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Twelve Principles for Effective Adult Learning

A principle, philosophers tell us, is the beginning of an action. As I begin the action of designing a course, a seminar, or a workshop for adult learners, I can make informed decisions that will work for these learners by referring to certain educational principles. I have discovered that these principles apply across cultures. In this first chapter of the new edition, we will examine twelve basic principles that are deeply interconnected, intrinsically related one to the other. In *Training Through Dialogue* (Vella, 1995) I name fifty such principles and practices that work to make dialogue education effective.

Although these principles and practices have been tested in community education settings, I believe they can also offer insight into educational processes for teachers and professors in more formal systems of education. As we shall see in the case studies that follow, they have been proven to work under diverse and sometimes extraordinarily difficult conditions.

One basic assumption in all this is that adult learning is best achieved in dialogue. *Dia* means “between,” *logos* means “word.” Hence, *dia + logue* = “the word between us.” The approach to adult learning based on these principles holds that adults have enough life experience to be in dialogue with any teacher about any subject and will learn new knowledge, attitudes, or skills best in relation to that life experience (Knowles, 1970). Danah Zohar calls dialogue a

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quantum process, the means of doing quantum thinking (Zohar, 1997, p.136). In this approach to adult learning all twelve principles and practices are ways to begin, maintain, and nurture the dialogue:

- *Needs assessment*: participation of the learners in naming what is to be learned.
- *Safety* in the environment and the process. We create a context for learning. That context can be made safe.
- *Sound relationships* between teacher and learner and among learners
- *Sequence* of content and *reinforcement*.
- *Praxis*: action with reflection or learning by doing.
- *Respect for learners as decision makers*.
- *Ideas, feelings, and actions*: cognitive, affective, and psychomotor aspects of learning.
- *Immediacy* of the learning.
- *Clear roles and role development*.
- *Teamwork* and use of small groups.
- *Engagement* of the learners in what they are learning.
- *Accountability*: how do they know they know?

In my study of the new science, I have come to understand that my awareness of how interconnected these educational principles and practices are was sound quantum thinking. You will discover as you work with these twelve principles that you cannot exclude any of them.

What strikes me as significant and operative, as we begin to design for effective learning, is the distinction between the universe seen as a machine (Newton) and that seen via quantum physics as energy. It is the difference for me between materialism and spirituality, between rote learning and “thinking with one’s toes.” My experience of teaching and learning over my life of seventy years corroborates the quantum approach.

Principle 1: Needs Assessment

Doing an adequate needs assessment is both standard practice and a basic principle of adult learning, which honors the fact that while people may register for the same program they all come with different experience and expectations. No two people perceive the world in the same way. That’s a standard axiom of quantum thinking. How can we discover what the group really needs to learn, what they already know, what aspects of the course that we have designed really fit their situations? Listening to learners’ wants and needs helps shape a program that has immediate usefulness to adults. The dialogue begins long before the course starts.

Thomas Hutchinson (1978) of the University of Massachusetts, Amherst, offers a useful question for needs assessment: *Who needs what as defined by whom?* This WWW question—*who* as needers, *what* as needs, *whom* as definers—reveals the political issues involved in preparing a course for adult learners. Who are, indeed, the decision makers of this course? Is it the teacher? Is it the learners?

The answer, using quantum thinking, allows for both voices to be heard: adult learners must take responsibility to explain their context; the teacher must take responsibility to contact learners in every way possible, see them at work if possible, and be clear about what she can offer them. I cannot teach what I do not know. I have the issues and knowledge sets that I want to teach them. Adult learners, however, can name what they see needs to be taught, as

well. They will vote with their feet if the course does not meet their needs. They will simply walk out. As their teacher, I need to discover what they already know and what they think they need or want to know. How do I hold these opposites, listen to these learners and their managers or their clients and to my own agenda, and then design a course that meets their needs?

This listening effort is what we call a learning needs and resources assessment. It is both a practice and a principle of adult learning. Paulo Freire (1972) refers to it as thematic analysis, a way of listening to the themes of a group. Themes are issues that are vital to people. When adult learners are bored or indifferent, it means their themes have been neglected in the design of the course. Motivation is magically enhanced, however, when we teach them about their own themes. People are naturally excited to learn anything that helps them understand their own themes, their own lives.

Myles Horton, founder of the Highlander School in Tennessee, discovered how well the police in that state understood this principle in the 1930s. As a young man he was arrested and indicted for “having gone to the miners, listened to them and then having gone back and taught them what you heard” (Adams, 1975, p. 33). In fact Horton was indicted for having done a needs assessment. “Listening to them” is the operative phrase here. How do we listen to adult learners, before we design a course for them, so that their themes are heard and respected? Today, we can use e-mail, faxes, and telephone conversations, we can use a small focus group to review the plan of a course or workshop or training, or we can do a survey. A well-distributed sample of even 10 percent of the group can give you important information for your design. The appendix offers numerous suggestions for ways of doing needs assessment.

Wheatley speaks of the advantage to dialogue and needs assessment of actually seeing people at work. “However you do it, discovering what is meaningful to a person, group or organization is your first essential task” (1999, p.149). Their themes are then visible and tangible. We can hear such themes by inviting them to de-

scribe situations they face, by asking for critical incidents in their work, by having a potluck supper where we can meet students with their spouses and partners in a relaxed atmosphere. I have used such events prior to each graduate course I taught at the School of Public Health at University of North Carolina in Chapel Hill. It is always a revelation for me to discover the surprising and exciting background of graduate students. I also spend five minutes on the phone with each student, calling each one from the list of those registered for the course. I discover things in such phone calls that help inform the course design. Remember that needs assessment does not form the course; it informs it. It is my duty as professor to determine what can be learned in the given time frame of a course; it is also my duty to begin the learning dialogue before the course begins.

My colleague, Dr. Paula Berardinelli, who was doing training in time management skills with a group of secretaries at a major industry, sent a number of them the draft program for the training a month before the event. She indicated that she would be calling them for a ten-minute conversation on a specified day. When she spoke with them, one by one, she heard a similar set of themes about their work. She also heard, over and over, how delighted they were by her call. They cited many incidents she could use in the training, as stories for analysis or case study material for reflection. This helped her understand some of the unspoken variables the secretaries faced. The result was a course that was accountable to the industry and to the adult learners, who knew they were decision makers in a sound relationship with the teacher. Although she spoke with only one-tenth of the group, the entire unit had heard of her needs assessment and were prepared at the outset of the course to offer their ideas spontaneously and creatively. All the secretaries said this had never happened to them before.

Using quantum theory, we see other alternatives for such a listening task: she might have gone to the company lunchroom and sat with the secretaries for a few hours of sandwiches and coffee. She might have asked to be a “fly on the wall” near the desk of one

secretary for a day. I expect she would have gotten a clear sense of their learning needs in less than eight hours of observing. The case I cite in Chapter Four from the horrors of the drought-swept Ethiopian mountains is an extreme example of the need for a needs assessment. I cannot imagine what might have occurred there with those young teachers and Fatuma if I had not used Hutchinson's WWW principle: who needs what as defined by whom.

Principle 2: Safety

Safety is a principle linked to respect for learners as decision makers of their own learning. But it has an added connotation. It means that the design of learning tasks, the atmosphere in the room, and the very design of small groups and materials convey to the adult learners that this experience will work for them. The context is safe.

Safety does not obviate the natural challenge of learning new concepts, skills, or attitudes. Safety does not take away any of the hard work involved in learning. Should learning be designed to be challenging or to be safe? The answer is yes! Carl Jung, Swiss psychiatrist and teacher, suggests a pattern for addressing such dilemmas: hold the opposites! In the new science the question arises: Is light a wave or a particle? The only response is yes! It is seen as either a wave or a particle depending on the context, the state of the observer, and the kind of equipment used.

I suggest that in all our efforts, and certainly in regard to the presence of challenge and safety in our educational designs, we celebrate the opposites. Safety is a principle that guides the teacher's hand throughout the planning, during the learning needs and resources assessment, in the first moments of the course. The principle of safety enables the teacher to create an inviting setting for adult learners. People have shown that they are not only willing but also ready and eager to learn when they feel safe in the learning environment. What creates this feeling of safety?

First, trust in the competence of the design and the teacher enables the learners to feel safe. It is important to make your experience and competence clear—either through written materials that learners have read beforehand or through introductory words with them. This is a natural way to make learners feel safe and confident in their teacher.

Second, trust in the feasibility and relevance of the objectives makes learners feel safe. It is important not only to review the design with the group but also to point out how the objectives have been informed by the learning needs and resources assessment. You can point out that the objectives are empirically based, since they have been successfully used in similar sessions, and explain that you understand that this particular group is a unique context for this content to be learned. You will see physical manifestations of a feeling of safety appear after such a review of the whole design: people relax, smile, talk more freely to one another.

Third, allowing small groups to find their voices enhances the power of safety. One of the first learning tasks I do in any course is to invite learners to work in small groups to name their own expectations, hopes, or fears about a learning event or norms they want to see established in the large group. Four learners at a table large enough for their materials, small enough for them to feel included, provides physical and social safety for learners. You can hear the difference in the sound in the room as learners find their voices in the small group. The new science has demonstrated how context affects reality. I have seen how a safe context changes timid adult learners into assertive and daring colleagues. Using the principle of safety creates a context in which adults can do the hard work that learning demands.

Fourth, trust in the sequence of activities builds safety. Beginning with simple, clear, and relatively easy tasks before advancing to more complex and more difficult ones can give learners a sense of safety so they can take on the harder tasks with assurance. Sequence and reinforcement will be seen later as a corollary principle to safety.

Fifth, realization that the environment is nonjudgmental assures safety. Affirmation of every offering from every learner, as well as lavish affirmation of efforts and products of learning tasks, can create a sense of safety that invites creativity and spontaneity in dealing with new concepts, skills, and attitudes. Affirming is one of the basic tasks of every teacher. As we affirm what we hear, we invite learners to use the power they were born with as decision makers of their own lives. Teachers do not empower adult learners; they encourage the use of the power that learners were born with.

How can safety be endangered? One great danger to safety is the fatal moment when an adult learner says something in a group, only to have the words hit the floor with a resounding “plop,” without affirmation, without even recognition that she has spoken, with the teacher proceeding as if nothing had been said. This is a sure way to destroy safety in the classroom. A “plop” destroys safety not only for the person who spoke, but for all in the room. Just as you can see physical manifestations as learners feel safer and safer, you can observe definite physical manifestations of fear and anxiety after such a “plop.” You can watch the energy draining out of learners. The rise and fall of learners’ energy is an accurate indicator of their sense of safety. Energy is another of our selected quantum concepts.

In the situation in Tanzania (Chapter Five), we see how safety was desperately needed to keep a gifted Muslim teacher working with a Christian community. We see how the absence of safety destroyed the potential of teacher and learners alike. How I wish I had known quantum theory and these principles at that time!

Principle 3: Sound Relationships

Sound relationships for learning involve respect, safety, open communication, listening, and humility. Zohar (1997, p. 134) offers a new reading of dialogue, *dia + logos*, as *dia* “through” and *logos* “relationship”: “through relationship.” She teaches that such dialogue is a central tool in quantum thinking.

The initial meeting between teacher and learner has to demonstrate the sense of inquiry and curiosity felt by the teacher. When doing a learning needs and resources assessment, through use of either e-mail, focus groups, or telephone surveys or by being a participant-observer in their work, we as teachers can discover specific personal or group learning needs. Then a dialogue about learners' expectations is a way to confirm our perception of their needs or amend it. Again, learners are immediately in the position of decision makers, deciding what they want to tell us, feeling safe enough to share their true feelings.

A manager of a nonprofit organization in Boston, about to attend a seminar at Tufts University, responded to a telephone call inviting him to name his unique learning needs for an upcoming management seminar by saying, "I am honored by this call. It's the first time anyone ever asked me what I wanted or needed to learn!" Imagine the relationship that was established between him and the professor via that simple phone call.

The power relationship that often exists between learner and "professor" can be a function of a mechanistic system where power is frequently used to dominate. Our efforts through dialogue education to build a world of equity and mutual responsibility cannot be designed without attention to the power of sound relationships. If I show how accessible I am to learners through an early dialogue in the learning needs and resources assessment, and respond to their questions with respect and affirmation in a safe environment, that world of equity already exists. We do "make the road by walking" (Freire and Horton, 1990).

In order to be sound, this relationship must transcend personal likes and dislikes and obvious differences in wealth and power. In such instances, a teacher knows she must be even more careful about showing respect, affirming, and listening carefully. When the teacher fails to show respect or fails to affirm a learner in a group or allows the fatal "plop," the whole group begins to doubt the learning relationship and often manifests anger, fear, and disappointment.

Nothing can diminish the importance to learning of the relationship between teacher and learner. The example in Chapter Six of Dr. Margie Ahnan from Indonesia shows how powerful a sound relationship can be in getting an adult learner to stretch beyond himself and grow in the knowledge, skills, and attitudes he needs.

Principle 4: Sequence and Reinforcement

Sequence and reinforcement are vital but often overlooked as principles of adult learning. I have an axiom: do it 1,142 times and you will have learned it! Those 1,142 times should be properly sequenced: from easy to difficult, from simple to complex. This seems such a basic concept. Failing to honor it, however, can lead to adults dropping out of courses, people acting out anger, fear, and disappointment, adults believing they cannot learn. As a budding pianist, I can corroborate that number, which in my case is immensely conservative.

Suppose a group of adult learners comes together to study opera. They are newcomers to the art. A focus group with three of them has shown that the learners want to know something of the development of the genre, but above all they want to learn how to listen to an opera for maximum enjoyment and intelligent response. The design ensures sequence and adequate reinforcement by taking a familiar opera such as Puccini's *Madama Butterfly* and listening for five or six basic forms. The learning tasks would move from basic recognition of forms—That's an aria! That's recitativo!—to a judgment on the quality of the music, with use of new terms heard in demonstrations by the teacher. The teacher listens to the adult learners and then changes learning tasks to meet their needs for reinforcement. If the task is too difficult for most of the learners, it must be changed. This process is what we mean by learning as dialogue. It puts the adult learners in the position of decision makers as to what tasks are appropriate—in a healthy relationship with the teacher, who is not afraid to ask: How does this task feel at this moment?

Sequence means the programming of knowledge, skills, and attitudes in an order that goes from simple to complex and from group-supported to solo efforts. Learning tasks can be readily examined for sequence. Manifestations of safety and enthusiasm and readiness to achieve in learners indicate that sequence is being honored. When you, as teacher, see fear, confusion, and reluctance to try in the learner, test the sequence of the learning task. You may find you have not honored their need for small steps between tasks and their need for reinforcement.

Reinforcement means the repetition of facts, skills, and attitudes in diverse, engaging, and interesting ways until they are learned. The design of reinforcement in adult learning is the job of the teacher. Although adults may do their own reinforcement through practical work and study, our teaching designs, if they are to be accountable, must carry adequate reinforcement within them to ensure learning. This is the heart of the matter. In adult learning situations—in industry, community, family, or in learning sessions for personal advancement—the teacher is accountable for a design that works for the learners there and then. In formal school situations, young students are “taught” and then admonished to go home and learn what they have been taught so they can pass the test at the end of the course. They are accountable to the teacher. In adult learning, accountability is mutual. Busy managers attending a course on strategic planning, busy community people trying to learn how to organize for new legislation, families trying to learn how to communicate more effectively, individuals learning how to use a new word processing program—all need an accountable design and an accountable teacher providing the necessary tasks. Learners will do the work that enables them ultimately to know that they know. It is our job as designers of adult learning and teachers of adults to ensure that the principles of sequence and adequate reinforcement are honored within the learning program.

When we work diligently to design learning tasks that are in simple and sound sequence and that reinforce learning, we address

the disparity in political power more directly than if we preach loudly on social and economic injustice. These rather technical principles and practices—reinforcement and sequence—are tough to use. They demand attention and diligence in design. When you do that hard work, you are in fact addressing sociopolitical-economic inequities. It is all of a piece. This is essential quantum thinking: the whole is more than the sum of its parts.

The example of building sequence and adequate reinforcement into a program preparing teachers to teach English as a second language and literacy skills to migrant workers in North Carolina (Chapter Seven) demonstrates the importance of this principle.

Principle 5: Praxis

Praxis is a Greek word that means “action with reflection.” There is little doubt among educators that doing is the way adults learn anything: concepts, skills, or attitudes. Praxis is doing with built-in reflection. It is a beautiful dance of inductive and deductive forms of learning. As we know, inductive learning proceeds from the particular to the general, whereas deductive learning moves from a general principle to the particular situation. Praxis can be used in teaching knowledge, skills, and attitudes as learners do something with the new knowledge, practice the new skills and attitudes, and then reflect on what they have just done.

Learning tasks (Vella, 2000) are not practice but praxis. If inductive, they invite reflection or action on particular instances by using new content. If deductive, they consider new content and work to apply it in new situations. In each case, praxis demands a hard look at content, the re-creation of it to fit a new context, and essentially the testing of it to prove its usefulness. Again, quantum thinking helps us fathom how each learner has to re-create the content through participation. They redesign the skills, knowledge, attitudes they are learning as they see them fit their context.

Praxis is an ongoing process, of course. We use it in our daily lives all the time as we do something, reflect on its implications, and change. In a learning situation, we can use case studies inviting description, analysis, application, and implementation of new learning—that is, praxis. When we set a group of adults to practicing a skill and invite them, as subjects, to analyze the quality of their practice, that moves practice to praxis.

Zohar (1997, p. 148) shows that the questions we ask determine the kinds of responses we get. Such learning tasks give people the chance to practice new ideas, skills, or attitudes and immediately to reflect on them, thus making practice praxis.

The story of Mustafa Hussein and his community development colleagues (Chapter Eight) in the program in the Maldives offers specific examples of praxis. Their learning was a result not only of their action in the villages but also of quiet and reflection after that action.

Principle 6: Respect for Learners as Decision Makers

Respecting learners as decision makers of their own learning is a principle that involves the recognition that adults are in fact decision makers in a large part of their lives. Healthy adults desire to be subjects or decision makers and resist being treated as objects, something that can be used by someone else. In dialogue education, we assume that people are not designed to be used by others. Adults need to understand that they themselves decide what occurs for them in the learning event. The dialogue of learning is between two adults: teacher and student, learner and learner. For example, new content in a course can be shown to the learners with the question: What else do you feel you need to learn about this topic? This approach makes the content an open system inviting critical analysis, editing, and additions by adult learners. Quantum thinking goes

beyond the subject-object dichotomy to recognize that inclusive respect honors all people as subjects in a universe of subject entities. As subjects, we evoke the world we perceive.

Here are some examples of ways to show learners they are respected as decision makers. When teaching something such as the facts of national history, we can always offer an open question that provides the vital element of choice: "Here are the dates of important events in the history of this nation. Which one seems the most important to you in terms of reaching independence? Why did you choose that date?" Before teaching the steps in a new computer program, the teacher can ask: "Which of these steps seems like it is going to be most useful to you in your work?" This question invites both teacher and learners to approach the learning as subjects. In teaching adults the personnel processes of a corporation in a job-related orientation program, the instructor can begin by asking an open question: "Here is our company process for taking sick leave. Look at all the steps. Which ones would be difficult for you? How does this process differ from the process you knew in another organization you worked for?"

In approaching adult learners as subjects, the teacher must distinguish between their suggestions and their decisions. This is called the distinction between a consultative voice (a suggestion) and a deliberative voice (a decision). Engaging adults in their own learning means engaging them as subjects of that learning. At times they offer suggestions; at times they make decisions. It is essential that we be clear about the difference.

Being perceived as the subject of one's own learning is powerful motivation to learning creatively. How can we offer adult learners as many opportunities for choice as possible? One practical guide is this. Don't ever do what the learner can do; don't ever decide what the learner can decide. As we shall see when we examine the principle of engagement, the learning is in the doing and the deciding. Teachers must be careful not to steal that learning opportunity from the adult learner. The example in Nepal (Chapter Nine) points out

how one man's feeling himself the subject of his learning enhanced his development of the knowledge, skills, and attitudes being taught. What happens if we recognize learners as subjects? It can mean a radical change in our way of teaching. It can lead to radical changes in the effect of teaching: fewer dropouts, for example, as learners feel themselves respected and important decision makers in their own learning. It can mean more measurable results of the learning process, as learners know they know because they have chosen to do what they are learning. It can mean better use of financial and human resources, as adult learners practice making healthy decisions in the learning process. Joye Norris, a master of dialogue education, tells of the powerful results she has seen when learners are invited to "raise their own voices" and hear themselves, often for the first time. Paulo Freire, Brazilian educator, titled one of his books *Cultural Action for Freedom* (1970). Inviting learners to be subjects of their own learning is indeed the practice of freedom.

Principle 7: Ideas, Feelings, Actions

Learning with the mind, emotions, and muscles and giving attention to the cognitive, affective, and psychomotor aspects of adult learning is a vital principle that is often neglected. When the formalities of teaching and learning in the classroom and university take over without reflection, adult learners can be faced with a mass of cognitive matter: information, data, and facts that may seem impossible to comprehend or learn. When I took my first computer course, I had the personal experience of being deluged with facts about the history and emerging complexity of computers. I simply wanted to know how to use one. The mass of information frightened me away and I became another statistic: another adult learner who began a course and then dropped out.

Using the principle that there are three aspects of learning: ideas (cognitive), feelings (affective), and actions (psychomotor), we can prevent that initial fear at the outset of a new adult learning event.

We know that learning involves more than cognitive material (ideas and concepts). It involves feeling something about the concepts (emotions) and doing something (actions). Whether I am learning the concept of *stakeholders* in strategic planning, or the skill of playing the piano, or the attitude of confidence when addressing an audience, I need to consider all three aspects of learning: cognitive, affective, psychomotor.

The concept of preparing an agenda for a meeting, for example, certainly has affective overtones for someone learning how to have an effective meeting. Who is deciding the agenda? As soon as we consider the political implications of making an agenda and preparing a meeting, we can then practice doing it consciously. The more frequently I actually design an agenda, the more fully I grasp the concept. In this example, to learn the idea I have used a cognitive approach (defining an agenda), a psychomotor approach (designing it), and an affective approach (considering the implications of the power of the one who prepares the meeting). Kurt Lewin taught that little substantive learning takes place without involving something of all three aspects (Johnson and Johnson, 1991). Zohar shows the human self as mental, emotional, and spiritual and demonstrates how a holistic view of the world invites us constantly to consciously address all levels (1997, p. 10). Real change requires a fundamental shift at each of the three levels. This can be accomplished by designing learning tasks that have cognitive, affective, and psychomotor components (Vella, 2000).

The formal approaches to learning often assume that the cognitive aspect is everything. Joseph Campbell has a startling insight: "The brain thinks it is running the show. It isn't really. It is a peripheral organ, secondary at best!" (Campbell, 1988, p. 142).

In the Zambian example (Chapter Ten), church leaders who have struggled long and hard with the concept of equality, and who preach it, got a unique chance to feel it and do something with it. The results, to say the least, are interesting. Note the power relations addressed in that vivid experience of doing what they were

learning. The design challenge in that chapter invites you to study your own educational projects in terms of cognitive, affective, and psychomotor possibilities (ideas, feelings, and actions) that address the whole person, not as a machine but as a developing man or woman, with incredible potential.

Principle 8: Immediacy

Research recognizes that adult learners need to see the immediate usefulness of new learning: the skills, knowledge, or attitudes they are working to acquire. Most adults do not have time to waste. We want to spend our time studying content that will make a difference *now*. We are willing to work in an appropriate sequence, and we recognize the need for reinforcement, but we want to see something in hand as soon as possible. A large percentage of adult learners start a course and then decide to give it up because they cannot see the immediate usefulness of what they are learning. Such immediacy is not a quick fix in a mechanistic sense. It is perceived usefulness, related to respect for the learner's context, sequence of learning tasks, and the data shared in the needs assessment. The immediacy perceived by learners will affect their determination to continue working. In quantum thinking, perception evokes reality. We participate in making our world.

How does this principle translate into practice? In designing a time management course for middle managers at a large factory, for example, a teacher uses the principle of immediacy by designing three short sessions instead of a day-long course. She makes sure the managers have one particular skill to practice at their posts in between these short sessions. When that skill makes a difference in the management of their usual activities, they gain confidence in the course, the teacher, and their own learning ability. A question we can offer at the end of each learning session is, *How can you use this new skill most effectively?* So learners, again as subjects, decide on the significance and application of the new skill.

The principle of immediacy helped the teacher decide how to organize the sessions in that short course. This offers an immediate example of what we mean by a principle: the beginning of an action. We are guided in the design of that course by the simple principle of immediacy. The principle of honoring learners as subjects would have us asking learners after the three short sessions: *How else could we have organized the time in this time management course? Let's use the very principles we've just learned to redesign this course!* That is using the principle of reinforcement as well as immediacy. As we develop skills in the use of all the principles and practices of dialogue education, we shall see how deeply intertwined they are. You can hardly use one without using all the others. The whole is greater than the sum of its parts. Each part contains the whole. *That is quantum thinking.*

In the war-torn streets of the little town of Due Arroyo in El Salvador (Chapter Eleven), the community organizers studying the principles and practices of community education had more than enough immediacy. The story shows how they applied what they were learning wisely enough to save their lives and mine.

Principle 9: Clear Roles

Another vital principle of adult learning is recognition of the impact of clear roles in the communication between learner and teacher. As Paulo Freire put it in conversation with us one evening: "Only the student can name the moment of the death of the professor." That is, a teacher can be intent upon a dialogue with an adult learner, but if the learner sees the teacher as "the professor" with whom there is no possibility of disagreement, no questioning, no challenge, the dialogue is dead in the water. Adult students need reinforcement of the human equity between teacher and student and among students. It takes time for adults to see themselves and the teacher in a new role.

In rural African villages, my colleague and I, two women, spent a lot of time walking around, talking to the mothers, holding their babies before teaching our leadership course. We swapped recipes in their kitchens and spent time watching them weave palm. The women always enjoyed our brave and clumsy efforts when we tried to weave and patiently tried to demonstrate the skill to us again and again. When we started to teach them, we had a significant new role as learners.

Before beginning a recent program with a national literacy organization, I spent time asking all the senior managers about their most recent discoveries in literacy education. “Dr. Vella” was soon transformed into “Jane”—a fellow searcher for ways to teach literacy, a woman who was interested in their work and their discoveries. I included myself somehow in their work by making telephone calls for learning needs and resources assessment and simply by asking: “What’s new? What should I know about your present work?” This listening process established some equity in our roles.

Role is a delicate cultural issue. In some situations around the world—as a woman in a Muslim country such as Sudan, for example—it was vital to be “Dr. Vella” the whole time. In other situations, a first-name basis moved us toward dialogue. What’s in a name? We wish to move adults to learn together in dialogue. Whatever impedes that dialogue must be courageously addressed and eradicated. Whatever enables that dialogue must be fearlessly nurtured and used. Accessibility is an issue here. If the teacher’s perceived role does not lend itself to dialogue, learners will not seek her out. If the teacher is committed to a role that moves both toward dialogue, she will make sure there is time for dialogue both inside and outside the classroom. Time spent with learners at a party or at a dinner in a different role makes a big difference in their freedom to ask the disturbing question, disagree with a point, or venture a novel opinion from their unique context. Danah Zohar has a delightful phrase to describe how that freedom looks in a learning

dialogue: “You hear a chorus of conversations!” (Zohar, 1997, p.143). I would add: a chorus of conversations in which learners are recreating the content you are teaching them so that it fits their context.

Role clarification and the move toward dialogue are never a cosmetic issue: they are both a matter of the heart and the heart of the matter. A graduate student recently suggested that another name for this principle is humility. In the graduate school of theology in New York (Chapter Twelve), we see professional men and women struggling toward dialogue, examining their roles with learners and with one another. This story tells how they found new meaning in the concept of *dia + logos*, “the word or relationship between us,” as they found new roles and new relationships with their graduate students and with one another in dialogue education.

Principle 10: Teamwork

Teamwork is itself both a process and a principle. Teams provide, in the adult learning experience, a quality of safety that is effective and helpful. The assurance of safety and shared responsibility available in teams has always proved welcome, no matter what the cultural setting. Teamwork cannot be taken for granted. Through the learning needs and resources assessment, the teacher can take advice about the formation of teams. People can be invited to work with friends when possible. This provides safety for undertaking the difficult tasks. The concept of optimal field works for us here. An *optimal field* is one designed for everyone to gain as much as possible, one where we design for a win-win situation by intentionally including everything in the field that makes for success. Respecting people as subjects means having people choose their own teams as often as possible, especially when the learning task is complex and difficult. You can set up arbitrary teams at the beginning of a course and then have people form work teams for themselves, choosing

with whom they wish to work. At times gender, age, or race are serious considerations in naming teams.

All too often we hear people in educational settings say: “When we get back to the real world. . . .” Teams *are* the real world. Team efforts in a learning situation are not vicarious and they are not contrived. What happens in the team is what is happening every day. As adult educators we must remember that feelings are never simulated. If an adult feels overwhelmed and excluded in a small group of people, those feelings are real. That adult will act out of those feelings of fear or exclusion throughout the course either by not returning or by disturbing the learning of all involved. The teacher must design for the inclusion of all.

This is exquisitely quantum thinking: nothing in the universe grows or develops alone. We learn together. We live in a participatory universe (Zohar, 1997, p. 68).

I have in the past described teams as limit situations, naturally imperfect. Today, from the perspective of the new science and quantum thinking, the dichotomy perfect-imperfect makes no sense. We are creating a world, a social, economic, cultural entity in an ordered universe that is naturally participatory. Reality is what we create. Do we dare use these principles to create, as Paulo Freire put it (1972, p. ix), a world where it is easier to love?

In a team, learning is enhanced by peers. We know that peers hold significant authority with adults, even more authority than teachers. Peers often have similar experiences. They can challenge one another in ways a teacher cannot. Peers create safety for the learner who is struggling with complex concepts, skills, or attitudes. I have seen significant mentoring go on in teams: peers helping one another, often with surprising clarity, tenderness, and skill.

Teams invite the welcome energy of competition. If we look at this word *competition*, we can see opportunity: *com* means “with,” *petition* means “asking.” We are asking together. There can, of course, be destructive competition among teams in a win-lose situation.

Constructive competition is structured so that teams work together in the learning process, manifesting their learning with a certain pride in their achievement as a team, in a win-win situation.

Teams examine another new potential in the learning situation, however, as different people learn how to work together generously and efficiently. We need time at the beginning of a course to invite learners to examine their roles in the team. There are group maintenance roles and task maintenance roles (Vella, 1995, p. 125). As a team considers how these roles are being acted out, they can name ways their team can work more efficiently. When learning tasks are deeply related to themes and time is adequate for the task, adult learners will work energetically in teams.

There can be an apparent contradiction between a learner's accountability to his personal objectives and his accountability to the team. When, in rare cases, a learner shows indifference or reluctance to join in a task, it is the teacher's responsibility to step in and work with that person. Perhaps the person should not be in the learning session at all. This is a decision to be made by both the adult learner and the teacher. The principle of safety is operative here. And that involves respect for the individual, for the teacher, and for the entire group.

The challenging story of team development in Zimbabwe (Chapter Thirteen) is unusual. Prior to the literacy training program, these young men and women had been members of military units in the guerrilla army that fought for Zimbabwe's independence. Now they were learning to be literacy coordinators with an entirely new idea of teamwork and a profoundly different purpose. This was a quantum leap for these young people.

Principle 11: Engagement

In Chapter Fourteen we see how a Hospice team's engagement in the learning and action plans for a strategic planning session was a vital principle to ensure the quality of the team's learning. Through

learning tasks we invited learners to engage themselves actively in the strategic issues of their organizations and of the community.

This is exquisite quantum thinking: learning as a process of a participative universe. Mechanistic thinking allows us to be passive learners. Zohar quotes Frederick Taylor, a mechanistic organization specialist, to demonstrate how Newtonian thinking affects organizations. Taylor said, “Employees are passive units of production” (Zohar, 1997, p.69). When we do not use dialogue and instead ask learners to be passive, they do indeed learn. They learn how to be passive, to be “good” employees. They learn that they have no power, except to obey. This is not the goal of adult learning in my perspective.

When learners are deeply engaged, working in small groups or teams, it is often difficult to extricate them from the delight of that learning. The director of that Hospice wisely invited complete engagement from all quarters. There were no levels of participation; everyone took part in the needs assessment and strategic planning. You will notice that some Hospice staff who were on holiday actually came to the program. *That* is quantum engagement.

Principle 12: Accountability

Accountability is one of the foremost principles of adult learning. Earlier in this chapter I spoke of it in terms of sequence and reinforcement. Who is accountable to whom? First, the design of learning events must be accountable to the learners. What was proposed to be taught must be taught; what was meant to be learned must be learned; the skills intended to be gained must be visible in all the learners; the attitudes taught must be seen; the knowledge conveyed must be manifest in adult learners’ language and reasoning. Second, the learners in teams are accountable to their colleagues and to the teacher. They are accountable to themselves to recreate the content so it really is immediately useful in their context. Accountability is a synthesis principle—it is the result of using all the other principles.

Chapter Fifteen is about a training event with doctors in Bangladesh. It offers a surprising example of the need for accountability. This story relates also to the issue of role. The doctors in the training program had a very hard time accepting that they needed to learn how to teach. Their role in their own country is such that they receive little personal or professional feedback on their teaching skills. As they learned the principles and practiced them among themselves, they found their role changing.

Ancient hierarchical relationships do not lend themselves to dialogue. They are reminiscent of the hierarchical system of the medieval state and church that we inherited and shaped into systems in industry, school, university, and government. This hierarchy was corroborated by a worldview of the universe and all that is in it as a vast machine. That worldview has an alternative, since Niels Bohr in 1923 split the atom and discovered within, not more matter, but energy. The measure of energy, a quanta, was named in 1905 by Einstein. Quantum physics presents a new perception of the universe and of our role in it. The kind of thinking needed to understand quantum physics is the key to understanding the whole new paradigm that is emerging (Zohar, 1997, p. 43). This quantum thinking leads to new and deeper accountability.

I have always tried, through careful design and through the use of the principles of dialogue education, to be accountable to learners. Today, using quantum thinking, I can be accountable in a new way: aware that what learners learn is much beyond what I have planned. The quantum concept of their participation in the construction of meaning and usefulness assures me. They are learning what they need for their context. I can review their portfolios and see how they have constructed appropriate meaning from the content I offered for their life and work. That is quantum accountability.

Thomas Kuhn offers us a useful hypothesis: change of a pattern, which he calls a paradigm shift, will only occur when the present pattern has proven itself ineffective and impossible to live with (Kuhn, 1970, p. 18). Part of my job in this book is to contrast pat-

terns and demonstrate how inefficient the hierarchical, mechanistic pattern is when we are attempting to teach adults. If we are insensitive to the cultural perspectives and value systems of the people we teach, we will not succeed in designing and effecting a dialogue with them. Dialogue does not serve those who see human beings as machines in a mechanistic universe.

As we work in our complex global and national society to reach adults who need knowledge, skills, and new, healthier attitudes to build healthy lives and we see those adults as subjects of their own lives, we can accountably design for dialogue. The basic assumption is that all learners come with both experience and personal perceptions of the world based on that experience and all deserve respect as subjects of a learning dialogue. Adult education, community education, and training are most effective when we honor that assumption. This is quantum thinking at its best. This is dialogue education. The twelve chapters of Part Two offer stories of adult learning situations based on such dialogue education.

