communication skills.

The materials we used were a selection of various textbooks, items from textbooks connected with the topic, paper, felt-tip pens and markers, scissors, and glue.

The duration of such a session depends on the amount of educational material to be studied and the difficulty of the topic. In our case the session lasted four academic hours (spread over two class periods) because the project required a lengthy period of serious work with textual materials.

Evocation stage: Students' interest in the problem is activated.

At the outset of the session I announce: "Now we are going to write a textbook called *Methods for teaching children with intellectual disabilities*, and the challenge we are facing is connected with making it really helpful for and appealing to the students who may use your textbooks in the future."

For a start we review together what the function of a textbook is, try to produce a

definition, and list the components of the book—cover, table of contents, introduction, conclusion, the main body of the textbook including sections, chapters, and paragraphs, the questions and assignments following each unit, appendices, and the bibliography. While doing this we brush up the students' knowledge of the theme *Methods for remediation: A textbook as teaching tool*. First we work individually, then in various-sized groups (it is possible to work in pairs and then switch to groups of three or four). We discuss whatever results we have come to, evaluate their appropriateness and appeal, and start drawing up a uniform table of contents for the future textbook.

Realization-of-meaning stage: Active practical work related to the theme).

We examine a number of textbooks brought to the session by the professor (textbooks may be of any kind, from school or college). We check whether the definition of a textbook developed earlier matches the reality, and whether we were correct in defining the components of a textbook. We enlarge the list if necessary.

Then we work together on compiling the contents of the textbook devoted to the chosen topic (using textbooks on general and remedial pedagogy, materials taken from *Defectology* journal, and course lectures). Some of the necessary materials are supplied by the teacher, others by the students (their home assignment is to select such materials).

With this spadework completed, we are ready to pass on to the creative stage. At this point it is necessary to get back to the goals of the session: we are creating a textbook/guidebook for students who will later study this topic. Special attention has to be drawn to the sections connected with the application of various methods for teaching children with intellectual disabilities. Students should understand that these points should be described in the most detail.

To make our work more effective we divide into groups—in accordance with the number of sections in the textbook we are developing. Communication among the groups should be maintained, since a textbook is a single whole. Therefore the desks in the classroom need to be arranged to accommodate the number of the groups and placed to facilitate communication among the authors.

The professor may choose to assign students to particular groups, taking into account their readiness for this particular task, as well as their level of knowledge and activity. An effective group is one that

fosters mutual enrichment, with no one bored or idle. A small group (two or three people) is selected for writing an introduction and a conclusion; there also should be a small group of artists and designers (three at most) to elaborate charts, tables, graphs, and the cover of the textbook to the authors' specifications.

The largest group of authors will write the text and think of supplementary assignments. This last group is divided into subgroups corresponding to the number of chapters in the textbook (the number of students in each subgroup depends on the scope and complexity of the work awaiting them). Some people are responsible for the text, others for questions and assignments. It is also necessary to form a small group (two people is usually enough) responsible for appendices.

The difficulties of the work depend on the concrete assignment of each group. For example, often those responsible for questions and assignments do not see the difference between those two terms. Additional work with the literature brought to class is usually helpful: students search for examples of questions and assignments in other textbooks. Another useful kind of work is the creation of two indexes: *Questions* and *Assignments* which could include a list of interrogative words, a list of possible assignments, and also brief implementation instructions. Those who are responsible for the introduction and the conclusion are likely to face their own difficulties. Until now the majority of students may simply have skipped these sections in textbooks, without knowing what is typically written in them. However, when they become authors and compilers, their attitude toward all components of educational literature obviously changes. Beginning authors may also fail to understand the function and possible content of an appendix; they may regard it as simply another boring addition. They can't even imagine that an appendix may contain CD-



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ROMs or video materials with recordings of lesson segments or whole lessons to be used for analyzing teaching methods. To help expand the possibilities, the professor's leading questions and additional explanations are needed.

The stage of compiling the text is the most time consuming. During this stage students use all available literature and the professor's help, and then discuss the results. They make clippings, use the glue, write their own text for the missing parts and logical links between the parts, make tables, and give examples of possible appendices. The professor also works actively and intensely, mainly at the job of facilitating. The professor moves around all the time—asking questions, answering students' questions, providing examples, showing how a problem that has arisen is solved in available textbooks, helping to design tables, etc. The main difficulty here lies in combining several roles: that of an organizer of the process, an active participant, and a detached observer of each student throughout the session.

One more important aspect is assessment and evaluation. Whenever possible, the professor should try to reach a fair and objective opinion of the quantity and quality of the work done by each student. However, this is not all. The teacher needs to

Fig. 1 Evaluation of work done by students of group _____ at the lesson on the theme _____

Student's name	Evaluation criteria				
	Activity	Independence	Participation in group presentation	Participation in group discussion	Quality of the resulting group product



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track the degree of activity of each student at this session as compared with the previous one, as well as the number and quality of the questions asked by the student, the amount of help rendered to the student, the level of the student's independence in performing tasks and, certainly, the textual material resulting from the work. In other words, it is not only the end products that are to be analyzed and evaluated, but also the formation of skills necessary for further study and work.

In the psychological and pedagogical literature devoted to critical thinking (Halpern, 1996; Klooster, 2001), the following criteria for the evaluation of changes occurring through the development of critical thinking are put forward:

- Independence of thinking;
- Ability to search for and comprehend the necessary information;
- Ability to set problems and formulate questions;
- Ability to provide convincing arguments for defending one's point of view;
- Ability to participate in productive group work.

Using this list (and proceeding from the nature and results of the students' activity during the lessons), the professor develops an evaluation sheet, which in our case usually looks like Fig.1 on p. 29.

In filling out the form it is possible to use traditional grading (5, 10, or 100 points) or any other system. The main thing is "to trace the steady positive development of each student" (Zair-Bek, 2001, p. 41). To facilitate this evaluation, the professor records all his or her relevant observations in written form. This catches the dynamics of students' skills in working with the text during several successive sessions. Without such records the teacher sometimes fails to evaluate objectively even one student's progress, while the use of such records

makes it possible to fix parameters of growth for students from several groups during the whole course, or over several years—even if they were taught by different teachers during this period.

Next, the groups make their presentations, taking turns in accordance with the structure of the textbook. During this closing stage of the work, elements of reflection are already present. First, the students read aloud the full text of the introduction; then

authors briefly retell the texts of separate units. Questions and assignments are usually read in full as these elements need to be thoroughly considered. We listen to a question, decide whether its wording is correct, whether it is answerable, how difficult or simple it is, and whether it is a closed-type question with one definite answer or an open-ended one requiring a creative approach and a search for additional information. Then we read the full text of the conclusion, and present possible variants of the appendices. After presentations by each group, the other participants may ask questions and express their opinions as to what data or elements are missing and what should be changed. The results of the group work are discussed.

In terms of product, at the end of the session we have a textbook on the topic we are studying. The culmination is usually the artists' presentation as they show the cover of the textbook, which provides all the information concerning the collective authors (such as "the collective work of ... group") and the publisher (a publication of ... university). On the table of contents page, all the authors' names are given next to the corresponding units, as in a professional publication. Sometimes a group asks permission to take their textbook with them upon graduation from the university. This provides powerful evidence of the value they give to their work and its results.

This part of the session invariably ends with a burst of applause for the authors of the textbook, i.e., for themselves.

Reflection stage: Evaluation of the students' own activities).

At this stage students write a reflective report on the session. This work can be given as a homework assignment. The report consists of two parts: subjective and

objective. In the subjective, or emotional part, students share their impressions as they form and express their attitudes to this kind of work; in the objective, or rational part they sum up the results, try to realize whether they have coped with the tasks set, and highlight the difficulties they have faced in the course of work.

These reports show that most of the students feel both exhausted and emotionally satisfied after such sessions:

I am so tired! It is such pressure to work throughout all the lesson, from beginning to end!

I feel satisfied with the work we did, it was a real pleasure!

I liked so to study in this way, but you can't make every lesson like that. It is too hard!

All participants enjoyed the cooperative work, since it allowed them to know each other better, to obtain new knowledge via communication, and to get an idea of other viewpoints on the problem:

It seems it turns out fine when we do things together.

I liked the way N. performed the task. I never expected her to be able to work like this.

My friends have opened up unexpectedly, they are able to do so much! I never knew!

Among the participants there will always be students who are dissatisfied either with the lesson, with their own work, with the work of their group, or—quite often—with the grade they get:

I am dissatisfied with myself. I failed to think of interesting questions. I did not like this lesson.

We could have made a better textbook if we had used the allocated time correctly.

I think the group was wrong for me. If the professor had assigned me to another group, I would have performed better.

For us, students' critical comments serve as means of self-improvement and professional growth. It is a stage of reflection not only for the students, but for the instructors as well. It is because of critical remarks that we make changes in the lesson plans and in the contents of the textbooks, and start to evaluate and assess students' work differently.

However, practically all the authors agree that it is more useful to acquire knowledge through writing a textbook than to use class time to reproduce a unit read at home.

The activity described above has been used for six years as part of the course entitled *Pedagogical approaches in teaching children with intellectual disabilities*. The

main result of such sessions is a collective product: a model of a textbook on the chosen theme. Moreover, students who study the theme "Methods for teaching children with intellectual disabilities" in this particular format do not as a rule experience any difficulties in dealing with this theme on tests and examinations. They feel confident with this material, giving detailed answers to questions, and successfully implementing practical tasks.

They also admit that this experience helps them later to cope with difficult questions in their research work and in elaborating theoretical parts of their course and degree projects. The experience gained during these lessons helps them to work out plans of research, to present the research successfully, to formulate questionnaires for parents and assignments for children in the practical part of their research, and to consider in advance the possible questions they may be asked when defending their degree projects.

We anticipate moving soon to the next stage, developing electronic versions of textbooks. This approach will probably have even greater appeal for the students and may encourage even more serious work on the textual material, and provide expanded opportunities for visual presentation. Thus, the presentation of the textbooks will look more impressive, and it will be easier for us to demonstrate the results of students' work. Who knows, maybe one day this will result in the publication of a real textbook, which will subsequently be used in other classes and courses. The collaborative work on a textbook will result in, and serve as evidence of, the mutual enrichment of the active participants in the process—students and their professors.

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Would you, Could you, Should you, Use Picture Books to Broaden Teachers' Critical Thinking Dispositions and Awareness?



Photo from the author's archive

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Every school day teachers carry out many influential curricular decisions that influence students' learning, most notably with respect to the development of critical thinking skills. Teachers hold responsibility for crafting the experiential and conceptual knowledge bases of their students, which ultimately (and simultaneously) shape the lenses and perspectives through which these learners view, process and internalize incoming information (as either static/fixed or evolving/changing knowledge). All schooling experiences potentially support or hamper learners' temperament towards, and capacity for, critical thinking. Thus, teachers' own existing critical thinking dispositions and awareness greatly determine the degree of critical thinking opportunities presented and experienced in their classrooms.

With the perpetual increase of standardized testing and accountability in the North American schooling culture, many teachers experience stringent, often regimented, and highly structured curricular and instructional demands (Kincheloe, Slattery, & Steinberg, 2000). Homogeneity dulls the critical edge of teaching and instructional effectiveness. Teacher creativity and autonomy, suddenly devalued, unsupported, and frequently viewed within the system as counterproductive to standardization efforts, loses ground or worse vanishes. Consequently, within teachers' pedagogy, many engaging and student-centered instructional strategies that promote sophisticated, advanced, and complex thinking can be compromised, resulting in a "trickle

down" effect where learners face a passive transmission process of teaching rather than learning activities that reflect active and interactive constructivist, critical thinking.

In the current standardization flux, teacher educators must swim against the current in resuscitating teachers' critical-thinking dispositions and awareness. As an instructor of graduate candidates in teaching placements ranging from early childhood through twelfth grade in both public and private venues, with varied specializations, disciplines and content areas (special education, history, math, etc.), the challenge is especially evident. To regain critical sharpness, teachers need to experience or develop several things: empowerment within their own practice; challenges to their existing perspectives and dispositions; disruption of normative thinking patterns; self-critical examination of their pedagogy; tolerance for ambiguity; analysis of their own epistemological lens through which they view teaching and learning; and development of a pedagogical repertoire. This feat cannot necessarily be accomplished through a graduate program, let alone a Models of Teaching course, but small doses of exposure to critical-inquiry course activities can yield progressive results.

In the Models of Teaching course, a required core course for the Master's of Curriculum and Instruction degree at the University of Houston Clear Lake, multiple effective instructional strategies are demonstrated throughout the semester. One instructional model I have used to enhance the development of critical thinking dispositions and awareness is Jurisprudential Inquiry (Joyce, Weil, & Calhoun, 2004). Jurisprudential Inquiry is a model "based on a conception of society in which people differ in their views and priorities and in which social values legitimately conflict with one another" (Joyce, Weil, & Calhoun, 2004, p. 251).

Basically, through this model participants utilize critical inquiry to explore values, beliefs and norms and adopt position-taking thought processes in understanding others' perspectives. Familiarizing learners with the method of

this model generally involves use of a controversial court case (one that deals with conflicting societal values) to facilitate the six process phases (orientation to the case, identifying the issues, taking positions, exploring stances, refining/qualifying positions and testing assumptions). The activity described below is an abbreviated jurisprudential approach which uses only the first five phases. Additionally, the approach is modified, since teachers are presented not with a court case but with a value-laden, hypothetical teaching decision scenario based on selection and use of picture books in their teaching practice. For classroom teachers, this modification contextualizes and places greater relevancy on the inquiry process because the substance of the inquiry is an everyday teaching task. For the purpose of illustrating the jurisprudential inquiry process, the described books are presented as examples *only*. Implementation of this instructional strategy is inherently generic and adaptable in that it can be replicated with any other book that potentially generates differing emphatic personal views or reactions.

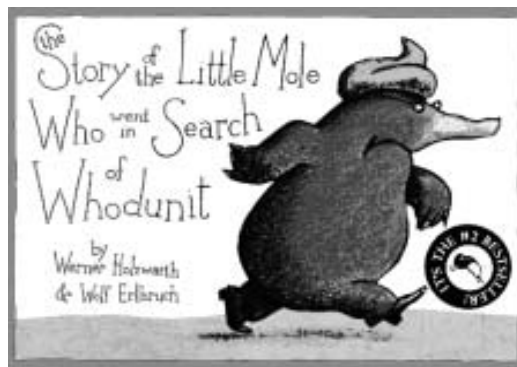
I begin by reading the picture book *The Story of the Little Mole Who Went in Search of Whodunit* (Holzwarth, 1993) and introduce it to the listeners by noting that this book was the number two best seller in Germany. The first couple of pages of the story read like traditional literature with colorful complementary illustrations, and I observe that many listeners are quietly enjoying, but intensely anticipating my motive for reading this children's book in a graduate-level course. As the story progresses, the furrowed brows of contemplation are quickly transformed to wide-eyed surprise when the listeners realize that this story depicts a mole with feces on his head going around to other animals asking them if they did this to him. In response, each animal defends its innocence by describing and demonstrating how it does it (the author presents high use of onomatopoeia for these descriptions). The initial aesthetic listening receptivity to the story becomes one of listeners' disequilibrium, resulting in either offended or amused stances. I remind the listeners that this book *was* listed as the number two best seller in Germany. A mixture of nervous and delighted laughter emanates from the group as the students shift and regroup their thought processes. I continue to read as some listeners become increasingly uncomfortable with the plot line while others laugh uproariously. At the end of the story, Little Mole identifies the perpetrator of the offense and takes revenge by committing the same act on the original victimizer, now turned ultimate victim, a sleeping dog. I then ask the listeners, "Would you, could you,

should you, read this book to your students?" And further, "Explain why or why not, considering your current teaching placement and population of learners." Post-reading discussion explodes into passionately expressed views and opinions from consistently opposing perspectives. At first, participants posture and jockey for position in the discussion. Most are eager to share their perspectives and beliefs and formulate value statements and normative claims on why they would or would not read this book to their students. Strong identity claims as teachers and individuals are expressed and shared. Many make highly emotional statements, while others express statements that waffle between emotional and efferent stances.

Customary responses *against* reading the book are paraphrased as: *my students would be out of control; it is inappropriate for the learners; they would focus on the lewd act; revenge is not something we should teach to children; parents would complain; the principal would have my neck.*

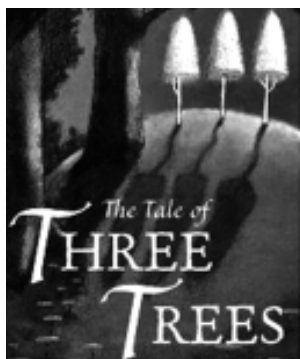
Responses *in support* of reading the book can be paraphrased as: *it would be a novel way to get my students' attention; this is a funny book that my learners would enjoy because they talk about gross stuff anyway; it might reach my special needs learners where other literature just doesn't work; I could use the book to introduce discussion of bodily functions; I could talk about how revenge is not a good thing.*

Highly engaging discussion continues as participants investigate others' views and opinions through questioning, and reassert their own views with counterpoints. Some initial staunch views are softened through dialogue as participants actively listen to the rationales offered and differing views they may not have previously considered. The nature of the discussion process inherently invokes critical self-examination of existing values, sometimes unearthing unexamined assumptions. The objective of the discussion is not resolution of the query, but rather an exercise in active listening and dialogue. Wrapping up discussion with no definitive



answer frustrates many, but ultimately through the process participants gain a more significant awareness and understanding (if only a glimpse) of how individual ideologies and contextual influences (teaching position, learner population, school placement, classroom climate of trust, etc.) affect and guide, if not dictate, decision-making values and viewpoints. Ideally, the discussion process also nudges disposition development in participants' ability to recognize and acknowledge the validity of others' perspectives.

For deeper internalization of the critical-thinking processes experienced in this activity, it cannot be a stand-alone, one-shot experience but must be directly chased with a harmonizing follow-up activity (similar process, different values explored). So, the first reading is juxtaposed with a second picture book reading of *The Tale of Three Trees: A Traditional Folktale* (Hunt, 1989). The subtitle predisposes the listeners to expect a particular type of story. Of course, after the first reading the listeners have been primed for surprises and many are expecting something unexpected. Again, this book initially reads as a conventional picture book. In the story, three trees are personified through their expressed wishes of what they long to represent in the world. One tree aspires to be carved into a treasure box, one hopes to be shaped into a great ship, and the third yearns to stay on the mountaintop and point toward heaven. After a few pages, listeners begin to realize that the "traditional folktale" is actually a story about Christ. The first tree is crafted into a feed trough that ultimately becomes the manger which cradles the baby Jesus. The second tree is crafted into a fishing boat, which carries Jesus and his disciples when he calms the storm. The third tree gets cut into beams, which becomes the cross to which Jesus is nailed. In this story, all three trees achieve their aspirations in ways different but more significantly poignant than they expected. After reading the book, listeners are again asked to share and discuss whether they would read this book to their students and to explain why or why not. As with the



Little Mole discussion, polarized views are emotionally articulated. Selection of this book was deliberate in anticipation that it would yield highly personal and diverse opinions, especially with respect to validating non-Christian views through discussion and the inquiry process. Although

similarly heated discussion occurs, a natural progression happens in which some participants appear more responsive and receptive to others' views, and actively more flexible and open to acknowledging, recognizing, and validating perspectives different from their own. Mezirow (2000, p. 12) describes this as moving "from self-serving debate to emphatic listening and informed constructive discourse."

Because of the religious theme of *The Three Trees*, it is strategically read second. *Little Mole* presents somewhat personally distant, non-threatening issues, so it better serves as an introductory activity. Participants need to feel trust within the group and they need to be supported in formulating and arguing positions, which can be easily facilitated through the first book. Additionally, confrontational dialogue operates powerfully to challenge individuals' critical thinking and is an inherent component of the jurisprudential inquiry approach; those who are not appropriately eased into the process will reject participation. Inquiry processes do not work for participants who feel threatened. A primary goal of the book-discussion activities is to develop a community of critical thinkers in a safe and trusting environment so that those participating teachers will internalize the process and carry these skills forward into their own practice (Bullough & Gitlin, 1991).

As with *Little Mole*, resolution is not the goal of discussion for *The Three Trees*. The second discussion process prods participants to more keenly examine tacit assumptions, the origins of presented beliefs (i.e., sociocultural influences), and how beliefs are formed and rationalized (ethnocentrism), and possibly to stimulate epistemological shifts in participants' thinking, moving along the continuum from naive (absolute) to more sophisticated (relativist) views. Adopting critical dispositions and awareness compels one to envision alternative perspectives and cultivate a capacity to tolerate ambiguity.

The second book activity provides reinforcement and extension of the skills practiced with the first book. Both activities, through dialogue and interactions, stretch individuals' existing critical awareness and dispositions in multiple ways that necessitate critically analyzing issues, articulating viewpoints, taking positions, experiencing empathy, acknowledging others' stances, and understanding the pluralistic nature of conflicting values.

General guidelines for presenting potentially transformative activities are described as follows:

Select a relevant issue or present situations for discussion that are professionally significant and meaningful to teachers regarding their

instructional or curricular decisions. Familiar controversial issues, or scenarios that are richly value-laden will generate the most rigorous discussions, especially those where opposing perspectives are likely to emerge. Even a seemingly innocuous picture book can serve as a catalyst for eliciting critical discussion.

Problemalyze the issue through a simple query like “would you, could you, should you?” Individual perspectives of existing societal norms come to light and conflicting values serve as fodder for discussion. Identification and recognition of polarizing values create an immediate disequilibrium in participants’ thinking processes and stir up engaged dialogue. The complexities of a well-posed problem are intrinsically challenging and invite participants to flesh out multiple accepted stances or alternative explanations. A deeper understanding of the issue is achieved.

Offer participants a platform to freely express opinions and claim aspects of their identity as teachers/educators in an open forum with other educators. This is important because for many, their “teacher’s voice” within some schooling systems, schools and teaching teams encounters increasingly marginalized decision-making influence. Usually, participants crave the opportunity to articulate their viewpoints to an attentive, connected audience. And remember, effective facilitators listen more than they share.

Model non-evaluative questioning during discussions. Facilitator finesse is demonstrated through probing and clarifying questions where participants are pushed to clarify the *relevance* of their response, the *specificity with respect to context* of their views, *applicability to multiple situations or conditions*, and the *generality* of their beliefs or opinions. An effective facilitator challenges participants’ thinking in a non-threatening fashion. You can self-evaluate your facilitative effectiveness if productive dialogue occurs and participants begin to meaningfully question each other in a similar, respectful, and professional manner.

Ease participants into confrontational dialogue with baby steps. For initial discussion, pose a non-intimidating issue to acclimate participants to the process. Build upon participants’ developing skills by presenting increasingly complex issues. Question participants with rigor to stimulate optimal challenges in their thinking, but temper aggressive questioning with supportive, objectively stated, affirmations. Substantial growth in participants’ critical dispositions and awareness is often realized through some discomforting feelings or



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thoughts, but there is a fine line between uncomfortable feelings and thoughts that challenge existing values and beliefs and thereby promote continued dialogue, and those that threaten and shut down individual participation. It is important that before group discussion the facilitator establish norms and expectations for dialogue. Although participants’ dialogue styles cannot be controlled, facilitator modeling of appropriate and respectful confrontational dialogue is often mimicked by participants.

Teacher educators can facilitate the growth of teachers’ critical thinking dispositions through a jurisprudential inquiry approach. Providing teachers with an opportunity to discuss individual beliefs and values, in a trusting climate where they listen to others’ viewpoints and critically examine their own and other’s beliefs, supports their capacity to think critically and ultimately promotes active critical analysis of their own teaching practice. Through these types of potentially transformative activities and experiences, teachers become aware of their own beliefs and values and how ideological influences impact instructional and curricular decisions. Ideally, teachers act upon their heightened critical awareness and carry it forward into classroom instruction.

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Rafael Madoyan

Why Nothing Changes in Armenia's Schools and What Can Be Done About It: A Reformer's View

Progressive teaching approaches initiated by Western educators and based on interactive methods, group work, and the development of critical and creative thinking, are being widely popularized in Armenia. Many institutions are involved in their implementation, in teacher retraining, and in printing various manuals. The effect, however, is almost negligible.

Despite all their efforts and financial investments, despite thousands of retrained teachers, interactive approaches have too little influence upon Armenian schools. The implementation of new approaches is often desultory, and the efforts of teachers remain fragmented and superficial. In teaching, "traditional" methods left from the Soviet times prevail;

it is sobering to remind ourselves that these methods were devised not to develop students as free individuals, but to mold them into Soviet citizens, into builders of an authoritarian state.

In this article, I will try to analyze why efforts toward the implementation of new educational approaches remain ineffective in Armenia, and suggest how the situation can be improved. This means I'm not going to address the effectiveness of the educational approaches themselves, but rather the efficiency of their implementation in Armenian schools. (There are plenty of examples of schools and even whole educational systems around the world where these approaches work successfully and I've

already featured such examples in *Thinking Classroom/Peremena*—see Madoyan, 2005). My analysis will be based on considering the motivational factors in reforming education. Thus, the main purpose of the article is not to criticize weaknesses (which are abundant in every educational system, including the most progressive ones), but to search for motivational levers that could increase the impact of ongoing reforms.

When trying to provide an explanation for resistance to innovations within an educational system, it's good first to look into *why* and *how* their realization at the state level and at the school level are going on. The question *why?* (concerned with motivation) seems to me as important as *how?* (addressing the methods of instigating change), since the initial motivation actually determines the reform policy of the authorities and the behavior of all participants in the system.

Motives for innovative efforts at the state level

We can name two main reasons for the reform policy of the Ministry of Education. These are: the internal reason—a decline of educational standards in the post-Soviet period; and the external one—the need to integrate with the educational space of developed countries. The first one is no doubt important; however, we know from experience that such a reason is not sufficient for launching fundamental reforms in education. For years—though admitting a perceptible decrease in students' knowledge—we have been trying to solve the problem by local half-measures. For example, in the mid 1990s, striving to enhance the prestige of the school-leaving certificate, we introduced a new format for final



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examinations: the school-leavers' knowledge was to be rated by special ministerial commissions. In the public's opinion this was equal to accusing schools of incompetence or accepting bribes. The result was absolutely contrary to the expectations, so two years later the "innovation" was cancelled and forgotten for good.

Now we have to admit that the current reform policy of the ministry is determined primarily by the external reasons. The major stimulus of reform is foreign investments—multi-million-dollar long-term programs of the World Bank. They have provided for a field of operations and "material interest" at many levels, from teachers involved in various projects, to the ministry functionaries coordinating these projects. Of course, the assumption is that positive long-term changes in the content of teaching, and in the application of new and progressive methods, will result from this kind of reform. However, such a motivational basis is fraught with negative consequences: when the true purpose of reform activities is connected with fulfilling obligations to investment programs instead of with real improvement to the quality of education, all work is primarily aimed at achieving those results and indices which please the investors.

Here is one example. Our educational reform contemplates an extensive, large-scale implementation of interactive teaching methods in *all* Armenian schools within four years. (I wonder if any other national educational system has ever been assigned such an immense task?) We need to retrain *all* teachers of *all* disciplines, without exception. How to meet the deadlines, to provide the needed pace and numbers? The answer is ready:

the accelerated retraining will be based on a "chain reaction" principle. One or two foreign experts give an intensive 10-day retraining course on new teaching methods to about 30 selected teachers. These newly prepared trainers conduct similar 10-day courses for their colleagues, teachers of their particular discipline. Their "students" in their turn, use the same 10-day pattern to retrain the entire pedagogical community within a year.

The plan is perfect in a way—however, the resulting "chain" risks transmitting to participants only separate teaching techniques, while the methodological principles that underpin them are practically ignored. Moreover, with such an *en masse* approach, the teacher-trainers have little chance to see whether their trainees have really mastered the material. Subsequent lesson observations or further support of each teacher are components all too frequently omitted. The allotted time is not enough even for overcoming the initial negative attitude to innovations, which is so typical of experienced teachers at the beginning of the retraining period. Innovative methods—like, for instance, the Step By Step interactive teaching approach for elementary school—take root more or less successfully only in those schools whose principals have gone through a complete course of training together with their teachers and who have recognized the advantages of the new approach, as well as the complexities of its implementation. To turn the innovations to our real advantage, we need to realize the ultimate goal of the contemplated changes, give up the deceptive *en masse* policy, and offer complete (as opposed to



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pared-down and simplified) retraining courses for teachers. Ideally, these courses should be made available for whole teaching staffs.

Motives for innovations at the school level

Considering the reasons and nature of the school's interest in reforming the teaching/learning process, let us not forget that for school administrators, teachers, and students, these reasons are likely to be completely different.

School administrator

In most cases the school policy is largely determined by the principal, whose innovative activity depends on two circumstances: first, on the extent of the principal's own competence and knowledge of new teaching methods; and second, on the principal's administrative conceptions and vision of the best choices for the future of the school (or maybe for the principal's own future).

Among almost 1,500 Armenian school principals, no more than 60 (or 4 percent) are to some extent familiar with new approaches. These are people who participated in various training

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sessions of IREX, ACCELS, Step By Step, or RWCT programs¹. Often the same enthusiasts participate in all these training sessions, whereas the others continue to oppose any innovative trends. It reminds me of a conversation I had with one school principal. Knowing me to be a supporter of innovations, he once asked me, “Is it true that these new methods say you mustn’t correct your students’ mistakes?” To which I replied, “Not exactly mustn’t, but a child should have a chance to get to the truth without anybody’s help.” “That’s it!” he responded, brightening. “I’ve always known this foolishness is not for our school. How can a teacher keep silent when a child says that two plus two is five?”

That’s the level of competence typical of many of our school administrators. This does not make them inclined to turn their minds to the new methods—all the more so as these methods demand great intellectual, physical, and material strain, often with no guarantee of appreciable immediate feedback.

New motivators for reforming school education in my country began to appear three years ago, when important changes in the system of school financing were introduced: in the new system, funds are distributed to schools according to the number of students. Concerned with the condition of their school budget, administrators are ready to do whatever they can in order to draw more students to their schools. In addition, the past three years have shown populist methods to be ineffective. For example, when some private and state schools make attendance at class an option, rather than a requirement, the numbers of high-school students grow insignificantly, while elementary and middle classes in the same schools rapidly reduce in numbers. As a result, dozens of schools that failed to provide the needed attendance figures have been closed.

As for the schools with no shortage of learners, these may roughly be divided into three types:

- Traditionally prestigious or “elite” schools
- Schools with strict management and rigid discipline
- Innovative schools.

In general, innovative schools whose principals are competent in the new teaching methods and approaches cope successfully with the annual problem of enrolling first-graders. Among these schools, the most attractive for young learners and their parents are Step By Step schools that implement new approaches beginning with the youngest age level. As a rule, the principals of such schools are people who have participated in

innovative training and are themselves trainers in new educational approaches. Unfortunately, there are only about 20 such schools in Armenia—but even so, they provide an example of successful reform for the others.

Teacher

The interactive learning approaches adopted by Step By Step and inherent in the multiple intelligences theory (Gardner, 1983, 1999) imply free development of the child and consideration of an individual child’s thinking and perception, without forced training or prohibitive treatment. Such an approach (although its names may differ from country to country) has long since gained a foothold in leading schools in different parts of the world. Meanwhile, in Armenia its application has not been entirely successful. Some teachers, having tried it, returned to the old proven methods, saying that “besides the free learning, we still need to teach the curriculum.” True, there are enthusiasts who do not want to give up the new approaches, but the results of their work are not always satisfactory. Their students are supposed to develop free creative thinking and the ability to solve any sort of problem independently. As a rule, these children demonstrate free behavior both in class and out of school—but may learn to read, write, and count rather late. No wonder many parents are dissatisfied. We have to admit that a teacher’s skill lies not simply in applying a method, but in gaining the best results through its application. For that the teacher will have to think over and plan systematic work with the class and with each student

¹ IREX—International Research & Exchanges Board, an international non-profit organization under whose auspices numerous innovative educational programs in the newly formed democratic countries are realized; ACCELS—the American Councils for International Education, a non-profit organization working to advance education and international exchange; “Step By Step”—an international non-governmental organization promoting early childhood education based on democratic principles; and RWCT—Reading and Writing for Critical Thinking, an international educational program, focused on the development of critical thinking.

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for every day and for the whole year. The teacher needs to carefully schedule each lesson, to elaborate daily assignments, and to prepare didactic materials, taking into consideration individual abilities and levels. It is a huge task in which preparation and reflection can take more of the teacher's time than the lesson itself. What can entice teachers into working like that, if the administration does not expect them to, and parents do not even suspect that this kind of teaching exists?

To answer this question, let us look into the general motives that propel teachers. In 2005, a group of school principals working within one of the IREX programs undertook a survey of Armenian schoolteachers. What follows are the results obtained across the Avan community (six secondary schools with about 380 teachers, 263 of whom completed questionnaires).

The data analysis has shown that the teachers, on average, are about 50—an age when, for many individuals, career ambitions and creative aspirations are on the

decline, while years of teaching make them suspicious of any innovations (as they seem to challenge or diminish the value of their teaching experience). Material interest remains the main incentive for most of them (73%)—which implies that without material stimulation it may be problematic to convince them of the need to modify their teaching.

The very low salaries paid to Armenian schoolteachers (\$30 per week for 22 hours) make them search for additional income. Most teachers give private lessons to underachievers or to graduates who are preparing for university entrance (which means the teachers stand to profit if their students don't do well, as they can then offer them additional tutoring at a fee). Others, usually the most conscientious workers, try to solve their financial problems by taking an extra academic load. However, one can hardly expect creative aspirations from a teacher who has 30 contact hours a week. In fact, we must be

grateful if such hard-working teachers come to their lessons on time, check home assignments, and don't forget to grade their students' work.

For a considerable proportion of teachers (23%) teaching offers a desired social status and public respect, provided they cope with their responsibilities and their associates are pleased with their work.

There are also enthusiasts (31%), for whom active creative work is a powerful stimulus in itself. These teachers are usually good at mastering new approaches and at awaking students' interest and activity. However, mere enthusiasm alone—without material stimulation—is an unreliable basis for stable development; one cannot seriously count on it. It is worth noting that these teachers carried out the greater part of innovative work in Armenian schools between 1998 and 2004, when IREX and OSI educational programs supported their activity financially.

Table 1 Survey results for the Avan community school teachers

What were the reasons for your becoming a teacher? ¹	Are you financially secure? ¹		What is your teaching experience (in years)		What is the share of certified RWCT teachers in your school? ²	
Material interest	73%	We are well off	4%	0–3	1%	<u>80%</u>
No alternative employment	49%	More or less	44%	3–10	8%	<u>15%</u>
Love for profession	31%	We live on my salary	32%	10–20	21%	4%
Social status and public respect	23%	We barely make both ends meet	56%	20–30	35%	4%
Family tradition	3%	We are hard up	15%	30–40	32%	0%
Random choice	2%	We are destitute	0%	more than 40	0%	0%

¹ For these questions, the respondents could select more than one answer

² The underline means that the principals of respective schools also have an RWCT certificate

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The analysis of the survey data reveals the determinative role of administration (the principal) in the school's innovative policy. In fact, the majority of teachers of schools with a 0 percent certification rate have never heard about RWCT, while 4 percent of certified teachers in a school is, in reality, no more than two or three people. Obviously, only a school principal who is competent in progressive teaching methods and ready to support innovations will be able (using the available levers of material and moral incentive) to involve *all* the staff in the innovative process.

However, no moral or material incentives will guarantee effective reform without serious and systematic work by teachers on themselves, on their own personal development. Long years of ideological dictatorship and strictly regulated teaching have developed stereotyped thinking in many teachers. Taking it for granted that they "know everything," they have lost the ability to listen to each other and to their students. Once during an RWCT workshop in Ashtarak, trying to evoke participants' interest, I asked teachers of local schools to name the criteria of an effective lesson. More precisely, I asked every participant to name just one criterion without any comments. In the resulting response, most teachers spoke for seven or eight minutes (until I stopped them), trying hard to emphasize their pedagogical skills and the effectiveness of their classes. The question is whether they had even heard the assignment. One of the major results of the first RWCT training sessions for teachers and school principals was the development of critical thinking and the ability to listen. Aiming to implement new educational approaches, it is worth remembering that in order to impart critical and analytical

thinking to our students, we should first be able to think critically and analytically ourselves.

Student

The central and most important element of the whole educational system is the student. Are our students interested in reforming their school learning? Certainly they have the most at stake. We have to admit that our current schooling system fails to provide for the comprehensive development of our children, nor does it foster all the skills and abilities they will need in their future lives. In many schools today, you will find quite a few capable students whose academic achievements leave much to be desired. The explanation is very simple: requirements, excessive home assignments in all disciplines, boring and unnecessary subjects—and all that with so many temptations around! Why strain to remember the kinks of German grammar, the derivatives of the logarithmic and exponential functions, or the dates of historic military campaigns, if you know for sure these will soon be forgotten because you will never use them in the future? A merely good grade, ensuring the realization of the parents' ambitions and promotion to the next level is, usually, an insufficient stimulus.

Moreover, we make the situation even worse by not carefully thinking through the implications of policy decisions. Beginning in 2007, a new system of final examinations is being introduced in Armenia. For those school-leavers who are not going to enter a university, examinations will be considerably reduced and simplified. This measure will eliminate still another stimulus for learning: We can hardly expect the students to perform their best when they find the learning process uninteresting and the content irrelevant, and when they know in advance that no one is going to

check their knowledge. Of course, the examination is not a cure-all and it could even be abandoned altogether—but only if some other factors stimulating learners' performance are at work. I know from experience that the best stimuli for students' interest and activity lie within innovative educational approaches, based on interactive and group learning.

How to make school education more effective?

From the foregoing it follows that, in order to increase the effectiveness of learning in Armenian schools, we need at the state level to give up large-scale, impractical projects and to direct the efforts to well-thought-out fundamental reforms. At the school administration level, we need to raise the school principals' competence in new teaching methods and approaches. At the teacher level, we should provide material and moral encouragement to innovative teachers, and develop their creative and critical potential. At the student level, we need to create conditions supporting students' interest in both the content and process of learning. Is there a strategy that would incorporate all these requirements? In Armenia, we have not yet found it, but the search continues—at all levels. I believe that one positive option is profiled education, wherein all students, beginning from the fifth grade (11-year-olds), have an opportunity to choose disciplines and courses that would form the basis for their further education.

Since the advantages of profiled learning have long been known, it has many supporters, including experienced officials of the Armenian Ministry of Education and Science. Nevertheless, today only a few schools in Armenia are authorized to offer this kind of choice, and that to

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their high school students only. “From the scientific and pedagogical point of view, differential learning should be considered appropriate and effective, beginning with the middle school. Our individual abilities become apparent already in early childhood and have certain polarity, be they hereditary or acquired. . . . One of the main tasks of the school should be creating favorable conditions for revealing and developing students’ abilities, interests and gifts” (Ananyan, 2004, p. 150).

I am most positive that profiled learning may become an effective motivational lever in reforming secondary school education, as it provides more

choice to students and more opportunities for teachers to realize their professional potential. The profiled education model, which is new to Armenia, works as follows: Students receive the minimum amount of compulsory training defined by the curriculum requirements for their level. The rest of the learning time—both compulsory hours exceeding this appointed minimum and the hours allotted for the study-group work—is devoted to profiled training. Thus, the share of student-selected courses grows, while the total weekly load for the students remains the same. The subjects and courses for profiled training offered to the students

should be relevant to their age level and provide the greatest possible diversity. The children are able to select subjects according to their interests and study them in profile training groups, at the same time learning compulsory general education subjects in their regular classes. For this pattern to be effective, school administrators will have to provide special “hours of profile training” in the school time-table, when all teachers will be free from class teaching and available to work with profile groups.

Since September 1, 2006, this model has been introduced (by way of experiment) in school 177 (Yerevan). The list of subjects we offer to our students is not all-

Table 2 Profile courses in school 177, Yerevan, Armenia

	Subjects	Grades					
		5	6	7	8	9	10
		Hours of profile courses per week					
1	World Literature	2	2	2	3	3	3
2	Mathematics	3	3	3	3	4	4
3	Physics			3	3	3	3
4	Computer Science and Programming	3	3	3	3	3	3
5	Foreign Language/Russian	3	3	3	3	3	3
6	Foreign Language/English	3	3	3	3	3	3
7	Foreign Language/German	3	3	3	3	3	3
8	Natural Sciences	2	2	3	3	3	3
9	History and Geography	3	3	3	3	3	3
10	Economics				2	3	3
11	Law				2	3	3
12	Psychology				2	3	3
13	Applied Arts/Painting and Modeling	3	3	3	3	3	3
14	Aesthetics	2	2	2	2	2	2
15	Singing/Voice-Training	2	2	2	1	1	1
16	Music/Piano	3	3	3	3	3	3
17	Cooking	3	3	3	3	3	3
18	Sewing	3	3	3	3	3	3
19	Sports/Basketball	3	3	3	3	3	3
20	Sports/Acrobatics	3	3	3	3	3	3
	Number of selected subjects	2	2	3	3	3	3

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embracing, of course: It is determined by the school's material and human resources. In grades 5 and 6, students select two profile courses, in senior grades, three. However, the children acquire a real opportunity to choose:

It should be noted that the profile courses do not repeat the subjects taught in the required classes: These groups are not meant for struggling students, but for a deeper study of compulsory subjects or entirely new disciplines. At the end of the school year students get credits for the courses they have studied. In view of students' immaturity, the whole system should be flexible enough so that an unhappy choice would not entail long-term consequences for a child. To this end, class teachers will advise students and their parents at the beginning of the school year, and during the year students will have the right to change the course.

The suggested model is not new, in fact it is close to the credit system popular in many countries. In this system, in order to be promoted to the next grade, students need to accumulate a certain number of credits (points), which means that they have acquired a certain amount of knowledge about the subjects they've studied during the year. There are compulsory subjects, (typically language, mathematics, natural sciences, history—usually not less than two thirds of the total required), and elective subjects, each having specific credit value. Similarly, in our system the total amount of hours for profiled training is limited on one hand by the maximum allowable weekly academic load, and on the other by the appointed minimum of general education hours.

If the work in a profiled school is properly organized, the results

can be quite significant. We expect the following positive changes:

- Maximum development of students' creative abilities beginning with middle school, due to the choice of profile subjects according to their inclinations;
- Individualized approaches to teaching/learning;
- Better academic achievement in compulsory subjects, since the most difficult and specialized topics are studied by profile groups;
- Growing numbers of strong students, including potential winners of various contests, due to early and continuous profiled training;
- Early vocational orientation, promoting students' interest in learning the selected subjects;
- More interest in learning even by backward students, due to an opportunity to choose subjects corresponding to their level and abilities;
- An alternative to private lessons, growth of attendance in high school;
- General improvement of academic achievement and discipline at school, due to increased motivation of students.

In addition, profiled learning implies that students can choose not only subjects, but also teachers. A teacher's negligence or incompetence will very soon affect his or her professional rating, eventually leaving the teacher without students. This is where real (and very material) interest in professional growth, mastering new methods, and raising the efficiency of teaching appears!

I believe that such optimization of the teaching/learning process inside the school, combined with considered innovative policy in the

sphere of teaching content and methods, will provide the shortest way to higher quality of school education, at least, in Armenia.

Conclusion

Modern society needs to provide an education that will prepare citizens for democracy: citizens who are competent, informed, possessing necessary skills, and capable of making responsible decisions. All of us—ministry officials, teachers, and school principals—can either contribute to the construction of such an educational system or hamper its progress. If we want to achieve appreciable results as soon as possible, we should give up large-scale experiments that result in aimless expenditure of funds and time and a negative reaction from the public; instead we should empower schools to make independent decisions on the use of teaching methods and the management of the teaching/learning process, and we should support local innovative efforts aimed at improving the quality of education. When the innovative policy of progressive schools yields appreciable results, the public rating of these schools will grow, and their positive experience will be acknowledged and adopted by other schools.

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Boris Bulyubash

Science and Mass Media in the Mirrors of Civil Society

We are used to textbooks that represent natural sciences as a special sphere of human activity. Laws of physics, chemistry, and biology are perceived as a firm foundation of the universe, and the scientists who discovered them seem infallible and extremely self-assured people. However, they look quite different on the pages of printed and electronic popular editions. Scientists, renowned experts in their own fields, quite often offer contradicting viewpoints, and articles presenting them are not always impartial either.

The inevitable question is: Whom shall we trust? To answer it, we need to be able to critically evaluate popular scientific publications in mass media. Two

books recently published in Great Britain will help teachers and students to develop this ability. The first one is a guidebook to the use of newspapers in science teaching, *Science Newswise*¹, developed within the framework of the *Newsroom Project* by Ruth Jarman and Billy McClune from Queen's University Belfast. The publication, which came out in 2005, is based on the results of a project implemented by the Graduate School of Education at Queen's University Belfast and supported by the Wellcome Trust.

The second book is an experimental textbook on science titled *AS Science for Public Understanding* (A. Hunt & R. Millar, 2000), which is intended for high school students specializing in language arts and humanities.²

Science Newswise was prepared by more than 40 experts from different areas, including science journalists. Included in the group were experts in scientific and media education. Teachers of science, English, and media courses from nine schools in Northern Ireland took an active part in the project. It was their experience that allowed the authors to fill the guidebook with plenty of practical exercises based on newspaper texts.

In each of the six sections of the book, the teacher will find exercises for individual and group



Photo from the author's archive

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work. These are based on critical analysis of excerpts from articles on popular scientific subjects from such British newspapers as the *Times*, *Daily Mirror*, and *Daily Telegraph*. The exercises—through examination of the language and structures of newspaper articles and through their focus on the images and metaphors of scientific journalism—help learners discover various aspects in the interaction of modern science and modern civil society. All exercises are accompanied by detailed comments from the authors on their methods and the science involved. Note that among the articles selected by the authors for experimental material you won't find traditional "big science" plots (like cosmology, chaos theory, or nanotechnologies). On the contrary, socially significant scientific plots prevail, such as the development of mobile communication, renewable energy sources, and genetically modified plants.



¹ The author of this review is grateful to Dr. Patrick Fullick (University of Southampton) who coordinates the British Council project *Faulkes Telescope*, for the opportunity to get acquainted with this book. More information about the Newsroom Project can be found at http://www.qub.ac.uk/edu/centres_and_outreach/nise.htm#1.

² Detailed information about this textbook can be found at www.scpub.org.

Book Review

Table	Assessing How Far to Trust an Expert's Views				
Score	Aspect				
	Theoretical ideas involved	Nature of the data	Status of the scientist	The scientist's institution	Personal affiliation
5	Core science—agreed by all	Reliable and agreed experimental or observational data	A recognized authority in this field	A famous university or scientific research institute, or a major company	Works for an official regulatory body with responsibility for this area
4	Agreed by many, but still contested by a few	Experimental or observational data that is challenged by some	A professional scientist working in the area, but not a top name	A known, but less prestigious institution or company	Has no direct personal or professional interest in the issue
3	There are several competing explanations in the field—and this is one of them	Data that is agreed to be sketchy and uncertain	A respectable scientist, but one whose expertise is in a different field	An institution or company with a more doubtful reputation	Has been involved in these issues for a time and is known to hold a particular view
2	A new field in which there is no agreed theory as yet	Data calculated from computer models, or projected from other data	A relatively junior scientist with no established reputation	An institution or company which few people have heard of	Has known views or contacts that might bias views
1	A fringe theory accepted only by the author and his/her friends	Data little more than an educated guess	A known maverick (or crank)	Not employed in an academic or scientific research institution	Works for a company with a direct interest in the issues

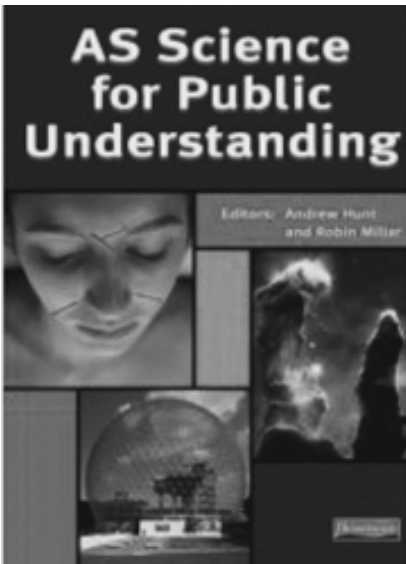
Through studying newspaper texts and doing the exercises, high school students working with the guidebook will see that modern science is created not so much by the efforts of individual scientists, but rather by the persistent work of big research groups. They will understand that scientists are not as self-assured as they appear on textbook pages, and that any material published in newspapers reflects, first of all, the viewpoint of a particular author. Another author in another newspaper might place the emphasis differently. They will see the “secret messages” that are transmitted by means of an article’s headings, subhead-

ings, captions for graphics, and by the pictures themselves.

Among all the strategies for processing newspaper texts employed in the book, I was most impressed by the following exercise. The class is offered an unpublished report (consisting of 400 words) on a certain piece of scientific research. After they have read it, students are asked to retell the report using no more than 250 words. A set of cards prepared in advance is supplied for use in constructing the story: each card contains a statement related to the report, and the number of words in this statement is also indicated. Naturally, the stories compiled by different

participants from the same set of cards differ considerably. The task is followed by a debriefing, in which participants explain their reasons for choosing certain cards and neglecting others.

Another very interesting exercise is called Scientific Editor for a Day. A set of 16 cards is offered to several groups of participants; on each card is a text of a scientific or medical character intended for the science news section of a publication. Each group should choose the six cards that, in the group’s opinion, are the most suitable for the science news column. After seeing the results,



the facilitator may try to point out the news pieces that best meet the standards of scientific

news. The facilitator may also try to work with participants to define the professional norms and values to which journalists adhere in their daily work.

In these exercises the authors clearly aspire to discuss issues of interaction between science and mass media in terms of quantitative evaluation. It is this approach—no doubt deserving of attention—that led me to draw an analogy between the guidebook and the second publication included in this review, the textbook *AS Science for Public Understanding*. In particular, the authors of this textbook have developed an original technique for measuring the quality of scientific information offered by a newspaper or journal article.

Using their table (cited on p. 44 with the kind permission of the authors) to check the reliability of expert opinions, a reader can evaluate the material in question by means of five grades on a five-point scale.

Although it is hardly possible to follow precisely all the recommendations of the table, such an evaluation certainly helps to call students' attention to certain details in a published article and provides much more concrete grounds for discussion.

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Author's Note: A guidebook for teachers largely based on the materials from the Hunt and Millar textbook was published in Russian in six issues of *Natural Sciences at School journal* (2005-6; 2006-5, see B.V. Bulyubash, *From John Snow to James Lovelock: A scientist facing uncertainty*). In the same journal (2004-4; 2005-3) the author's articles about this textbook and its voice in the context of Russian schools, and also about the British and Russian experience with texts in science education (2004-5) were published. All publications were prepared within the framework of the scientific education projects of the British Council in Russia.

Teaching and Learning Strategies for the Thinking Classroom

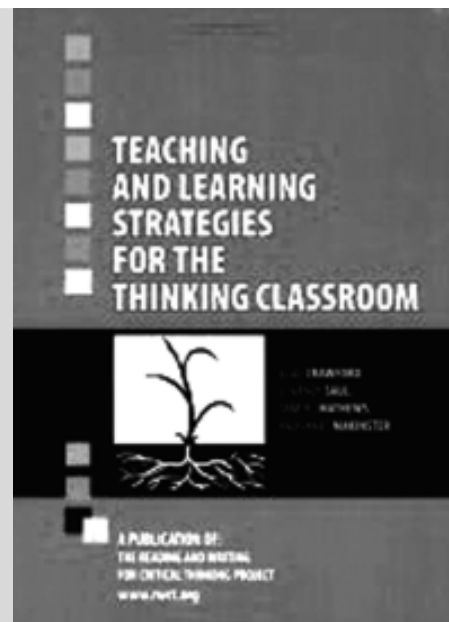
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Strategic Moves

from William G. Brozo

Principled Practices for Strategic Teaching

This column is concerned with teaching strategies and practices to enhance students' academic performance. But strategic knowledge alone does not always lead to improved student learning. Teachers also need to know why certain strategies are worthwhile to employ and others are not. Sadly, many find it difficult to rationalize their instructional approaches on the basis of foundational principles (Brozo & Simpson, 2007). And yet we know that effective teaching is principled teaching (Smagorinsky, 2001).

Unlike strategies, principles are not a series of steps that must be adhered to or a set routine that must be followed. Instead, they guide effective strategic teaching that takes different forms depending upon teachers and students in particular learning contexts. Strategic teaching is more likely to be effective when it is applied

in ways that are sensitive to the unique circumstances and available resources of different schools and classrooms.

What follows are five principles to guide strategic teaching. Each principle is briefly explained and exemplified so as to develop an appreciation for how the principles can support acts of teaching that are innovative, student-centered, and responsive to the needs of learners.

Five principles to guide strategic teaching

Build new understandings by connecting prior knowledge and experience with academic learning.

In honoring students' outside-of-school interests and competencies, we help them see how school-based learning relates to their life worlds beyond the classroom walls. Students make meaning based on the various discourse

communities they inhabit, such as homes, peer groups, sports teams, and even the neighborhood hair salon. Viewed as funds of knowledge (Valdés, 1998), these networks of relationships shape ways of talking, reading, writing, and knowing. Space can be made in classrooms for students to explore how their many different funds of knowledge might inform, connect to, and be integrated with academic knowledge (Hull & Schultz, 2002).

For example, students may encounter a reading in science about the water cycle for which they have little prior knowledge or that would seem to have little connection to their concerns as youths. If students are asked to engage in activities that explore how the water cycle relates to the cost of finding and purifying potable water, how the scarcity of clean water limits their use of community swimming pools and restricts how often they can wash their cars, and how they themselves might imagine possible solutions to local and regional water shortages, then comprehension of the text will be supported by connections to students' daily experiences.

Motivate and sustain effort in learning. Teachers engage and sustain students' strategic thinking when they create environments and implement classroom practices with students' interests, needs, and goals foremost in mind. These teachers know that engagement must remain connected to academic learning in order to give energy and direction to it (Guthrie & Humenick, 2004). Youths, like the adults in their worlds, are motivated by and enjoy activities and pastimes of their own choosing. Teachers can



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take advantage of the power of choice by allowing students options for demonstrating new understandings and by giving students freedom to co-construct knowledge with friends and classmates. Teachers who embrace this principle are also keenly aware of the influence of family, community, and peers on students' academic motivation and regard them as resources to help sustain student effort (Valdes, 1998).

For example, a mathematics teacher, who requires her students to do a term project, asks each student to bring to class one item that represents a favorite pastime or accomplishment to share with the others. The teacher then confers with each student about how to create a math project based on her/his special interest. With one boy, who held up a soccer trophy and talked about his passion for the sport, the teacher helped design a scrapbook about his and his team's performance, including statistics, graphics, and relevant computations.

Develop skills to promote long-term recall of information and ideas and encourage independent learning. Students need to develop the ability to gather relevant information from a variety of sources and organize information and concepts into useful forms for review or application. These skills are becoming increasingly vital for youths given the sheer volume of information available on every imaginable topic as well as the variety of both print and nonprint media at their disposal. To sort through and organize information from multiple sources, students need to develop a range of sophisticated study strategies. Teachers

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guided by this principle know that students need multiple opportunities to develop skill with, and find applications for, study strategies in order to reach an appropriate level of ownership and expertise (Alexander & Jetton, 2000). Thus, teachers apprentice youths in these strategies through modeling, practice, reflection, and, above all, meaningful application with class assignments and projects.

For example, a history teacher helped a recent émigré from Bosnia prepare a report on the Balkan Wars. The student was shown how to compile sources ranging from Joe Sacco's graphic novels to transcripts of interviews with her own parents and relatives. To organize the information while obtaining it, the history teacher taught the student to use a split-page notetaking procedure designed to cluster big ideas on the left side of the page with supporting details on the right. To collapse the volume of information, the student was taught to write summaries of the content in each source. To organize the information in a way that would assist the student in seeing how the summarized information and ideas were related, she learned to create a map. Finally, from the map, summaries, and notes, the student wrote the report.

Foster critical interpretations and metacognition. Youth need to develop the skills necessary to compete in the new, global, knowledge economy (Alvermann, 2002). The strategic teaching practices associated with this principle will promote students' abilities to discuss, write, and

create texts that demonstrate deep and meaningful understandings, critique the ideas and assertions of others, and interrogate their life worlds outside of school. These texts should require students to reflect on what they know about a topic or phenomenon as well as what they learn as a result of critical inquiry. In all these activities, students inevitably reflect metacognitively on their own thought and learning processes.

For example, a secondary school health teacher taught her students investigative strategies for learning more about health phenomena in their communities. She taught them how to conduct and transcribe interviews, take field notes, and write analytical reports based on the findings. Two of her students did an assignment on AIDS for the class, taking video and audio equipment into their own neighborhood where they conducted interviews of people with AIDS in order to explore the impact of the disease on the local community. Back in the classroom, they convened and moderated a panel composed of public-health personnel and social workers. They also produced a script for a video documentary of their research, which promotes safe-sex practices.

Use assessment as a tool for learning and future growth. Strategic teaching should help students become authors of their own understandings and assessors of their own learning. From this perspective, assessment is seen as a tool for promoting critical thinking, metacognitive awareness,

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and self-efficacy (Dweck, 1999). The goal of assessment is to help students and teachers reflect upon new understandings and become empowered by the assessment process (Tierney, 2000). Empowerment through assessment comes when teachers have a broad and deep understanding of students' abilities, needs, and learning potential; and students having an equally full understanding of their own abilities, needs, and potential.

For example, students were taught to maintain a reflective log in science to document new learning and monitor understandings. They used the Internet to study examples of science logs made by Da Vinci and Darwin, learning to include in their log entries both factual and personal input. They took walks on the school grounds to find examples of particular plant and insect life, then made sketches and annota-

tions of their observations in their logs. They also learned how to use their logs to write questions, express doubts, and report on new discoveries.

A final word about principles

Principle-based strategic teaching means that teachers are employing practices associated with one, some, or all of these principles depending upon the time, resources, and other local constraints. Remember, principles are not prescriptions for instant success, but guidelines for effective strategic teaching with an enormous variety of permutations applicable in virtually any learning context.

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Joe Sacco's graphic novels

- Soba* (1998)
Safe Area Gorazde (2001)
The Fixer (2004)
War's End (2005)

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Thinking Classroom (also published in Russian as *Peremena*) serves as an international forum of exchange among teachers, teacher educators, and others interested in democratic teaching practices. It seeks to encourage professional development, research, and reflection. Authors are invited to submit articles that focus on active inquiry, student-centered learning, alternative assessment, and other aspects of educational change. Due to the international nature of the journal, articles should address issues that appeal to a wide audience, and terms or examples that are specific to a particular country or region should be explained in the text.

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