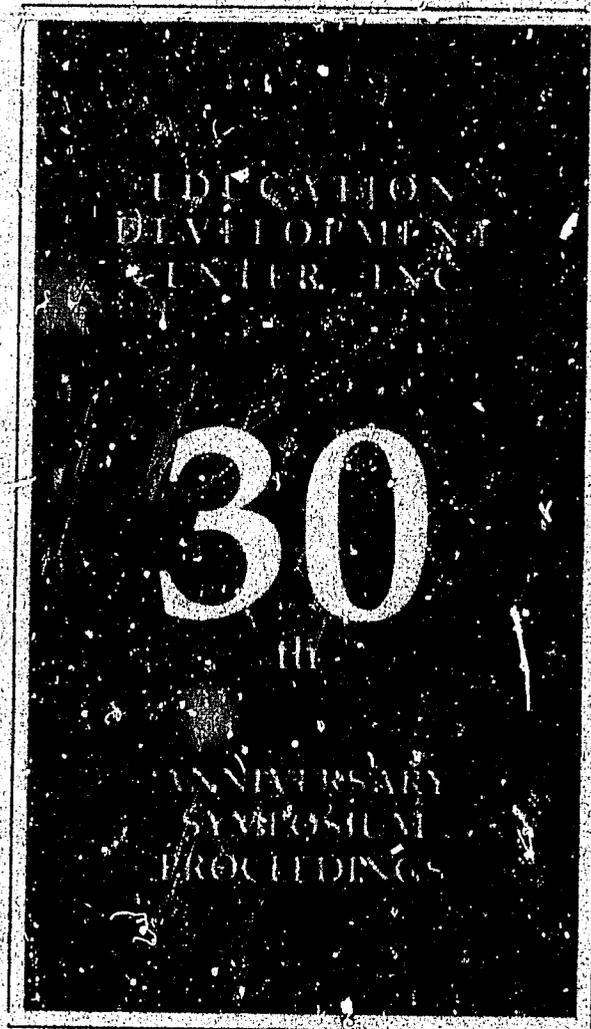


EDUCATION FOR
HUMAN DEVELOPMENT

STRATEGIES THAT WORK



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**EDUCATION FOR
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STRATEGIES THAT WORK**

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Education Development Center, Inc. (EDC), is an international, nonprofit, research and development organization based in Newton, Massachusetts. Dedicated to human development through education, EDC plays a leadership role in addressing many of the world's health, education and social problems. The thirtieth anniversary of EDC provided an opportunity for EDC staff, friends and associates to gather on December 5, 1988 for a symposium at the John F. Kennedy Library in Boston. The day included speeches, audiovisual presentations, computer demonstrations and exhibits on a wide range of strategies that can be used to improve health and education throughout the world. This report presents selected excerpts from the symposium. For further information, contact the president's office.



President's Opening Remarks

Janet Whitla

Welcome, friends and colleagues, to this festive occasion. For the next several hours we will explore together the theme of our gathering—“Education for Human Development — Strategies That Work.”

The Kennedy Library is truly a fitting place for Education Development Center's extended family and friends to gather together for this thirtieth anniversary symposium. EDC had been founded for only two years when John Kennedy was elected President. The times, though filled with difficult challenges, were optimistic and fired with an enthusiasm and an idealism that were dampened in the following decades, and that are gradually being rekindled by people like yourselves who are leading efforts to strengthen teaching and learning, and to promote healthier lives for people around the globe.

EDC was founded in 1958 by university scholars and researchers who saw the need for an independent, free-standing institution that could bring together university and school people, business and community leaders, creative artists and talented researchers, to achieve reform of science and mathematics curricula. That collaborative, inclusive spirit has remained a guiding force through the years, producing a distinctive working style. But the agenda has expanded, and the enormous diversity of programs EDC now carries out attests to the broad vision of education that has evolved over these thirty years.

At its founding, EDC was unique. There were no federally-funded regional laboratories and centers, or other non-profit, or for that matter, profit-making research and development organizations working broadly on issues of national and international import in education. Its appearance on the scene coincided

with a growing national investment in the education sector. The founders believed in the need for this institution to fill the distinctive roles of catalyst, experimenter, developer, and to be an instrument for improvement and renewal. I believe that need is as great today as at EDC's inauguration.

There are so many challenges to achieving healthy and productive lives for all the world's people. What, in a programmatic sense, do we mean by “education for human development”? What is EDC doing, and what can it do, to contribute to this worthy end? Let me set a framework for considering what you will see and hear during this symposium, a framework that extends from the present, building on work in progress, into the future, the 1990s and beyond.

I believe EDC will continue to make a distinctive contribution by following this “working agenda” for the 1990s:

Programs that address human needs and the quality of life including:

- promoting health and reducing threats to well-being across the life span
- promoting educational equity and opportunity for all people
- contributing to higher levels of literacy and numeracy
- helping at-risk populations in this country and the developing world: children, families, and the elderly.

Janet Whitla is President of Education Development Center.

Programs to apply learning technologies as tools for creative problem solving;

Programs that develop human resources through basic and continuing education and technical training;

Programs to build interdependence and collaboration across groups to solve social, technical, and ethical challenges.

During this symposium we address two major streams of activity: Improving Teaching and Learning; and Promoting Health Through a Lifetime. These themes are at the heart of EDC's agenda as we look to the future. This is a wonderful opportunity to take stock, to consider what we have learned, and what we are now doing that contributes to improving education and health for the diversity of people in this country and the world whose lives we hope to touch and influence through our work.

Finally, the focus of this symposium is on "Strategies That Work." But at another level, the focus of the day is on people. For EDC always has been, and remains, an organization that puts people—the human dimension—first. This, then, is also a day to celebrate people: the people of EDC as well as those who are served by EDC's work and who participate in creating and using the products and services of the organization.

In recognition of this, I want to acknowledge first the EDC family who are here — more than 130 staff, numerous consultants and several trustees, whose work on past programs and on the more than 60 projects now underway, makes this day possible.

We also have guests here from many regions of the country—teachers and school administrators, health and social service professionals, people who work in developing countries, foundation representatives, university scholars and researchers, people from government offices and agencies, colleagues from other research and development organizations, corporate sponsors, publishers — and many others, all of whom, together, constitute an important and

impressive network of commitment to human development through education.

I am privileged to be able to celebrate this day with all of you as we launch EDC on its next decade.

Student-Centered Schools: A Vision for the Future

Adam Urbanski

Thirty years ago, when EDC was started, I was a twelve-year old boy in one of those countries where you have worked in the Middle East, having a year prior to that escaped from Poland with my parents and six brothers. Instead of going to school, we took turns taking stints with my father, selling doughnuts from store to store, from beach to soccer match, to earn money to come to America.



Adam Urbanski

And indeed, three and a half years and twelve countries and six languages later, we came to America. I learned very early on that opportunities are not automatic. Not only do you have to work hard, but you have to be the recipient of the caring of others. It is because of people like those from EDC and those who support EDC, and because of public schools, that I have found opportunities here to build a life for myself and for my family. So I thank you for your work, not only as an educator, but also personally. I join you in the celebration of this thirtieth anniversary symposium.

There is no more important work than that which helps raise the level of dignity of life for all, regardless of what country they live in or the color of their skin. The work EDC has done in the last thirty years is no less needed now. Indeed, I would make an argument that it is needed now more than ever.

In Rochester, which may be an example of how urban school districts are faring and not as bad off as some larger urban centers, look at the indicators. About 30 percent of students drop out every year; about 50 percent of ninth graders never show up in the ranks of the graduates. The failure rate in each subject of 40

percent is not unusual. Eighty percent of our entering kindergartners, eight out of ten, are already tested as a year or more behind in readiness skills. We are finding the hard way that children get to be that way before they are five years old and that schools and educators are behind the eight ball before they even get a crack at it.

We have day care centers for the children of our students in every high school. We have students who have already had their third child. And this

is not unique, unfortunately. It's not that Rochester veered off somehow. Urban school districts in this nation can accurately be described as education's intensive care units. Throughout this nation, each year, we send more young black men to prisons than to colleges and to universities. What greater indictment does a society need? The problem ought to be relevant not only to those of us who live in that environment. Martin Luther King was right: "Justice is indivisible. Injustice anywhere is a threat to justice everywhere."

It is also a matter of enlightened self-interest. We cannot survive economically—we certainly cannot thrive economically—unless we fix the education system. You cannot have greatness in other fields without greatness in education, and simple common sense tells us that if we're getting lousy results now

Adam Urbanski is Vice President of the American Federation of Teachers and President of the Rochester Teachers Association.

then the surest way to continue to get lousy results is to continue to do everything the same lousy way. If we always do what we've always done, we will always get what we always got.

Change is desirable. Indeed, I believe change is inevitable. Only growth is optional. Those who agonize over change truly agonize over whether or not to grow in the face of change. Change means doing things differently, not just harder or longer than what we now do. Change, real change, as you have learned through your experience, is in the long run. Real change brings stress and anxiety. It's not easy. It involves risks. There are no guarantees of success in advance. But real change is desperately needed because schools as they exist now were so designed at the turn of the century when the economic rage was mass production systems and the factory model.

So, when you really think about it, that's how schools are today. They are factories, and children are the products, and teachers are the assembly-line workers, and school administrators are the floor stewards. And the child comes to me and I screw on social studies to him. And then forty-seven minutes later, the bell rings and I screw on math. And if they only sit still for it, we'll do that to them seven times a day. They're supposed to be finished products, but we have too many recalls. It doesn't work. Children are not products.

The problem with today's schools is not that they are no longer as good as they once were. The problem with today's schools is that they are precisely what they always were, and society is not. We have now changed realities. Manufacturing, like agriculture before it, is quickly becoming a source of wealth and not a source of jobs. Forty percent of all the job categories now in existence will not be when first-graders graduate from high school.

Technology is accelerating change. It is one of the few things in life that is getting cheaper and better every year, and it is turning information into a utility. All of the information that exists in all the computers in all of the libraries of this world doubles every five years. So what's the sense of asking students to act

like squirrels and squirrel away bits of information to spit back some months later?

We have to question the most fundamental assumptions about our industry and our enterprise: how time is allocated, how space is utilized, how students are classified and grouped, and how subject matter is divided and presented. We have to restructure schools from the top down, from management that doesn't work to shared governments that might; from isolation to collegiality; from rule-driven values to value-driven rules; from emphasis on programs to emphasis on students; from compulsion to choice; from unexamined tradition to reflective practice.

We have to restructure teaching, as well, to make it resemble something more of a genuine profession with an induction system that does not compel new practitioners to learn by making mistakes on a first batch of clients, but with a great deal of collegiality and professional discretion in their jobs, and with an opportunity for promotion so it wouldn't be necessary to promote teachers out of teaching when you promote them in teaching. And with accountability, but not only bureaucratic accountability; accountability by results to the clients, accountability to the students.

We have to turn teachers into real professionals and not permit them to remain the empty vessels through which higher-ups transmit decisions. That is all too often the case. We have to view students as workers and teachers as leaders and principals and other administrators as leaders of leaders—which leaves dignity for all and an important job for all. Mastery, not time served, ought to dictate whether or not someone has met standards. We have to model democratic processes in schools, because you cannot teach others what you cannot model yourself.

Teachers, too, must be learners engaged in team teaching while students are engaged in team learning, cooperative learning. In-depth treatment must replace coverage. Recognition of complexity of learning must replace the simplistic approach now taken. Learning, not teaching, is the most important dynamic in education. We must teach students and help them learn to think critically, not just to memorize. We must match teachers with students differently than

we do now. We should not relegate what we formalistically refer to as the most challenging students or the most challenging classes to the youngest, most vulnerable teachers who have enough to do to learn the job the first year.

We must recognize the various levels of intelligence and the varying learning styles that our students have. We must encourage peer relationships among them. Peer tutoring is often more effective than adults teaching youngsters. This cross-age tutoring is very effective, and there is ample evidence on all of this. We must finally realize that reading helps retention better than listening, discussion even more than reading, simulation even more than discussion, and doing even more than simulation. We must let learners do.

There ought to be less talk, and greater utilization of technology, and testing by exhibition and demonstration, not through multiple-guess tests that tell us that everybody is above average and that 60 percent of the test takers are in the top. We must challenge the most fundamental assumptions such as one building must mean one school. Why should architecture dictate practice and pedagogy? Or the assumption that people learn best in forty-five-minute segments? Or that the most conducive environment is captivity in neat, straight aisles prohibiting contact among them?

These are not the answers, these are questions that I raise. The biggest emphasis ought to be on encouraging many others to raise questions. I don't think we ought to fear that there is someone out there who is smart enough to invent a system that would get us worse results than the one that we currently have. It's critically important, because the survival of public education is at stake. The future of the next generation of students is at stake. And I, for one, believe that the risks involved are worth taking. As a matter of fact, I would agree with Winston Churchill in his definition of success—that it is nothing more than “going from failure to failure with undiminished enthusiasm.”

So, we must make it safe to experiment and safe to try different approaches for more effective results. It can

be done. As a student of history, I know that the most important revolutions in the history of mankind are the revolutions of rising aspiration, rising expectations. If I have learned anything in my experience in this nation, it is two things: one is that the real difference in this wonderful country is not so much between the economic “haves” and the economic “have nots” as it is between those who have hope and those who have none. The second thing I've learned is that, here more than anywhere else in the world, chances are that if you can envision it, you can also achieve it.

EDC Panel: Strategies to Improve Teaching and Learning

An Overview of Teaching and Learning at EDC

Myles Gordon

Some might say that Education Development Center is an entrepreneurial and energetic organization that changes with the times and responds to new needs and emerging opportunities. In fact, it is. That was true in 1958, and continues to be true in 1988. But, I believe there is something else going on here and that something else in my mind is vision. The will and capacity to look at a problem in a new way; to challenge the commonly held assumptions; to seek new answers for old questions; to search for a better way. Business as usual or more of the same is not what EDC is about.

What are the hallmarks of EDC's visions in teaching and learning? As I think about it, I see a number of common threads that cut across the patchwork. Many of them I can trace to the spirit and temperament of the experimental physicist, Jerrold R. Zacharias, who gave rise to the enterprise. First, in these visions, learning is an active process. Understanding and problem solving are the product of individual and collective action. These are not passive processes. Whether it's physics or child development, you have to work the problem.

And in these visions, particular attention is paid to content. All teaching and learning must be informed by the best available scholarship and expertise. Finally, when and where it's appropriate, turn to technology. This is technology not for its own sake or as a substitute for good teaching, but rather technology as a tool to extend the capacity and reach of the learner and the teacher.

Not every vision of EDC has been a success, and not every successful vision had the far-ranging effects that we might have hoped for. I think it is important that we consider what we've learned and how the

character of our vision has expanded over the years. How have our visions changed?

First, I think we've learned that vision must be the product of collaboration. At every stage of our work, we seek out partners, but it is particularly critical that at the outset, as we form our visions, that we work with others. Many of you are, in fact, partners in that process. Second, our visions must be inclusive. We must provide opportunity and resources for all people. For EDC, it isn't a choice between excellence and equity. In EDC's visions, equity is a condition of excellence.

Finally, to be successful, our visions must acknowledge and accommodate local context. No strategy is universal. Papua New Guinea is not Newton, Massachusetts, and Newton, Massachusetts, is not New Orleans. We can offer people vision, resources, and support, but the ultimate measure of EDC's effectiveness is the extent to which our programs meet the needs of people who use them. To make a difference, we have learned that even the best of visions must in the end learn to live in the real world.

At the same time that I sense our vision has expanded, our approaches also become more consistent and systematic as well.

Let me lay out in broad strokes, EDC's approach to teaching and learning programs. It begins with research and needs assessment, a review of the literature, a review of current practice. Steering committees and advisory groups are formed to offer

Myles Gordon directs the Center for Learning Technology and is a Vice President of EDC.

expertise, guidance, and critical review. Initial development is shaped by formative research, then enhanced and enriched by cycles of development and field testing, and, from the outset, we attend to issues and mechanisms for training, dissemination, marketing, and ongoing support.

Over the years, we've also been working toward what Jerrold Zacharias called, "the systems engineering approach." If you're working on a complex system and you want to change it, you can't just tinker with a single element of the system. Everything is interconnected. If you want to change the curriculum, good materials are not enough. You have to work on, or at least account for, every element in the system: teachers, principals, superintendents, school boards, parents, community organizations, professional organizations, educational publishers, test makers, business and industry, state education agencies, state legislatures, Congress, the U.S. Department of Education, even graduate schools of education. It's no wonder that systems engineering is no small task.

As I look back over thirty years, the sustaining strengths of EDC and the sources of its longevity, diversity, and success are visions: visions that have broadened over the years and that both honor the roots of EDC and reflect a growing sophistication, maturity, and humility.

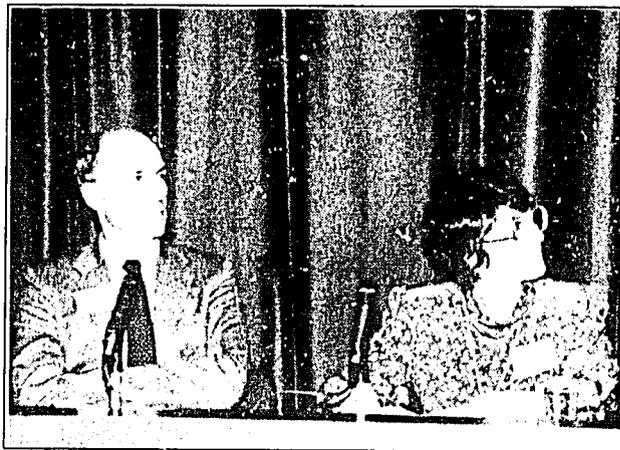
Mainstreaming Children with Special Needs

Joanne Brady

For almost twenty years, EDC has worked with teachers, specialists, paraprofessionals, administrators, and parents to support their efforts to create real opportunities for children with special needs to learn and to grow together with their non-handicapped peers.

We have used the paths of training, technical assistance, and resource development and dissemination, training teachers on their attitudes towards and expectations of children with disabilities; offering workshops on how to deal with many conditions, including children who are chronically and/or terminally ill. Our technical assistance has varied, depending on the specific problem a program might experience.

For example, we have worked with our Head Start colleagues to devise more efficient early-detection systems to identify children with special needs. We have helped teachers share pertinent information as children move on from Head Start to kindergarten. We complement our training and technical assistance with good learning materials. Sometimes we develop these materials ourselves. Right now, we are working on material that will show low-cost ways to adapt playground equipment and activities to include children with physical disabilities. The strength of these pathways lies in their combined use over time. From both our service and research projects, we have learned that innovations that last need strong, on-



Tom Tilson and Joanne Brady

going support. This support can take many shapes: integrating technology into the classroom, networks of special educators sharing their successes across programs, teams of teachers and specialists working together with parents to assess a child's needs and set priorities. We have also learned that children with special needs have a range of complex needs. The process of supporting these children cannot be the province of education alone. Hospitals, clinics, mental health agencies, schools, and community groups like Head Start must collaborate. They must pool their resources to make services more welcoming to children with special needs and their families.

Joanne Brady is the EDC Project Director of the Resource Access Project and the New England Resource Center.

Interactive Radio Instruction in the Developing World

Tom Tilson

A few weeks ago, I visited Malawi, in southeastern Africa, as part of a World Bank team to assess their educational program. Now, imagine pulling up to a rural school. The grounds are clean, there are neat little paths with flowers and shrubs leading to the school buildings which are nicely constructed and seem very well cared for. But, when you enter one of the first-grade classrooms, you're struck by the reality of limited resources, of what it means to have a crisis in education. For here before you is a mass of little children, some 150 of them, boys and girls, sitting on the cement floor, lined up shoulder to shoulder across the room in row after row, from the front of the room to the back of the room. The only desk and chair in the building in that classroom is for the teacher. The teacher is conducting a math lesson, and you can see the children, many of them, with their little teeny pieces of chalk in their hands writing math problems on the best thing available, the cement floor between their legs.

The children appear very eager to learn but find it so hard to get attention because there are so many others in the classroom. The eight classrooms in this school are no where near enough for the nearly three thousand children. As you walk out into the spacious school grounds, you find the other children. There they are, scattered about the premises and about fifteen groups with some hundred to two hundred children in each group, sitting on the dirt, sometimes under a tree, sometimes out in the open. Each group may have one or two teachers and a chalk board propped up on a small, rickety, old chair but little else. Most of the children have a little notebook, or at least a piece of paper and a stub of a pencil to write with. But there are few texts. When the rainy season starts in earnest next month, these classes sitting out on the dirt will be a disaster.

To help meet situations like this, with overcrowded classrooms, few texts, many unqualified teachers, and virtually no resources for in-service teacher training, we work with a process called interactive radio. This is a new use of an old technology. Over the last fifteen years, interactive radio has proven highly effective and popular with children and teachers alike. EDC is a leading institution today using interactive radio throughout the developing world, with support from the United States Agency for International Development. Through these contracts, we, along with subcontractors, are developing either new radio courses or adapting courses previously created in the following subject areas of basic education: arithmetic, English as a second language, reading and writing in Spanish, science, and health education.

Interactive radio is not the same as typical radio lessons for schools. It is distinctive in several ways. First, it's intensive. In most courses, the lessons are broadcast every school day for some twenty to thirty minutes. These lessons teach the core instructional materials; they are not just supplementary. Second, the lessons incorporate several important pedagogical principles. For example, each course is designed so that every new concept is introduced only after carefully determined prerequisite skills have been learned. Another key principle is that the children are active participants in the learning process. In fact, the term "interactive" comes from the simulated dialogue between the radio and the children. The children respond to the radio literally every few seconds, by speaking, by writing, by reading, by manipulating materials or doing physical exercises.

Tom Tilson is Project Director of the Radio Learning Project at Education Development Center.

Other pedagogical principles include the distribution of the teaching of new concepts over time, systematic review of material already taught, immediate reinforcement of concepts of correct answers, and presentation of a variety of activities during each lesson. Each lesson is divided into segments or mini-lessons, each covering a different topic, some new, some review, and each usually requiring a different kind of response from the children. This variety is pedagogically sound and helps to account for the fact that children, even those in first grade, remain alert, on task and highly motivated for the full twenty- or thirty-minute broadcast.

These interactive radio programs demonstrate a strategy for improving education in the developing world. First, there is a commitment to improving the schooling experience for children, ensuring that the children learn more and that learning can be enjoyable. Second, the strategy insists that the curriculum development process be based on research, principles of learning, and an on-going, thorough evaluation. The third component is the use of appropriate technology, one that is widely available and affordable even in the poorest country, and one that ensures that good quality instruction gets out to the most remote schools, regardless of the condition of the schools, the training of the teachers, or the number of students in the classroom. Finally, the strategy is based on a management system that is within the capacity of countries with limited resources.

Creating Safe Schools: Participatory Decision Making in Schools

Paul Vorro

The first time I heard about EDC was when I was called to the superintendent's office shortly after being appointed as principal of the Roger Williams Middle School in Providence, Rhode Island. This was our initial contact with the people from EDC. Our superintendent had decided to work with EDC in an attempt to improve discipline and morale at our school.

One of the first things we did was establish an Action Team consisting of four department heads, the two EDC people, and myself. The Action Team was a good way to involve the teachers in the school and get the faculty to sense that they were helping in the changes that were needed. We then held a faculty meeting and conducted a school survey to address the concerns of both faculty and students. The surveys showed that the school was not a good place to be. It was unpleasant and unsafe, with no consistent discipline policy. Teachers were willing to help but they wanted backing. We then asked for faculty volunteers and at least twelve people joined the Team.

We decided to meet throughout the summer to write handbooks for both teachers and students. The student handbooks very clearly pointed out what would happen if rules were broken. Assemblies were held to explain to the students all the rules. The rules were then reinforced within the classrooms by the teachers. Handbooks were sent home to all the parents with a letter of explanation. Phone calls started coming in from parents saying, "It's about time."

We began making needed repairs to the building and made sure that in September, when we opened school, every single student had a locker. As the teachers saw the progress that was being made in the school,

more teachers volunteered to take part in the Action Team. Parents were included on the team, and a PTA was formed. We plan to add student representation once we finally form the student council. I think we started realizing at that time, shortly after September of 1986, that a strong group of school administrators, teachers, parents, and students working together can get results.

The English Department chairperson started a yearbook. We had not had a yearbook in fifteen years. School pictures were taken. The social studies department chairperson organized a student council. A business teacher came to me and said, "I'll start a school newspaper." A home economics teacher said, "I'll start an arts and crafts class." I said, "Fine, you're doing all that, I'll do a newsletter that I'll send home to the parents on a quarterly basis." Students are doing murals where the lockers used to be.

Our faculty meetings have changed. I don't run the faculty meetings anymore. All I do is orchestrate them. The teachers run them, and they talk about what they want to, and there's a lot of interaction. Another thing we did was change the Open House from an afternoon to an evening meeting so more parents could come. These are all ideas that came from the Action Team and the teachers. On November 16 of this year we had 400 parents at the Open House.

Our attendance rate has improved, and discipline problems are mostly minor. For instance, three years ago, eighteen students were excluded from my school. Providence has a policy if you carry weapons or assault students, you're excluded from school for

Paul Vorro is Principal of the Roger Williams Middle School in Providence, Rhode Island.

sixty days by the school board. Roger Williams Middle School excluded eighteen of those. Last year we excluded two. This year so far, none. In fact, if I had been invited to this symposium three years ago, I would not have been able to attend because I could not leave that building.

Teacher morale is high. Our Christmas party is being attended by eighty faculty and their spouses. Three years ago we couldn't have a Christmas party. By using the strategy of teacher, parent, and student involvement in the decision making of school policy, we have taken a school that was depressing to one where student interest is increasing, and the image of the school within a community has improved.

A New Vision of Learning, Teaching and Making Mathematics

Judah Schwartz

If we taught language the way we teach mathematics, we would do a quite interesting piece of business. We would ask somebody to learn a play by Shakespeare and a short story by Hemingway and an essay by Emerson, and we would never ask them to compose a piece of prose. The fact is that when we teach mathematics we ask people to learn the mathematics that has already been made by other people. That is an unreasonable thing to do. It is an unreasonable way to run a school system. Children have the right to be challenged to make mathematics.

We at EDC set out to try to find ways to use the new technology to challenge children to make mathematics and found a particularly appropriate and seizable opportunity in the problem of the teaching of geometry and algebra. We have designed a series of software environments that make it possible to raise questions about particularity and generality in the domains of geometry and algebra. The overarching theme that goes through all of what we try to do in mathematics and software is that the software should never ask questions that have only single right



Judah Schwartz

answers. Teachers should never ask questions that have only single right answers. Software should make no inferences about users' intentions. The software should be a kind of intellectual mirror that allows the user to explore his or her own understanding of the domain.

What happens when you start to make software like this? What happens when you start to treat the computer as a serious intellectual tool intended to

expand the intellectual reach of all who use it, be they student or teacher? You begin to make a different set of attitudes about what it means to make knowledge. Schools are not simply places where the knowledge of the past is transmitted, but schools can arguably become places where new knowledge is made, where people respect one another for the making of that knowledge, and where people always question, "What is this a case of?" and "What might be done better?"

Judah Schwartz is an EDC consultant and a Professor at the Harvard Graduate School of Education and at the Massachusetts Institute of Technology.

Changing the Rules of Math Class

Glenn Kleiman

The focus of our work in elementary mathematics is a curriculum for the 1990s, one that will prepare students for the challenges they will meet during the twenty-first century. In a project funded by the National Science Foundation, we are seeking to define the structure, content and pedagogy of a new elementary mathematics curriculum and to develop and test prototype materials that will demonstrate how that curriculum can be implemented.

Our project is in response to the changing needs for quantitative literacy as our society changes, to research that has advanced our understanding about how children learn mathematics, to the availability of new technologies, and to the growing concern about the poor performance of American students on national and international assessments.

In most schools, mathematics instruction at the elementary level continues to be based upon textbooks and workbooks, and to focus upon paper-and-pencil drills of basic computation. Instruction generally consists of the teacher showing students exactly what to do and then students practicing it. Students in these classes come to expect that there is always one right answer and always one right way to find that right answer. They come to believe that using a calculator or working with another student is cheating rather than a useful way to solve problems. They come to expect mathematics to be the memorization of facts and rules, and they regard it as a subject that simply is not any fun.

From this type of instruction, children often develop the notion that mathematical procedures are like magical spells. If you cast the right spell, you get the right answer. For example, when given a question

that asks, "A shepherd has one hundred goats and five sheep. How old is the shepherd?" many students answer twenty. They've learned a magic spell that says, if a problem gives you a large number and small number, then divide. All too often, children are learning to manipulate symbols without learning to understand the underlying mathematical concepts, and without learning to apply mathematics to solving problems.

Our strategy to try to help improve this situation is to introduce new teaching and learning materials into the classroom—materials that incorporate different content and different activities and that reflect a different set of expectations about mathematics and mathematics instruction. These materials are varied and include many types of activities. There are class projects, activities with computers and manipulatives, mathematical games, activities in which children create pictures and objects and graphs, and activities in which children collect and analyze data.

For example, one module, called "What's My Strategy?" contains problems with coins, geometric blocks, and computer software. Students solve problems that involve combinations of coins, making shapes with blocks, identifying number patterns, and building pictures on the computer screen. The focus throughout the module is having students explore, write about, and discuss their strategies for solving the various problems.

One problem asks students to pick a set of coins and then find all the different values they can make with combinations of those coins. While very simple, this

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problem has some important characteristics that are different from the usual drill and practice. First of all, it has more than one right answer. The challenge is to find all the different possible combinations and figure out how you can know whether you found them all. This type of problem is an excellent one for students working together, with each student contributing some answers to the full set. Students can figure out many different strategies that they can demonstrate and discuss with their classmates.

After some work with coin problems, the students move on to working with blocks of various geometric shapes. Again, we have students collaborating, working with manipulatives, and solving a variety of problems. For example, we ask students to look for all the different ways to make an octagon from the available blocks. In a fundamental way, this problem is similar to the coin problem. In both cases, we present basic elements and have students explore different ways to combine them while meeting various constraints. Students can use similar strategies to solve both types of problems.

One part of each activity is having students discuss the strategies they've used, compare them, and put together a class list of useful strategies. As they review and add to their list of strategies, students begin to recognize those that are generally useful—things like finding patterns, making tables and pictures, making the problem smaller or simpler, and systematically testing alternative answers. They refer back to this list when presented with other problems, both in mathematics and in other subjects.

Through these types of activities, we hope to foster changes in the teaching of elementary mathematics. In our field testing, we are looking for teachers and students to have an increased emphasis on conceptual understanding and problem solving, and to acquire a broader view of mathematics and its relationship to other lessons and experiences. We hope to promote the teaching of mathematics within a community of learners where discussion, sharing, and collaboration are considered part of every lesson. We hope that teachers and students will come to view mathematics as an enjoyable, creative, and useful activity.

The Urban Mathematics Collaboratives

Kimberley Richards Sawyer

It is a pleasure and an honor to participate in this symposium program which celebrates thirty years of Education Development Center's commitment and work and its leadership role in education. I am also proud to represent the eleven cities of the Urban Mathematics Collaborative. The Collaboratives are a result of the need to improve the effectiveness of schools as institutions in the communities that they serve. Without the vision and financial assistance of the Ford Foundation, the Collaboratives would not be possible. I would also like to take this opportunity, on behalf of the one hundred and fifty teachers that participate in the Mathematics Collaborative in New Orleans, as well as other teachers from around the country who have worked very hard and participated in their collaborative activities, to say thank you to the Ford Foundation for lighting that candle which the collaborative represents and to thank Education Development Center for its technical assistance and outreach which ensure that the light shines brightly.

It is the goal of the collaboratives to enhance professional development of secondary mathematics teachers and enrich the teaching of mathematics and secondary education. The strategies that are employed in the eleven cities vary. I will touch on four that are very common within those cities and give examples. I'm sure you know that there is a great amount of isolation among teachers and administrators as they work with children. The collaborative has a strategy to reduce the isolation among mathematics educators. Teachers many times go into their classrooms at 8:00 a.m. and close their doors and go out at 3:00 p.m. There is really no structure there for them to communicate with other teachers.

In New Orleans we offer a symposium twice a year where the majority of the participants are high school



Kimberley Richards Sawyer, Robert Albright and Jerome Bruner

mathematics teachers. We make sure to include representatives from the business world, and we just don't ask the CEO to send someone, we ask the CEO to come. We also ask department chairs in education and mathematics to come as well, to listen to a speaker on an area of interest that all three sectors have as a joint concern. After that lecture, we have a question-and-answer period, dinner, and more dialogue. I don't know how many of you are familiar with New Orleans, but Louisiana's employment rate is very low and teacher pay and teacher morale and just the whole feeling of the profession of teaching is probably close to rock-bottom. We had to do a lot of long, hard work to create a climate where teachers were respected, where business people would actually come to a symposium when they found out that teachers were going to be there too.

Another activity that we have to reduce teacher isolation is what we call a Teacher Advisory Committee. The collaborative wants teachers to set

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the agenda for what they feel they need to enrich their professional work. The Teacher Advisory Committee meets at different school sites on a regular basis and we do a lot of listening to teachers. Much of the information we received from those teachers at that first meeting set the tone for a symposium we had later this year.

We really want to increase the awareness of the interdependency of the needs of mathematics users in the three sectors—schools, universities, and business. High school and middle school mathematics teachers aren't really communicating with the universities that receive students, and the universities aren't communicating with the areas in industry where there are jobs available. The universities blame the high schools, and the high schools blame the junior high schools, and we know how the cycle continues. We really want to increase the awareness that we're really all working together on this.

Another strategy is to provide resources, information, and knowledge to improve the mathematical experience of youngsters. Although our efforts are mainly toward professional development and enriching mathematics applications, as we all know, the end result of that is providing an environment for children to flourish in schools. What we've done, and what many of the other collaboratives around the country have done, is to sponsor a Woodrow Wilson Institute. The Woodrow Wilson Institute uses the concept of the master teacher. Teachers teach teachers rather than having someone from the outside who really is not a teacher coming in with a different culture and a different language. So teachers from around the country attend a two-week workshop at Princeton University where they can enhance some of the talents and skills that they've brought with them to the institute and use the information that they've gathered from one another to teach other teachers what they have learned through that workshop.

This summer we sponsored geometry applications in New Orleans, where four teachers from around the

country worked for one week with twenty-five high school mathematics teachers on activities that would be exciting to children and that would put them at the center of learning experiences in the classroom. We've also sponsored two teachers going to the North Carolina School of Science and Mathematics for the same type of training. They then came back and did a week's worth of training with teachers in New Orleans.

We all have the challenge of drawing from the vast pool of human resources that are in our urban cities which is the whole purpose of the Urban Mathematics Collaborative: working with youngsters who have historically not received the classroom support or the training to do high-level thinking in mathematics—students who represent what I call “the new majority.” I think many times, we want to use these buzz words—urban, at-risk, disadvantaged—when we're really talking about people of color: African-Americans, Hispanics, Asians, and others. As Kennedy said, “We've got to create an environment where diversity is appreciated.” I'm not quoting him correctly, but diversity is what rang clear in my heart. My challenge to all of us, EDC included, is to really focus on that and create math equity and excellence in the urban centers that the collaboratives are designed to serve.

If the collaboratives are to remain a growing force in the urban areas they serve, they will need to collaborate also with less urban areas and more rural areas and address the challenging issues that are faced there. The collaboratives spent the early years in helping to create the climate for change. We are now working to make sure that the infrastructure that we built while creating that climate for change is solid so that the real change can occur. The challenge is really to all of us—to remain very vigilant in our efforts to improve the quality of education in all of our communities. All children have within them the capacity to thrive in a mathematically rich environment where they can be respected, encouraged, and challenged to take risks, and to grow.

Reflections on Thirty Years of EDC

Philip Morrison

NOTE: The Jerrold R. Zacharias Science Teaching Award was presented to Professor Philip Morrison in recognition of his outstanding career as a scholar, philosopher, and most of all, teacher. Professor Morrison was in India on the day of the symposium but he sent the following videotaped message to the EDC audience.



Philip Morrison

I'm very grateful, indeed, for the initial Jerrold R. Zacharias award, and, because that is so, because I speak out of the ancient history, if you like, of EDC and Jerrold Zacharias, I thought I could begin with a few words about what I remember about that man and his times. I knew Zach for a handful of years. I was just a graduate student then. Before I ever saw him, I knew of his name as one of the group of the most subtle investigators at Columbia who teased knowledge out of the nucleus by radio techniques.

When I first ran into him, it was in Los Alamos where he became well-known as a manager and instigator of a big weapons project. I saw him next a couple of years later when I came as a visitor to MIT, and admired his leadership. But, still I did not see anything but one more of those energetic and insightful physicists whose work and spirit were important in the postwar world.

We had fallen upon pretty bad times. First, the physics community was damaged and startled by the hasty decision to start on the H-bomb, and then by the rise of that attitude we affix now to the name of Senator McCarthy. Then by the cruel humiliation of the leader of physicists, a man who deserved much

better from this country, Robert Oppenheimer. The times were bruising, and we had just put them aside when in the fall of 1956 Zach entered the path that we here are still following.

I was at Cornell and my chief was a famous, wonderful man, the fearless Hans Bethe. Bethe and Zach were old colleagues and friends and the call came to us. Bethe called a few of us younger fellows together and told us

what Zach had suggested. He put us on the track of a new task—the reform of high school physics, something we had not thought of before.

Now it seems narrow, perhaps, in this world of wide understanding of the importance of education at all levels, but then for this university-associated group it was something novel and splendid, because we saw in it, not just the improving of the teaching of physics but the restoration of something that had been subdued and cast aside in American life: the idea of questioning, asking for yourself, seeking answers, the life of the mind brought to a wide community like high school students. That's what we saw in it, and that's what Zach intended. For as you know, that became the first of a great many efforts in the same domain.

I give nothing but the highest praise for Zach's recognition. Coming out of the world of inventive radar and bombs and weaponry, he saw that national security meant more than that in this new world. It

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meant a sense of what I believe more and more of us have come to understand in the modern world: that it depends on a far wider healthy country to have a secure nation. Zach saw that early and with strategic ability. He put in place by his direct leadership and his inspiration more than one institution such as EDC is today after these decades.

And a new day has come. I'm pleased and proud to be recognized for the old days. Zach saw that it was not just weapons but knowledge that would count and he saw it had to be extended widely—first of all in the developing world, to the countries of sub-Saharan Africa in which we became involved and had many friends. We were also right at the edge of that wonderful experience in which equality was extended, still inadequately, but with great hope to the widest group of Americans, to black Americans as well. And then, on to the primary school with the Elementary Science Study Project.

Here it comes around again. Once again national security is recognized as wider than weapons, wider than Swiss bank accounts, wider than dropping guns from airplanes. National security begins with a loyal, devoted, and able citizenry that can do things for themselves, that can solve their problems. I see it at four distinct levels. Least of all, but I mention first because it's easiest to do, is an adequate, inspiring education, both in theory and practice, for the specialists of our economy—those few millions of people, technical in every level. Next we must educate a work force a hundred million strong, also able to see what's wrong, to cope with the new, to model instructions, to understand that their abilities and their energies are part of everything that happens in the economic world.

The ballot box, too, needs the engaged American, able and willing to try to think for himself and make sure of the evidence. That's what education can bring everyone to do. Finally, we need to make sure that every American has some sense of his place and her place in the modern world; some sense of coping with change, of understanding questions, of standing on ground that is congenial and helpful. We need a society that is supportive of what will come without being constraining.

Zach knew that. Zach loved Uncle Sam. I don't believe he saw Uncle Sam as the rather anxious codger we see today, two hundred years old, something of a neighborhood bully with a profligate life-style, not anxious to patch up and repair the essential things of life frugally but to whiz down the highway without a thought for tomorrow. I think that period has reached its end. We all recognize a new stance must be taken and above all, we need that. Something of the best of the time that this building represents—the best of JFK. The pledge of allegiance is being talked about a good deal in the weeks when I am speaking to you, and I think we can look forward to having it a still more positive pledge which guarantees not only the essentials—not only liberty and justice, but liberty and justice and the open path to education for all.

A New Era in Public Health

Deborah Prothrow-Stith, M.D.

When we look at what works, in particular in the area of public health, I think about our efforts around smoking over the last twenty-five years and the strategies we have put in place in a very creative and very consistent way over those years. The first surgeon general's report was issued, and, after that, specific strategies went into place. For example, health education in the classroom. I certainly remember in my elementary school class, the person who came in brought a set of lungs, one from a person who had smoked for many, many years that were clearly charred and scarred, and another from a person who had not smoked at all, clearly illustrating the difference to an elementary school kid between smoking and not smoking.

So health education was a major part of what happened if we were to list those strategies. We would also have to list public service announcements; letting the people know through public media and private media that smoking was bad for you was a critical part of what we had to offer. Not only did we promote health in the media, but we said that you cannot advertise this unhealthy product in the media as well—another one of those strategies. We labeled the product, we said smoking is unhealthy, and we got all of our health care providers and workers to screen for smoking and to do one-on-one education. You could probably list several other strategies that we've used in the last twenty-five years, and many of these have been successful as well.

Our attitudes have changed and our behavior has changed. I think about that whole issue of attitudes because it's a crucial one for us. I also remember buying the little candy cigarettes from the store and imitating the movie stars as they smoked on television. We clearly had an attitude that said smoking is



Deborah Prothrow-Stith, M.D.

glamorous and that the beautiful people smoke, so children were aspiring to do that. We changed our attitudes, we find it offensive and unhealthy now, and smoking is down 30 percent in this country, which is a very dramatic change in behavior.

It would be impossible to tease out one of those strategies and say, "This is why smoking is down," or, "This is why our attitudes have changed." But, clearly, that comprehensive set of strategies led us to this point. Let me also make a note that I know a lot of adults who stopped smoking once their children came home from school and started talking about how bad smoking was and putting the pressure on parents. That health education piece had a benefit that I don't think we've really measured when we try to measure which of those strategies were effective. If I'm making a plug for health education, it is obviously in an appropriate context and it is what I believe to be appropriate as well.

Deborah Prothrow-Stith, M.D. is Commissioner of the Massachusetts Department of Public Health.

I think we have reached, with our adolescents in particular, a new era in public health. AIDS, in particular, has ushered in part of the new era. The public is very interested, the elected officials are very interested, the media is very interested, and at this point we have a new stage set for beginning to do the same kind of public health work we've done around smoking, around a lot of the other issues that face us.

A second part of this new era has to do with what our adolescents really face. If you think about adolescent development and those stages that put adolescents at risk for a lot of unhealthy behavior, it's clear that we live in a very different world. Experimenting with sex is very different with AIDS as a threat than it was when we did not have AIDS. Teenage pregnancy and other sexually transmitted diseases were the threat. But for kids now, we're talking a life-threatening decision. The choice to experiment with drugs is a very different choice when you're using crack, a drug that is so highly addicting that within two to three uses, and sometimes on the first use, many are addicted physiologically. It's a very different world for our adolescents. Even the issue of fighting is a very different kind of fight when kids are carrying guns and other weapons.

It makes what was experimenting with different behavior, the risk taking that's such a necessary part of adolescence, a real life-threatening risk in the context of this new world. So, in this different world, this new era of public health, we really do face some critical issues. And we know some of the strategies that work. It's very important for us to not focus so much on one strategy that we forget that it was really the comprehensive view of smoking and the use of all of those strategies that probably helped us to be successful. Then there is obviously the caveat that, in the face of declining smoking behavior in this country, young girls have not shown that decline. In fact, in some areas there is a slight rise in smoking among adolescent girls. So, we have a sense of what works. We have to figure out how to target it at high-risk populations, and we've got to remember that it is a comprehensive set of strategies.

That brings me very specifically to thinking about the area of violence as a public health problem. EDC

gave me the opportunity to take health education, a traditional strategy in the public health arena, and apply it to the issue of violence. We looked specifically at violence as a public health problem. There are at least three reasons why this is appropriate. One has to do with the magnitude of the problem. For young adolescents in the city of Boston, homicide is the leading cause of death. If we look across the country, we know that for all adolescents, homicide is the second or third leading cause of death. It clearly stands out as a major cause of injury and death.

A second reason I would like to offer has to do with the characteristics of violent confrontations. Most often people know each other, most often an argument caused the homicide, most often alcohol is involved, and most often a handgun is the weapon. So the traditional strategies, the criminal justice strategies that we use to approach this problem, are not appropriate for a large majority of the homicides. If you have two people who know each other, who get into an argument while drinking, and who have a handgun, more street lights and more police and stiffer sentences just won't affect that situation.

The third has to do with what the public health arena offers—the notion of using the same strategies that we've used for smoking in a comprehensive way to reduce violence. We teach our children to use violence to solve their problems. I participated in a panel entitled, "Why Are Our Children Killing Each Other?" The answer was really quite simple for me: our children are killing each other because we teach them to do that.

Now, it's not quite that simple, but think about the number of ways that we say to children, "Violence is acceptable, it is appropriate, it's the hero's way to solve the problem." You would have to start at the top; you'd have to think about President Reagan, when he quoted Clint Eastwood in the movie, *Dirty Harry*, using the phrase, "Make my day." "Make my day" is a very interesting phrase. It not only means, "I will use violence," but it means, "I'm going to enjoy this, I'm going to get a thrill out of it, it's something I want to do." That slogan expresses for many adults at least an ambivalence around violence and for some

a real promotion of violence as a way of solving problems.

I won't lay it all at the President's feet, because parents and other adults in this society say things to kids that promote violence. Parents tell their kids to "go back outside and fight, don't let that so-and-so take advantage of you." Nobody wants a wimp for a child, and we tell children to do things for themselves. One boy said to me his mother said, "I'm going to beat you for getting beat up." I witnessed a fight in one of the high schools and asked the principal about the young boy who had been hurt in the fight. He said he was doing fine. I said, "What about the guy who hit him, how's he doing?" He said, "Oh, he's doing fine as well, but you know, that guy deserved to be hit." I thought, wow, if the principal thought that guy deserved to be hit, certainly the kid who hit him thought he deserved to be hit. As adults in this society, we are at least ambivalent about violence and in a lot of situations are actively promoting it for adolescents.

I certainly can't leave out movies and television. So many heroes constantly give us the message that violence is a first choice, it's always successful, it's always rewarded, and it is, in fact, a hero's way to solve a problem. These heroes do a detriment in this society. Now, there are kids who are more susceptible to these bad attitudes. That's where in public health we have a particular problem and a particular interest. They tend to be poor kids. They tend to be kids who have witnessed a lot of violence in their family or in their community, and they tend to be kids who perhaps exist in the context of quite a bit of weapon use as well. I had one probation officer say to me, "You know, I think it's the young boys that are raised in the absence of a nonviolent adult male role model who are more susceptible to the television hero and the violent hero in the movies." It's a very interesting thought. It hasn't been studied, but there clearly are some kids who are more susceptible to the attitudes and behaviors we are talking about.

As we add new issues to the table and look at the public health strategy that we have to offer, we need to remember that it's a comprehensive set and that often no one piece offers a complete response. I've

also said that, in this new era of public health, we really have to target those strategies better so that we reach persons who have not been reached in the very traditional way.

Looking at what works is very important here. Within the context of adolescence, not only education and prevention, but the service delivery system has to be a part of what we offer. I can't end without putting a plug here for school-based clinics. They work partly because of location. In fact, if I were going to list the first ten reasons, the first nine would be location. The tenth would be they tend to attract people who are very interested in working with adolescents.

In addition to school-based clinics, I would add that we need to integrate drug-treatment services into our health care systems so that there are no waiting lists. We have a twelve hundred person waiting list that over the last six months we have reduced by about eight hundred persons, but there are still twelve hundred waiting because as soon as the persons come off the list others come on. It's clear that's the capacity of the list, not the number of people waiting. In the era of AIDS, this is a critical problem. For adolescents, it becomes even more difficult, because treatment services are even less available. We would never have a waiting list of twelve hundred diabetics. We need to integrate our drug treatment into our health care system and look at how service providers and emergency rooms could fit into the whole drug-treatment system.

Let me close by thanking EDC again for their help in getting the curriculum published and offering strategies around the prevention of violence as a public health problem. In this room, and certainly at the Department of Public Health, we have people with the will, and with the will plus what we know, I feel pretty optimistic that we can be successful. We can create for our children a healthier environment.

EDC Panel: Strategies to Promote Health Through a Lifetime

Overview of EDC Health Promotion and Education

Cheryl Vince

In thinking about what works, let's consider three questions:

- *How does a health problem gain attention and resources in our society?*
- *How can we best design interventions to produce positive behavior change?*
- *How can interventions be delivered and sustained over time?*



Cheryl Vince

The first question: How does a health problem gain attention and resources? One obvious way is through the availability of data that demonstrates the presence of a health problem among members of the population. But data are never enough—it's how people use the data to make the case that works. We need leaders and advocates who will bring an issue to the attention of policy makers and the public in a dramatic and persistent way. There is no substitute for leaders like Deborah Prothrow-Stith or advocates like Bob Sanders, a pediatrician from Tennessee, who appealed to legislators about the need for mandatory child restraints in cars. As a result of his efforts, a law was passed in Tennessee, and deaths to children in car crashes declined by 40 percent. Now every state in the nation has mandatory car restraint laws for young children. Imagine for a moment how much health and wellness Bob Sanders has given to the children of this nation? What works is a devoted advocate who uses the data and the human story to bring attention to the problem and sets the stage for change. Individuals can make a difference.

The second question: How can we best design interventions to produce positive behavior change? EDC faced such a challenge with the accelerating incidence of sexually transmitted diseases among patients served by public clinics. This has been one of the most successful national efforts in demonstrating results. We randomly

assigned clinic patients who were diagnosed with a sexually transmitted disease to target and control groups. Our objectives were to increase the number of patients who returned to the clinic for a test-of-cure, referral of their sex partners, compliance with taking medication, and use of condoms to prevent spread of disease. The project achieved significant and dramatic positive changes in knowledge, attitudes, and behaviors through proxy measures. Obviously, since this is not a behavior we can observe directly, we measured the number of coupons patients redeemed for free condoms.

Why did this intervention work?

1) We had a very thorough understanding of the patients as human beings and their needs for information. Staff spent days and weeks in the clinics experiencing what it was like to be a patient or health care provider in an inner-city clinic. We began to understand how demeaning an experience it was for patients to wait three or four hours for care, to be handled by several different clinicians, to come out confused about what disease they had and what to do about it.

Cheryl Vince is a Vice President of EDC and Director of School and Society Programs.

We learned how overworked and stressed the providers were. We learned about patients' serious misinformation or beliefs, such as the belief that because their symptoms were gone, so had the gonorrhea. And we learned about the unwillingness of women to suggest that their partners use condoms because it implies a lack of trust.

2) We delivered the intervention in a contained clinic setting, at a poignant moment after diagnosis. The messages were consistent, clear, and entertaining, using soap opera style videos in the language of the target audience. We learned more new names for condoms than you can possibly imagine.

3) Finally, we made changes in the environment to support the behavior change. We offered new packaging for tetracycline pills that made it easier for patients to remember if they had taken their pills. We provided easy access to condoms distributed free at the clinics.

This project applied those three basic principles from our early days... delivering messages in the language and culture of the audience, belief in the ability of people to learn, and a demonstration of caring for the patient's condition.

The third question: How do you deliver and sustain an intervention over time? This is one of the very first questions we ask in designing solutions to public health problems. How will the intervention be delivered, who will do it, and how will they be trained and supported? Those delivery systems must be put in place at the very beginning, and the people must be involved in the design of the project. Once you introduce an innovation, change takes time—on average from two to five years. Initially, when people are adopting change, their skill level can dip temporarily. Evaluations often collect pre- and post-test data in the first year of an innovation when skills may be temporarily lowered, minimizing the chance of showing results. Technical support and training of those delivering the change over time maximizes the effect and can't be withdrawn too soon.

In summary, what works? We must have skilled and committed advocates who use data and stories about

people. We need simple, targeted educational messages using the language and culture of the audience along with reinforcing changes in the environment. We must provide support in the forms of training and technical assistance to deliver new programs over periods of two to five years if real change is to take place. Lastly, our work in health, as in other fields, provides us with the wonderful opportunity to demonstrate our caring capacity as a culture—our caring for each other as we take on these challenges and for those whose health conditions we strive to improve.

The health issues we face in our nation and the world today are demanding, and as we look ahead to the work we do, I leave you with these thoughts. We have opted to be involved in an evolutionary process to create healthier, stronger, more competent people, and a more humane society—a process that will take place over generations. Seldom will we see the full results of our work, and we will not always know the specific effects of our actions or interventions on people. Such is the nature of the challenge we face. But we can be guided by this quote from Hillel some 2,000 years ago: "It is not our duty to finish the work, but we are not at liberty to neglect it."

Teenage Health Teaching Modules: Lessons from the First Ten Years

Charles Deutsch

The Teenage Health Teaching Modules (THTM) began about ten years ago when EDC responded to a Request for Proposal from the national Centers for Disease Control (CDC) to develop a comprehensive secondary school health education curriculum. Since that time, we have worked hard to strengthen the program and to disseminate it to over 1,500 schools. Currently we are working to integrate materials on AIDS education into the curriculum.

What do we mean by comprehensive school health? Fundamentally, it starts with the assumption that the causes, the strategies, and the solutions to all of the health issues and health problems that adolescents and children face are overlapping and interrelated and have to be addressed K-12 in an ongoing and serious way and in the context that the kids face them.

Substance abuse and eating disorders and sexually unsafe behavior and depression and suicide; they're all tips of the same iceberg. It makes no sense and it's ineffective to go tip-to-tip-to-tip like some ten-day tour of the capitals of Europe. We have to work on the iceberg at a level that means something to the kids. So the titles of the modules in Teenage Health Teaching Modules are "Living with Feelings" and

"Communicating with Families" and "Having Friends" and "Understanding Growth and Development." We're really trying to address directly the developmental tasks that kids are facing, ones that they have in their lives.

In addition, comprehensive school health means that there has to be some very strong, conscious, well-planned coordination between the curriculum that's delivered in the classroom, the school environment, and the extent to which it encourages or undercuts helpful behavior. Services need to be delivered to the kids and the broader community needs to be supportive.

There are now fourteen regional service centers with personnel ready to provide on-going technical assistance to THTM teachers. We know that no curriculum meets the needs of all children, but a good curriculum in the hands of teachers who know how to use it can be an important tool in reaching the high-risk kids who need help, as well as promoting healthier ways to live for all our young people.

Charles Deutsch is a Principal Investigator with the Teenage Health Teaching Modules project at EDC.

AIDS Education: Hope in Knowledge

Sara Garcia

In the summer of 1988, a group of eighteen adolescents, as part of the Chicano AIDS Summer Youth Project, depicted AIDS as a cyclone in a city-block-long mural that they painted in El Paso, Texas. Across the top of the painting, you can see a dark, menacing wind approaching as the community flees in terror from it. We see children, we see young couples, a pregnant woman holding her stomach, the elderly, all are represented as a community tries to escape its horror. On each side of the painting is a massive figure, a man and a woman. The figures are reassuring, strong, powerful. They evoke hope.

But, where is the hope in AIDS? How does EDC convey the hope? We believe the hope is to be found in knowledge, that hope is to be found in what research has proven, what our failures have taught us, and what our successes have yielded. We are putting these together in order to enter into a dialogue with the community. In the Women at High Risk for AIDS project, the dialogues are in three communities. The first is San Juan, Puerto Rico, where the language spoken is Spanish, with most people being bilingual, and where many people travel to the United States often. Another site is Bridgeport, Connecticut, a city of approximately 150,000 people where the population is multi-cultural—Hispanics, Blacks, Asians. The third site is Juarez, Mexico, across the border from El Paso, Texas, the home of one of the largest military installations in the United States. The language spoken there is Spanish, although it is quite different from the Spanish in Puerto Rico.

The project seeks to reduce the transmission of HIV infection among prostitutes and IV drug users. One of the most important components of the project has been in the way outreach is done. That is, people who

are used to the street culture are trained in AIDS prevention and education, and they are formed into teams. They go out at night and they go into the crack houses and to the shooting galleries and to bars and to houses of prostitution and to treatment centers. They try to identify and recruit women to come to the project's site center for educational workshops, for support groups, for counseling, and for testing if they desire it.

EDC's part in the project has been the designing and development of educational materials that would help them do their job better. This has meant going into dialogue in the communities and doing a lot of waiting—not a passive waiting but a waiting that says we know we can learn, we can learn the culture, we can listen, we can be patient, we can wait to be trusted. Above all, to wait until we can transcend the language of the tongue to the language of the heart. What has resulted from these dialogues is the creation and development of the materials that are most meaningful for each community.

One of the things that has come to me as I've come through this project is being acutely aware of those human traits that are universal: our need to love and be loved, our need to have productive lives, our need to have meaning in our lives. Above all, all of us feel love and concern for the future safety of all people. If hope is to be found in knowledge, it is also to be found in working together to protect ourselves and our children until the day that the cyclone of AIDS is no longer a threat.

Sara Garcia is Project Director of the Women at High Risk for AIDS Project at EDC.

The Bioethics Project: Decisions Near the End of Life

Vivian Guilfooy

This day is truly a celebration of life. And what is the logical extension of life? Something we don't like to talk about—death. To quote a New York Times article, "death is a dirty word. We act like we're going to live forever. Yet the death rate is one per person."



Vivian Guilfooy

Our project, Decisions Near the End of Life, deals with the final stages of the life cycle—caring for adults who are terminally ill. We are developing strategies to improve the process by which doctors, nurses, social workers, pastoral counselors, and their patients and families decide how to use, or not to use, life-sustaining technology in a humane and ethical manner. This program of continuing medical education will reach health care providers directly in hospitals and in long-term care settings across the country. We are doing this work with The Hastings Center, a leading research institute in the field of bioethics, under a grant from the W. K. Kellogg Foundation.

Imagine the challenges! How do you honor patient autonomy? Can you override a patient's wishes? When? Is withholding or withdrawing treatment ever morally justified? Who lives? Who dies? Who decides? As anyone can see, there are no right or wrong answers—no cookbook ethics here! Strictly medical considerations are only one piece of a larger mosaic that includes moral choices, religious preferences, cultural values, economics, and legal issues. . . often in more than one language.

Health care providers must weigh and balance conflicting values and obligations, conflicting claims of burden and benefits, conflicting views of

overtreatment and undertreatment. They must help to "narrow the divide" between them and their patients and between them and other providers. And so, the time seems ripe for a program response that can result in a better treatment plan for the terminally ill—better because the patient helped to shape it.

What are we doing to develop this continuing education program? First, we find out what it's really like to work in hospitals, nursing homes, and hospices and face these decisions. Our formal research and focus groups document enormous stress. What does the nurse do when the patient stops breathing at 2:00 a.m. and the "do not resuscitate" order is not clear in the chart? The fear of litigation has a powerful influence over treatment decisions. What are constructive ways to work with the law? There is considerable uncertainty about appropriate roles and responsibilities for health care providers and little opportunity for them to learn how to cope with ethical dilemmas.

Second, we find the very best information and resources that can shed light on the issues. There is an emerging consensus among ethicists about initiating and foregoing life-sustaining treatment, reflected in The Hastings Center Guidelines. There are some agreed-upon principles for examining ethical dilemmas, and there are promising practices that clinicians are using to improve the decision-making process.

Vivian Guilfooy is Director of the EDC Center for Promoting Equity and Project Director of The Bioethics Project: Decisions Near the End of Life.

Then, after talking and working with scores of experts and those who wrestle with these problems on a daily basis, and to organizations that sponsor continuing education programs, we apply a number of targeted theories of adult learning and behavior change to fashion a model of continuing medical education.

What are the key elements of such a program? First of all, the program is institution-based. Organizational change theory says "top down and bottom up." Institutional leaders, especially physicians, must "buy in," since decisions to forego life-sustaining treatments will be embedded in the corporate climate and highly influenced by its policies and procedures. Staff must feel free to surface their problems and talk about how to do things better on the floors, in their units.

The program is interdisciplinary. We know that people working alone cannot make these decisions. Nurses are often caught in the middle, spending more time with patients and family members but often marginal to the decision-making process. Social workers and pastoral counselors may be left out entirely. Administrators are cast as villains, blamed for conveying the financial pressures of the system. Good teamwork and communication are central to so many interactions: advance planning, informed consent and refusal, evaluating a patient's capacity, choosing a surrogate.

The program is action oriented. Small changes in policy can make big differences for patients. To move beyond awareness, case-based materials underscore specific ways to move good ideas into good practice. The program is pragmatic. It presents issues as clinicians encounter them. For example, it may be fine to say that stopping a treatment is ethically equivalent to not starting it in the first place . . . but it does not feel that way to those who must "pull the plug."

And the program takes into account all the logistical headaches that go along with offering a worksite-based, interdisciplinary program. The result is a modular design where education is a catalyst for real changes we hope institutions will put in place in their daily routines.

An institutional self-assessment takes the "pulse" of all staff early on, highlights potential problems, helps an institution tailor the program to its own special priorities, and measures its progress along the way. Then, in two "get ready" workshops, interdisciplinary teams from hospitals and nursing homes receive training on how to implement the program and engage their colleagues in program sessions. Three program tiers move health care providers on-site from knowledge acquisition to action. Audiovisual and print materials for participants capture many different points of view and can be used before, during, and after the sessions to stimulate discussions and develop a common language.

Will it work? We are poised to find out, as we prepare to work with a committed group of acute care hospitals and long-term care facilities in a national field test.

Improving Health and Education in the Developing World

Ronald C. Israel

In the early 1980s, in the field of international development, most people who were concerned with issues focused on problems of infant health and child survival. Faced with rising infant mortality rates, disease, and malnutrition in the Third World, health professionals identified a series of basic, simple, low-cost technologies that people could use at the household and village levels to protect the health of their babies. What were these? Things like breast-feeding promotion, oral rehydration therapy, immunization, growth monitoring, and child spacing.

From EDC's point of view, the dissemination of these technologies requires education, communication, and training; those are really the tools of our trade here. So what we did was to utilize techniques of social marketing and health professional training to support the child survival movement. Social marketing, for those of you who are not familiar with the term, fuses techniques from modern commercial advertising with market and social science research to promote behavioral change in at-risk populations.

EDC was one of the first groups to develop social marketing and successfully use it to promote breast-feeding and improved weaning practices in countries like Thailand, Indonesia, Kenya, Panama, and Honduras. How do you promote breast-feeding in rural Sierra Leone, for example? In order to achieve this transformation, EDC utilized a team approach and brought together pediatricians, obstetricians, and nurses with targeted in-service workshops. Instead of calling what we were doing breast-feeding promotion, which most health professionals would say they were for but not really take seriously, we gave our courses a medically sexy name called "Seminars in Lactation Management" and made them into exercises

in how to deal with practical problems in infant feeding.

In the past decade, the child survival movement has succeeded in many places in lowering infant mortality and morbidity rates. It's not that things are perfect. In many areas of the world—in Africa, parts of Asia, Bangladesh—there are still huge infant health problems. A lot of countries have made progress in setting up a primary health care system, and in many places we are beginning to see infant mortality rates begin to drop off.

So the challenge now is to really build on the gains that have been made and not to let them go for naught. That's why I believe that if the 1980s was the decade of child survival and health for all, the decade of the 1990s is going to be the decade of basic education for all. Already many major donor agencies, like USAID and the World Bank, are recognizing the need to increase support for basic education programs.

What do we mean by basic education? We refer specifically to the teaching and learning of basic literacy and numeric skills. Wherever feasible the aim is to integrate this teaching and learning into real-life situations. For example, EDC had a very successful project in Jamaica—the Nutrition Magician Project—which developed primary school reading primers and also taught health and nutrition messages. Now, economists have demonstrated that an investment in basic education for third world countries will yield the greatest rate of return of any educational sector investment—more than investment in higher education or technical vocational

Ronald Israel is a Vice President of EDC and Director of International Programs.

education, for example. So, the challenge for the 1990s will be to find basic education strategies that work comparable to the child survival strategies.

What are some of these strategies? We heard this morning from Tom Tilson about the use of interactive radio-based instruction in classrooms that lack adequate teacher resources to ensure the quality of instruction. A second promising strategy is the provision of well-designed textbooks and teaching and learning materials. This requires a whole systematic approach to the design and testing of materials for classroom use. A third strategy relates to strengthening the capabilities of ministries of education to address school health problems.

We can sketch a picture of a typical classroom in many developing countries: large scale overcrowding, the absence of textbooks, and even blackboards and chalk. The situation is compounded, however, if one also considers the epidemiology of the children in the classroom. In a district in Nkwale, Kenya, for example, a recent study showed that at least 80 percent of the school children suffered from severe parasitic worm infestation. Another 40 to 75 percent had symptoms of malaria; one-half had enlarged spleens; and a large percentage were classified as malnourished. Can these kids be fully receiving what their parents, their community, and their government expect them to realize from a primary school education? The nutrition and health status of school children in developing countries has got to be taken seriously as a factor affecting academic performance.

Education Needs in Developing Countries: A Private Voluntary Organization Perspective

Beryl Levinger

What are the functions of schools in developing countries? I'd like to look at three major functions and then share with you my thesis that in each of the three principal functions there has been enormous change in the last twenty years. This enormous change poses vast challenges for those of us who consider ourselves education change agents.

The three functions of schools in developing countries are not unlike the three functions of schools in any society. The first function is transmitting a common cultural heritage, a core of knowledge that is deemed critical in socializing the young. The second function, no matter how we articulate it, is essentially the creation of human capital. It's creating a skilled pool of person power that's needed to achieve some level of development. The third function and a function, I believe, that's relatively of recent vintage, is addressing critical social problems, whether they be equal opportunity for underrepresented groups or more participation for the traditionally disenfranchised. Increasingly the school has become an instrument for realizing some or all of the social agenda.

We're living in what has, at times, been described as the post-colonial age. With respect to the age in which we live, there have been some key questions recently raised concerning the transmission function. The most significant is, whose cultural heritage gets transmitted? Then the questions of what is core knowledge, and for what life style are students being socialized? Let me try to show how these questions come into play in the daily debates in which educationists in the Third World participate.

- Recently, in Tanzania in East Africa, Shakespeare has been reintroduced into the curriculum.



Ronald Israel and Beryl Levinger

Shakespeare was banned for the past roughly twenty years because he and his works were deemed inappropriate and culturally imperialistic. There seems to now be a consensus among Tanzanian educators that Shakespeare represents a core of civilization that's common and transcends particular ethnic groups. But there was that need, if you will, to reestablish what is appropriate for the Tanzanian youth to learn in school.

- For approximately the past twenty years, the relationship between education and rural-to-urban migration has been carefully studied, and, to no one's surprise, education is probably the leading cause of rural-to-urban migration and may, in fact, be a leading cause of urban unemployment.
- The Egyptian civil service is swollen beyond capacity. I'm sure you know that the Egyptian

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civil service is an unalienable right, an entitlement. Any individual who graduates from the university is guaranteed a position in the Egyptian civil service. So, what has happened is that the education gains in Egypt are now manifest in a bloated, dysfunctional civil service.

- The growing trend called bilingual education in developing countries raises questions of whose cultural heritage is translated, what is the medium of instruction, and what is the role of vernacular? We're seeing an increasing use of vernacular throughout the Third World alongside English or the other colonial languages.

Now, these are just some developments, some trends, that relate to the cultural transmission function. Let's move a little bit further and look at what have been the changes of the last twenty years. I would identify four principle changes with respect to this function. The first, and for me the most gratifying, is the increasing recognition of the role of nonformal education, that is, nonschool-based learning, in the transmission function. This represents an incredible leap forward with respect to the democratization of the sharing of knowledge because schools act as a screen, as a barrier. When education can be recognized as taking place outside the classroom, we see a more equitable, just, and open society. I think that's one important trend with respect to the cultural transmission function.

Another very important trend, and again extremely gratifying, is that we're beginning to understand that schools cannot be the only vehicle for the transmission of culture and particularly, for socializing the young. So, we're seeing new and exciting partnerships with parents. The schools by themselves simply cannot fulfill the transmission function adequately.

A third trend is that there is a proliferation of new national curricula that represent significant departures from the colonial or traditional approaches. For example, in Egypt, Peru, Columbia, Tanzania, and many other countries, there is very significant innovation that represents a radical

departure from how things have been done traditionally. The concept of the O-levels and the A-levels of a country that has a British heritage or the bachillerato program, prevalent in Latin America—those concepts are falling to some degree by the wayside and there's an increasing recognition that those programs may not be the appropriate programs for most students in a given country.

The fourth trend is that we are recognizing that for schools to serve their socialization function properly, they need to reach children before they enter the first grade. There is a growth in preschool education which used to be considered a luxury or a frivolity and is now considered in some countries to be an integral portion of the total educational package. In Haiti, for example, and in India, preschool programs for children are very much part of the educational landscape.

Let me move to the second of the three functions, the capital formation function. This again, is creating that person pool that is essential to achieving development. Let's begin by looking at what some of the key questions are in the post-colonial age.

The first question is: What is the relationship between educational attainment and a host of development-related variables? We have learned, for example, that education probably is the single most important determinant of a woman's subsequent fertility. That alone may make it a very good investment. We have learned that family size is not the only variable influenced by education. Clearly, family income is; but more importantly, the health status of succeeding generations also is largely determined by the educational attainment of the mother. So, I have the opportunity right now at this juncture of EDC's thirtieth anniversary program, to meld the two main currents, education and health, because education, regardless of whether it's health education or numeracy education, is a very good investment for the health sector, although we don't treat it as such.

A second question with respect to capital formation is: What are the attitudes, as well as the skills, that individuals must possess if their countries are going to progress? We all know, for example, that a punctual

work force is probably a more productive work force than one that comes and goes as it sees fit. How can we inculcate the kinds of attitudes that are conducive to development? What are these attitudes? Some researchers have looked at the relationship between need achievement and educational attainment in the national development. But, it is clear that the schools can create attitudes as well as skills in students whether they be exploration, participation, community belonging, that will have very, very significant outcomes with respect to overall national development goals.

I think that the third main question with respect to capital formation is: Within the education sector, where do you invest? Studies have consistently shown that the primary school sector is the most profitable sector for investment with return rates typically being in the area of about 20 to 25 percent, which is certainly considerably higher than for higher education, for example.

So, let's turn to what some of the illustrative changes are with respect to the capital formation function. Perhaps the most widely visible is that there are curricula changes throughout the Third World that represent a blend of the theoretical and the practical. The basic education movement is one example. Another trend is an ever-increasing focus on what educational jargonists describe as internal efficiency. Internal efficiency relates to how many years it takes, typically, to graduate one primary school graduate. What is the efficiency of the system in moving people through it? When there are high dropout rates, high repetition rates, or even low enrollment ratios, then the system is determined to be inefficient.

Evaluation has played a very important role in understanding what the relative efficiencies and inefficiencies are within educational systems. So you see concurrently much better macroanalysis going on. Related to the whole question of efficiency—again merging the themes of education and health—is the question of what is the actual status of the kid in school. The child who is malnourished, the child who is not healthy cannot learn very well and, consequently, you have a school system that's inefficient.

Let me move to the final function which I described as the social agenda advancement function, referring to the greater equality of opportunity for those who have been traditionally disenfranchised. The most significant change in education is that this has become a function of educational systems in the last twenty years in the developing world. This has necessitated posing some very basic questions, such as: Who are the disenfranchised, and how can schools reach them?

The disenfranchised typically have been identified as girls across the board, rural children, whether they be boys or girls, and in some countries, particular ethnic groups. We also are beginning to understand that the disenfranchised represent children who are educationally at risk. Again, health and education merge, because the child who is traditionally at educational risk is the child who is also at risk for health factors. Then the question is: How will changes in educational programs to reach these children be financed? This is a question that really doesn't have, unfortunately, many good answers.

Today, there are increasing efforts to improve in-service teacher training for rural primary teachers using technological innovations including radio, because there is a huge imbalance in the quality of educational opportunity between children in rural areas and those in urban areas.

The basic education movement, I think, exemplifies everything that is significant with respect to changes in the three functions of cultural transmission, human capital formation and social agenda advancement. The basic education movement has some common characteristics, whether we're talking about Egypt or Columbia or Bolivia or several countries in Asia.

These characteristics generally include nine years of primary school education that enable students to acquire prevocational skills, basics of numeracy and literacy, and some very important skills related to community living, whether that be participation in cooperatives, agricultural production skills, nutrition skills, or the skills related to the perpetuation of the child survival revolution. Generally, to finance the basic education revolution, which is designed to get every child in a given society through at least nine

years of relevant education, networks of feeder schools are created with the one-room school house being the lowest level of the feeder school. These one-room school houses typically feed into a satellite.

Basic education is going to make a difference because it is education for development. It's designed not only to transmit a common core of information, knowledge, and skills; it's designed to equip students to participate more effectively in their communities and to be more productive members of their communities, and it is premised on a very clear understanding of the skills required to accomplish all of the above.

Let me take as examples some projects CARE is involved in that I think offer some exciting hope for the future and also mirror the changes and functions I've tried to describe this afternoon. There are two projects in Belize; one is called REAP, one is called GROW. REAP is Rural Education for Advanced Productivity and GROW is Greater Rural Opportunities for Work. The concept, very simply, is working with schools to alter the curriculum so that students have a more skills-focused education, and then providing loans and technical assistance to school leavers at the end of nine years so that they can set up small-scale enterprises that allow them to apply the skills that they've acquired.

Another set of projects that we're supporting in Haiti and India deal with preschool education for children at risk. What's exciting here again is how health and education come together; comprehensive health and educational services are offered. Mothers are trained not only in child survival techniques but also in income-generating skills. The idea is to change not only the educational attainments of the children but also the long-term circumstances in which they find themselves.

Take a different tactic—school feeding. Girls are probably the largest single group of the educationally disadvantaged and the opportunity costs of sending girls to school are significantly higher than for sending anybody else to school because girls are awfully useful at home. In the Dominican Republic and in India, we found that by providing school feeding,

school lunches, we have had a very noticeable and dramatic impact on attendance and enrollment of girls in school systems.

Finally, in Kenya and in Thailand we're working to produce educational materials that enable teachers to relate the general school curriculum to agricultural productivity, environmental protection, and the specific topic of agriforestry. What those efforts all have in common is that there are lots and lots of different ways to skin a cat.

Let me conclude by telling the story of a boy, his father, and a donkey. They were returning from market and the donkey was laden down with firewood and the boy and the man were walking beside the donkey, and someone said to the man, "You're awfully stupid. You're both walking and you've got this donkey." So, the father thought, "That's a good point, I'll get on the donkey and he did until another neighbor came by and said, "You know, you're a terrible father. You're sitting on top of this donkey and your son is walking." So, they switched places until they came to another neighbor. And this neighbor said, "I've never seen such a disrespectful son in all my life. The son is atop the donkey and the father is walking." Finally, the father and the son and the firewood were on top of the donkey. They traveled along like that about 50 yards until the donkey dropped dead.

I think the moral of this story is that education, like the donkey, can collapse when too much of a burden is placed on it. On the other hand, what's happening now, I think, and what has been the culmination of the last twenty years of trends, is that we're placing burdens on education but also creating systems and supports so these burdens can be successfully accomplished. There is a change in the role and the function of education in the Third World well underway, and if this change has the successful culmination that I believe it will, then we can all anticipate a society and a world that is more just, that's more peaceful, that's more collaborative. For those of us who recognize that we live in an interdependent world, this should be cause for great hope.

Afterthoughts on the Revolution

Jerome Bruner

NOTE: The EDC Distinguished Educator Award was presented to Professor Jerome Bruner for his outstanding contributions to teaching and learning. In accepting the award, Professor Bruner offered the following remarks:



Jerome Bruner

Independent and free-standing institutions dedicated to educational development do surely reach full maturity by their thirtieth birthday, as we have. Indeed, the going is tough for such institutions, and infant mortality is more the rule than the exception in the precarious domain in which EDC lives. I thought that this thirtieth anniversary occasion, then, was a particularly apt one for talking a little about the past with a view to converting that past into a prelude and what we might do next.

EDC started off like so much does in America...in response to a gap. We were at the brink of a new era dominated by a blindingly new set of insights in science and technology—insights that promised unimaginable benefits and yet at the same time threatened annihilation of the very earth. Yet, we as a people were woefully ignorant of the nature of this science and technology that was at hand, and the Russians had demonstrated our shortcomings and our gap by launching Sputnik. The founding project, the Physical Sciences Study Committee (PSSC), had as its first objective the closing of a gap, and nothing could be more American.

But that old story is, as our linguist friends like to say, only the surface manifestation of a much deeper story. The founding fathers, Jerrold Zacharias, and

Francis Freedman, no less so, and all of the others were concerned principally with giving back to the ordinary citizen some sense of the understanding of his world, some sense of how to make decisions about that world in order to control it, for it was dangerous in the extreme and potentially rich in its opportunities.

It was not very long before Zach and Franny and others were contemplating the possibility that learning something like physics, learning it well and learning it honestly, had consequences

beyond physics; that honest learning, well done, improved intellect generally, critical thinking in particular, and was even really good for the character.

The next set of projects all went directly to the heart of the human problem that had been a part of the founding impulse behind the Physical Science Study Curriculum: how ordinary men and women could operate effectively in our changed and dangerous world.

The final shape of *Man: A Course of Study* was unclear to us during the task of construction, the way in which we put that course together, and it was necessarily unclear to us until the end what it was that we were working with and how quite to do it. For it was our conviction in putting that curriculum together that a curriculum should be not only an opportunity for pupils to learn about a domain of knowledge, as it is now called, but also an opportunity

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for teachers to do so and scholars to do so, even if they have already given the course before—in which case the teaching experience should be a self-renewing one. Education is not just, to take the preceding speaker's point, a cultural transmission. It's something else, too. It's a cultural renewal, it's a cultural creation. That meant, of course, that the curriculum-building effort should itself be an occasion for learning and always be so. And I believe that Man: A Course of Study filled the bill on that score.

In doing so, however, it overshot what was possible in the political atmosphere of its time. Deep in American ideology there exists an axiom that Americans as people and America as a state are special, are exceptional, are somehow different from the rest of mankind. It's very deep. It's a belief that was already so well established in America by the first half of the nineteenth century that de Tocqueville even commented upon it. Now Man: A Course of Study, without ever explicitly intending to do so, collided with that primitive conviction of the specialness of America and of Americans. For Man: A Course of Study is totally dedicated to the proposition that man makes equally good sense, is equally valuable, wherever and however he lives out his life. Whatever our pretensions, we are all in it together trying to make sense of our world as culture-using, symbol-making creatures, even when our worlds are different and even when we are repugnant to each other.

The other thing about Man: A Course of Study that I want to mention is that it was put together with the theory of human development in mind and with some loose principles of pedagogy to fit what we were building as we went along. The theory of development and the principles of pedagogy were nearly as often under discussion during the project as was the content of the course, and, in certain respects, all of them were inextricable. It was not irrelevant to the exercise that Man: A Course of Study was an intersect, so to speak, between one line of development that was going on at the Harvard Center for Cognitive Studies and having to do with the nature of human development, and another that was going on at EDC on how to educate. And that, I think, is something that is important and should be remembered.

Now, life at EDC after Man: A Course of Study, I know only at second-hand. My base had shifted to Oxford, where I soon became involved in a project with children under five in the United Kingdom. But I have a few observations on those years that I would like to share with you.

For one thing, it was very obvious that the American educational agenda changed dramatically from a preoccupation with general education and knowledge gaps to a concern with crises. These were real crises and urgent ones, like the struggle for equal rights with its undertone of racism, like the need to provide care for the young of working mothers, like the impact produced on school children by the mindless assassination of the president and such other great human beings as Martin Luther King and Robert Kennedy. The materials that were prepared during that period were remarkable in the humanity and the sensitivity that they brought to bear on those crises.

Now, there is a new stirring—a curiously politicized stirring in which education has come to the top of the agenda again. Reports proliferate. No governor worth his salt is without a commission for improving the schools in his state. As we know from Ernest Boyer's last annual report from the Carnegie Commission on Teaching, standards have gone up, and schools, or at least test performance, have improved somewhat. There is much emphasis on standards for both teachers and students, some emphasis on better pay and promotion policy, much on evaluation, but very little on either the aims of education or the means for achieving whatever aims we have in mind. There is virtually nothing on how to help the teacher do a better job, though some studies are beginning on how to conduct teacher training in our schools of education.

The rhetoric of current discussion on educational reform is appalling. There is the contrapuntal theme: about how our educational practices must quickly restore our position in the increasingly technical world economy by improving competitive test scores in science, mathematics, and language. Above all, there should be no nonsense, no frills, only the real stuff. Meanwhile, the policy silence is deafening on such issues as preventing further creation and consolidation of an underclass, or how to break the

hold of mindless and alienating pedagogical practices in our classrooms, or how to break the cycle of poverty in some planned way that includes a role for the schools in the community.

Now, George Bush wants to become known as a great education president, and I think we should give him every encouragement. One of the most important things we can do in his behalf at this juncture is to recreate the frame of mind and the machinery for transforming our schools once again as we did in that earlier period. Yes, again, for in our rapidly changing world, renewal and transformation must be perpetual, just as Jeffersonian vigilance is a perpetual aspect of a working democracy.

I think we have some good intuitions about how to start. Ernie Boyer's thoughtful eighty-seventh annual report from the Carnegie Endowment summarizing the Commission's five-year study just completed contains, it seems to me, the key proposal for how next to proceed. After praising such progress as we have made in teacher compensation, in in-service training, in the increased autonomy and participation of teachers, all of them rather incremental, he goes on to say—and let me use Ernie's words:

We are troubled that the nations' teachers remain so skeptical. Why is it that teachers, of all people, are demoralized and largely unimpressed by the reform actions taken thus far? The reform movement has been driven largely by legislative and administrative intervention. The push has been concerned more with regulation than with renewal. Reforms typically have focused on graduation requirements, student achievement, teacher preparation and testing and monitoring activities. But in all of these matters, important as they are, teachers have been largely uninvolved. Indeed, the most disturbing finding in our study is this: over half the teachers surveyed in our five-year study believe that overall morale within the profession has substantially declined since 1983. What is urgently needed in the next phase of school reform is a deep commitment to make teachers partners in renewal at all levels. The challenge now is to move beyond regulation, to focus on renewal, to make teachers full participants in the process.

That, it seems to me should be a familiar message here at EDC. But, perhaps we know one other thing, a matter that goes back to the very founding of EDC. The way to get teachers to participate is not to preach at them but to work with them, to help them to do their job better, to give them the tools and the training they need and show them that we trust that they know how to do what they have to do with those tools. EDC is still in a privileged position to bring together, from inside and outside the universities and the boards of education and the rest of it, that coalition of scholars, teachers, artists, critics, and, yes, activists that can breathe life and color back into teaching and into the life of teaching. EDC's free-standing independence may be the very thing that validates its license for playing that role as free-standing, not tied to a state system, not tied to universities with their own conservative impulses.

So let's look afresh at what it is like to get some kind of a consensus: a consensus as to how we can be realistic about a nation that has fallen behind and that has allowed itself inadvertently to get into a trap threatening the very nature of the kind of state that we are proud of. Let's look at the question, "What should we be like twenty-five years from now, and how can we aid those who work on a day-to-day basis with children to do it?" As Jerrold Zacharias would have said, "Well, get going." After all, your fortieth birthday is only ten years away.

An Afterword

Janet Whitla

EDC's thirtieth anniversary has been a gratifying and fulfilling day, a day to remember for years to come. In closing the symposium, I would like to thank those who presented, and those who joined together in celebration and in considering the future and EDC's place in it.

As we leave the Kennedy Library today, I am reminded that ten days before Jack Kennedy's inauguration as President, he delivered an address to the Massachusetts legislature in which he commented on the momentous responsibility he was undertaking and the characteristics by which he hoped his administration would be judged. They are characteristics that should apply to EDC as well. Success or failure, he asserted would be measured by the answers to four questions:

- First, were we truly people of courage—with the courage to stand up to one's enemies, and the courage to stand up, when necessary, to one's associates—the courage to resist public pressure as well as private greed?
- Second, were we truly people of judgment, with perceptive judgment of the future as well as the past, of our own mistakes as well as the mistakes of others, with enough wisdom to know what we do not know, and enough candor to admit it?
- Third, were we truly people of integrity: people who never ran out on either the principles in which they believed or the people who believed in them?



Janet Whitla and Jerome Bruner

- Finally, were we truly people of dedication, with an honor mortgaged to no single individual or group, and compromised by no private obligation or aim, but devoted solely to serving the public good and the national interest?

Courage. Judgment. Integrity. Dedication. These are qualities I believe we have lived by for these thirty years and which I believe will continue to characterize EDC, its people, and its work in the decades ahead.