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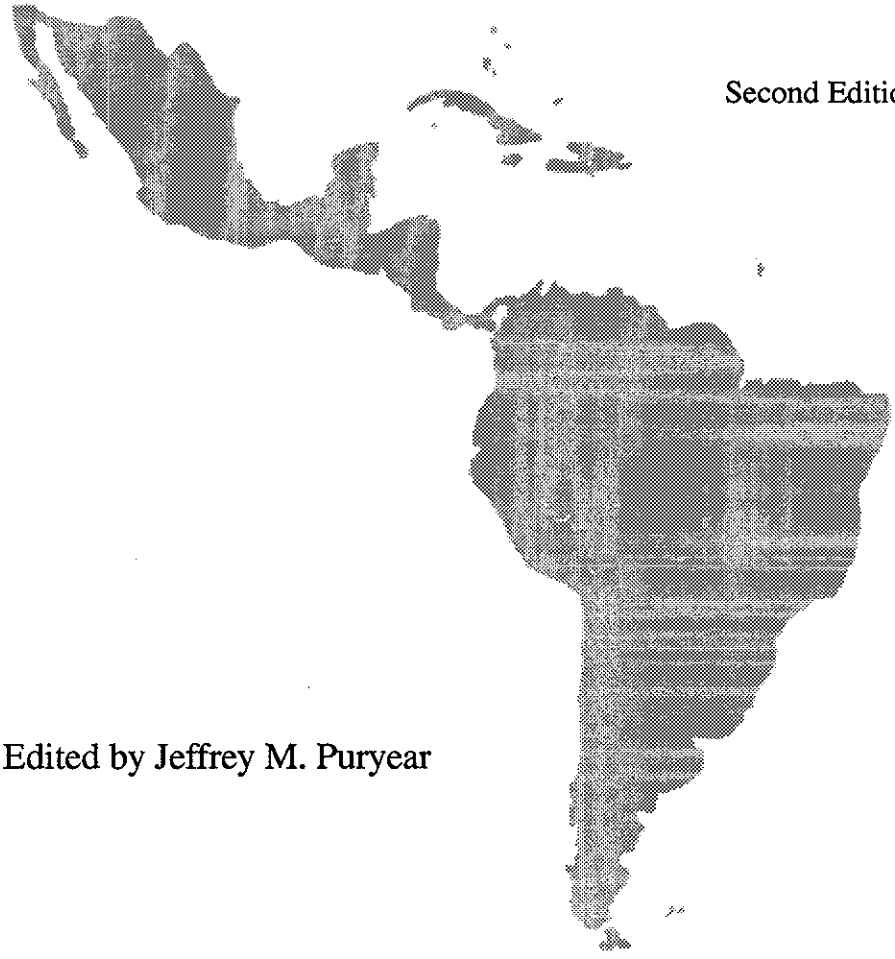
Education and the Private Sector in Latin America and the Caribbean



Second Edition

Edited by Jeffrey M. Puryear

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Executive Summary

Education has become crucial to economic success in Latin America and the Caribbean.

- Open economies and global competition require a workforce with strong skills, good work habits, and the ability to learn.
- Democratic governments require citizens who are more informed and responsible.
- Defeating poverty requires quality education for the poor.

Nowhere in the region are these demands being met. More children are going to school now than ever before, but the quality and efficiency of education have sharply declined.

Business leaders have responded by launching a broad range of programs to strengthen education. They are convinced that better schools are good for business, and that corporations have much to offer in bringing schools up to acceptable quality levels.

Several important conclusions emerge from a review of nearly 30 business-education "partnerships":

Business leaders are demonstrating that education can be improved and schools for the poor made better. The challenge now for corporate leaders is to build on the initiatives under way and to persuade the broader business community to direct its talent and resources toward resolving education problems.

Improving education is good for business and for the country. Firms need well-educated and flexible workers. Good schools help them retain qualified employees, and develop a strong and positive corporate image. Some support education for charitable reasons or because they wish to be "good corporate citizens." A few argue that public schools cannot improve without more input from the clients they serve. Education, they maintain, is the responsibility of all and not just of the government.

Business offers education more than money. Business can:

- Promote innovation in schools—in contrast to rigid and slow-moving public bureaucracies;
- Establish private foundations that can work over time to develop new educational programs and get them adopted;
- Influence education policy; and
- Share its experience in managing organizations, dealing with change, listening to customers, decentralizing decision making, measuring performance, maximizing production, and minimizing costs.

Many different approaches are possible. At least four types of business-education partnership have emerged.

- Simple aid - providing funds, goods, and services that help schools do what they are already doing;
- Program change - a more complex approach that seeks to reform a particular school or program;
- Joint ventures - when groups of businesses and schools work together to reform programs; and
- Policy change - when business leaders seek to influence educational policy, rather than individual schools.

Several factors are crucial to success.

- Commitment is vital. When business makes a firm decision to improve education, its activities generally have a significant impact.
- Government cooperation is important. Centralized government bureaucracies and anti-business attitudes have worked against alliances among business and schools. But where governments have reached out to the business community, significant progress has followed.
- A professional approach is necessary. Firms should either recruit education specialists for their staff or work with an intermediary organization—typically a foundation—to achieve their goals.

Much remains to be done. Business-education partnerships are still uncommon, and the potential impact of business on schools is far from being realized.

- Experience needs to be communicated. Business leaders working on education in Latin America have almost no contact with one another and little knowledge of successful experiences in the United States, Canada and Europe.

- Evaluations should be carried out. Little effort has been made to carefully measure the results and impact of the programs that are under way.

- A systemic approach is missing. Most activities to date target individual schools, and have had little impact on the broader educational system. The major obstacles to better education, however, are system-wide and require fundamental institutional reform.

Introduction

by Jeffrey M. Puryear

Now more than ever, economic success in Latin America and the Caribbean depends on education. The intensive economic restructuring of the past decade has created a need for workers with strong skills, good work habits, and the ability to learn. In response, student enrollments have increased and business has begun to take an interest. The problem is, few governments are providing the kind and quality of education required in today's rapidly changing labor markets.

Moreover, providing quality education to all children is crucial to defeating poverty. But the education provided by most public schools—which overwhelmingly serve the poor—is of vastly inferior quality. Bringing public schools up to acceptable quality levels will require fundamental reforms and additional government investment.

The private sector has not fully addressed this issue, despite having a clear stake in what schools produce. Business—because of its emphasis on efficiency and results—has much to offer in the way of education management and reform. Yet so far business in Latin America and the Caribbean has not played a major role in the formal education sector, leaving it principally to the state.

That is not the case everywhere. Business has recently become a significant force in public education in Canada, Europe, and the United States, not necessarily because of an idealistic commitment to schools but because of a growing concern about the quality of labor. Educational performance and worker productivity appear to be declining at the very time economies are opening up, competition is becoming global, and technology is becoming more complex and dynamic. Improving human resources and output is therefore a high priority for corporate leaders. They see investments in education as a means to that end.

That is why business-education "partnerships" have sprung up throughout the industrialized world. Small, medium, and large firms are joining these partnerships, and their contributions range from goods and services to individual schools (such as equipment, small grants, speakers, and tutors) to sophisticated efforts to develop new education policies. Some projects focus on classroom teaching, others on providing students with work experience, and still others on improving school management. What they all have in common, however, is a conviction that better schools are good for business and that corporations should be willing to invest in bringing about such an improvement.

Drawing on experience elsewhere, the Chairman's International Advisory Council of the Americas Society decided to examine how the private sector in Latin America and the Caribbean might also take up this challenge. In cooperation with the Latin American Business Council (CEAL), it has established an ad hoc committee on education, co-chaired by Roberto Paulo Cézar de Andrade of Brazil, Fernando Léniz of Chile, and Fernando Romero of Bolivia. The committee commissioned Jeffrey M. Puryear of the Inter-American Dialogue to pinpoint the central issues, formulate a strategy for educational reform, and develop a series of case studies that would demonstrate business involvement in education.

The cases are presented in this report. They are drawn mainly from Latin America and the Caribbean, but a few from the United States, Canada, Europe, and Asia are included for comparative purposes. Consultants reviewed existing business-education projects in 11 Latin American countries and selected some of the most interesting ones for analysis. They then gathered the available data, interviewed key actors, and prepared case studies on each. Other cases were adapted from existing publications on business-education partnerships or from materials prepared by businesses that have entered such partnerships. The objective was to identify and describe the diverse approaches to business-education partnerships and make this information available to business leaders throughout Latin America and the Caribbean.

Although public spending on education has disproportionately favored universities in most countries, the report focuses on primary and secondary education, because that will be the source of much of tomorrow's work force. Study after study suggests that primary education is a particularly good investment. For one thing, improvements in primary education will generate immediate pressure to improve secondary schools. For another, both levels face similar problems: poor quality, mismanagement, inadequate financing, and a lack of accountability.

The project is designed to help business communities use their resources and influence to promote needed change—at both the school and policy level. It calls on Latin American and Caribbean business leaders to make a concerted effort to strengthen primary and secondary education in order to enhance economic competitiveness in the region.

The Chairman's International Advisory Council of the Americas Society and the Inter-American Dialogue are grateful to the many specialists who provided information and advice throughout the project, including P. Michael Timpane of the Carnegie Foundation for the Advancement of Teaching, Sandra Hamburg of the Committee for Economic Development (CED), Susan Ottenbourg of the Conference Board, Diana Wyllie Rigden of the Council for Aid to Education, Sophie Sa and Ann Kreidle of the Panasonic Foundation, Chris Marsden, Ramilla Shah and Johari Hassan of British Petroleum, Robert Witte of the Exxon Educational Foundation, Trevor Owen of "Writers in Electronic Residence", Bruce MacMillan and Lynda Pindar of CANADA FIRST Robotics Competition, and Martha Johnson of Ashland Inc. We would also like to thank the consultants who prepared the Latin American cases: Helena Bomeny (Brazil), Carlos Briones (El Salvador), Josefina Bruni Celli (Venezuela), Regina Caffaro

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Policy Framework

An Agenda for Educational Reform in Latin America and the Caribbean

by Jeffrey M. Puryear and José Joaquín Brunner

If business is to work successfully with schools, it needs to understand the broader problems that characterize the educational system. This essay, originally published as an Inter-American Dialogue Policy Brief, provides an overview of the growing debate on educational reform in Latin America and the Caribbean. It identifies some of the principal problems and most promising avenues for reform emerging from the efforts of researchers, policymakers, and practitioners. The policy brief is part of the Program to Promote Educational Reform in Latin America and the Caribbean (PREAL)—a comprehensive effort to build a broader and more active constituency for education reform region-wide—being carried out jointly by the Inter-American Dialogue in Washington and the Corporation for Development Research (CINDE) in Santiago, Chile.

Nothing is more important to Latin America and the Caribbean's future economic and social development than the education of its youth.

The countries of Latin America and the Caribbean reached the limits of one model of economic development in the early 1980s and are shifting rapidly to another. The old model, in place for over three decades, was based on industrial protectionism, foreign borrowing, the exploitation of natural resources, and domestic budget deficits. The new model is based on opening national economies to international competition, foreign investment, technological innovation, and macroeconomic equilibria. Democratic governance has spread throughout much of the region, and public administration is rapidly being decentralized. Overall, Latin America and the Caribbean are steadily integrating themselves into a new world economic and political order, while building closer ties with the United States.

The emerging model of development has brought with it new demands on citizen and state alike. Open economies integrated into the global system require an internationally competitive labor force with an emphasis on science and technology. The return of democratic governance has caused citizens to pressure governments for new services, and governments to require that citizens be more informed and responsible. The decentralization of public administration is placing a new emphasis on citizen participation, autonomy, and responsibility in provincial and municipal settings.

These changes have required that Latin American and Caribbean educational systems train students for jobs in an internationally competitive economy, foster technological change, expand social opportunities, and prepare people for democratic citizenship. Nowhere in Latin America and the Caribbean are these demands being met. While more children than ever attend school, the quality and value of the education they receive is inadequate in most countries of the region. Only half the students who begin primary schooling complete it. Secondary schools fail to provide the skills necessary for economic competition or modern citizenship. Education systems are unresponsive to those they should serve and are resistant to change. New strategies for educational development and transformation are needed.

Key Problems

Finance

The financial crisis that gripped Latin America throughout the 1980s caused public spending on education to decline by 30 % in real terms between 1980 and 1985. Although spending has recovered somewhat since, per capita expenditures in 1989

were still below 1980 levels and represented just one-tenth those of industrialized countries. The economic downturn also diminished the ability of parents to provide the material conditions necessary for children to take advantage of the public education available. These declines have generated rising rates of failure, repetition and dropout at the primary level (chiefly among the rural and urban poor), and a decrease overall in the quality of public education.

Insufficient quality

The emphasis placed on expanding enrollments has meant less attention to the processes and results of schooling and has failed to produce adequate levels of quality. Funds that could have been used to improve education for those already enrolled, by providing laboratories, textbooks or teacher training, have been spent instead on additional classrooms, administrators and poorly paid teachers. Latin America and the Caribbean have higher repetition rates than any other region of the world. Nearly a third of all primary students repeats a grade each year. The cost of teaching these repeaters has been estimated at US$4.2 billion annually. Only half the students who begin primary schooling will complete the cycle. Students tend to score significantly below their peers in industrialized countries on standardized achievement tests in reading, math, and science. Many children do not achieve basic mastery of language and mathematics; secondary schools do not equip students to function effectively in modern economies; and many of the new universities are hardly more than secondary schools.

Inequity

Although the poor are heavily concentrated in public primary schools, public funds have been used disproportionately to expand secondary and higher education instead of reducing quality differentials at the primary level. Most primary school repeaters are poor. Research consistently indicates that achievement levels among primary school students from the poorest families are dramatically lower than those of middle- and upper-class children. For much of the region, good education today still is concentrated among the wealthy and upper-middle classes and imparted through private, relatively expensive schools. The substantial public subsidies to higher education provide a particularly dramatic contrast. More than a quarter of all money spent by Latin American and Caribbean governments on education in 1989 went to higher education, up from 16 % in 1970 and 23 % in 1985. Yet research indicates that the wealthiest quintile of the population receives nearly half of those subsidies, while the poorest quintile receives just five percent.

Economic growth

Schools are not providing students with the skills required by a modern, internationally competitive economy. Traditional models of educational development have been keyed more to political demands for expansion and to promoting national integration than to the demands of modern labor markets. Emphasis has been placed on expanding enrollments and on the humanistic content of education rather than on its contribution to economic growth. The model's lack of ties to the labor market—barely adequate for countries whose economies were relatively insulated from the world economic system—is inappropriate for economies moving toward free markets and competition in the global economy.

Lack of accountability

Education systems in Latin America and the Caribbean are characterized by centralized bureaucracies, rigid procedures, and isolation from other sectors of society. Administration has been monopolized over the past 40 years by what many call a bureaucratic machine, often too concerned with its own interests, resistant to change, and accountable to almost no one except itself. Schools do not respond sufficiently to the needs of students, parents or employers. They have failed to keep up with the changing demand for skills and have lost their role as society's key agent of change.

Neglect of the teaching profession

Throughout the region, teachers have low status and earn relatively low salaries. Teachers at all educational levels tend to be poorly trained (one-third lack professional certificates or degrees) and are offered few incentives for professional excellence or advancement. These conditions are due in part to financial limitations. But they owe as well to an educational system that places central emphasis on expanding enrollments,

with little concern for quality. The massive expansion of teaching positions over the past 40 years took place without the resources necessary to establish and maintain teaching quality. As a result, the teaching profession has steadily deteriorated. Low salaries and poor conditions have also impaired the recruitment of new teachers. Recent research suggests that those entering teacher training programs have disproportionately low levels of academic achievement.

Policy Options

Addressing these problems requires that Latin American and Caribbean governments place education at the top of their policy agendas, as crucial to success in economic development, social advance, and democracy. The goal should be to transform educational systems so that they provide children with the skills required by modern labor markets, foster social mobility, promote equity and reinforce democratic government. Among reforms being discussed—and in some cases tested—by experts and governments throughout the region, priority should go to the following:

Schools are not providing students with the skills required by a modern, internationally competitive economy.

1. *Improving school quality*

Governments should make improving quality their top education priority. That means attracting a better-trained teaching force and providing more textbooks, teaching materials, and educational technology. It means as well working with teachers and school directors to introduce new teaching methods. No single combination of curriculum, materials and method is right for all groups. Rather, schools must be encouraged—and provided the funds—to experiment with new approaches and to tailor them to local needs. Mechanisms should also be developed to monitor educational quality and determine which approaches work best under different conditions.

2. *Allocating a greater proportion of education resources to primary and secondary education*

Most of the poor, and much of tomorrow's labor force, are concentrated in public primary schools and will not advance further. A majority of those who manage to begin secondary school will not complete it. Thus, the argument—on grounds of equity and of economic efficiency—in favor of concentrating public resources on primary and secondary education is strong. Yet government subsidies in most Latin American and Caribbean countries tend to favor higher education. Unit costs for higher education as a whole in 1989 were subsidized at a rate seven times higher than those for primary education. Latin America and the Caribbean's level of higher education exceeds that of all other developing regions of the world, but its level of secondary education is low when compared to developing countries more generally, and particularly when compared to Asia. Increasing the share of public funds going to primary and secondary schools will be difficult because of the greater political clout of middle and upper income groups who benefit from the current emphasis on subsidizing higher education.

3. *Strengthening the teaching profession*

Good teachers are fundamental to good education and cannot develop without a strong professional framework. Governments can help most by making sure that framework is in place. They should work with teachers' unions to establish high professional standards and devise mechanisms for evaluating teacher performance. They should provide more and better in-service training. They should establish incentives for professional excellence and offer greater prestige. Finally, they should stand ready to increase salaries. Only a combination of measures aimed at fundamentally rehabilitating the profession of teacher will succeed in recruiting more talented teachers and improving the quality of teaching.

4. *Decentralizing the management of schools and involving parents, employers, and other social groups in setting policy*

The highly centralized, bureaucratic administration of Latin American and Caribbean educational systems has failed to deliver acceptable levels of quality, equity and economic efficiency. Several coun-

tries, including Colombia, Argentina, Chile and Mexico, are experimenting with schemes to decentralize school management and open it to outside influences. Typically these efforts include shifting responsibility for management to the municipal level and establishing advisory boards that incorporate important social groups, such as parents and employers, in policy decisions. As yet, no clear formula for doing so exists. Countries will need to work systematically to decentralize and open up the management of schools while monitoring carefully the results.

5. *Enhancing the leadership and management capabilities of school principals*

Decentralizing the management of schools can only succeed if school principals are provided with the skills necessary to assume additional responsibility. Governments not only will have to provide appropriate training, they also will have to alter mechanisms for selecting school directors so that those chosen will possess the necessary levels of leadership and motivation. In addition they will have to establish a new structure that promotes professional excellence through appropriate incentives and standards.

6. *Setting minimum acceptable levels of competency and establishing national achievement tests to measure them*

Governments should begin to gauge educational progress by measuring what students learn in school, rather than emphasizing how many enroll or graduate. That implies setting minimum standards of learning in such core subjects as language, mathematics, science, history, and geography, and establishing a national system of performance examinations to determine progress in meeting those goals. Several Latin American and Caribbean countries, including Mexico, Costa Rica, and Chile, are already experimenting with such examinations at the primary level.

7. *Establishing nationwide systems for evaluating the performance of schools*

Governments should establish information systems that monitor school input and output, and the quality of teaching. The goal should be to provide students, teachers, administrators, parents, and employers with information they can use to compare the performance of institutions, and to identify effective reforms.

8. *Aligning secondary education more closely with modern labor markets and the demand for skills*

Governments should reorganize the curriculum of secondary schools to reflect the fact that most secondary students will enter the labor market rather than go on to the university. This implies greater emphasis on the mathematics and science that are common in industrialized societies, introducing job training, providing more information about the workplace and encouraging participation by employers in devising programs. Initiatives that bring students closer to the demands of contemporary society, such as internships and reorganizing the school to give students experience with real-life activities, should be actively pursued.

9. *Establishing conditions on public support for higher education*

If governments are to improve the quality of higher education, they will have to condition their subsidies on fundamental reforms and on progress toward reaching specific goals. They should require universities to take clear steps to improve quality by raising academic standards, attracting more qualified faculty, and strengthening libraries. They should also require more efficient administrative structures and greater private sector collaboration. Governments should particularly emphasize the establishment of national programs of accreditation that establish a basis for comparing the quality of institutions of higher education. They should also require universities to promote greater equity by charging fees to students from families who can afford them and by establishing loan programs for students from less advantaged backgrounds.

10. *Raising expenditures on education*

As reforms are instituted and educational quality improves, governments should increase the proportion of their GDP they spend on education. Additional government monies will be most helpful if offered

as incentives for improving quality—to encourage reforms within the teaching profession, for example, or to allow schools to experiment with new kinds of organization and teaching materials. Governments should also experiment with measures that encourage greater spending by private sources. Tax codes, for example, might be altered to encourage contributions to schools by individuals and businesses.

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Case Studies

ALTO PARANÁ PROJECT/ LOS LAPACHOS INSTITUTE

by María Antonia Gallart

Key Actors

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Alto Paraná S.A. produces cellulose paste in northeast Argentina, an area of low socio-economic development. Since it began operations, the firm has taken several important steps to improve the quality of life for residents in the area. In the field of education, it has already helped create a high-quality private school serving children in pre-school through secondary school levels, offered scholarships to low-income students, sponsored teacher training, and improved conditions in public schools. Its support of the new school, the Los Lapachos Institute, was motivated by a study which showed that technical and professional personnel were moving away, in large part to find better schools for their children. In response the firm decided to create a high-quality school for the entire community.

Objectives

Since 1979, when the plant was built, Alto Paraná has taken steps to improve the social infrastructure of the area by concentrating on services that are not provided by the State. Initially, it focused on establishing a minimum level of education and health for the local population. Later, it concentrated on improving educational quality in order to retain its technical/ professional employees.

Key Inputs

A key element in the origin and execution of the project has been the Alto Paraná Foundation, created in 1984 to channel funds external to the firm. In reality, however, the firm continues to be the only contributor. The Foundation provides greater flexibility to support various activities than an industrial firm. Moreover, as a nonprofit association, it has won greater acceptance from the community.

Another key input has been the collaboration of the provincial government. While Alto Paraná paid for the construction costs of the buildings where public services are provided, the State pays the salaries of the teaching staff and janitors for the school. Furthermore, the provincial government helped develop and officially approved the innovative and original curriculum of the Los Lapachos Institute.

Brief History

In 1976, Alto Paraná began its forestal activities. Construction of the plant was launched in 1979, with plant operations commencing in 1982. The plant produces more than 700 tons of cellulose daily, much of it for export. The investment made to date has been $600 million (Argentine). The project directly or indirectly employs 3,500 families. Located in a forested region near Argentina's border with Brazil and Paraguay, the operation includes everything from the forest plantation to chemical processing. It spans three localities: Puerto Esperanza, the center of industrial production, Colonia Wanda and Puerto Liberta.

Because the subtropical climate discourages settlement, the firm initiated its social activities with the aim of establishing new and stable populations of workers. The objective was to successfully integrate personnel in the area, while taking strides to benefit the entire community.

In 1984, the Alto Paraná Foundation was created to coordinate community activities. This initiated the establishment of the Los Lapachos Institute, a privately managed school.

Initially, the school was focused on the pre-school level. However, grades have been added as children progressed to higher levels. In 1994, the first class of secondary school students graduated.

Some 30 % of the students are employees' children; the remainder come from the community. The school is small in relation to the community's size: approxi-

mately 70 students attend pre-school and kindergarten, 200 are enrolled in primary school, and 200 attend secondary school. In contrast, the area has an estimated urban population of 35,000 and a rural population of approximately 10,000 residents.

The Alto Paraná Foundation owns the buildings, while the Institute is operated by the School Association of Puerto Esperanza, under the supervision of the Foundation's Administration Council.

Results

Alto Paraná played a key role in improving the quality of life in a one of Argentina's most under-developed areas. The firm helped extend preventive medical care to the entire population, and, in the field of education, the firm helped rehabilitate poor, rural schools, provide running water and sanitary facilities in every school, as well as finance teacher training.

The creation and support of the Los Lapachos Institute further extended the firm's impact. Taking advantage of the fact that private schools have greater flexibility in designing programs than public schools in Argentina, the Institute has established educational opportunities of much higher quality than had previously existed in the community. Unfortunately, only a relatively small number of students are benefiting from these improvements.

...Alto Paraná has taken steps to improve the social infrastructure of the area by concentrating on services that are not provided by the State.

Observations

Alto Paraná's experience underscores the necessity of establishing a minimum social infrastructure to support a company whose technological operations deal not simply with extraction or the processing of raw materials, but with the final stages of production, such as the chemical processes of making paper. This level of operation requires sanitary living and educational conditions that will not only support the settlement and retention of qualified personnel, but increase the productivity of less skilled personnel. A great amount of effort has been dedicated to this objective and the results appear positive.

Alto Paraná took a dualistic approach to improving the area's educational system. Simultaneously, it strengthened the existing public schools and founded a private school. To understand this approach, it is important to keep in mind the nature of the populations being served. Initially, small rural schools served most of the local population. These were replaced by higher-quality public schools.

The segmentation of the student population and the rigidity of the educational system raises concerns. Therefore, the creation of a private school is an important innovation. One hopes that the implementation of the Federal Law of Education—which allows greater flexibility at the provincial and local level and facilitates the implementation of schools like Los Lapachos that respond to a community's needs—will bring other improvements.

Conclusions

The Alto Paraná experience demonstrates that a firm concerned about its impact on the local populace and its employees can make an important difference in improving the quality of life and education in its area of operations. Notably, a firm can implement innovations in the field of education, working through the existing system and backing improvements and new approaches.

To extend this effort to other locales in the province, collaboration would be needed between other firms and the provincial government.

ORT SCHOOLS/TECHNICAL COOPERATION DEPARTMENT

by María Antonia Gallart

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The ORT World Union supports two privately managed technical schools in Argentina, serving 6,000 students. ORT is a Jewish non-governmental, non-profit institution founded in 1880, which backs technological and vocational education, such as international cooperation programs, in more than forty countries in Africa, Asia, Europe, the Middle East, Latin America, and North America.

Within the organization, ORT has created a special Technical Cooperation Department to provide technological and institutional consultations to companies and public and private national and international organizations. (Many of the consultants are university professors.) The Department has a high degree of autonomy in its decision-making and finances its own activities.

Teachers also play a key role in this project by establishing the training curriculum and actively participating in the institution's work with firms to tailor programs to meet employer needs.

Since the schools specialize in computers and electronics, business partners generally include high-technology firms, such as IBM Argentina, Telam, Texas Instruments, Ericsson, YPF, and SIDERCA.

Brief Description

With the aid of the Technical Cooperation Department, and in cooperation with private firms, the program's two private technical schools develop and carry out training programs in areas of advanced technology. The schools use the experience gained in working with the firms to strengthen the curriculum and to improve teacher training.

Objectives

The program aims to create a mechanism to help the technical schools tailor their curriculum and training to meet the needs of firms. The schools' steps to fine-tune their training encourage firms to work with them and thus sustain efforts to keep the schools' programs updated.

Key Inputs

The effort draws on groups of expert technical professionals and instructors, university teams specializing in specific subjects, and firms. Students must have completed advanced course work and be of high caliber. The cost of this initiative is covered by consulting fees.

Brief History

In response to a request by IBM Argentina, the Technical Cooperation Department was created in 1980 and relations with other firms were initiated. IBM faced the challenge of changing its product line — from mechanical to electronic — and had to choose between shutting down its operations or completely retraining its personnel at all levels, from the engineering teams to the machine operators.

IBM approached various national universities about implementing a training program, but none could respond quickly enough. ORT had a significant advantage since it had just installed the latest generation of computers.

It made a formal request to ORT in November 1979. In December, ORT announced that it could meet IBM requirements. The project was designed and presented in February. By March, it was approved at the local level and by the head office. In April, ORT moved its training equipment to IBM's offices and began 1,100 hours of on-site training. The efforts were refined over a four-year period. In the first year, 36 % of the

personnel received training. In the following years, training became more specialized.

The experience established a dynamic: the program evolved to meet the needs of the firm, and the firm cemented its relationship with the schools.

Over time, two mechanisms evolved to develop and refine other training programs: the Academic Council and the Council of Directors. The Academic Council is composed of the heads of departments in both general areas and areas of specialization. The Council evaluates study plans and considers whether existing programs should be updated or new ones created. In this manner, the Council identifies resources that are needed, including the recruitment of professionals who can carry out improvements.

The Council of Directors is composed of Directors of the two secondary schools. This Council discusses policy issues and focuses on coordinating relations between the institutions and firms.

Results

The program has led to the development of new career directions for students, such as musical technicians, media technicians, and mid-level industrial designers. Moreover, the initiative established a flexible and practical training mechanism with the following important characteristics:

- Program plans are structured to allow constant updating of subject matter;
- Courses do not have specific titles, so it is possible to change content without going through the cumbersome process of changing the formal structure;
- The policies towards teachers tend to stimulate participation; and
- The program exposes students to the realities of the workplace and to the institutional demands of the community.

By the time students finish half their studies, they must complete a project that is requested by an institution or firm. In 1995, these included the production of a video focusing on the Children's Hospital (which was celebrating its 120th birthday), as well as a video of highly complex surgical procedures to be utilized for training.

In order to meet the request of the firm or institution, teachers aid students in finding the necessary information. Adding to the "real life" aspects of the project, students must present their project to professionals, who are specially chosen to critique their work.

In the third year, students participate in internships at telecommunications, computer, or robotics engineering firms.

In the last few years, demand for graduates has been strong.

Over the years, the program has gained prestige, an important factor in and of itself, which the schools plan on maintaining.

Observations

The success of the program depends on the schools' technological capacities and level of academic excellence. The integration of high academic levels with practical workshops produces graduates who are extremely well-qualified for the job market.

The Technical Cooperation Department works as an intermediary between the productive sector and the educational system. This facilitates the creation of new and targeted educational programs and allows them to be updated and refined to meet demands from various institutions, firms, service institutions, ministries, and technical cooperation organizations. The permanent link between the educational and the productive spheres is the "secret" of the program's success.

Over the years, the program has gained prestige, an important factor in and of itself, which the schools plan on maintaining.

The ORT formula provides an interesting precedent in Argentina, given the lack of educational initiatives led

by firms. This technical assistance mechanism is used in other countries to channel firms funds to educational activities and to foster the transfer of technology to technical education (for example, the technical schools of SENAI and the federal technical schools in Brazil).

The need for excellence and flexibility among teachers, and the high levels of achievement required by students, however, make the program difficult to implement in the education system in general.

Conclusions

The role of the Technical Cooperation Department as an intermediary, as well as the manner in which the program evolved, has been crucial to the program's success. The initiative began as a service to firms to meet their internal training needs in a pedagogic and non-bureaucratic way. The initial bridge was created from the school to the firm based on the firm's need to make itself more productive and competitive by retraining and restructuring.

Over time, an especially effective dynamic has evolved. The schools revamp their educational program to meet the needs of firms and institutions. In turn, as those needs change and technology evolves, the schools further develop their program.

INTI RAYMI FOUNDATION/CENTER FOR EDUCATIONAL AND INTERCULTURAL MULTI-SERVICES (CEMEI)

by Eduardo Gonzalez Saá

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The Center for Educational and Intercultural Multi-Services (CEMEI) is a recently established educational alternative for the poor neighborhoods of Oruro, Bolivia. Founded in 1994 by the Inti Raymi Foundation (FIR), CEMEI is modeled on the Center of Educational Multi-Services (CEMSE) of La Paz. It is the brainchild of the Jesuit priest Antonio Sagristá, working in concert with Mario Mercado Vaca Guzman, the manager of the Inti Raymi Mining Company, and his associates.

Brief Description

CEMEI is intended to complement the system of public education in Oruro by offering modern facilities and high-quality educational opportunities to the student population of the city's severely impoverished neighborhoods. It is strategically located amid the financial institutions of the northern part of the city and has a well-designed infrastructure, including spacious rooms and the necessary equipment to meet modern standards of education.

The center's motto is "Equality of Opportunity." To this end, it is dedicated to expanding educational coverage and guaranteeing better-quality education for the poor. In general, this means an all-out effort is made to give poor children diverse experiences that will stimulate oral, written, and athletic expression, so as to improve their self-esteem and ability to become productive members of society. CEMEI's teaching methods and curriculum are therefore designed to encourage students to think for themselves, be analytical, and develop their creativity. Their interest in reading is stimulated by making appropriate textbooks available on a wide range of subjects. Guided by their teachers, students learn to make reading a lifelong habit. They also learn how to analyze their reality and make the best of the possibilities they have to improve it.

Equally important, CEMEI tries to cultivate a sense of community and solidarity, and in this way to expand children's access to education and knowledge. Student activities are oriented toward an appreciation of each cultural group's identity, but with an emphasis on building unity through diversity.

Another important aspect of CEMEI activities is their emphasis on teacher training. In the framework of Bolivia's current concern with educational reform, teachers are encouraged to upgrade their training while at work or to periodically take refresher courses and thereby ensure their professional standing is maintained. CEMEI supports such activities through specialized libraries, video libraries, chemistry, physics, and biology laboratories, and periodic teacher training workshops. In addition, CEMEI encourages parents to participate in events that focus on education. These include seminars, roundtables, and conferences related to the new emphasis on the role parents must play in taking responsibility for the education and training of their children.

Objectives

CEMEI has a variety of objectives, all geared toward improving the education of the poor:

- Establish support activities and up-to-date educational techniques for the Fiscal Educational System of the North Zone of the city of Oruro;
- Improve the process, output, and results of education in the fiscal schools, and thereby provide students with real and effective opportunities to "learn how to learn" and meet their full potential in life;
- Reduce the percentage of students who leave school at an early age or who have difficulty advancing from grade to grade;

- Improve students' self-esteem and personal security, enable students to develop a sense of cultural identity, and open the door to social and intercultural relations;
- Stimulate curiosity in children, develop analytical skills, and foster an interest in analysis so as to prepare them for scientific investigation;
- Promote productive and artistic creativity, by giving students access to diverse cultural activities that can help them discover and develop their natural talents;
- Give students of the Fiscal Educational System access to educational services that are lacking in their schools;
- Promote respect for different cultures, in accordance with the State's new political constitution and recently ratified Law of Education Reform; and
- Develop environmental consciousness and techniques geared to preserving natural resources and protecting the environment;

...the contributions of CEMEI and the Inti Raymi Foundation confirm that it is not only possible for private commercial firms to participate in educational processes..., but that it is also highly beneficial to the firms and the populations served.

Key Inputs

CEMEI obtains its support from the Inti Raymi Foundation, which operates in the city of Oruro and in rural communities of the same Department. The Foundation's social and development projects are financed in part by the Inti Raymi Mining Company, and 30 % of its resources are provided by the Bolivian Social Investment Fund (FIS), which draws on cooperative national and international financing.

Brief History

CEMEI is the product of deliberations following a socio-educational and economic study of the city of Oruro, along with a needs assessment based on opinion polls. The results led the Foundation to focus its attention both on the urban sector and on the rural area under the influence of the mining firm.

Beginning in September 1991, the Foundation launched a large investment and social development project, consisting of the construction and renovation of rural schools, food and nutrition programs, as well as an all-out effort to improve the quality of education and the health of the children. It organized mobile equipment and a medical center with an on-board capacity; brought a water supply to the community; fostered the rearing of livestock; implemented an irrigation project; repaired roads; and encouraged soil management, commercialization, and better and more sanitary animal husbandry.

Results

Since CEMEI is still in its infancy, a rigorous evaluation has not yet been done. According to feedback from both the beneficiaries and mediators, however, the initial results over the first year of operation are promising.

Before the Foundation was established, the Inti Raymi Mining Firm was the object of widespread criticism and was denounced in public statements and demonstrations for the contaminating effects of the toxic wastes emanating from its mines. To counter this criticism, Mario Mercado spearheaded a move to establish the Foundation and through it to address the region's social problems. Such a move, he thought, would do far more to improve the firm's public image regarding its environmental impact than costly campaigns trying to justify and explain its operations. Under the impetus of the Foundation and the successful establishment of CEMEI, the Inti Raymi Firm took immediate steps to clean up the rivers and protect the environment. All these activities have drawn a favorable response from a large segment of the population of Oruro.

Over a surprisingly short period of time, the firm's investment in the Inti Raymi Foundation has benefited the urban and rural population of Oruro in many areas: education, agriculture, drinkable water and irrigation, health, handicrafts, and the raising of sheep. Moreover, the

mining firm itself has significantly changed its public image in Oruro.

Observations

The academic structure of the CEMEI, with its multi-function activities and versatility, has been instrumental in meeting the diverse learning requirements of the participating student population. This structure is the result of a conscious decision to respond to the double challenge of helping expand the coverage and improve the services for the children of workers in the mining area.

The project would not have gotten off the ground, however, without the inspiration of Sagristá, who was determined to "provide comprehensive and high-quality services under one roof to the students of low-income families." Also, the results achieved by CEMSE in La Paz made a strong impression on Mario Mercado and helped ensure that an effort would be made to achieve similar results for the population of Oruro. Clearly, there has been a vast change since that time, not so long ago, when the Inti Raymi Mining Firm did not interact at all with Oruro's Urban Fiscal Education establishment. Thanks to the work of CEMEI, the firm is now having a direct, significant, and beneficial impact on the surrounding community.

Conclusions

Despite educational reforms in 1955, Bolivia has continued to face serious educational problems: high levels of illiteracy, increasing drop-outs, marginalization, poor-quality education, and disappointing results. Under these circumstances, it is extremely difficult for the country's human resources to meet the requirements of the modern world. Needless to say, CEMEI's promising early results indicate that it has already begun to contribute to improving the quality of educational services in the city of Oruro.

Clearly, the contributions of CEMEI and the Inti Raymi Foundation confirm that it is not only possible for private commercial firms to participate in educational processes and in social development, but that it is also highly beneficial to the firms and the populations served.

BRADESCO FOUNDATION "A SCHOOL IN EACH STATE OF BRAZIL"

by Helena Bomeny

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The Bradesco Foundation is a private organization created in 1956 to fill the existing gaps in the provision of educational services in Brazil. It is rooted in the idea that private firms need to engage in more activities that demonstrate a concern for social issues. The Foundation is administered by Bradesco Bank, the largest private bank in Brazil and one of the strongest commercial organizations in the country.

Brief Description

The Bradesco Foundation maintains a network of schools in 23 of Brazil's 27 states, as well in the Federal District. Altogether, some 95,000 students attend the Foundation's schools. The network is independent of the public sector, except to observe the relevant laws governing education and to interact with the political leadership of the regions in which its schools are located.

The Foundation establishes, maintains, and administers various types of teaching institutions, mainly in areas without access to educational services. Among the services provided are free literacy courses, elementary schooling, secondary professional schooling, rural specialization, training of elementary school teachers, and community-orientated training programs.

Foundation schools have well-equipped laboratories and libraries and offer extracurricular activities, including vocational reinforcement programs with specific training for management assistants. In some cases, the Foundation contracts with professionals from Brazil's top-ranking universities to teach specific courses.

Objective

The Foundation's primary purpose is to provide basic and professional education to children and needy youth in Brazil.

Key Inputs

The Foundation's activities are financed by Bradesco Bank. In 1994, the amount allocated to its projects totaled 61.2 million reais (more than US$62 million). This figure rose to 61.7 million reais (about US$65 million) in 1995. Funding is carefully monitored to ensure that it reaches the schools. About 73 % of the budget is invested in human resources and about 27 % in the maintenance, expansion, and refurbishment of school buildings. The Foundation currently employs 2,822 people throughout Brazil. To safeguard against teacher shortages or strikes, teachers are paid slightly more than the average salary in private schools.

Brief History

Since its inception in 1956, the Bradesco Foundation has become what it calls "a dynamic link between poor communities and educational opportunities." Education and culture constitute the principal objectives embodied in its statutes and guide all its activities.

The first school was built in 1962 in Osasco, a poor suburb on the outskirts of São Paulo. It was an elementary school for the children of Bradesco Bank employees. The project was initiated by Amador Aguiar, a self-taught Brazilian of humble origins, who had placed great emphasis on education, hard work, austerity, and dedication. In 1969, the school introduced secondary-level classes. In addition to its academic activities, it provided students with scholastic materials, food, uniforms, and medical and dental care.

In the early 1970s, Bradesco Bank entered a period of growth and was able to create a stable financing

mechanism for Foundation-related activities. This arm of the Bank, known as the Bradesco Top Club, works in the insurance sector and now has almost 350,000 members. Its liquid income is channeled to the Foundation. During the early stages of the project, the Foundation gave top priority to implementing professional courses, rural specialization, and community-orientated training programs.

In 1971, Bradesco founded its second school, this time in an area of northern Brazil lacking any educational structure. At this point, the Foundation decided to commit itself to two basic principles: it would not compete with public initiatives, and it would only operate in areas not served by, or only poorly served, by the State.

Results

The success of the Foundation's projects can be judged by the extent to which it has fulfilled its objectives. Between 1962 and 1995, for example, it built schools in the Federal District as well as in 23 states of Brazil. The total is now 31 schools, 16 training nuclei for rural workers, and 10 teacher training courses. Another important indicator of success is the increase in the number of students taught: 78,000 in 1992, 85,000 in 1993, 92,000 in 1994, and 95,000 in 1995. Only 10 % of these students are from families of Bank employees.

The Foundation's teaching establishments have greatly helped to strengthen local communities, not only by serving needy students but also by providing employment opportunities. The Foundation's policy is to recruit employees from the areas in which a project is operating.

Observations

Although more and more private companies in Brazil are becoming sensitive to social issues, thus far most of their assistance projects have been of a superficial nature. Recently, however, two important trends have been gaining momentum: first, some companies have been interacting with government projects on a complimentary basis or have been providing support for State actions; second, a search is on for alternative programs, independent of the public sector.

The activities of the Bradesco Foundation fit into the second category. The Foundation is a private institution whose projects have departed from the concept of a partnership between the private and public sectors. Rather, with its own resource base, the Foundation can invest in the establishment and maintenance of schools under its auspices.

One of the Foundation's primary concerns has been to correct the deficiencies in teacher training. To this end, it has contracted university professionals to run special training courses and at the same time has created its own teacher-training programs.

The fact that it operates under a single private company and is based on established principles has enabled it to avoid the discontinuity seen in the public sector, where constant changes in leadership and orientation hinder the development of long-term endeavors.

Conclusions

Due to its continuous, permanent, and long-term direct investment in education, the Bradesco Foundation is able to handle projects that are broad in scope and thus bring various levels of education to low-income people. The fact that it operates under a single private company and is based on established principles has enabled it to avoid the discontinuity seen in the public sector, where constant changes in leadership and orientation hinder the development of long-term endeavors. This has also made the project easier to assess. Indeed, both its processes and results have provided positive feedback for making on-going work more relevant.

The project has won the support of both the public and the authorities. Despite its independence—or perhaps because of it—the project does not compete with the public sector in the educational field, which enhances its standing with local authorities. Since it provides access to education in cities where this service does not exist or is inadequate, communities are strongly behind it. Moreover, Foundation schools have few problems with the vandalism that has become common in public schools. The example set by the Foundation's projects

makes it clear that sensitivity to educational issues, a long-term approach to investments, and coordination with the local community are important factors to consider in setting educational priorities.

CLEMENTE MARIANI FOUNDATION SUPPORT PROGRAM FOR MUNICIPAL SECRETARIATS OF EDUCATION

by Helena Bomeny

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The Clemente Mariani Foundation was created in 1990 by BBM Participations, a private financial institution. This firm is controlled by the family of Clemente Mariani, a native of the State of Bahia in northeastern Brazil and Brazilian Minister of Education from 1946 to 1950.

Brief Description

The Foundation endeavors to strengthen public schooling through a private-public partnership between itself and the Municipal Secretariat of Education. Its program is centered in Catu, a city of 45,000 inhabitants in the agricultural region of Bahia. This is a particularly poor region, whose population is isolated from the rest of the country and tends to be neglected by the government. The Foundation's program is organized into three main divisions. One part focuses on improving the skills of teachers and officials through teacher-training programs, preparation for entrance exams for the teaching profession, courses for the technical team from the Municipal Secretariat of Education, and courses in management training. The second part is concerned with the methods and tools required to function efficiently and effectively. Here the emphasis is on computerizing the Foundation's services and those of the Mayor's Secretariat of Education; refurbishing school buildings; purchasing and distributing educational materials, books, and magazines to teachers, students, and community members; and producing educational videos, bulletins, and informational posters. The third category consists of institutional activities such as implementing public entrance exams for selecting and hiring teachers and also establishing the mechanisms for teacher advancement. At the same time, the Foundation has worked to strengthen the idea of citizenship by disseminating information on training and by organizing the community through the promotion of parents' associations and school councils.

Objectives

The Foundation is dedicated to developing and supporting projects geared to the continuous improvement of public services in basic education, health, and culture. It carries out these activities in partnership with municipal mayors' offices.

Key Inputs

The program is maintained by a private financial institution, BBM Participations, working through the Clemente Mariani Foundation. Its annual budget is approximately US$500,000. The Foundation has permanent staff in Salvador, the capital of the State of Bahia. The staff consists of a coordinator, three managers, a secretary, a driver, and a cleaning lady. In addition, consultants are hired on a short-term contract basis for specific projects.

Brief History

In 1990, BBM Participations began a support program for the Municipal Secretariat of Education in Catu. Initially, the program concentrated on restoring school buildings, training teachers, and distributing scholastic

materials. However, it soon became evident that no proposal for continuous educational improvement could be implemented without addressing two significant problems. First, teachers were not fully literate and lacked both the experience and the motivation to produce the desired educational impact. Second, local politics was of a clientelistic nature. In other words, the procedures followed to gain entry into the teaching profession or a permanent position frequently turned into an exchange of favors, based on electoral interests.

BBM Participations decided to address both aspects of the problem: the strictly didactic-pedagogical, on one hand, and the social, on the other. The first step was to establish teacher-training programs by contracting a pedagogical team from Salvador (the state capital). The training sessions covered not only learning techniques but also role of citizenship in education. Trainers also sought ways to bolster the identity and self-esteem of the teachers. The subsequent change in teachers' perception of their work, the role they played, and their place in society produced significant improvements in teacher motivation and performance.

In the second half of 1990, BBM Participations created the Clemente Mariani Foundation in response to an evaluation of the new teacher-training programs which recommended the establishment of more permanent and universal procedures for handling such programs. The Foundation's responsibilities expanded in July 1992, when it opened two literacy centers, in conjunction with the Vitae Foundation and municipal mayors' offices, to supply schools with books, magazines, videos, and audiovisual equipment. These resources were also made available to the community as a whole.

...the Clemente Mariani Foundation has gained the confidence of local political leaders and succeeded in transforming the educational environment in the region in which it functions.

In 1993, the Clemente Mariani Foundation formed a partnership with the United Nations Children's Fund (UNICEF) to improve and expand upon the activities already underway; to provide training for new teachers chosen through competitive exams; to computerize the Catu Municipal Secretariat; and to train its staff in computer skills. Educational TV programs were also introduced under the joint venture.

Another function of the Foundation has been to provide municipal education secretariats with useful information about the kinds of benefits that they should have access to under the law, but that they have failed to take advantage of for lack of information or the proper orientation. Furthermore, the Foundation has worked to change the manner in which teachers are hired. In particular, it has promoted the competitive examination as a logical and necessary way to gain entry into the profession. Although local politicians for a time continued to defend their clientelistic hiring practices, the Foundation organized a special preparatory course for the entrance exam that attracted 200 participants and thus overcame the traditional resistance.

Since that time, the local mayor's office has taken a number of other steps to make educational administration more transparent, increase respect for legislation governing the teaching profession, and persuade politicians to abandon clientelistic practices. The agenda for 1995 called for the continuation of teacher-training and technical programs, the distribution of scholastic material, the development of parent-school activities, and the production of informative and pedagogical material.

Results

During 1990–95, the Foundation's support program reached 8,000 children in the municipal schools of the Catu region. The teacher-training programs, with their emphasis on both pedagogical and social concerns, combine instruction in specific classroom techniques with citizenship training and identity strengthening. The teachers' new-found knowledge of their rights as citizens and of their role and place in society has had a significant impact on their motivation, interest, and commitment to their work.

Once the Foundation entered into partnership with the Catu Mayor's Office, other important changes took place: public entrance exams were introduced for hiring teachers, the Statute for the Teaching Profession was imple-

mented, the concept of a career plan was adopted, and the base salary for teachers was set at 1.4 times the minimum salary. In addition, the school snack program was taken over by the municipality, a Municipal Council of Education was established (there are only four in the entire state of Bahia), the Catu Municipal Education Fund began receiving the 25 % funding mandated by the Federal Constitution for basic education, and steps were taken to modernize and computerize the Municipal Secretariat of Education.

In a less visible, but equally important way, the Foundation's efforts to modernize and tighten control procedures have begun producing reliable data on fundamental variables, such as the number of students enrolled in schools, the rate of grade repetition, and truancy. This has made it possible to better analyze educational needs and define policy.

Observations

The program's support of basic education in partnership with the public sector can be traced to Clemente Mariani's commitment to education and his knowledge of the vagaries of the Brazilian bureaucracy and its bottlenecks. Mariani passed on to his family a sense of responsibility toward education and also the conviction that it was necessary to become involved with public initiatives to improve teaching services provided by the State.

Because its projects provide support for public schools, the Mariani Foundation has operated as a mediating body between educational agencies and various governmental institutions. Through a consistent strategy of cooperation with the community and with local authorities, the Foundation has managed to overcome the public sector's inertia, the clientelistic interests of local politicians and improve operational standards in the region. Its success is also due in part to its decision to collaborate with both the public sector and other organizations, such as foundations and UNICEF.

Conclusions

Since its inception five years ago, the Clemente Mariani Foundation has gained the confidence of local political leaders and succeeded in transforming the educational environment in the region in which it functions. This success is predominantly due to its close cooperation with the local public sector and its concerted efforts to avoid competing with those leaders. The members of the Foundation's board live in the south of Brazil and make it perfectly clear that they have no desire to run for political office. Local politicians cannot avoid acknowledging the multiple benefits of the Foundations's socio-pedagogical work without risking adverse public response.

The Mariani Foundation's pedagogic and social activities—especially its long-term investments in education, information, and citizenship reinforcement—have helped improve local teaching by leaps and bounds. In the Catu area in particular, the Foundation has helped combat Bahia's traditional paternalistic and clientelistic style of politics with a beneficial effect on the development of the educational system.

The Clemente Mariani Foundation's work is probably a first in Brazil: it has helped those responsible for teaching in poor rural areas gain access to vital information, has legitimized public exams for teachers as a way of entering the profession, has accredited schools to enable them to apply for available benefits, and has promoted participation in educational associations. These efforts, in unison, have undoubtedly had a multiplier effect on other educational initiatives.

NITERÓI EDUCATIONAL CENTER "INFORMATION TECHNOLOGY APPLIED TO EDUCATION"

by Marcelo Fonte Boa

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The Niterói Educational Center, created in 1960, is an experimental school financed by the Brazilian Educational Foundation (FUBRAE). It is a nonprofit, philanthropic, public interest institution.

Brief Description

The Niterói Educational Center (CEN) is an educational complex whose activities accommodate preschool, elementary, high school, and correspondence school education.

In 1982, CEN was singled out for its innovation in the application of information technology to education. It established an agreement with EMBRATEL (the Brazilian Telecommunications Company) to use computer technology as an educational tool for improving the quality of the teaching and learning processes. This particular project was named *Teaching through Information Technology*.

Similarly, in 1991, CEN signed an agreement with TREND (Training and Development, Ltd.) to facilitate the inclusion of information technology in its curriculum structure.

Since technological breakthroughs offer a host of new options daily, and because CEN was aware of the numerous educational possibilities created by information technology, it created a new Multimedia Sector in 1994. Later, it was renamed as BITCEN (Bureau of Information and Technology of the Niterói Education Center).

Through BITCEN, the school is presently developing a large project in the area of education-related information technology which has forged a strong link between the work of TREND and the goals of the school.

Objectives

- To maintain permanent facilities for research and the development of new education-related technologies, especially through the use of computers in elementary and high schools;
- To promote, via the INTERNET, access to CEN by large national and international agencies involved in education;
- To make access to electronic communication available to the entire school community;
- To motivate and enable teachers to make use of computer resources in their teaching;
- To offer students a space in which to do school work with the help of new technologies;
- To create school groups composed of students and teachers with common interests, which will disseminate throughout the community various computer resources, such as text editing, sound and image treatment, hypermedia resources, graphics and animation computing, spreadsheets, data banks, programming, etc.;
- To help teachers and students form teams to develop multisubject projects;
- To build an incremental data bank with hypermedia technology of educational interest that is fed by data from both student and teacher work;

- To analyze existing educational software products in order to assess their applicability in a given community;
- To make translation of foreign software products into Portuguese possible; and
- To establish research and development partnerships for projects in education-related information technology.

Key Inputs

CEN is a mid-level school which derives its resources from payment for services rendered.

The use of computers for educational purposes was made possible by initial agreements with EMBRATEL and later with TREND. The agreement with TREND allowed for the building of four laboratories, each with twelve computers, used in classroom activities today.

The physical structure of BITCEN consists of two rooms:

- The first is dedicated to research and development as well as general use by students; it has two computers equipped with multimedia kits to be used for general work, one computer that is used by the 24-hour school bulletin board system (BBS), one color desk-scanner, and one color printer.
- The other is dedicated to internal and external classes, and it has five computers equipped with multimedia kits and one laser printer.

Brief History

Since its founding in 1960, CEN has not limited its educational activities to the classroom only. In implementing its curriculum, it takes into account the integration of activities developed in alternative spaces such as libraries, laboratories, playgrounds, auditoriums, etc.

The concerns and guidelines of the school were expanded during the curricular reform of 1970, when the technical team introduced a new area of study: cybernetics, or the study of issues related to the control and communication of animal and machine. The document containing the curricular reform proposal included computer science as an area belonging to the new cybernetic knowledge.

In 1982, CEN established its first agreement with EMBRATEL for using information technology in education. Both entities decided to unite human and material resources to employ computers in education. A multi-disciplinary team composed of psychologists, teachers, and professionals in the computer field launched this work.

Despite positive results, beginning in 1990, EMBRATEL changed its policy on education and failed to renew its agreement with CEN. However, CEN continued to finance its information technology program exclusively throughout the following year.

In August 1991, the Educational Center established a partnership with TREND to continue work in information technology applications for education. The underlying theoretical concepts were very similar to the ideas expressed in Seymour Papert's book *Mindstorms—Children, Computers and Powerful Ideas*. In the book, Papert describes an educational philosophy (called LOGO) whereby the computer is a tool allowing the child to explore an array of ideas in science, mathematics, and model creation. In this context of ideas, the computer is no longer simply a means of transmitting information but also one through which the child can formalize his or her intuitive knowledge. This approach represented an advance in CEN's use of computers in teaching.

The advance, however, did not occur without careful consideration by CEN's technical team. There was one positive factor: since the 1960's, the school had been adopting new methods of mathematics education and, in general, had been paying attention to the issues raised by Piaget in his so-called genetic psychology.

In March 1994, CEN inaugurated its Multimedia Sector. As its work progressed, this new sector became known as BITCEN. BITCEN's first activities consisted of a broad spectrum of research on the use of computer resources in a school environment. Such research defined and consolidated previous objectives and added the assumption that computer use in teaching goes beyond questions of hardware and software.

In December 1994, a free electronic bulletin board system, BBSCEN, was created. Today this system boasts approximately 370 users (most of them students in the school). It is managed by a team of students and alumni. As a means of improving communication abilities via electronic media, the BBSCEN allows its users to exchange messages, files, and school work, as well as to become interested in interactive systems. In addition, efforts have been made to expand the community's access to the Internet, which is only available through a commercial provider.

CEN's activities were greatly aided by the purchase of additional computers and other equipment in May 1995. Since then, approximately 32 two-month courses have been instituted, open to both students and the greater community. The students receive constant assistance—both in executing school work requiring the use of computer resources and in obtaining information on purchasing equipment and using software.

Study groups composed of students and teachers were created to explore various possibilities for computer utilization. The only prerequisite for forming such groups was that some of the participants hold some prior knowledge of computers. The main goal of the groups is to train people to assist in ongoing and future multi-disciplinary projects.

BITCEN's philosophy is that, in school, "one should learn how to use the computer by using it," and thus it proposes and supports those projects in which the greatest number of students and teachers can be involved.

In 1996, CEN signed a technical and scientific cooperation agreement with the Federal University of Rio de Janeiro (UFRJ) to expand its possibilities for research and application.

Results

Within the CEN community (approximately 1,800 students), BITCEN involves a growing number of students in its work every day. The following list is a sample of the multi-disciplinary, multimedia projects already developed or in progress at CEN:

- *Multimedia document:* "Projeto Ouro Preto, Poesia e Arte" (Ouro Preto Project of Poetry and Art), produced by students in their second year of high school in 1995;
- *CD-ROM*: an "album" of school life by third grade students in 1996;
- *Graphic computing*: "To See in 3D," created by students in their second year of high school, together with the Mathematics and Esthetics Appreciation departments;
- *Graphic editing*: sixth and seventh grade newspaper, as well as a CACEN (Student Council) newspaper;
- *Student courses*: numerous software products used in the various disciplines of the curriculum;
- *Art on the computer*: activity developed in cooperation with the Atelier project, involving students from the eighth grade and the first year of high school; and
- Expansion of facilities and course offerings to the greater community, students, and teachers.

Observations

With the evolution of work in the computer education field, CEN, along with other institutions, is becoming a point of reference for schools and specialists in the area, as are its students in general. It has also been developing activities that favor the autonomy of student thought, by exploring not only the entertainment factor associated with computers but also the creative resources it offers.

Conclusions

The technical team of CEN is currently planning a school curriculum reform to create a teaching model, based on new paradigms of information and learning, in order to meet the needs of the school populations of the next millennium.

TEACHER TRAINING PROGRAM ARAUCO EDUCATIONAL FOUNDATION

by Sergio Martiníc and Lucía Reyes

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Celulosa Arauco y Constitución S.A., a private forestry corporation, has cellulose plants in the Arauco community, Chile's eighth region. This area is characterized by high levels of unemployment, poverty, infant mortality, malnutrition, and a below-average standard of living.

To assist in the social development of the Arauco region, the company has created two private high schools to serve the children of its employees and the surrounding community and has established an Educational Foundation to promote the development of the region. To date, the Foundation has instituted educational improvement programs in 22 rural Arauco schools and is designing an additional program for the community of Cañete in the same region.

This represents a pioneering case of a company's support for municipal schools. The investment is being made in basic education because the level of development an adolescent or adult can attain is directly related to the quality of elementary education.

Brief Description

With the company's financial support, the Arauco Educational Foundation has implemented a continuing education program for teachers and administrators. The program reached 110 teachers in 22 schools in the Arauco community from 1991 to 1994 and has recently extend service to Cañete.

The three-year program was designed and directed by an interdisciplinary team of psychologists and educators. The program proceeded in three distinct phases: evaluation design (four months), implementation in schools (two years); and follow-up (one year), including the implementation of permanent training.

Training has been conducted using diverse methods, such as day trips, monthly meetings, on-site visits, training workshops, and psychological education support, in order to facilitate staff development and professional exchange. Training courses emphasize basic skills and self-esteem, using teachers' prior classroom experience as a base for improving future performance.

Objectives

- To strengthen participating teachers communication and mathematical reasoning skills and improve their self-esteem; and

- To encourage pedagogic reform within each of the participating schools.

Key Inputs

The Arauco Foundation provides funding for a group of highly qualified professionals and the educational materials needed for training.

Results

To evaluate how well the program has met its objectives, teachers' achievements were measured in terms of knowledge, methodology, self-esteem, attitudes, personal attributes, and interpersonal relations. A variety of instruments were used, including objective tests of knowledge, surveys, personality tests, attendance records, and self-evaluations.

The results of this evaluation revealed a high degree of flexibility among teachers in the program. Although participation in the program is voluntary, teacher participation has been high and stable over the three-year period. For example, attendance at meetings has never fallen below 90 %—even when teachers had to overcome such obstacles as traveling

Fourth Grade Scores Above the National Average in Participating Schools (Percent)

	Math	Spanish
1990	14.3	28.6
1992	25.0	37.5

long distances or coping with floods. Among the most important results are improved personal and professional self-esteem, work methods, attitudes, and communication within the education field.

Student performance on national exams (such as the SIMCE) in reading, writing, logical reasoning, and math also improved markedly, as did self-esteem. Illiteracy levels decreased from 20 % to 6 % among third graders. In the eighth grade, the level of sub-standard readers (potential illiterates) decreased from 19 % just over 3.3 % over the three-year period. Mastery of fundamental topics in math, such as problem-solving and logical reasoning, has improved significantly at every level from second to eighth grade.

The table above shows the change in the percentage of fourth graders in participating schools who exceeded the national average on the SIMCE exam between 1990 and 1992. As the table shows, from 1990 to 1992, the percentage of scores above the national average increased significantly in both math and Spanish, only two years after the program began.

Moreover, the program has motivated teachers and students to excel, resulting in genuine changes in performance and attitude. The company's image has also improved substantially in the Arauco community.

Observations and Conclusions

This is one of the few instances in which a company has supported educational improvements not only for its own personnel, but for the local community as well. Celulosa Arauco y Constitución S.A., through the Arauco Foundation, has committed itself to improve the quality of education in poor schools in public school districts, as well as in the private schools it administers.

The general design of the program has proven to be effective. The combination of different types of training and exchanges—including day-long workshops, on-site visits, monthly meetings, scholastic support workshops, and psychological education—has worked well. The program has a solid foundation and can be adapted to operate in other schools with similar characteristics.

Results are likely to take time to achieve, since they require personal changes in teachers. Once completed, however, teachers will not need constant, external intervention to improve their teaching techniques. Thus, while change is slower, it is probably more permanent.

Community participation is another key to the program's success. The fact that the initiative was guided by a concrete proposal with clear objectives and methodology and had a clear, established duration, allowed people not directly related to the educational process to participate in project implementation. This had the added benefit of improving communication between the business and education communities.

Chile

SAN JOAQUÍN SCHOOL/ MARCELO ASTORECA FOUNDATION

by Sergio Martiníc and Lucía Reyes

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San Joaquín School, a private, subsidized primary school (K-8) in the Santiago area, provides an innovative model for raising student achievement in areas of extreme poverty by providing a solid financial and administrative structure.

Central to the school's efforts are the activities of the Marcelo Astoreca Foundation. Directed and administered by a board of directors composed of nine professionals and businesspeople, the Foundation also retains a group of permanent advisors. The Foundation has two central tasks: to obtain financing to develop the project, including funding to cover infrastructure improvements and operational costs; and to establish an administrative system in accordance with the requirements of a business.

The program has sought to support quality education through the establishment of a curriculum that takes into account labor market requirements and demands; increased attendance of students and instructors; a strong results-oriented approach; and incentives to seek new educational methods.

Brief Description

The San Joaquín School is located in the Renca community, one of the poorest areas in the Santiago metropolitan region. The community is marked by high levels of teenage unemployment and drug addiction. According to the school's own data, approximately half of its students' families characterize themselves as incapable of escaping from poverty by their own means.

The project is based on the firm conviction that even the poorest students are capable of a high academic performance if placed in a program which addresses their particular needs. The project focuses not only on academic content, but on the learning process as well. Particular emphasis is placed on the development of independent thinking, responsibility, and creativity in the workplace. The current study plan was proposed by Chile's Ministry of Education, and has adopted proven methods to reinforce and develop the areas where the greatest difficulties occur.

The program spans an entire school day. All students receive breakfast and lunch, thus improving their diets and ability to concentrate. A library, donated by the Andes Foundation and filled with games and texts geared to help students complete their homework assignments, attracts children of all ages. In addition, the schools has contracted a physical education instructor to lead students in sports and other physical activities.

The school serves 360 students from kindergarten through the eighth grade and plans to extend its instructional services to the high school level in the future.

Objectives

- To raise the standards of and expectations for education for children in extreme poverty;
- To help students rank with their peers in private schools in Chile;
- To imbue individuals with moral values and provide a solid spiritual base; and
- To be a model that future schools will follow as decentralization opens the way to more creative and flexible solutions to Chile's educational problems.

Key Inputs

The Ministry of Education provides 46 % of the initiative's financing. The remainder comes from two sources: voluntary, private support to "adopt" a child and corporate donations for specific projects. This funding approach has allowed the school to improve its infrastructure, organize a library, and establish a computer center.

The school directors have opted for a homogeneous team of young teachers with a solid professional/ educational background, who display strong motivation, initiative, and openness to change. In view of the professional challenges and demands posed by the program, the foundation has decided to offer the teaching staff a relatively high level of compensation, approaching that of a private school in upper-class Santiago.[1]

Other positive results include: only three drop-outs in a five-year period; average attendance rates of 96%; 100% enrollment by graduating eight graders in prestigious vocational/technical middle schools; and a 150% surplus demand for enrollment slots in San Joaquín. Such excess demand reflects the interest and prestige the school has generated in the community.

Observations

The San Joaquín project has successfully demonstrated one method for improving the quality of education in poor schools and introducing curricular and pedagogical innovations in classroom teaching.

Its success can be attributed in part to: directorial leadership, homogeneous and committed teaching staff, confidence in the innate abilities of its students, and the application of new programs which address the particular learning needs of the population served.

Fourth Grade Performance on SIMCE Exams by Type of School, 1992 and 1994

Type of school	1992 Spanish	1992 Math	1994 Spanish	1994 Math
Private	86.8	85.2	83.7	86.4
Public	64.1	63.7	63.4	65.4
Private-subsidized (all)	63.7	68.3	69.9	71.4
San Joaquín	69.9	73.5	80.0	78.7
National Average	68	67.2	63.7	65.7

Source: Fundación Marcelo Astoreca, 1995

Results

The results to date have been significant. Virtually all students (around 97%) learn to read in their first year, and sustain steady improvements in reading speed and comprehension in successive years.

As the table above shows, from 1992 to 1994, San Joaquín's fourth graders greatly exceeded the national average in Spanish and math achievement on the National Education Quality Assessment System (SIMCE) exam and nearly matched their peers at private schools.

As the table also shows, San Joaquín students' performance improved over the two year period and their scores are among the highest in the community.

Conclusions

Two important conclusions can be drawn from the San Joaquín model. First, the financing scheme could be replicated, with potentially favorable results. The combination of individual contributions and corporate support for concrete projects, such as libraries and laboratories, promises success elsewhere.

Secondly, the use of a technical proposal with clear objectives and widely recognized educational goals, in this case, raising the school's academic standards to those of private schools and becoming a model for other schools, helped ensure the program's success.

[1] Educational statutes require a minimum salary of Ps.5,200 (approximately US$13) per teaching hour for educators in the public sector. According to estimated figures, teachers in the private sector receive double this amount.

HIGH TECHNOLOGY EDUCATIONAL CENTER (CEAT)

by Sergio Martiníc and Lucía Reyes

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In 1988, the Andes Foundation, in conjunction with experts from the ORT World Union (the Organization for Educational Resources and Technological Training), created the High Technology Educational Center (CEAT) to train secondary school students in high-technology skills and specialties. The initiative quickly won the support of Chile's Ministry of Education, the city of Concepción, and numerous important national businesses.

Brief Description

The High Technology Center, which began its activities in March 1993, is an alternative secondary institution providing technical-professional training. On May 6, 1994, the President of the Republic officially inaugurated the Center. At full capacity, the Center plans to support 48 classes a year, with a duration of approximately 30 hours each and an average of 15 students per class.

To contribute to Chile's process of geographic decentralization, the Center was located in the south of the country; in the eighth region. This region of Chile is known for its dynamism and entrepreneurship, serving as a hub for several vital industries, including forestry, fishing, metals, manufacturing, petrochemicals, agriculture, and construction. Despite this economic activity, however, data from the National Institute of Statistics shows that youth unemployment remains high. Nearly 14.7% of local youths aged 15-19 were unemployed as of April 1995.

The existence of this high level of youth unemployment alongside the entrepreneurial development of the region demonstrates the inadequacy of the educational system in providing technical and professional training to respond to current technological demands and labor market requirements. This shortcoming, in turn, continues to lower the region's standard of living, decreasing the demand for further technological development and discouraging future graduates of technical-professional schools.

CEAT offers an effective alternative in technical-professional education to handle this problem. In particular, the Center's goal is to produce qualified technicians who can increase production, with a focus on export industries.

The Center offers specialized training in several basic areas of modern production technologies: industrial electronics, electronic instrumentation, precision mechanics, and internal combustion engines. To be certified as a technician in any of the above cited specialties, students must pass all course work during the four years of instruction and complete 600 hours of professional training.

CEAT pays particular attention to helping its students view themselves as independent entrepreneurs. Thus, the program does not use external controls such as inspector generals or floor inspectors. Instead, the Center emphasizes the value of self-discipline and internal control.

Similarly, the Center has replaced the prevailing notion of preparing narrowly educated technical operatives with that of training specialists who can adapt to the ever changing demands of technology.

In well-equipped laboratories and workshops, students can integrate theory and practice, as well as science and technology. Needless to say, computers are widely used. Students work at computer stations individually or in groups, depending upon their tasks. Special attention is paid to industrial safety and risk prevention.

Objectives

The Center pursues the following objectives for itself, the region, and the country:

- To produce specialists who are proficient in key aspects of high technology, including the ability to adapt to continuous change, work on multi-disciplinary teams, and solve problems efficiently;
- To enable workers to find solutions to practical problems by using cutting edge technology;
- To instruct teachers in the areas of technical and professional education throughout the country; and
- To produce and disseminate teaching materials for technical education, that can be used in CEAT and similar centers.

CEAT pays particular attention to helping its students view themselves as independent entrepreneurs....the Center emphasizes the value of self-discipline and internal control.

Key Inputs

The investment level for the first five years is approximately US$9 million. Funding has come from a variety of sources, including: the Andes Foundation (44.5%); the Ministry of Education (29%); the ORT World Union (10%); 47 private companies (7.5%); the City of Concepción (3.5%); and the Center itself (5.5%).

Results

Since this project has only been underway for two years, there are still no evaluations of its internal management, the quality of education being offered, and/or career opportunities for graduates. However, the program has had an important impact. One indication of its initial success is the strong demand for admission. In its first year, 968 students applied for the 180 available vacancies; in the second year that number increased to 1,018.

Observations

The project is a wide-ranging effort that requires infrastructure, equipment, and professional expertise of the highest caliber. It aspires to be an innovative model for technical and professional education.

The strategic location of the Center in an area rich in entrepreneurial activity is important. The project seeks to draw on, and develop, a high demand for technical specialties in the area.

Conclusions

Given its dimensions and costs, this project would be difficult to replicate. However, it demonstrates the possibility of tapping different types of support from distinct sectors — a combination that might prove useful for other endeavors. In particular, this partnership exemplifies the benefits of collaboration between the private and public sectors in a long-term, programmatic initiative.

SAN JORGE SCHOOL/ PAPER AND CARTON MANUFACTURING CO. (CMPC)

by Sergio Martiníc and Lucía Reyes

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In December of 1980, the Laja Paper and Carton Manufacturing Company, Inc. (CMPC) established San Jorge School to meet the basic educational needs of the preschool, elementary, and secondary school-aged children of its workers and management. With high quality schooling now available locally, families could avoid sending their children to other cities to pursue an education.

Children of CMPC employees receive first priority in admissions. The company subsidizes between 60%-75% of these children's tuition in accordance with their household income. Those with greater need receive a greater share of financial aid. The school is also open to children and adolescents in the Laja community and its vicinity. These students, however, are not subsidized by the company and must pay the full monthly tuition fees.

The Educational Corporation of San Jorge was established to ensure the school's autonomy from the company. Any worker over 21 can become a member of the corporation. A seven-member directorate oversees the corporation. The president, vice president, secretary-general, treasurer, and the remaining three Directors are elected by direct and secret ballot at the Annual General Assembly Meeting and serve for one year; corporation *members* can be re-elected indefinitely.

Brief Description

The project aims to transform traditional education by refocusing curriculum and teaching methods on the individual. Students are viewed in the holistic sense. Cultural components of the program address students' cognitive, moral, and spiritual development. Methods which inspire students to learn are stressed.

To this end, the program has adopted several innovations. The number of hours and activities for each course have been increased. Class size has been limited to no more than 30 students. The school has also created new terminology to reflect its philosophy. For example, Spanish is now called Language and Communication. A mandatory weekly refresher course is provided for all low-scoring students. Finally, students in the bottom 10% of the class, along with those who request additional help regardless of their grades, obtain weekly tutoring.

In order to enroll, students must take an entrance exam. However, the object of this exam is not to select or reject applicants, but rather to discern the candidate's level of development so that the program can address his or her weak areas.

The San Jorge School began its activities on March 9, 1981 with ten classes, ranging from preschool through eighth grade with an enrollment of 322 students. In the 15 years since then, over 4,288 students have enrolled in the school.

Objectives

The program's general goal can be summarized with a single phrase, "to provide a quality education." This entails education that integrates superior academic training with preparation for a lifetime of individual self-growth—instilling qualities to help individuals be both free and responsible citizens.

Moreover, the institution encourages those in the educational community—including teachers, students and guardians—to assume an active role in both the learning process and in community affairs.

Key Inputs

The project is financed by CMPC, which assumes approximately 70 % of the total costs of educating each

child. With this financial support, the school has been able to upgrade its infrastructure, buy top-quality equipment, and offer teachers above-average salaries.

The school also offers an incentive system for teachers similar to the one CMPC offers its own employees. Thus, teachers receive a cash bonus for every point increase that their students attain on the National Education Quality Assessment System (SIMCE) exam.

Results

Over the past 15 years, the San Jorge School has achieved good qualitative and quantitative results. Internal evaluations show that graduates are known in the community for their solid training and enterprising spirit. Quantitatively, the school's success is illustrated by its high ranking on the SIMCE evaluations. Recently, student scores placed San Jorge within the top 4 % of schools in Chile in terms of SIMCE performance. The following table illustrates this success.

SIMCE Results at San Jorge High School

GRADE	YEAR	SPANISH (%)	MATH (%)
Fourth	1992	88	90
Fourth	1994	90	94
Eighth	1991	71	73
Eighth	1993	87	91
Tenth	1993	79	76
Tenth	1994	84	78

Source: San Jorge School

Since the incentives program for teachers began, performance on the Academic Aptitude Test taken by high school seniors has increased an average of 79 points. In 1994, 87% of the school's graduates were enrolled in college.

Only 1.8% (78) of students have failed a grade in the 15 years since the school's inception, and San Jorge School now has one of the highest passing rates in the country.

Observations and Conclusions

An important factor underlying the program's success has been the link between the educational institution and its financial supporter. CMPC invested in education, and, in turn, the school has provided tangible educational accomplishments. Demonstrated success has induced the company's continued support. In this manner, a true synthesis has occurred. The institution has acquired company's traits, such as creativity and boldness. The business, for its part, has adopted the school's commitment to educational development. As a result, both the company and the institution are contributing to the quality of education in Chile.

Other positive factors have been the director's leadership and the expertise of teaching and administrative technical teams. This leadership, along with the achievement of significant results in a short period of time, have helped overcome many obstacles, including the initial wariness, indifference, and fear of change in the community.

XXI CENTURY LEADERS/ PRESIDENTS' FORUM

by Hortensia Manrique de Llinas

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Brief Description

The XXI Century Leaders project objective is to instill quality in high schools, based on the philosophy of performing things well from the onset and continuously looking for opportunities to improve. The idea is to transform not only the people who make up the educational community (directors, teachers, students, and parents) but high schools as well, by focusing on total quality, including the necessary tools and methods needed for continued improvement.

The project is guided by a clear conception of quality education aspiring for an integrated approach to the training of the individual. This holistic method encompasses the development of his/her moral, intellectual, social, emotional, and physical potentials, ultimately contributing to the transformation and well-being of the surrounding culture and environment.

The overall aim is to improve the efficiency and effectiveness of education through a process of continuous improvement. This effort is derived from the recognition that students will need a better set of knowledge, abilities, and skills if they are to function and compete in an interconnected and quickly changing world.

The effort is spearheaded by several company presidents who have implemented total quality programs within their own firms. In a collaborative endeavor, company presidents contribute their time and expertise of quality management to schools. The initiative is being carried out in 12 private high school pilot programs. Once the pilot program is evaluated, supporters will strive to expand it to at least 500 educational institutions throughout the country.

Objectives

The project seeks to develop and implement total quality programs in education between the business sector and educational institutions.

Specific goals include:

- Imparting a uniform understanding of the basic principles of quality to principals of the high schools, students, administrators, and staff, so that the concept of continuous improvement may be applied in all school activities;
- Developing an educational project with active participation of the entire educational community, taking into account the institutional philosophies, including needs and expectations of different groups;
- Promoting the integrated training of students through formal and informal education programs;
- Increasing organizational efficiency by adopting effective teaching methods and flexible administrative procedures that satisfy the needs of clients;
- Developing a society that favors decision-making based on facts and data; and
- Implementing mechanisms to maintain informational exchanges with others.

Key Inputs

Company presidents contribute their leadership, commitment, and time. In particular, one of the firms linked to the project, Meals of Colombia, organized and financed an initial event to train the presidents, as well as furnished the methodological material to help launch the initiative.

Brief History

The project began in 1989, when a group of managers became interested in the permanent improvement of their companies, in order to meet the challenges of

operating in a more open economy as well as coping with the country's problems. Thus, they decided to form a permanent group to exchange experiences, analyses, and reflections about their firms and the nation as a whole.

Hence, the Presidents' Forum was launched. Today, the Forum unites 120 firms —the largest members of the Chamber of Commerce of Santa Fé de Bogotá. Each company has at least 50 employees and annual sales of $2 million or more. All the firms apply principles of modern management and have implemented quality programs.

The Forum's mission is to contribute to the improvement and the development of its members, their companies, and the nation through teaching, the exchange of experiences, and teamwork. The Forum promotes civic spirit among the managers, fosters their personal growth and that of their families, and encourages competitiveness and the internationalization of companies.

The Chamber of Commerce supports the Presidents' Forum, and two members of the Forum's Board of Directors are a part of the Chamber's Board of Directors. Work is organized in groups that deal with specific subjects, such as benchmarking, re-engineering, and social responsibility.

In 1993, various Forum members traveled to Boston to attend a course on quality organized by the American Association of Quality. There they learned of the Koalaty Kid program, which improves the quality of primary education through team work between high schools and managers. Inspired by the positive results of this experience and concerned with the problems that the educational system faces in Colombia, they proposed a similar initiative to other Forum members upon their return to Colombia.

The group joined the Quality Corporation, an entity that promotes the development of quality programs in firms and offers a national prize under the same name. Together, they organized a seminar to present the experience of the Pitágoras School of Brazil, which also links the business sector and schools in a quality program. The event was attended by representatives of the Ministry of Education, principals of various public and private educational establishments, teachers from different regions of the country, and managers.

Motivated by the seminar, various high schools became interested in participating in the XXI Century Leaders project. A group of 12 company presidents and 12 high school principals was formed to initiate the experience. At the beginning of 1994, the firms, led by Meals of Colombia, organized a seminar for principals and managers. There, basic concepts were presented and some experiences concerning quality programs in education in the United States and Brazil were examined. Strategic planning, evaluation, and systems of participation and teamwork were also discussed.

Following the seminar, company presidents and high school principals visited two educational establishments, supported by private business, which were utilizing the principle of continuous improvement. Representatives of each firm and each high school also initiated meetings to learn more about one another and establish trust.

High schools informed the educational community about their decision to initiate a quality process. Each participating school then formed a Quality Committee and began to define a work plan. From the start, presidents assisted each high school in establishing various activities.

The project is led by a rector in each school, who is supported by a coordinator and the Quality Committee. The Quality Committee consists of the directors, teachers, and student and parent representatives. It addresses issues of strategy, curriculum, and evaluation, among other aspects.

The entire process requires four steps. The first step is preparation. The question of precisely what to improve is examined and some answers are suggested. The cultural and social surroundings, the institutional structure, channels of communication, and participation are investigated. The profiles, needs, and expectations of the staff, students, and parents are also explored. Thereafter, an institutional diagnosis and a plan to implement improvements are prepared.

In the second step—implementation—the mission and the institutional vision are defined; organizational

values, policies, and principles are revised; challenges and opportunities are addressed; strategic areas are pinpointed; an internal evaluation is conducted to determine strengths and weaknesses; and key actions to develop each of the strategic areas are outlined.

In the third stage—quality education—the contents of education are defined, a budget for developing the activities is established, and the plan of implementation is completed.

In the last step, improvement occurs. Systems of public inquiry and mechanisms of comparison with others are defined, measurements are taken to aid in the follow-up process, and the impact of the process on different actors is evaluated. From this evaluation, further steps are taken to promote additional improvements.

Results

One of the most positive results has been the increase in enthusiasm and commitment by various participants. Moreover, the initiative has opened the process of decision-making at schools, increasing participation among students and other members of the educational community.

The process has also helped schools deepen their knowledge of the needs and expectations of different social classes. This has aided school activities to remain in touch with the realities of the community.

In addition, the program has encouraged schools to adopt a systematic approach to their planning and operations, including the management of their educational institutions as organizations with objectives and goals.

Participants have also benefitted from the exchange of experiences with other schools. This helped principals expand their horizons, replacing the traditional inward focus that most institutions had.

Moreover, the theme of quality has created a common language that permits communication and exchanges between sectors, people, and institutions with different interests. In particular, firms and schools have gained better understanding of one another.

For these reasons, the project has become a valuable tool in implementing the Institutional Educational Plan (PEI), which all schools are required to carry out according to the new General Law of Education.

Observations and Conclusions

The project exemplifies the business community's growing interest in education. The urgent need of firms to increase their competitiveness in international markets, as well as the requirements of operating in a more open economy, have sensitized managers to the lack of quality education. It has become evident that the educational system is not equipping students with the knowledge, abilities, and skills that they need to function in today's fast paced marketplace.

The strong commitment of business leaders' energy and experience distinguishes this initiative.

EDUCATION IN TECHNOLOGY/ CORONA FOUNDATION

by Hortensia Manrique de Llinas

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Brief Description

The Colombian Ministry of Education is working to incorporate instruction in technology into the nation's school system. Concepts and methods are being tested and refined in 12 pilot projects at 12 public and private basic educational establishments throughout Colombia. The ultimate aim is to incorporate technology education in every school in the country by the year 2000.

The objective is not to train technicians, but rather to introduce technology into every aspect of school life in order to promote learning and integrate technical and academic education. The goal is to present technology as a practical and pertinent activity that stimulates students' creativity, innovation, and interest in learning, while developing their design and production skills.

The sustained support of the Corona Foundation has been vital to the success of the project. With the Foundation's assistance, a core group of teachers in each of the 12 pilot high schools received special technical training. These teachers then formed inter-disciplinary groups within their schools which examined ways to enact the technology project (e.g., changing the curriculum or adopting new teaching methods) and helped launch the effort.

Within the pilot schools, students and teachers work together to select a project theme, which must address an important aspect of the students surroundings. Classes then work to define the problem that needs to be solved, generate and communicate ideas, develop models and instruments to solve the problem, and evaluate the process. Students do not use notebooks; instead, they use "process diaries" to note activities undertaken, as well as achievements, difficulties, and personal reflections as the project proceeds.

Within the Ministry of Education, the Department of Pedagogical Investigation and Management has established conceptual guidelines and work methods governing various aspects of the project. These include the assistance, training, and promotion of exchanges among participants in the various pilot programs.

The Corona Foundation provides technical assistance, co-finances training events and information exchanges, and provides teams, tools, and teaching materials to the pilot groups. Together with the Ministry of Education and the National Pedagogical University, the Foundation participates in the National Follow-Up Committee.

At the Foundation's request, Goldsmiths College, a

unit of London University, collaborated in teacher training by offering a practical course to 20 teachers in London. It also conducted follow-up visits to the participating high schools.

Once a new curriculum has been developed and existing pilot projects have been evaluated, the Ministry hopes to disseminate results and incorporate technology education in every school in Colombia.

Objectives

The project has two main objectives:

- To help students meet the challenges posed by modern society, including the opening of the Colombian economy to the world market, through improvement in the quality of instruction; and
- To incorporate the technology education component at every level of basic education beginning at the pre-school level.

Specific goals include:

- Designing a technology curriculum for each grade;
- Establishing a pilot project in each of Colombia's political-administrative divisions;
- Forming a system to train the staff of the different pilot centers;
- Supplying the basic resources to create a technological environment in schools linked to the project;
- Helping implement, follow-up, and evaluate the different programs; and
- Establishing a permanent national system of research and communication among the different centers.

Key Inputs

The Corona Foundation has provided technical assistance to the professionals carrying out the project, financed travel and lodging for participants in the Goldsmiths College course, donated the necessary equipment to the schools, and provided logistical support for training and information exchanges.

The Ministry of Education created a professional advisory group within the Department of Pedagogical Investigation and Management. This group is in charge of providing technical assistance and training to the different high schools, performing follow-up, and encouraging exchange.

The educational establishments provide logistical support and grant staff the necessary time for training courses, project-related activities, and workshop attendance.

Similarly, the Foundation's association with the government in projects of mutual interest increases the Foundation's social impact in improving local living conditions.

Brief History

The project was designed to help the educational system respond to the challenges presented by the new model of development adopted by Colombia in the late 1980s, which is focused on opening the economy to international markets. The effort aims to prepare students to cope with scientific and technological advances and become more competitive in the workforce.

The proposal originated with the Ministry of Education's 1991 publication entitled "Raising Technological Education in the Context of General Education" (*Replanteamiento del área de educación en tecnología en el contexto de la educación general*). The report noted the urgent need to reform technology instruction in the country. According to this publication the tendency to confine technology training to vocational-technical schools created a false dichotomy between academics and technology and between theoretical and practical knowledge.

In 1992, a well-received proposal was submitted to representatives of the educational community, the private sector, and society in general. It was at that time that the Corona Foundation became interested in the pilot program.

The Foundation's interest in education dates to its creation in the 1970s. It currently directs around 40% of its funds to educational activities. Areas of interest include: improving the quality of education; increasing the relevance of curriculum to the requirements of the productive sector; and promoting links between the educational system and private firms.

After the 12 public and private educational establishments were selected for the pilot project, a training workshop was organized for representatives of each high school. Participants received training to organize inter-disciplinary work teams in their schools and to disseminate the training they received. Each team prepared a document diagnosing the strengths and weaknesses of the educational institution, a pedagogical and curricular proposal, and a work plan.

In 1993, 20 instructors traveled to the University of London's Goldsmith College, where they completed a five-week training course. There they learned about the British model of educational technology, visited specific programs, and explored themes such as food, textiles, and computers which would serve as a base for their own projects. Upon returning to Colombia, they reviewed the initial proposals, adapting what they had learned to the Colombian setting. In 1994, a mission from the University of London made follow-up visits to the different pilot projects. The advances achieved by each of the projects were very impressive.

Currently program officials are in the process of systematizing and evaluating the pilot experiences. In an effort to promoting the initiative, participants plan to publish a book, written by the instructors with the assistance of the participating entities.

Results

Although there still is no formal evaluation of the pilot projects, some results are evident. The initiative coincided with the promulgation of the General Law of Education in 1994, which included a new and fuller conception of technical education. It also motivated the development of a masters degree program in technology for professors at the National Pedagogical University, the first of its kind in the country.

Enthusiasm for the new activities has grown among the instructors who have participated in the project. They have also changed their view of their role in the classroom. Instead of teaching material through repetition, they now ask students to actively investigate problems. In their new role, teachers become managers of activities and contribute to the construction of knowledge. Additionally, teachers have learned how to work on project basis. In so doing, they have recognized their own need for further training and study. Meanwhile, relations between professors and students are closer. Communication among instructors and teamwork approaches are also more prevalent. The entire process has stimulated reflection on teaching methods. The concept of student evaluation has also been reformulated, giving priority to the process and not to the final grade.

Among students, teamwork has been fostered, awakening curiosity and creativity. Students have developed more critical and analytical thinking skills. In turn, this fosters more student autonomy in learning how to face and solve problems. Students have developed new skills and a sense of responsibility in the management of resources as well.

Finally, the project has motivated the active participation of parents, who have begun to understand the importance of technology in education. In many cases, parents help to obtain materials and resources for student's work and become directly involved in the activities.

Observations and Conclusions

The project presents an interesting example of collaboration between the government and the private sector, with positive results for the development of the country.

The Corona Foundation's participation in the project has had very favorable consequences. The active presence of the Foundation has made it possible to enrich the project both conceptually and methodologically. The Foundation's support has not been limited to economic input, but has extended to technical assistance through Foundation personnel who are specialists in the field.

Additionally, the Foundation has provided critical support for training both the technical team and the staff of the educational establishments participating in

the pilot program. It has been a key proponent in launching the initiative, implementing the pilot program, and perhaps most importantly—for sustaining the project through time, ensuring the resources to continue training and support services. The Foundation has also sought co-financing for the project from other organizations in order to guarantee a steady monetary flow.

The Foundation's role as an intermediary between the private sector and the government demonstrates how businesses can broaden their participation in social development projects beyond the economic sphere. In this instance, the Foundation contributed to both the conception of the project and the formulation of public policy. Similarly, the Foundation's association with the government in projects of mutual interest increases the Foundation's social impact in improving local living conditions.

The private sector's interest in social themes in general, and in education in particular, is intensifying in Colombia. The internationalization of the Colombian economy, as well as the problems of generalized violence affecting the country, have sparked managers' interest in education. Since 1993, various foundations, including the Corona Foundation, have organized forums for private and public sector discussion of ways to improve coordination between the productive, educational and training sectors.

The Education in Technology program presents an excellent example of the possibilities for collaboration between the educational and productive sectors.

ACTION FOR BASIC EDUCATION/ EDUCA

by Julio Valeirón

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Action for Basic Education (EDUCA) is a nonprofit conglomerate formed by important businesses and businesspeople to improve the quality of education in the Dominican Republic. Since its inception in 1989, EDUCA has viewed the business sector as a key force in the development of education in this country.

Brief Description

Although EDUCA's activities are centered mainly in the National District, it also lends support to various Ministry of Education programs and has assisted indigent communities in the southern provinces. EDUCA's administers two major programs: Adopt-a-School and Private Initiatives for Elementary Education (P.I.P.E.). The first program is supported by the Dominican business community, along with various national and international social and educational organizations; the second is supported by funds from the United States Agency for International Development (USAID) and the Dominican government.

In general, EDUCA's Adopt-a-School program consists of an agreement between a business, a school, and the community in which these entities function. The objective is to help the school meet financial requirements and thereby raise the community's academic and cultural levels. The P.I.P.E. program consists of several subprograms which provide a base for the sponsorship program. Subprograms may provide training for directors or teachers, information on production, or assistance in the distribution of books, textbooks, and other teaching materials among poor schools in Santo Domingo's Adopt-a-School program.

Other P.I.P.E. subprograms are working to develop achievement tests in language and math at the elementary school level, to create an information system for education, and to support a variety of projects designed to achieve greater community participation in the educational process. School directors have been given increasing responsibility throughout this process. EDUCA has also become an important forum for the development of new activities and a source of educational information for diverse sectors.

In addition, EDUCA has contributed to the national dialogue on educational policy and to the development of the educational aspects of the Ten Year Plan. Furthermore, it acts as a mediator in conflicts, usually between teachers' unions and the governing sectors of the Ministry of Education.

Objectives

EDUCA's principal objective is to promote and support basic education by helping expand teaching capacity, providing leadership in teaching centers, and improving compensation, work, and retirement conditions. It also seeks to improve physical facilities, sport complexes, and libraries, and bring families and private business into the educational process.

Additional objectives include: increasing public awareness of the relationship between business, basic education, and the ability of the nation to resolve its problems; promoting public and private investment in basic educational services; training school directors, teachers, and supervisors; creating environments conducive to learning; and enabling disadvantaged students attending public and private high schools to gain better access to school texts and didactic materials.

Key Inputs

EDUCA's principal inputs are economic and human resources, didactic materials, and volunteers.

Brief History

EDUCA was established in 1989 by a group of professionals, educators, businesses, and individuals

committed to their community and seeking ways to work together to improve the education in Santo Domingo. By chance, they learned about a participatory process being tested by the Sisters of the Immaculate Conception in Ingenio Consuelo, a town in San Pedro de Macorís province. The schools in question had few resources, and it was apparent that they needed the participation of the community's parents, as well as the leadership of a strong director, in order to transform the educational environment.

Impressed by the Sisters success, the group decided to establish a new entity to improve the quality of basic education "through the active integration of the family and private sector in the educational process." This new institution, EDUCA, was based on the belief that education is everyone's responsibility and not the exclusive domain of the State.

At first, EDUCA concentrated on meeting emerging needs. With the help of private companies, it had the programs for the first, second, and third grades printed and collaborated in compiling and printing the school calendar for three consecutive years. In addition, it made an effort to increase and substantially improve information on basic education available in the mass media.

Subsequently, the world conference "Education for Everybody" in Jomtien strengthened the links between institutions that had previously been working in isolation, most notably, EDUCA, PNUD, the Educational Plan, the Dominican Association of Professors, and the country's main universities. Their discussions led to the formulation of the Ten Year Educational Plan and the Adopt-a-School and P.I.P.E. projects. All three collaborative efforts have grown into successful programs. The Adopt-a-School program, for example, began with 51 public and private school affiliates in 1991, and today encompasses more than 500 school-business partnerships.

In 1990, with funding from USAID, the EDUCA program was expanded to include the P.I.P.E. project. Through this new program, EDUCA launched a series of new training programs for teachers and administrators and began distributing textbooks and other didactic materials to poorer schools affiliated with the program. To date, EDUCA has published more than thirty books, brochures, and other didactic materials. Recently, the program announced the creation of the Centers for Professional Development[1], an initiative seeking to create training facilities for teachers and school administrators. In addition, the centers will serve as a clearinghouse of information for those interested in educational topics.

Results

In the six years since it was founded, EDUCA has made a number of important contributions to the development of Dominican education:

- The public is now more aware of the education environment in the Dominican Republic, as well as alternative solutions to the problems in that sector;
- The organizational structure of the Ministry of Education, Fine Arts, and Culture has been modernized;
- The business sector has collaborated in the search for and execution of new solutions;
- Indigent students now have greater access to textbooks and other educational materials;
- A professional training program was developed for directors and teachers;
- International organizations have been encouraged to assist with educational funding;
- Professional centers have been established to provide support for the teacher training and educational research;
- Scholarships have been established for Ministry of Education employees;
- Updated courses and workshops have been introduced on various educational topics;

The public is now more aware of the education environment in the Dominican Republic, as well as alternative solutions to the problems in that sector

- Certification has now been awarded to thousands of teachers-in-training;
- Steps were taken to secure the approval of the new Education Law;
- EDUCA has actively participated in many work commissions and supported programs initiated by the Ministry of Education; and
- EDUCA has mediated conflicts between the Teachers' Union and the educational authorities.

Observations and Conclusions

EDUCA is administered by a project manager, who is in charge of training and investigation, along with a group of support staff. The organization's most important work involves consulting on contract-based projects with clearly defined products. One example is the development of achievement tests in language and math, as well as the implementation of a school census.

Since the end of the 1980s, Dominican society has been increasingly concerned with the educational reality and a search for social solutions to educational problems. At times, the search has gone beyond the country's borders. In this respect, EDUCA has become a key player and beneficiary in the global context.

[1] The centers will be established in institutions which have maintained close ties with EDUCA in the past. They are: Pedro Henríquez National University (UNPHU), Santo Domingo Technological Institute (INTEC), Mother and Child Pontifical Catholic University (PUCMM) and the Félix Evaristo Mejía Normal School.

FALCONBRIDGE FOUNDATION
SUPPORTING THE ESTABLISHMENT OF ELEMENTARY EDUCATION

by Julio Valeirón

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Falconbridge Foundation was established by Dominican Falconbridge, Inc., a subsidiary mining company of Falconbridge, Ltd., Canada. The Foundation's overall goal is to help communities learn to manage their own cultural, social, and educational development. Its self-management programs operate primarily in the provinces of Monseñor Nouel and La Vega, where the mining company is located.

The Foundation has initiated four main programs, focusing on education, natural resources, health, and society and culture. Investment in these programs has greatly boosted the public image of the company and has become a corporate spending priority.

Brief Description

In order to qualify for assistance from the Falconbridge Foundation's programs, a community must participate directly in developing and managing its own educational activities. The Foundation has divided its education programs into three subprograms: adopt-a-school; strengthening family-school relations; and the construction and reconstruction of school buildings.

Objectives

The Foundation has three principal objectives:

- To help make elementary education universal, lower the drop-out rates in district schools, improve students' academic performance, and enhance the quality of education in general;
- To promote schools that treat students as

individuals and to encourage young people to participate in the educational process; and

- To strengthen democratic, participatory, self-management programs in community schools.

Key Inputs

The Foundation primarily provides aid in the form of technical assistance, such as teaching materials or furniture. These resources are provided to community groups as a starting point for a project. After that, it is up to the community to financially maintain the project. However, the Foundation does provide an assessment of the project's management.

Over the past three years, the Foundation has invested more than 10 million pesos in the field of education. In 1994, the amount reached RD$4.434 million, or 56.8 % of the Foundation's total investments. Investment in the adopt-a-school program alone reached RD$2.600 million.

Brief History

The Falconbridge Foundation's educational projects have accounted for more than half of its total activities in the last three years and have established its parent company as a responsible corporate citizen. As mentioned earlier, Foundation activities are subdivided into adopt-a-school, family-school, and infrastructure projects.

Adopt-a-School: This educational sub-program accounts for the largest percentage of the executive budget. It provides poor school districts with the financial support needed to obtain teaching resources and to procure and maintain furniture. It serves about 32 schools in Monseñor Nouel Province. In addition, it provides:

- Up-to-date teacher training;
- Library donations;
- A preschool sub-program;
- Student counseling; and
- Support for local parent-teacher associations.

Strengthening the Family-School Relationship: This part of the program rests on the notion that quality education is closely linked to the family-school partnership. It is believed that family climate, household income, and parents' level of education, especially the mother's, are key factors in academic performance.

Talks and workshops have been organized to examine these issues within the adopted schools. A total of 5,000 students, more than 700 teachers, and approximately 1,300 members of the parent-teacher association participated in these workshops.

Construction and Repair of Infrastructure: Since many school buildings are in a state of disrepair, this is one of the most active and costly projects of the Foundation. It is also the undertaking most frequently solicited by the community. In the first year of the Foundation's operations, construction and repair was the most dynamic sub-program. Most requests were concerned with building restoration. In all cases, repairs were done through a joint effort of the school community and administrators. Community participation is a fundamental prerequisite for Foundation assistance.

Results

One of the first effects of the program was that parents were more willing to enroll their children in public schools. These schools receive most of the Foundation's attention. Approximately 35 percent of the families whose children were previously enrolled in private schools have now returned to the public school system. Second, although specific rates are not available, it appears that schools participating in the various aspects of the Foundation's program experienced a decline in their drop-out rate. Third, parents are showing a greater interest in their children's education and are participating more in school meetings. Fourth, company employees and technicians are beginning to show a greater degree of competence and are staying in the community permanently. Fifth, thanks to the company's efforts through the Foundation, its image in the province's community has changed for the better over the past few years.

Observations and Conclusions

An important feature of the Falconbridge Foundation is its emphasis on flexibility. This means that its executive office enjoys a high degree of decision-making authority and that the government bureaucracy is not able to stifle program activities. At the same time, because the Foundation is dedicated to promoting self-management, this is a prerequisite for

all institutions or organizations involved in the program.

The Falconbridge Company has been in the Dominican Republic for approximately 30 years. During this time, it has frequently run into problems because it is a foreign mining company. It began its operations in the midst of strong political opposition in the 1960's, after a near civil war and intervention by American marines. Since then, however, the opposition has gradually dissipated. Another problem is that farmers and ecological organizations blame the country's pollution problems on the firm's mining process and subsequent handling of the iron and nickel it produces.

These problems, inherent in the very nature of the company's operations, have serious implications for the Foundation's activities. Months of work can be placed in jeopardy if the company is condemned for having an adverse impact on the environment.

DECENTRALIZATION OF PUBLIC EDUCATION/ EDUCO/FUSADES

by Carlos Briones

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The Salvadoran Foundation for Economic and Social Development (FUSADES) is a private nonprofit organization, founded in 1983 with the support of the United States Agency for International Development (USAID). Its main goal is to serve as a business sector study center and to contribute to the push for economic and social development. Its commissions and programs are concerned with promoting investments, exports, agricultural diversification, small and micro-enterprises, social strengthening, economic and social studies, and other related activities. FUSADES has helped establish other foundations, such as the Foundation for Educational Development, which specializes in labor training and vocational education. Among its founding partners are representatives of the most important firms in the country (national and transnational).

Brief Description

EDUCO is a public program created by the Ministry of Education in 1991. Using a relatively decentralized management system, it offers basic education (presently up to fourth grade) in rural areas through Communal Associations for Education. Many EDUCO projects receive the direct support of FUSADES through the Communal Support Foundations promoted by its Social Strengthening Program.

There are two types of EDUCO schools: (1) "pure" ones; which are newly established entities in locations that never before had a school, or schools which reopened after being closed by a lack of staff willing to serve in inaccessible or war-torn locations; and (2) "mixed" ones; which are part of the program and also part of the Ministry's regular system of nomination. In mixed schools, EDUCO is only responsible for kindergarten and the first cycle (or some part of it), in order to allow schools to expand coverage through the sixth grade. Administrators of the program believe that the "pure" schools achieve better results.

The model used by EDUCO was inspired by the autonomous management of rural schools observed in a 1990 field investigation. The field study was designed to identify existing systems for supplying basic education and determine the real demand for educational services for rural children through the age of 14.

Each community has a Communal Association for Education (ACE) formed by parents. The ACE has the following responsibilities:

- To contract the services of teachers and school administrators;
- To offer free educational services to the student population of the community in the grade levels at which EDUCO works;
- To manage funding for local classroom creation and adequately maintain the facilities under its charge;
- To supervise the attendance, punctuality, and public conduct of the educator to ensure that professionality and a positive educational environment are maintained;
- To evaluate and, upon approval, renew the contracts of professors on an annual basis[1]; and

- To efficiently administer the monthly transfers allocated by the Ministry of Education to pay the educator.

Objectives

- To promote the establishment of educational spaces and the creation of an ACE in all participating communities;
- To train ACE members for financial administration and staff supervisory duties;
- To train contracted teachers in the methodology of the program;
- To advise the educators regarding curriculum development; and
- To supervise the educational and administrative development of the program on a monthly basis.

Key Inputs

The following were the key inputs for 1994: measures were taken to promote the program and to train the ACES and educators; in certain cases, sites were donated for the construction of the schools and financing was obtained from the Social Investment Fund; the suitability of classroom facilities was assessed; and furniture and school supplies (paper) for the students were also donated. The Ministry of Education pays the educator's salary, ensures that the physical environment of the classroom is suitable for learning, and installs a small literary library in the classroom (between 28 and 50 literary titles or motivational texts for learning how to read).

In 1995, the Ministry redefined its commitment, and put the Foundations of Communal Support in charge of identifying areas of immediate need where the programs should be put into effect. EDUCO has agreed to assume the promotion and training costs of the program since the Foundations, given their composition, do not have the capability to handle promotion[2] —even though at some phase the Ministry always uses Foundation members to facilitate community acceptance of the ACE to gain credibility in sustaining the project.

Brief History

In 1985, under an agreement with USAID, FUSADES initiated the Social Strengthening Program (FORTAS) as a means of enhancing the institutional strength of professional and developmental associations and unions. In 1988, it began focusing on social improvement within marginal communities and tried to persuade associations and private firms to become involved in small infrastructure projects. In 1991, FUSADES decided to refocus its activities toward rural areas and became a social action program. The objectives of FORTAS have been defined as follows: (1) to respond to urgent social needs in the rural community through the decentralization and privatization of basic services; and (2) to support Community Programs of Integral Development (PRODICOS), through business foundations dealing with social development at the local level.

...those in charge of the EDUCO program are convinced that the support of the Foundations makes it easier to focus services on the poorest populations in rural areas.

After deciding its focus would be on education and health, the FORTAS program agreed to manage, in cooperation with the Ministry of Education, kindergarten and/or first grade classes in rural zones that lack educational services and that will form part of the zones of influence of the municipalities served by the Foundations of Communal Support. In 1994, with the support of 22 foundations, EDUCO opened 57 programs serving the needs of 33 cantons.[3] Thirty-nine more sections in 24 cantons were expected to be opened in 1995.

Results

Cooperation with the FORTAS project has been positive even, if it is not considered fundamental for the extension of the coverage of the EDUCO program. For example, in 1995, of the approximately 3,500 classrooms which EDUCO supports, only 100 (less than five percent) belong to the FORTAS project.

Nevertheless, those in charge of the EDUCO program are convinced that the support of the Foundations

makes it easier to focus services on the poorest populations in rural areas. Because the Foundations work with PRODICOS, selection of EDUCO sites in the regions where they work involves the participation of local residents. Such selections are usually more efficient than those made by Ministry of Education officials who do not have links to the communities and therefore may not have a realistic understanding of poverty criteria. In addition, EDUCO verifies the eligibility of Foundation-selected sites directly and forces these organizations— by means of rebuff— to choose those sites that meet the established criteria.

Another advantage of Foundation cooperation with EDUCO is greater efficiency and reduction of time in acquiring adequate educational sites and converting them into properly constructed schools. It can take up to two years to meet a normal ACE request for school construction at FIS. On the other hand, with Foundation management, that time can be reduced by one-third. In addition, the greater managerial skills demonstrated by Foundation-supported ACE groups has led the administration of EDUCO to consider transferring the total yearly financial resources for each participating educational center (approximately US$3,300) to FORTAS. This would give FORTAS administrative authority over a fund of approximately US$500,000 to be used for the recurrent costs of educational services. Such a system would strengthen the partnership between Foundations for Community Support and local ACEs, reduce the administrative costs of the Ministry of Education, and facilitate funding transfers to ACE groups.

Observations and Conclusions

This project owes its existence to several key factors. One is the "discovery" of an autonomous and communal model for resolving the most basic educational needs of rural areas and the successful commitment to reproduce it widely, until today it has become the official model (EDUCO) of rural extension. Another key factor is the change in focus of the FORTAS program, which at the outset was committed almost exclusively to the institutional strengthening of professional and development associations. By 1988, however, it had become a social development enterprise. As it matured and grew conscious of the magnitude of basic needs of the rural population, FORTAS again restructured itself, this time into a program promoting the participation of businesses and professionals from the interior of the country in solving social problems in their communities of origin.[4]

Between 1994 and 1999, EDUCO hopes to expand kindergarten coverage and ensure that the majority of rural schools offer classes through the sixth grade. Such plans would benefit greatly from a FORTAS-EDUCO partnership.

At the same time, however, exclusive reliance on the FORTAS system of Foundations for Community Support could cause the growth of new educational spaces to be slower than desired. For example, in 1994, FORTAS had created only 30 Foundations serving 45 municipalities. Yet, El Salvador contains a total of 262 municipalities. In other words, only 17% of municipalities are being served by the current program. Furthermore, approximately 80% of those served are located in the southwestern part of the country, the region which is the most populated, the most urbanized, and has shown the greatest rates of growth (between 42% and 85%) between 1971 and the 1992.[5] In contrast, in rural zones with little educational infrastructure (in the eastern and northern part of the country), virtually no foundations have been established. Finally, because of FORTAS's pre-school emphasis, the creation of new spaces will probably be concentrated in kindergartens—presently the area with the greatest staff deficits. For these reasons, both FORTAS and EDUCO would be well advised to find some way to expand activities outside the southwestern quadrant and to search for additional partners in educational expansion process.

FORTAS has succeeded in persuading consumers of private educational services to become involved in supporting poor consumers of public educational services. In this sense, it deserves closer attention in order to determine which of its methods could be adopted in a cooperative venture between a foundation the size of FUSADES and the public sector.

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[4] This constitutes an innovation in monitoring teaching quality, since in El Salvador, the Teaching Professionals' Law (Ley de Profesión del Maestro) gives priority to rights over obligations in such a way that, despite their poor salaries, teachers in the public schools system cannot be fired no matter what the quality of their

job performance, the quality of their training or their willingness/ ability to meet their professional obligations.

[2] Managers of the EDUCO program consider this to be a fundamental activity because the success and continuation of the ACEs and schools depend on specialized promotion which explains community responsibilities in relation to the program.

[3] Cantons are small rural communities which are politically and administratively linked to municipalities.

[4] Apparently, communities of origin may include those in which an individual has family connections (parents or grandparents) or those in which an individual has real estate holdings. Independent of the type of connection, FORTAS tries to involve individuals in solving the public problems of the community.

[5] See Umaña, C. "La reorganización territorial" (Territorial Reorganization), *Revista Tendencias*, 39, abril, 1995.

EL DIARIO DE HOY:
AID PROGRAM FOR THE IMPROVEMENT OF BASIC EDUCATION QUALITY

by Carlos Briones

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El Diario de Hoy, El Salvador's well-known daily newspaper, believes that the print media have a social responsibility to promote human development through education. Therefore, the paper disseminates curricular and didactic materials to primary schools throughout the country.

Brief Description

The newspaper has launched three sub-projects to carry out its work: a weekly supplement entitled "The Children and Us," the project "*El Diario de Hoy* in School," and the project "Student Social Service *El Diario de Hoy.*" These three sub-projects are interlinked and together represent an attempt to facilitate and reduce the costs of didactic materials in the public school system.

Objectives

- To strengthen the education of Salvadoran children;
- To supply teachers, students, parents, and the general public with resources to enrich their knowledge;
- To offer students, educational staff, parents, and the reading public high quality and low cost educational material;
- To facilitate the didactic task in the area of basic education, keeping in mind the minimum curricular requirements of the new model proposed by the Department of Curricular Design in the Ministry of Education;
- To fill the void in bibliographic material that exists in some schools;
- To help improve the quality of education for the Salvadoran population; and
- To train education professionals in participatory teaching techniques which stimulate learning (e.g., handouts and the utilization of didactic materials from the newspaper).

Key Inputs

The key inputs of the global project are newspaper supplements and a weekly index that can be used by both staff and parents interested in supporting the education of their children at home. One recently introduced supplement presents instructions on how to conduct scientific experiments and tries to stimulate an interest in science. This project, named GUANAQUIN, received official recognition from the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

The six staff members who are in the newspaper's department of education are in charge of compiling weekly teaching material. Within this group, the four educators singled out by the Ministry assume the greatest responsibility, not only in assessing the design and content of each subject area, but also in implementing and evaluating these designs.

Other key inputs are the efforts of departmental supervisors and school directors to stimulate staff to use and collect (through their students, parents, members of the community, or sales by school personnel) the supplements that appear in the normal editions of the newspaper. Since the newspaper does not print special editions of the supplement, private collection by school staff is currently the only means of distributing the materials to the various public schools.[1] To permit greater project coverage, staff should be encouraged to develop new ways of gathering and using the free material. In some urban schools, collection efforts could result in having a supplement for each student. However, in rural areas, this outcome would be more difficult to achieve and collection efforts would require the support of social service organizations.[2]

The result is that more students and poor families gain access to official texts. It is also a means of developing "friendlier" methods of learning, by using the newspaper...

Secondary schools (public and private) also contribute to the project's efforts by gathering materials to create educational texts for poorer schools.

Brief History

The section "The Children and Us" (used by the newspaper to present elementary school curricular materials on a wide scale) was introduced in February 1992. Every Tuesday, the section was dedicated to topics in language and mathematics. On Thursdays, its focus was on the natural sciences and social studies. This material was directed toward students from second to sixth grade.

In 1993, the publication process was systematized to support teachers endeavors and to be closer to the students. Thus, on Tuesdays, the topics from the first cycle were covered. Articles related to the second cycle were published on Thursdays. For both cycles, all materials were subsumed within the four basic subject areas: language, mathematics, social studies, and science, health, and environment. In 1994, as in the preceding year, the paper continued to publish the sections in accordance with reader needs. The objective in 1995, was to reach more readers, ultimately serving the more than 834,134 students in the country's schools. The goal of this project is to publish 40 educational supplements for the first cycle and 39 supplements for the second cycle of basic education during the course of the school year. User feedback is a permanent feature of the publication development process.

The project "*El Diario de Hoy* in School" was initiated in 1989, and its goal is to find ways to create new didactic materials for public schools. This project is based on the idea that handouts stimulate student creativity and that by using the newspaper imaginatively, one can obtain inexpensive "didactic inputs" that substitute for the sheets, maps, figures, and other items that are normally used in teaching, but are generally lacking in public schools.

The newspaper selects 100 schools, seven for each department in the country, to participate in the project. Then they select a representative staff member from each institution. That member's respective students are the direct beneficiaries of the program. An effort is made to cover all grade levels—from first to ninth. The teacher's job is to orient and work with the students using newspaper articles as a didactic resource in a given class.

Cultural, informative, and/or recreational meetings are scheduled every two months throughout the school year. At each of these meetings, each student of a participating staff member is given a basket of basic school supplies (e.g., pencils, notebooks, etc.).

During the second trimester of the year, personnel from the department in charge of this project at the newspaper pay a visit to the educational centers in order to become familiar with the problems, worries, interests, and suggestions of the participating teacher. At the end of the year, teachers gather by region to share course activities designed solely with materials from the newspaper (*El Diario de Hoy*).

The "Student Social Service-*El Diario de Hoy*" dates back to 1994 and requires members to collect a minimum of three copies of the supplement "The Children and Us" every Tuesday and Thursday. This collection takes place over a period of six months, as stipulated under the Project of Student Social Service guidelines.

Having collected the supplements, each student then uses the materials to produce six books containing all of the didactic materials that appeared in those six months, in order. Their work is supervised by trained staff in the participating high schools—in coordination with the Ministry and the newspaper.

When the books are completed, the students donate them to one or more public schools in rural or marginal-urban areas, depending on the quantity of books that are gathered. The overall objective is to distribute one book per student in each receiving school.

This project is carried out by agreements signed between the newspaper, the Department of Secondary Education in the Ministry of Education, and interested high schools. The project is designed to serve as logistical support to the "The Children and Us" initiative. The didactic materials generated by the Social Service project are donated to schools which would not ordinarily have access to the supplements, either because they are in remote locations or because poverty prevents parents and community members from purchasing the daily paper.

Results

There are no figures currently available on the coverage of the "The Children and Us" program. As mentioned earlier, the use of didactic materials depends on the voluntary participation of the staff. However, in 1994, the Student Social Services delivered 11,539 supplement books to 125 poor schools. Twenty-seven institutions, including 1,031 students worked to create the books that year. In 1995, nearly 5,000 students participated in the Social Service project, creating approximately 30,000 books and expanding the network of needy schools reached.

Ideally, the newspaper would like to have supplement coverage close to that of the daily run of the newspaper (approximately 100,000 copies). To reach this level, without transferring the logistical costs to the firm, Ministry intervention is required. The Ministry needs to recognize the savings that this free material represents for poor families as well as the jump in educational quality that schools with fewer resources can achieve. In so doing, it will need to develop a logistical support system, in order to keep the loss of supplements to a minimum.

Between 1992 and 1995, more than 1,600 staff members were trained to use the newspaper as didactic resource. Recently, it has been suggested that university staff from the field of education sciences should be invited to participate in the training workshops.

Observations and Conclusions

This project represents a simple cooperative relationship between *El Diario de Hoy* and the Ministry of Education in what might be called a "limited program initiative." The firm does not modify curricular contents and instead uses the support of a Ministry of Education team to prepare educational supplements. The result is that more students and poor families gain access to official texts. It is also a means of developing "friendlier" methods of learning, by using the newspaper as a source of visual support for the concepts presented by teachers in the classroom. In addition, it establishes a cooperative relationship with the 100 schools to which it brings supervised support of materials and staff training. This project merits greater attention from the Ministry of Education in order to improve its logistical aspects and to take advantage of the opportunity for collaboration with the firm.

[1] The cost of distributing additional materials, outside regular circulation routes, would be too costly for the newspaper, which does not wish to include other sponsors in the production of the supplement.

[2] For this to occur, it is vital that the Ministry of Education encourage teachers to use the materials. However, this level of support has been less forthcoming than the paper had hoped.

ASSOCIATION FOR THE EDUCATION OF GIRLS

by Regina Caffaro Mosquera

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In 1990, the government of Guatemala joined forces with a number of private businesses and international agencies in an initiative designed to foster the education of girls. Close to 30 institutions have been involved in this initiative, under the leadership of the Association for the Education of Girls (Asociación Eduquemos a la Niña). The need for such an endeavor was apparent from several socio-economic and cultural indicators. Perhaps the most serious is that Guatemala has the highest rate of female illiteracy in Latin America: of the four out of ten Guatemalans who are illiterate, approximately 59 % are women; almost 46 % of the total female population does not even have one year of formal education; and less than 12.5 % of the girls entering first grade will complete sixth grade.

A number of studies in Guatemala and in other countries suggest that four to six years of primary education would be of enormous benefit to girls: they would learn to make their own decisions and thus improve their quality of life; they would be motivated to increase their productivity within and outside the home and could therefore help increase the country's productivity; and the mortality rates of newborns, children and mothers would decline, having a positive impact on the aspirations and educational achievements of children, especially daughters.

Brief Description

According to the Association for the Education of Girls, "Life begins early in Guatemala. The farm woman wakes up at dawn and a girl becomes a woman before her time. This early awakening almost never includes education." Yet, "by educating girls, we can accelerate the development of Guatemala." Consequently, the overall goal of the Association is to formulate an inter-institutional plan to promote the education of girls and to wage a national campaign stressing the importance of such action to the development of Guatemala. This plan would address the economic, infrastructure, educational quality, physical, cultural, and health and nutrition issues that prevent girls from enrolling and continuing in the school system.

Objectives

The fundamental purpose of the Association for the Education of Girls is to contribute to and support the formal education of Guatemalan girls, with a view to increasing the rates of retention at the primary level. The Association's principal objectives are to:

- Publicize the social and economic conditions of Guatemalan girls in rural areas and to demonstrate that education is the way to deal with this precarious reality;

- Persuade people and groups to undertake concrete actions to increase the retention and graduation rate of girls in primary school; and

- Identify groups and people who support similar initiatives in order to maximize the impact of everyone's actions without duplicating any efforts. This would help promote communication between all those involved in advancing common goals.

Key Inputs

Close to 30 institutions and firms have become involved in this education initiative. Among them are the Association itself, the Ministry of Education of Guatemala, the Rafael Landívar University, various private foundations (FUNDESA, FUNDAZUCAR, Mariano and Rafael Castillo Córdova Foundation), the business sector and international agencies such as the United States Agency for International Development (USAID), World Bank, the United Nations Development Programme (UNDP), and the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

Brief History

The decision to promote the education of girls was made in 1990. The following year, the Ministry of Education and a USAID mission under the sponsorship of UNDP and the National Office of the Woman held the first national meeting on the education of women and their role in the development of Guatemala. One outcome of this meeting was the establishment of a commission entitled "Let's Educate Girls" (Eduquemos a la Niña) dedicated to the formulation of policies, training, and allocation of resources for programs that would benefit Guatemalan girls by promoting their formal education and increasing the rates of retention at the primary level.

This multi-sectoral commission agreed to investigate the problems impeding the education of girls and propose possible solutions. As a first step in this direction, the Commission organized a series of meetings with national leaders of the public and private sectors. Since then, it has launched a promotional campaign and has persuaded planners in the Ministry of Education to give high priority to the education of girls.

In 1992, the Commission published its Diagnostic and Plan of Action, which outlines 37 projects designed to address concrete problems that make it difficult for girls to attend and remain in primary school. At the same time, the Commission identified sponsors and project executives who would participate in the proposed actions. Among the projects initiated by this multi-sectoral group are "A New World for Girls" (Un mundo nuevo para la niña), "Promotion of Girls' Education with Parents" (Promoción de la educación de la niña con padres de familia), and "Educate Girls" (Eduque a la niña).

Guatemala recognizes that education, particularly the education of girls and women, should be high on its list of policy priorities. At present, women have only marginal access to educational opportunities. These opportunities must be expanded not only for their personal development but also to ensure more equitable social and economic development.

In concert with other institutions and firms, in 1993 the Commission initiated various projects and continued its work on the overall plan of action. A second national meeting was also held to assess the Commission's progress. In 1995, the Commission was renamed as Association for the Education of Girls and had statutes approved that would enable it to obtain legal assistance in the search for financing and in the execution of its programs.

Results

The 37 projects in the Commission's plan of action are to be executed in a period of five years. This plan and other Commission activities have engaged a host of people from a broad spectrum of institutions: private, governmental, religious, political parties, media, and international support agencies.

As part of its contribution to the initiative, the Ministry of Education gave prominent attention to the proposed agenda for improving education over the period 1993–98, which was as follows:

- Promote the matriculation, retention, and support of girls in the school system;
- Ensure that programs, study plans, and educational materials contain specific measures promoting the education of girls;
- Inform the school community and parents of the importance of educating girls; and
- Encourage policy makers to promote innovative proposals in support of female education.

The Ministry of Education also created a special scholarship fund for indigenous girls of rural areas. It is expected to benefit nearly 5,000 girls in 1997. The resources for this fund were obtained by eliminating and transferring the line of confidential expenses of the President of the Republic to the educational branch of government. In addition, the objectives, policies, proposed actions, and goals relating to the education of girls have been included in the government's Plan of Action for Social Development 1992–1996 and 1997–2000, coordinated by Guatemala's General Secretary of Economic Planning.

Institutions in both the public and private sector have agreed to participate in the implementation of various projects. One such project already under way is "Eduque a la niña," which began in 1994 as a joint effort of the Ministry of Education, USAID, the World Bank, the Sugar Foundation, the Mariano and Rafael Castillo Córdova Foundation, the Bahai Community, and Rafael Landívar University. This is a three-year pilot study of the impact of a combination of measures (e.g., scholarships to needy students, the appointment of education advocates, and the formation of parent and community committees to select candidates for the scholarships and to discuss educational materials) on the retention and promotion of girls at the primary level in rural areas.

Two other cooperative projects, sponsored by the Castillo Córdova Foundation, consist of a national campaign stressing the education of girls and a campaign directed toward rural Mayan groups. In a related initiative, the Linguistics Institute of Rafael Landívar University translated and published a collection of Mayan tales for girls. The Castillo Córdova Foundation also hosted the second national meeting. USAID has not only supported the efforts of the Commission but has also helped provide educational materials.

Observations

Statistics show that for the past 10 years, girls' attendance in every primary grade has been significantly less than that of boys. The problem is most acute in rural areas, where girls constitute only 11% of the school population. Moreover, only one in eight girls who begin school will complete the sixth grade.

One of the main barriers to education for Guatemalan girls is economic in nature: sending a girl to school is costly, not only because of the opportunity cost that the family has to absorb—which is much higher than it is for sending a boy—but also because many families simply do not have the resources to cover a girl's educational expenses. Another problem is the poor quality of education and infrastructure. Schools, classrooms, desks, and teachers (especially bilingual teachers) are all in short supply. And many existing schools are almost inaccessible because of the poor roads and the lack of transportation. A third problem is a cultural one. Many groups in Guatemalan society still fail to see the value in educating women.

As for the response to initiatives already begun, some complain that the coverage achieved up to now is still far from adequate. Another growing concern is that not enough financial resources have been targeted for the execution of many of the projects contemplated in the Commission's plan of action.

Conclusions

Guatemala recognizes that education, particularly the education of girls and women, should be high on its list of policy priorities. At present, women have only marginal access to educational opportunities. These opportunities must be expanded not only for their personal development but also to ensure more equitable social and economic development. This initiative serves as a model of the kinds of inter-institutional, inter-sectoral, and inter-agency effort needed to strengthen educational policy.

THE PANTALEÓN SUGAR REFINERY

by Regina Caffaro Mosquera

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The management of Pantaleón Refinery has operated two primary schools in Guatemala since 1989 with considerable success. These schools were established in response to a government mandate (Article 77) requiring all owners of large agricultural estates, shops, or industries to establish and maintain schools, nurseries, and cultural centers for their workers and the children of their workers. Although the law was passed to help the State provide primary education to the entire population of school-age children (especially the children of parents working on large agricultural landholdings), the quality of many rural schools is inferior to that of official schools and it is difficult to secure an accredited staff. The Pantaleón Refinery has attempted to address this issue through a creative and responsive program designed to help people solve real-life problems and to promote the integral development of the child.

Brief Description

The Refinery's two schools operate under the aegis of the Department of Social and Community Development and serve the children of the Refinery's farm and firm workers. The Ministry of Education considers it an example of the positive way in which farm schools have recently evolved with the participation of the private sector.

One of the two schools is located on the grounds of the main refinery, and the other on farm property in Las Palmas. Three of the Las Palmas teachers are paid by the Refinery and two are financed by the municipality. Recently, the Refinery began revising the schools' curriculum in an effort to develop an innovative education model for the rural population of the country.

Objectives

The main objective of the project is to adequately prepare future generations of workers to play a productive role in society. Thus far, the Refinery has taken steps to:

- Restructure the curriculum of primary schools;
- Improve the internal operation of the schools in order to achieve measurable institutional objectives;
- Improve educational output, namely, the efficiency level of the graduates;
- Reduce the number of drop-outs; and
- Encourage parents and the community at large to participate in educational activities by meeting with teachers, recognizing the need to educate their children, helping evaluate school activities, and taking part in the educational program for parents.

Key Inputs

The Pantaleón Refinery is directly responsible for all the costs of school operations, including teachers' salaries, except for the salaries of the Las Palmas teachers contracted by the municipality. A parallel initiative has been launched in the adjacent Concepción Refinery, which also operates two schools. The total maintenance cost of all four schools is approximately $200,000 a year.

The educational resources of these schools are much better than those of nearby schools. They have large

buildings with an average of 16 classrooms, a multi-purpose room, and spacious green playing fields. Plans are also under way for the construction of a modern school complex with the facilities needed to implement the planned program.

The teachers are well paid. Indeed, their salaries are higher than those of the staff of adjacent public schools. In addition, they receive free housing, medical and dental services, and bonuses for outstanding performance. Teachers, therefore, find the Pantaleón schools an attractive option, and many well-qualified people apply when there is an opening— even though the staff work more hours per week than teachers in the official sector.

Brief History

The Refinery schools are an outgrowth of the firm's desire to improve the educational services available to its workers. The firm's executives recognized that the students who graduated from its schools would in all likelihood end up working in one of the two refineries. However, if they attended the local schools, they would receive less than adequate training, directly affecting the firm's "pool" of future workers.

Although the firm has been providing educational services for the past 85 years, in 1989, its leaders decided to reorganize the curriculum and reassess the role that their schools should play in the community. They agreed it was essential to modernize the schools on its properties if their workers were to reach the educational level of other units of the firm. Suddenly, the question of "what to teach" and "how to teach" in the refinery's schools was given unprecedented attention.

In order to determine the direction needed to reach its goals, the firm began an in-depth evaluation of the schools' curriculum, administration, and organization. The investigation gave high priority to the social, cultural, and economic aspects of the community in which the school operates. An effort was made not only to analyze the internal operations, but to also take into account the opinions of parents, former students, and others in the community who might have relevant comments.

Refinery leaders found some of the resulting statistics to be alarming, especially with regard to drop-out rates and failures. For example, only 21 of the 100 students registered in the first grade of Pantaleón schools in 1986 reached the sixth grade in 1991. To make matters worse, education in general was of poor quality, satisfying neither the parents nor the former students.

A strategy was then formulated to revamp the entire curriculum. The emphasis was to be placed on public speaking, mathematics, writing and spelling, adequate agricultural and industrial orientation, and initiative and drive in the work field. Part of this new strategy was to promote the intellectual development of children, so that they would be able to think and act for themselves. Other changes introduced included a diagnostic evaluation of first-grade students, the establishment of learning objectives, the development of corresponding curriculum guides, the organization of learning along the lines of socio-educational interest, and a program of field trips for first-grade students. In 1991, experts were contracted to provide technical assistance and to train the staff in the new educational focus. In addition, it was decided that psychology students from La Universidad de San Carlos de Guatemala should be allowed to participate in the project as part of their graduate work, for example, in vocational orientation, child psychology, educational psychology, or special education.

In addition, teachers were offered greater incentives, including higher salaries, while students were given free bus service, medical and dental services, and school supplies. Furthermore, a scholarship program was introduced for outstanding students wishing to continue secondary studies.

Results

Since the beginning of Guatemala's educational reform, there have been some obvious signs of improvement: stronger leadership, positive attitudes, and greater dedication of the staff who work in the school. Above all, the number of drop-outs has decreased from 7.5 to 2.2 %.

With the decline of the traditional approach to education and the growing emphasis on the learning

process, teachers have become more conscious of their function as facilitators and guides in this process. Their activities have expanded to include visits to the homes of children, meetings with parents, the preparation of lessons, and participation in meetings and study circles. They are also being encouraged to upgrade their skills through training courses.

Within the classroom, the concept of team work has become an essential part of work methodology. As the teachers point out, "the students perform team activities, set their own norms, build their learning environments, and seem to enjoy doing it." Students are responding to this new approach with increased motivation, higher levels of interest, and enthusiasm. Outside the classroom, they have held elections for a student government.

The results of the diagnostic evaluations of the students in first grade led the firm to initiate pre-primary education in 1994. In Pantaleón, the new pre-primary school enrolled 110 students in the past year. In addition, a vocational program was introduced for students in fifth and sixth grade.

The success of the Pantaleón schools led to the establishment of the Pantaleón Foundation in 1995. Its goal is to support and carry out education, health, and environmental projects. One expected activity is a program on health education and the development of a Center for Training and Education on the West Coast.

Despite widespread support for the program, some parents object to the new method of teaching and learning. Thus, it will not be easy to carry out all the reforms. Training and technical assistance for the staff will still be needed to maintain the expected standards. Furthermore, follow-up and monitoring will be essential to ensure a positive effect on the quality of education in these schools.

Observations and Conclusions

The Pantaleón Refinery schools represent only two of the 117 private rural primary schools in the Department of Escuintla. The Department also has 70 private primary-level facilities in urban areas and a total of 285 official primary schools, 232 of which are rural.

Recently, Guatemala's public schools have been undergoing reforms similar to the ones mentioned here. Nevertheless, work conditions and training, among other factors, have made it impossible to consolidate the reforms in the country as a whole. The majority of public schools still follow a traditional, academic curriculum focused on courses that are virtually irrelevant to those who take them. These schools have neither the resources nor the capacity to initiate and sustain such changes.

In other words, numerous business still do not place a high enough value on the benefits of promoting the educational development of their workers and communities.

Although public and private initiatives are similar in many respects, there is almost no communication or exchange of experiences between the two sectors. The problem is that they have yet to establish channels of communication. Until they do, little can be expected in the way of cooperation and joint projects.

Furthermore, although many in the country agree that there is a close relationship between education and development, as well as a need to achieve greater equity in the population's access to educational opportunities, the business sector has been slow to support the education of rural workers. Some owners of country estates argue that their duty is to produce and pay taxes, not to educate the workers or their children, something they consider to be the responsibility of the State.

Some also fail to see how education will have much impact on workers' performance. A few have even suggested that workers may think maintaining a school on a rural estate is a way of validating the presence of people on that property. If for some reason an employee was released, he or she might refuse to leave the property if their children attended its school. In other words, numerous business still do not place a high enough value on the benefits of promoting the educational development of their workers and communities.

Despite these problems, education in the Refinery schools has made great strides since 1989, when educational reform was initiated. Not only has the project strengthened the Refinery schools, but it has demonstrated the importance of training for the future workers of the firm.

NEW EDUCATIONAL OPPORTUNITIES FOR GUATEMALAN CHILDREN/ (PROYECTO NEO)

by Elizabeth Versten

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AJWS established offices in Guatemala City and San Pedro Sacatepequez exclusively to implement this project. Project NEO has a team of eight Guatemalan professionals including trainers, community workers, and extensionists, as well as an on-site, international education specialist as a Technical Advisor to the project.

Brief Description

Project NEO is a five year, integrated human development project designed to improve educational opportunities for Guatemalan children attending primary schools in San Pedro, Sacatepequez. The Phillips Van Heusen Corporation initiated this project to address the most urgent needs of the community in which they had relationships with contractors. Approximately 5,000 students, primarily Mayans, will benefit from the program. In the seven participating public schools, the project is designed to improve: a) active learning capacity of children, b) the availability and quality of educational services, and c) parent and community involvement in the school process. AJWS has sufficient autonomy to carry out the project in accordance with effective development practices.

Objectives

Project NEO seeks to provide the opportunity for disadvantaged children to attend and stay in school; to improve students' grades and retention rates; to increase attendance and performance of girls; to identify, treat, and prevent the health problems that interfere with students' learning capacity; to better prepare preschool children for first grade; to retain teachers in the school system in order to allow more students to attend school and lower the student/teacher ratio; to increase the availability and use of appropriate didactic materials in the classrooms; to cultivate good teaching practices; to enhance the learning environment by improving the physical infrastructure of school buildings; and to empower parents by building their capacity to have an impact on their children's education.

Key Inputs

The five year, $1.5 million project is fully funded by Phillips Van-Heusen. Inputs include building and repairing schools and classrooms; purchasing educational materials including textbooks and libraries; working with the Ministry of Education to obtain additional teachers and student teachers for NEO schools and to pay for their first year's salary; training teachers in interactive methods and the creative use of new materials; introducing a nutritious school snack to all schools; micro-nutrient testing and education regarding micro-nutrients that are important for performance in school; sanitation inputs; school gardens; vision testing and provision of glasses or other treatment; ear exams and treatment for hearing problems; literacy for parents; community workshops; introducing an afternoon shift of classes; and providing health education for parents, teachers, and students.

Brief History

The idea for the program emerged in 1992, when Bruce Klatsky (President and CEO of PVH) and Arthur Heffner (Executive Vice President of Logistics) were in Guatemala to meet with PVH's contractors in San Pedro Sacatepequez. They observed that the community was suffering from a serious lack of infrastructure and that many school- aged children were not attending school. PVH then commissioned AJWS to do an assessment to determine the most urgent needs of the community and how these needs could be addressed. AJWS found that one of the most urgent needs of the community was education for primary school children. One third of all primary school-aged children in Guatemala are not enrolled in school. Most of the classrooms observed did not have adequate lighting, ventilation, or desks, and most were operating without textbooks. With PVH's firm commitment to support a significant and lasting improvement in the community, AJWS developed an integrated development project with a three-pronged approach to transforming the educational system in this community: improve the physical schoolhouse, improve classroom instruction and didactic materials, and strengthen the individual student.

Project NEO demonstrates that when a business-education partnership is carefully planned and operated, a corporation can have a meaningful impact on a target population and strengthen a public institution.

AJWS chose seven schools on the basis of community interest, teacher commitment to the project, and need. Currently, the locally-based NEO team of consultants works with existing parents' committees, teachers, and principals. One key to success has been that the project allows for an individualized approach to development in each of the seven communities. Another key to the project's success and sustainability is its cooperation with local entities such as the Ministry of Education, the local health clinic, and locally based teacher training programs. With participation from all interested parties, there is now a plan for each community to implement, monitor, and maintain those project components that they feel are most relevant to them. Each step in the planning and implementation of Project NEO is coordinated with a special PVH consultant. AJWS has contracted outside evaluators to conduct comprehensive yearly evaluations of the project.

Results

PVH is in the process of creating a model of

educational improvement within the context of a public school system. Tremendous positive reception of the project has also enhanced PVH's image as a responsible corporate citizen. The program has already accomplished some impressive results:

- Twenty three percent more children attend the target schools, while student/teacher ratios have been lowered or maintained;
- Drop-out rates have decreased and more students are reaching the sixth grade;
- Test scores are higher;
- Attendance in preschool has increased and there is notable increased achievement for first graders who have attended the preschool programs;
- The prevalence and intensity of parasitological infections has been reduced markedly as a result of education, treatment, and improved hygiene;
- NEO schools now have relevant textbooks where there were none before. Each school has new books and materials devoted to promoting girls' education; and
- Parents are much more involved in their children's education and regularly meet with teachers, many for the first time.

A final evaluation will be conducted in 1998.

Observations

PVH and AJWS chose to work with existing public schools for two reasons: they hoped to contribute to the long term development of the region; and they knew the Ministry of Education had the potential to support new teachers and provide the necessary inputs after the initial five year, funded period. Working with public schools did, however, have some drawbacks, namely: NEO personnel found it difficult to convince district supervisors to allocate more time to training and planning; and the bureaucracy was slow to revise the official curriculum and introduce new teaching materials. Nevertheless, the emphasis on sustainability and local ownership has paid off, sparking creative local solutions to the challenges faced by each school.

Conclusions

Project NEO is an example of a corporation's commitment to significant, lasting development. It is the result of a commitment to work in partnership with an experienced international development organization to design an integrated, sustainable project that addresses the most pressing needs of a community. In this case, PVH is an active partner that contributes not only financial resources to the project, but valuable advice and direction to ensure that the project is aligned with their initial vision and corporate philosophy. PVH selected AJWS as the organization to implement the project because of AJWS's experience and expertise in the areas of education and health. Project NEO demonstrates that when a business-education partnership is carefully planned and operated, a corporation can have a meaningful impact on a target population and strengthen a public institution.

THE EDUCATIONAL COMMISSION OF THE BUSINESS COORDINATING COUNCIL

by Lorenza Villa Lever

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Brief Description

The Business Coordinating Council (CCE) brings together Mexico's principal business organizations. Council members created the Business Sector Educational Commission (CESE) to play a role in educational policy at the national and regional levels. CESE helps coordinate business and government education initiatives, especially by alerting government education authorities to the job requirements of Mexican businesses. This cooperative approach coincided with and complemented efforts by the Salinas administration to reform Mexico's educational agenda and advance the nation's development.

Objectives

- Promote educational development and modernization at the national and regional level;
- Strengthen links between Mexico's productive and educational sectors; and
- Help the business community and the government to work together to design and implement strategies to solve some of the nation's educational problems, particularly as they relate to preparing students for the workforce and improving employee training.

Brief History

CESE had its roots in another educational commission, created in 1976 through the Sponsorship Federation of the Republic of Mexico (COPARMEX). That earlier commission assessed the educational situation in Mexico and generated concrete proposals for improvements. (At the time, an effort to bring together business and educational communities was itself a feat.)

Since 1986, several other umbrella business organizations have participated in CESE besides COPARMEX. These include the Federation of National Chambers of Commerce (CONCANACO); the National Chamber of Commerce (CANACO); the Federation of Industrial Chambers of the United States of Mexico (CONCAMIN); the National Chamber of Transformation Industry (CANACINTRA); and the Association of Mexican Insurance Institutions (AMIS).

In 1989—following a call by the Secretariat of Public Education for greater business sector participation in education—CESE was integrated into the Business Coordinating Council. This has facilitated interaction between the business sector and the Ministry of Public Education.

CESE has a technical secretariat, which had previously handled the work of the Educational Commission of COPARMEX. This secretariat, which is funded by the Business Coordinating Council, keeps business groups (both members and nonmembers) informed, promotes education projects, presents proposals, executes the Commission's decisions, represents the business sector in various forums, and performs administrative duties. It's head has experience and background in education, as well as a strong grasp of the business sector. The commission meets monthly to discuss modernization and education issues which it then brings to the attention of the Secretariat of Public Education.

Key Inputs

In helping set educational policy, the most common way for the Commission to proceed is through commissions and working groups of the Secretariat of Public Education and through follow-up meetings. It is typically through such meetings, whether with government officials at the national, regional, state, or local level, or with particular sponsors, that the business members obtain funding and donations to support their programs.

Commission members also use their wide network of relations with relevant groups, organizations, associations and political institutions to spark interest in education.

To inform the public and build support for its activities and perspectives, the Commission uses publicity campaigns and other forms of mass communication.

The Commission has supported a variety of efforts, including:

- *Analyses of educational plans, programs, and textbooks*
  From 1988-94, the Commission actively participated in the analysis of the Program for Educational Modernization and of educational content plans and programs, as well as preschool, primary, and secondary school textbooks.

- *On-site business training*
  To improve students understanding of business fundamentals, the Commission signed an accord with the National College of Professional Technical Education (CONALEP) to provide business training. The course, a five-hour workshop, is taught by business leaders at their place of work.

- *Primary school education*
  The Commission has supported a program to help elementary school students improve their ability to think clearly and creatively. This program is currently being used in elementary schools throughout the state of Chiapas.

- *University studies in education*
  To improve teacher training, the Commission has backed a one-year course to improve the personal and professional development of student teachers who are obtaining their degrees in elementary or secondary education.

...there is now a growing recognition of the need to link the productive and educational sectors to solve common problems together.

Results

Some of the most important results of the Education Commission's work have been intangible. The greatest impact has been to improve the image of the business community as a positive force for change in the field of education. Relations between the state and business—and each sector's perceptions of the other—have changed from negative to positive between the 1970s (when the Business Coordinating Council was launched) and the 1990s. In particular, steps to transmit a business spirit and an entrepreneurial attitude have won acceptance.

The full impact of the concrete actions undertaken by the Commission is not clear because the Commission has not undertaken evaluations that could measure such results. Nevertheless, the agreements signed between businesses and various state entities signify an important and positive change that opens the possibility for greater links between and participation by both sectors.

Observations

The creation of the Business Coordinating Council in 1975 to bring together the business community, with its diverse interests, to work with the state was a long-range political decision. It stemmed from a growing recognition of the limits of the interventionist policies followed by the state in the 1970s. In this light, the business community's decision to participate in the Educational Commission during the years of the Salinas administration (1988-94) is important. The creation, directly within the Business Coordinating Council, of a unit to consolidate the work on educational policy that the business community had been pursuing through the Sponsorship Federation of the Republic of Mexico (COPARMEX) marked a new approach.

One of the Commission's first actions was to sign an accord formalizing the participation between the nation's productive and educational sectors. The Accord of Cooperation and Linkage (Convenio de Concertación y Vinculación) was signed on February 28, 1989 in the presence of then-Mexican President Salinas de Gortari, key actors at the Secretariat of Public Education, heads of the main educational institutions, presidents of business organizations, and participants in the business and educational sectors.

The accord aimed to tailor Mexico's educational system to help future workers meet the demands of the job market and to incorporate the needs of the business sector in their education and training. Although the accord focused on the productive sector and educational technology, members of the business community have expressed their desire to widen it with the goal of supporting education in general.

Conclusions

The Educational Commission has been as important for the process it has established as for specific programs it has backed. The Mexican business community has been able to influence educational policy in Mexico because there is now a growing recognition of the need to link the productive and educational sectors to solve common problems together. Relations between the business community and the state have extended and strengthened. In particular, businesses and educational authorities have explicitly acted on their interests in jointly devising and implementing strategies to solve some of Mexico's educational problems.

In the process, members of the Mexican business community have demonstrated their ability to work on common projects, despite the differences that exist among them.

MEXICAN BUSINESS DEVELOPMENT/ DESEM SYSTEM, A.C.

by Lorenza Villa Lever

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Brief Description

The Mexican Business Development System (DESEM System) is a nonprofit association created in 1975 by a group of businessmen to foster competitiveness in the workforce, fight unemployment, and improve productivity by teaching young people about the business world.

DESEM supports three programs to present fundamental concepts of business and economics to children from the elementary school to college level. These three programs are described below.

Course Descriptions and Key Inputs

1. Course: Our Families
   Level: Elementary school, 1st and 2nd grade
   Duration: 30 minutes per week for 5 weeks
   Total time: 2.5 hours

Starting with an analysis of students' own families and those of their schoolmates, this course teaches children that in their families and peer groups, as in society, each person is unique. Each member takes part in different activities, and fulfills responsibilities according to his/ her position. The concept of "work" is key to this course. Work links the family to the community and to the environment in which one lives. Using these basic concepts, instructors demonstrate to children how the economy works; first within the family and then within the community.

The course uses transparencies to help students identify various services and businesses, which are then used to illustrate the concepts of business, entrepreneurship, and other services. Students also explore how business opportunities stem from customer needs and desires, and how markets evolve to match supply and demand.

In particular, the course aims to:

- Complement the academic curriculum with lessons in the free market and the economy;
- Increase students' awareness of the different jobs and responsibilities that each family member has;
- Help students reflect on the essential factors in forming a family; and
- Help students understand the role that needs and desires play in an economy, and how an economy meets those demands.

2. Course: Fundamentals in Business
   Level: Elementary school, 5th and 6th grade
   Duration: 50 minutes per week for 5 weeks
   Total time: 4 hours, 10 minutes

This course introduces students to the most common forms of business organization in Mexico and acquaints them with the skills and resources needed to begin a business. The program stresses the important role education plays in the formation of prospective employees and managers. Emphasis is placed on decision-making in such areas as management, the hiring of personnel, production, and marketing.

In particular, the course seeks to encourage student reflection on the responsibilities and importance of businesses in Mexico's economic system. The program seeks to:

- Complement traditional basic education materials with concepts such as economics and business;
- Combat school drop-out rates by motivating students to explore the options offered by various professions; and

- Instill in students the belief that participation and responsibility are essential to society.

Both "Our Families" and "Fundamentals of Business" use transparencies, carbon copies, worksheets, brochures, and a teacher's manual as key educational resources. Instructors are trained and assigned by DESEM. Training occurs in DESEM's main office in Mexico City, along with development of the program and course materials.

Teachers are volunteers; they receive no financial compensation. Typically, they are young people who have completed other DESEM courses; businessmen, heads of families, retirees, and others also are instructors.

A group leader helps the instructor manage the group and maintain discipline. Information presented in each lesson is reinforced by linking it to materials covered in other courses during the week.

Various students have not only been able to simulate a business during the course, but to launch their own businesses after completing the program.

The DESEM System's branch offices operate the educational programs through a franchise contract. The contract allows affiliates to use the technology and materials developed by DESEM, as well as the DESEM name, in a given area. DESEM only awards franchises to those business groups it deems capable of maintaining DESEM's high standards and developing the system. The organization particularly seeks private sponsors that can assume the costs of the program and offer the courses directly to public schools.

3. Course: Young Entrepreneurs
   Level: Secondary school, 9th and 10th grade
   Duration: At least 2.5 hours per week for 25 weeks

This course aims to:

- Impress upon students the values of the entrepreneurial spirit: initiative, creativity, teamwork, and continual self-improvement; and
- Acquaint students with the practical aspects of a business: its goals, conditions of creation, activities, resources, obligations, and relations with other actors in the market economy.

The program relies on the participation of experienced business volunteers, counselors, and consultants drawn from the different areas of business operations. These individuals are trained by DESEM.

A scholastic coordinator assigned by the educational institution serves as a link between the school, the company, volunteers, and DESEM. The coordinator, trained by DESEM, supervises the group's progress, identifies problems and seeks solutions to them according to the DESEM method, motivates students to participate in complementary activities, and prepares a monthly progress report for DESEM. Coordinators are selected from the staff of the participating institution for their understanding of DESEM's philosophy and activities, leadership qualities, ability to work well in teams, and ability to dedicate one afternoon a week to the program.

Brief History

The founders of the DESEM System belonged to the American Chamber of Commerce (CAMCO),which helped launch the initiative. The DESEM System began as a branch of Junior Achievement International; DESEM adapted and translated its programs, and proceeded with support from the United States Agency for International Development (USAID), whose objective was to promote small business as a way to help Mexico in its economic recuperation.

During its first decade of operations, DESEM grew slowly; in addition to its national office, it had only two affiliates, one in Guadalajara and the other in Monterrey. In 1986, DESEM became independent from the American Chamber of Commerce, and began a period of rapid growth and consolidation. By 1993, DESEM was operating in 11 Mexican states and was developing teaching programs with the support of

Junior Achievement International's technology in business education initiative.

Results

By 1993, more than 83,000 students had participated in DESEM's programs—90% at the junior or high school level. DESEM has concentrated on public education. By the early 1990's, 83 % of its classes had been taught in public schools, and the remainder in private schools.

Perhaps the most important result of the course "Business Fundamentals" has been the establishment of good relations with the Ministries of Public Education in some states, which have agreed to fund the courses and introduce them in all the schools in their jurisdictions.

The Young Entrepreneurs program has also demonstrated positive results. Various students have not only been able to simulate a business during the course, but to launch their own businesses after completing the program.

Notably, the Young Entrepreneurs course has won acceptance with the National Polytechnic Institute. Although it was initially only offered at the middle school level, since 1991 it has also been offered at the high school and pre-university levels. Various public and private educational institutions now offer the Young Entrepreneurs class independently of DESEM.

At present, DESEM is actively operating throughout the country at several levels. It recently signed an agreement with the Sponsorship Federation of the Mexican Republic (COPARMEX), which has business and/or sponsorship centers in each Mexican state. The goal of the partnership is bring knowledge of the free market, social responsibility, and the entrepreneurial spirit to the maximum number of kindergarten through 12th grade students as possible. In addition, COPARMEX is working to promote DESEM's programs and support the formation of Business Development Centers.

Observations and Conclusions

DESEM was launched in the final term of President Luis Echevarría Alvarez, when the model of state control of the economy was already demonstrating its limits. The new model of development proposed by the State brought with it changes in the political economy, organizational principles, and values—all of which sparked conflict between the government and the business sector. For example, the Echevarría administration suspended traditional government consultations with business in economic policy decisions. The business community took the cancellation of these meetings as a threat to its political interests.

In response, business leaders took several actions to ensure their voices were heard in other forums. Economically, they expressed their disapproval through divestment and capital flight. Politically, they created the Business Coordinating Council (CCE) in 1975 to serve as an umbrella group for the private sector and to promote business interests in a unified fashion. In the cultural field, the business community used the school system to instill its vision of entrepreneurship. This was the impetus for creating the DESEM System of Business Development.

DESEM marked an important change in the role that the business community traditionally had played in education. Before the advent of DESEM, businesses preferred to direct their action through private schools; now, through DESEM, they participate directly in the public school system.

The DESEM experience demonstrates the ability of the Mexican business community to organize programs and projects to attain its educational objectives, to secure sponsors to support those projects, and to make the transition from the private to the less familiar public sphere. These capacities for initiative, organization, and negotiation are necessary conditions for achieving educational goals.

TECSUP INSTITUTE (LIMA)

by Luis Hochschild Plaut

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The Tecsup Institute is a non-university, higher education center which trains professional technicians with a strong orientation for solving problem using a "hands-on" approach. It was created by a group of Peruvian businessmen/managers under the leadership of Luis Hochschild, an engineer, who, in 1982, founded the Promotional Association of Tecsup Higher Technologies Institutes, a private, nonprofit organization which created the current project and searched for the necessary financing at both the national and international levels.

Brief Description

The Tecsup Institute is located on a 80,000 square meter site and contains 64 laboratories and workshops with modern equipment and appropriate teaching facilities. The net worth of the Institute is calculated at around US$18 million.

The Institute's three-year professional programs encompass a total of 400 hours of instruction, half of which takes place in classrooms. The remainder occurs in workshops and laboratories. Additionally, in coordination with diverse private businesses, a minimum of 500 hours of pre-professional practical training is arranged during the course of study.

In training its professionals, the Tecsup Institute emphasizes the development of skills in:

- Leadership and discipline;
- Technology management;
- Maintenance, installation, and operation of modern equipment; and
- Automation.

The Institute offers six areas of specialization:

- Maintenance of Plant/Factory Machinery;
- Industrial Electrical Engineering;
- Chemical and Metallurgic Operations;
- Maintenance of Heavy Machinery;
- Industrial Electronics; and
- Computer Electronics.

Each of these specialties is overseen by a Technical Committee composed of Peruvian business representatives involved in the work of the Institute.

In addition to its long-term technical training programs, the Tecsup Institute also offers courses of shorter duration to mid-career professionals seeking to update, reinforce, and develop specialized skills. The short courses are offered both at the Tecsup campus and on-site for businesses requesting a specific course.

Objectives

The goal of Tecsup is to train, teach and advise professionals in the field of technology, thus supporting the development of people and businesses. To this end, the Institute seeks to provide service at the national level and to produce graduates who are successful professionals, leaders in technology, and an example for the community.

The Tecsup Institute's objective is to be recognized for its excellence in teaching, the quality of services it provides, for the respect it shows in its actions toward humanity and the environment, and for its conviction that both the Institute and its graduates must contribute to the development of Peru.

Key Inputs

Peruvian businessmen are the principal donors to Tecsup. Since its beginning, 175 Peruvian businesses have donated US$18.1 million to the Institute, an amount surpassing funds provided from international sources. These business contributions have been used primarily for investment and to cover the initial operating deficit.

Among the Peruvian businesses that have contributed to the development of the Institute are: Minas de Arcata, Cementos Norte Pacasmayo, Cía. Cervecera del Sur, Southern Peru Copper Corporation, IBM del Perú, and El Pacífico Peruano-Suiza Cía. de Seguros y Reaseguros.

The contribution of private business also manifests itself through its participation in the Technical Committees for each area of specialization. As members of the Technical Committees, businesses donate executive personnel to help manage Committee activities and to assist in the final evaluation of candidates in a particular specialization.

From its inception, the project has relied on the support of the Ministry of Economy from the City of Baden Württemberg in Germany, which contributed to the initial design of the curriculum, and later financed expert consultants, the teacher training, and the acquisition of equipment.

The United States Agency for International Development (USAID) and the Inter-American Development Bank (IDB) have also contributed to the project. Moreover, the Tecsup Institute has received the backing of other international sources such as the European Union, Sweden, the Basque country of Spain, Canadian organizations, and the Lampadia Foundation.

Total international cooperation to date totals US$13.6 million, of which US$7.6 million was in assets; US$5.7 million went for experts and training, and US$0.3 million was spent on operating costs.

Brief History

The idea for the Tecsup Institute began in 1980. One year later, the Tecsup project was presented to the officials of the government of the City of Baden Württemberg, who decided to back it.

The Tecsup Institute of Lima began its activities in 1984 with the education of professional technicians. Two years later, it began the Program of Continuing Education, which offered short evening courses at the Institute's campus. Gradually, specialized on-site training courses were introduced for businesses in Lima and other Peruvian cities. It also implemented one-year training programs in specialized subjects.

In 1993, in an effort to decentralize education, a new branch of the Tecsup Institute was opened in the city of Arequipa. As with the campus in Lima, regional businessmen in Arequipa were actively involved in founding the new school. Along the same lines, Tecsup is now seeking to further decentralize its educational activities through a pilot program using correspondence courses.

Results

The success of the Tecsup Institute is demonstrated by the better than 90% employment rate of its 1,274 graduates. In Peru, such a percentage is outstanding. Tecsup graduates work in important businesses throughout the country such as the Corporación Backus y Johnston, Cosapi Data, Xerox del Perú, Química del Pacífico, Luz del Sur, and Deterperú, among others.

As a result of the close tie between the Institute and the businesses benefitting from its educational services, the Tecsup Institute has successfully completed 1,136 short training courses with a total enrollment of 18,635 individuals.

Observations

The Institute maintains a balance between its operating expenses and the income it generates from the services it provides. Equipment maintenance and investment in new projects are financed through donations.

At the Tecsup Institute, tuition is based on a sliding-scale system which charges students based on their ability to pay. In addition, an Educative Credit system permits students with very limited resources to pay for their studies at the end of their course work by using their future income as professionals. Thus, of a total of 970 students currently enrolled at the Institute, 54 % belong to homes whose monthly family income are less than US$500.

Conclusions

The Tecsup Institute was created in an effort to develop a higher education facility with close ties to private business.

Tecsup offers a professional technological training of high quality which permits its graduates– the majority whom come from low socioeconomic backgrounds– to an adequate standard of living.

BIGOTT TECHNICAL-INDUSTRIAL TRAINING (ATIBI)

by Josefina Bruni Celli

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C.A. Cigarrera Bigott is a cigarette manufacturing company owned by British American Tobacco. The company maintains a 575 employee factory a few blocks from its ATIBI training partner, the Don Bosco Popular Technical High School. Bigott uses ATIBI as a tool to guarantee effective recruitment of high quality factory maintenance and repair technicians, and to assure that recruits have mastered basic skills for continued learning.

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The Salesian Catholic Order owns and operates the Don Bosco Popular Technical High School. In the tradition of Saint Don Juan Bosco, the school prepares underprivileged boys for the world of work. The school serves about 250 working class boys, grades 10 to 12. One-third of the graduates go on to college, and the others enter the labor market. Conscious of this, school authorities have made efforts to secure job placement for graduates in the primary or formal sector of the economy. They have thus sought to develop close training relationships with a number of large firms. The school participates in the ATIBI program because it provides good job opportunities for its graduates, additional income for the school and its teachers, new equipment, and exposure to new technology.

Brief Description

ATIBI is a post-high school technical training program initiated by Bigott to improve the quality of its young recruits. Bigott accepts approximately eighteen trainees each year to begin training immediately after their high school graduation. The program is composed of three months of classroom and shop training at the school (Phase A), followed by six months of training at the factory (Phase B).

Objectives

- To recruit and train qualified factory maintenance technicians; and
- To make the transition from school to work for graduates as smooth as possible.

Key Inputs

Cigarrera Bigott pays all program costs, including teachers' salaries and associated costs for Phase A, as well as stipends for the trainees during both phases. The estimated average cost per student in 1994-1995 was approximately $2,000, not including used equipment donated by the company or hidden costs (e.g. time of school coordinator, general training manager, and other staff). The program coordinators of each institution dedicate about 20 % of their time to the program.

Brief History

The program began in 1987 under the leadership of Cigarrera Bigott. At that time, the firm faced serious recruitment problems. Most two-year college graduates found Bigott's manufacturing jobs unappealing. Those that did take positions often left the firm in search of better opportunities. INCE[1] apprentices could perform well as assistants to technicians, but their low educational level made them ineligible for promotions. Though better prepared academically, technical high school graduates showed serious deficiencies both in knowledge and skills. An attempt was made at recruiting experienced technicians, but these individuals brought in bad habits and negative attitudes, were not committed to the firm, and were highly prone to quit.

To develop the ATIBI curriculum, the Training Department turned its attention to technical high school students who had been coming to the firm from the Don Bosco School for six-week internships since 1980.[2] The firm analyzed deficiencies in these students in 1986 and created a program to supplement their regular high school training.

The Don Bosco School was chosen over other schools for various reasons. First, its location was close to the factory. Second, interns coming from this school showed better work habits than interns from other

schools. Third, unlike students from public technical high schools, these students had completed the entire high school program.[3]

Problems arose at the plant level during the first years of the program. Some plant supervisors and technicians felt threatened by the new, well-trained, young apprentices. Thinking that the latter's presence would lead to their own dismissal, seasoned staff tried sabotaging the program. The firm overcame this problem by running a set of courses for these employees and reiterating its policy of only hiring trainees to fill already vacant positions.

The current structure of ATIBI includes 600 hours of in-class and shop training in one of two specializations—maintenance mechanics or industrial electronics. Students spend ten hours a day in class, studying a total of 14 to 17 subjects. The objective of this phase is to assure that trainees will understand explanations provided by tutors and supervisors during Phase B. This minimizes trainee frustration, costly mistakes, and the wasteful distraction of other members of maintenance and repair crews. The firm expects trainees to work well independently by the end of Phase B. Trainees that successfully complete the program are offered a position with the firm at a salary of approximately double the Venezuelan minimum wage.

ATIBI has produced lower turnover rates for Cigarrera Bigott workers and higher job-placement rates for Don Bosco School graduates. The company reports improved production efficiency at the factory.

Bigott hires the school to coordinate and execute the 12 weeks of Phase A training. The school plays an active role in selecting trainees and in developing the curriculum for Phase A, but has no control over either the contents or operations of Phase B, or trainee-Bigott labor relations. With few exceptions, the school hires regular high school teachers for ATIBI. These teachers familiarize themselves with new shop equipment linked to the program and with new company technologies, and regularly receive updates from company employees.

Results

ATIBI has produced lower turnover rates for Cigarrera Bigott workers and higher job-placement rates for Don Bosco School graduates. Out of 105 ATIBI graduates over the last eight years, 78 still work at Bigott. The company reports improved production efficiency at the factory.

The school has received, and continues to receive, updated technology which it has incorporated into the regular high school program. The school also benefits by making more efficient use of idle space during the summer months.

Observations

Bigot chose to make ATIBI a post-high school program in order to avoid the Ministry of Education's rigid regulations. In Venezuela, the technical school curricula cannot be changed or modified without permission from the central government—a factor that contributes to the technological lag of high school programs. In addition, the constitution until recently prohibited public school and business partnerships. Although a 1992 presidential decree authorized the formation of "civil associations" between a dozen public, technical schools, and private groups, much of the education establishment rejects these associations based on opposition to government schools serving individual business interests. Indeed, according to some interpretations, the constitution still prohibits any use of public property for private benefit.

Conclusions

This case demonstrates that when a school-firm partnership is carefully planned, operated and evaluated by both partners, students can be provided with relevant job-training, a smooth transition from school to work, and guarantees of jobs with career opportunities. It also shows that schools can benefit greatly from such partnerships because of the additional resources and updated technology which a manufacturer can provide.

The rigidity of the Venezuelan education code, which requires trainees to finish the state curriculum before beginning another program, makes the cost of such partnerships high. Higher opportunity costs for graduates relative to students raises the cost of scholarships, and therefore the cost of the program in general.

Although the ATIBI program is an example of a highly successful school-to-work transition program, its cost may discourage replication. On the other hand, Bigott is part of a large multinational corporation with ample resources for training and retaining workers, and firms of this type may find partnerships to be better alterna-

tives to their own, in-house training programs. Such advantages include a highly controlled recruitment and selection process, the development of a highly cohesive organizational culture, and low turnover rates for trained workers.

[1] INCE is a national training authority. Venezuelan companies must pay INCE dues and take on a certain number of apprentices. These apprentices come from either a sixth- or ninth-grade level.

[2] The Ministry of Education requires a six week internship of all technical high school students.

[3] Because public schools in Venezuela close many times during the year due to strikes and protests, students there often do not complete the basic curriculum.

CARLOS DELFINO FOUNDATION EDUCATIONAL UNIT (UEFCD)

by Josefina Bruni Celli

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The Carlos Delfino Foundation (FCD) is administered and directed by the Delfino Group, a large family-run financial group whose interests include cement and paper production. Josefina Gómez de Delfino established the foundation in her husband's name to serve the Parroquia La Vega, a community adjacent to the family's first cement factory.

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Although owned and fully funded by the Carlos Delfino Foundation, the Carlos Delfino Foundation Educational Unit (UEFCD) has been run, since its inception in 1946, by a chapter of the María Auxiliadora Order of nuns. The 13 nuns who currently run the school live on campus. For the nuns, the Delfino endowment represents an opportunity to provide girls with the skills and knowledge needed for dignified living.

Brief Description

The UEFCD is a private school that provides underprivileged girls of Parroquia La Vega with free first-class primary and secondary education. This includes free uniforms, medical assistance, books, and supplies for its 650 students, and free school lunches for about half the students. The school's large, well-kept buildings and sports areas are comparable to those of the most expensive private schools in Caracas. Its well-equipped science and computer labs contrast sharply with those in the country's public schools. The UEFCD also runs education programs for parents and monthly professional improvement workshops for teachers. An FCD manager, whose office is on the school grounds, makes all financial and management decisions but leaves teaching decisions to the nuns. The manager maintains an ongoing dialogue with school administrators and the foundation.

Objective

The program's ultimate objective is to provide girls of the Parroquia La Vega with a well-rounded, high-quality education.

Key Inputs

One of the UEFCD's most important resources is the María Auxiliadora Order, whose nuns feel they have a personal stake in the project. The foundation managers are also central to the school's success, since they manage the investments that provide the school's income.

All UEFCD expenses are paid by the foundation. In 1993–94, UEFCD spent substantially more on its op-

eration than did the country's public schools. For example, the school spent:

- More than three times as much per student;
- More than twice as much for direct student aid programs (in the form of scholarships, lunches, uniforms, medical assistance, and school books);
- More than twice as much for personnel (employees at UEFCD earn about 10–15 % more than public school employees);
- Eleven times as much on maintenance materials and services (that explains, in part the, sharp contrast between the atmosphere at UEFCD and the public schools);
- One hundred eighty-five times as much on extracurricular activities (which reflects UEFCD's emphasis on this type of activity and the public sector's total neglect of it); and
- Seventy times as much for instructional materials.

Brief History

Mrs. Gómez de Delfino's original intent in 1946 was to create an orphanage to care for the female orphans of workers at her husband's cement factory. Over the years, FCD added a primary boarding school to the orphanage and later replaced the boarding school with a primary and secondary day-school.

The founder feared that in her absence this initiative would eventually collapse. She thus established an institutional framework to guarantee the project's continuity. In 1947, she created the FCD with an endowment that included both the school building and grounds and most of her personal fortune. She involved her nephews, by then directors of family cement plants, in the project.

In contrast to public school students, who spend half the day in the surrounding slums, often with no adult supervision, UEFCD students spend the entire day on campus. Their mornings are taken up with regular school work and their afternoons with sewing workshops, computer classes, athletics, religious education, and a large variety of parent and alumna-led extracurricular activities, ranging from community service to theatrical productions. Older student volunteers also use this time to help younger students in organized study halls.

The school has always insisted that parents be directly involved in education. In addition to evaluating applicants' academic skills, the school interviews their parents to determine if they are willing to participate in their children's education. As a minimum requirement, all parents must attend monthly meetings with teachers. All parents are further required to help the school with maintenance one Saturday a year. In addition, the school encourages participation in the parents' delegate assembly, an organization dedicated to improving the school community. The assembly's social welfare commission, for example, cares for school community families requiring special support. In return, the school offers parents courses in sex education, adolescence, and other topics related to childhood development.

Results

No scientific findings are available regarding the impact of the UEFCD program. The atmosphere and student conduct in the school, however, contrast sharply with that in public schools. School administrators estimate that about 10 % of their graduates go on to college, half proceed with a technical career in a commercial field, and the rest take secretarial jobs. The school director reports that repetition and dropout rates are almost nil, largely because of the student selection system and the high level of parental involvement.

Observations

Rather than running the project personally, Mrs. Gómez de Delfino set up a solid institutional structure to guarantee the project's continuity after her death. Another key decision was to place teaching responsibilities in the hands of the María Auxiliadora Order, an institution that has made a sustained commitment to projects of this nature around the world. On the administrative side, Mrs. Gómez de Delfino initiated sound management policies by making the directors of the Delfino Group statutory directors of the FCD.

The school is located in a very violent area of Caracas. For this reason, the nuns have sought the support and protection of the surrounding community by opening the school grounds on Saturdays and Sundays to anyone who wishes to participate in organized cultural, religious, or athletic activities. The vandalism and pillaging often seen in Venezuelan public schools, factors that tend to discourage businesses from donating

equipment and materials, are not seen at UEFCD. This may be explained by a combination of the nuns' residency on the school grounds, the school's community activities on weekends, and the community's involvement in and respect for the school's work.

UEFCD is not a "partnership" between a business and an existing school, but rather a case of a firm creating a school on its own. Partnerships between a business and an existing public or private primary school are rare in Venezuela. Instead, businesses have created schools for company workers, their children, and adjacent communities or have provided funds or other cooperation to non-governmental organizations active in primary education. In most of these cases, firms make little effort to develop innovative programs.

Conclusions

This initiative has survived more than half a century, thanks in large part to its founder's decision to create a solid institutional structure.

If businesses in Venezuela want to influence education in existing primary schools, they will probably have to begin with private or church-run schools. The rigidity of Venezuelan education laws leaves businesses seeking to directly influence primary education with only two alternatives: extracurricular programs and educational programs for parents. It is almost impossible to carry out these initiatives in public schools because the national collective contracts governing public school employees discourage teacher participation and because public school teachers and administrators, by law, cannot receive compensation from private firms for work on public school grounds.

SCIENCE ACROSS THE WORLD/ BRITISH PETROLEUM COMPANY

compiled by Samuel S. Robfogel

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Science Across the World, a program of the British Petroleum Company, assists 300 schools in 22 countries of Europe, 500 schools and over 1,000 teachers in 14 countries of Asia, 50 teachers in five countries of Africa, and 100 teachers in Canada, Colombia, and the United States.

BP developed the program in cooperation with the Association for Science Education (United Kingdom), the University of Witswatersrand (South Africa), the Regional Education Centre for Science and Mathematics (Malaysia), John Carroll University (United States), and an international team of education volunteers.

British Petroleum Company p.l.c. is one of the world's largest petroleum and petrochemical groups. Its key strengths are in oil and gas exploration, production, refining and marketing, and in chemicals. BP has well-established operations in Europe, the United States, Australia, and parts of Africa and is expanding its presence in other regions, including South America. The company sponsors a wide variety of programs addressing issues in education, the environment, and community development.

Brief Description

Science Across the World is dedicated to helping young people and their teachers better understand key international issues. It does so by encouraging 14- to 19-year-olds to investigate common science-based themes and to exchange ideas and perspectives with their counterparts around the world. The program has two main components:

- Teaching modules, available in 16 languages, are used to address international environmental issues (e.g., energy supply, the state of nutrition, and drinking water quality) typically encountered in most secondary school science courses; and
- A database of participating schools enables students to exchange information and opinions with their counterparts in other countries who are working on the same module.

Students collect information, data, and opinions on a chosen topic. The results are combined and exchanged with schools in other countries. The information is usually sent by mail or fax, although schools can also use electronic mail or even video conferences if available through local businesses. Communication may also take place via the Internet.

Objectives

- To encourage contacts between students, and thereby broaden their understanding of global scientific and environmental issues, and to raise their awareness of the perspectives and life-styles of students in other countries;
- To provide students with opportunities to develop communication skills in the widest sense, which include communicating in languages other than their own; and
- To make learning science fun.

Key Inputs

BP's regional offices support the program through conferences and the production of teaching modules and video programs. The company hires consultants to write the teaching units and provides access to fax machines and computers at its facilities around the world. Once a school purchases a teaching module, registration in the database is free. The Association for Science Education administers the database.

Brief History

The program started as a partnership between BP, the Association for Science Education, and an international team of science educators. BP was looking for a way to improve both science education and intercultural exchanges. Its staff recognized that global issues—especially those concerning the environment—can only be resolved by international agreement. Yet different societies tend to have their own perspectives and priorities in matters such as water quality and energy use. Workable solutions

cannot be found unless these differences are recognized.

Science Across the World developed from four regional projects in Europe, Asia Pacific, Africa, and the Americas. BP gave its support to the development of the program at the regional level and is now helping to establish it worldwide.

To date, teaching units have been produced on drinking water, renewable energy, acid rain, tropical forests, domestic waste, using energy at home, global warming, and nutrition. Each contains background information on the topic to be covered, teachers' notes, student pages, maps, data, and registration and information exchange forms.

Results

Experience has shown that making links with students in other countries is highly motivating. Teachers have also praised the program for providing schools with the opportunity to integrate foreign language instruction with cross-cultural exchanges. The development of linguistic skills thereby goes hand in hand with increased scientific and cultural understanding.

Some of the teaching units are being extended to all schools in Indonesia as a part of a Ministry of Education initiative there. Furthermore, Science Across the World is the only successful international science exchange available to secondary school students in Africa.

The program has been effective in developing ties between BP and schools in participating countries. In addition, it has helped build BP's image as a good corporate citizen.

Observations and Conclusions

The concept of Science Across the World has proven to be highly transferable. More schools are enrolling in the database, and parallel programs continue to form.

"Science Across the World means our students can look beyond the frontiers of their own country..."

The program provides BP with an inexpensive means of building its international image while helping teachers broaden their students' horizons. By sharing BP's international communication resources, the company is able to make a major contribution to the resources of individual schools.

According to one teacher in the Netherlands, "Science Across the World means our students can look beyond the frontiers of their own country, make contacts with other students abroad, and have a practical opportunity to use foreign languages."

WRITERS IN ELECTRONIC RESIDENCE

compiled by Sam Robfogel

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The Writers In Electronic Residence (WIER) program is administered by The Writers' Development Trust (WDT), a private organization dedicated to increasing interest in Canadian literature and supporting the development of Canadian writers, in partnership with the Faculty of Education at York University.

TransCanada PipeLines (TCPL) is a major corporate sponsor. With over 2,000 employees, TCPL is one of North America's leading transporters and marketers of natural gas. Their head office is located at 111 Fifth Avenue S.W., Calgary, Alberta. TransCanada's goal is to encourage the development of writing, reading, literacy, and literature skills in students living along the 4400 kilometer TransCanada pipeline route.

Additional financial and technical support is provided by Viacom Canada, UniTel Communications Inc., The Ontario Arts Council, the Toronto Arts Council, and schools and school boards across Canada.

Brief Description

WIER connects students across Canada with writers, teachers, and one another in an animated exchange of original writing and commentary. The writers, who are all well-known Canadian authors, join classrooms electronically to read and consider the students' work, offer reactions and ideas, and guide discussions among the students. Experienced WIER teachers serve as online moderators in each conference.

Classes (normally six) from across the country are grouped in "electronic literary salons." Each class has 30 or fewer students. In turn, each salon is grouped with at least one other salon to form a conference. WIER employs one professional Canadian writer for every six classes participating in the program. All writers in a given conference work with all salons in that conference. This method of grouping salons and writers maintains the multiplicity of writers' voices that is an integral part of the WIER experience. It is also possible to structure WIER participation outside the classroom (e.g., as an extracurricular creative writing group centered in the school library).

Conferences are offered three times per year, in the fall, winter and spring, with a schedule designed to meet the range of Canadian school calendars. Each term is twelve weeks long.

Objectives

- To improve the writing and critical-thinking skills of Canada's primary and secondary school students;
- To make technology a catalyst for learning, not merely a tool of production; and
- To bring the knowledge and insights of this generation of writers to young writers and readers in subsequent generations.

Key Inputs

All writers are paid from funds raised by The Writers' Development Trust and school participation fees. School participation fees for the 1996/97 session are $650 per class, per term. Fees represent approximately one-third of the cost of running WIER. The remaining funds come from the generous support of sponsors who share a commitment to literacy and writing in both the arts and education communities. TransCanada PipeLines (which pledged $250,000 over five years to the program), Viacom Canada (which donated $30,000 to sponsor the addition of 10 schools to the program), and UniTel (which sponsors several schools) are among the largest financial contributors to WIER.

York University provides the technological infrastructure through its faculty's online learning network. Frontier College, Canada's oldest adult literacy organization, publishes the writings generated by participants in *The WIER Tap*. During the first years of WIER, the Ontario Arts Council supported the individual writers-in-residence.

Participating schools provide their own Internet access if they are outside the local Toronto dialing area.

Brief History

WIER was created in 1988 by Trevor Owen, then a secondary school teacher in Toronto, with the support of Gerri Sinclair of the Faculty of Education at Simon Fraser University (SFU) and poet Lionel Kearns, who was the first writer in electronic residence.

"Why would a company like us—with engineers and scientists—get involved in a writing project? Because unless we can communicate, we can't do business."

In 1990, WDT adopted WIER as its educational program. This initiative was guided by novelist Katherine Govier who saw that the Trust could promote WIER's growth and provide financial support through fund-raising. The Trust's constituency is large and eclectic, embracing all those who write (or will write) the literature of Canada, those who teach it, and all who have a passion for the literary arts. WDT sees its involvement in WIER as a natural extension of its mandate to promote Canadian writers to a new generation of readers and to increase recognition of the role writers play in creating, illuminating, exploring, and recording the cultural richness and diversity of Canada.

The Faculty of Education at York University assumed pedagogical and technical responsibility for WIER from SFU in the spring of 1992 in order to inform and advance online learning through teacher education and research. It opened its first WIER writing conferences in January, 1993. The Faculty of Education now promotes WIER to student teachers (several of whom participate in the WIER conferences) in their pre-service programs as part of its efforts to inform and advance an understanding of online learning pedagogy. York's faculty also undertakes research on the effectiveness of information technology projects.[1] As a result of these efforts, WIER continues to make a substantial impact on teaching and learning in Canadian classrooms.

In 1992, TransCanada PipeLines began to sponsor the program. TransCanada's interests in the program lie in the notion that WIER not only promotes better literary writing, but also improves understanding and business writing as well. As TransCanada Chairman Gerry Maier has said: "Why would a company like us—with engineers and scientists—get involved in a writing project? Because unless we can communicate, we can't do business."

The development of long-term relationships between business and education in WIER is based on the understanding that the ideas and aspirations of one are reflected in the vision and contributions of the other.

Results

Since WIER's inception in 1988, 40 Canadian writers have worked online with over 10,000 students and 350 teachers from across the country. Comments from teachers in response to WIER's 1995/96 questionnaire demonstrated great enthusiasm on the part of their students for this new approach to writing. Many commented on the increased motivation to improve one's writing that the engaged audience of professionals readers provides.

Additional benefits include:

- Students in small-town and big-city schools across Canada now have the opportunity to share in their country's literary talents;
- WIER provides a national audience of student readers for Canada's authors, and generates new work for Canada's up-and-coming authors; and
- The program creates a powerful link between classrooms and teacher training programs, and between the arts and educational communities.

Observations

WIER is a good example of how emerging technology can be used to improve the quality and reach of education.

A combination effort by actors in industry, the arts, and public and private schools made this project possible.

Conclusions

TransCanada feels students benefit from connecting with professional writers, even if they don't expect to become writers themselves. The company decided to sponsor the WIER program because it wanted to move the impact and benefits of its corporate donations program into the regions and smaller communities along its pipeline route. TransCanada believes it has a responsibility to participate in the social goals of the communities in which it operates.

In partnership with innovative educators and supporters of the arts, TransCanada and the other corporate sponsors of WIER have created a program which brings together a unique collection of resources to improve the quality of education in Canada.

[1] WIER maintains a current listing of research initiatives at its web site. References include journal articles, book chapters, theses, conference papers and presentations. Findings reveal how involvement in WIER's "electronic residencies" affects and alters the attitudes and practice of each of the participant groups. Formal research into these areas is currently underway at the Tele-Learning National Centre of Excellence, located at SFU. The study is expected to be completed in 1998.

ROBOTICS COMPETITION/CANADA FIRST

compiled by Kati Suominen and Tamara Ortega Goodspeed

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Brief Description

CANADA FIRST (For Inspiration and Recognition of Science and Technology) Robotic Games/Jeux Robotiques Pancanadiens is a four year old technology-based team competition organized by Motivate Canada (1994) Inc., a national nonprofit organization. CANADA FIRST is supported by technology associations, the Canadian government, Canada's leading high technology corporations, various non-technical firms, and volunteer action. It is patterned after FIRST, a similar competition held in the United States since 1991.

Leading Canadian businesses, such as Motorola Canada, Bell Canada, IBM Canada, SPAR Aerospace, Sun Life Assurance Company and the Royal Bank of Canada, sponsor teams of Canadian high school and CEGEP[1] students in CANADA FIRST's national and regional robotics competitions. Assisted by teachers and engineering mentors, the teams use a standard kit of materials to design and build remote-controlled robots over a period of six to seven weeks. They also prepare a 7.5 minute documentary video and a 150 page written binder outlining the progression of the project, and make a presentation before a panel of engineering judges.

The competition culminates with a sports competition between the teams' robots and the presentation of the team's work before the engineering panel. While the particular game varies from competition to competition, all robots perform athletic-type activities, such as capturing balls and depositing them in the opposing team's goal. The team with the most cumulative points from three areas (video, binder, panel presentation) wins the President's Award. The team with the most points in the sporting event receives the SPAR Aerospace Canadarm Award. Supplementary prizes are also offered in nine other sub-categories. CANADA FIRST is also exploring new activities at the junior high and post-secondary level.

Objectives

- To increase interest in and understanding of applied math, science, and technology among Canadian high school and CEGEP students by providing "living-learning" opportunities that extend beyond traditional classroom education;
- To provide opportunities for Canadians to explore applied technology through competitions and products that are relevant to their interests and experience;
- To encourage Canadian youth—particularly young women—to pursue careers in science and engineering;
- To promote teamwork, entrepreneurship, creativity, and competitiveness;
- To establish communication links between industry, educators, students, and parents and provide positive role models for students wishing to enter a technology-related field; and
- To foster the competitiveness of Canadian corporations in an increasingly demanding global environment by contributing to the education of Canada's future workforce.

Key Inputs

A variety of businesses, government agencies, and professional associations provide funding for the CANADA FIRST competitions. Sponsorship fees amount to $5,000 (Canadian) for regional competitions and $8,000 for national competitions. Firms may also provide employees to serve as mentors for a team.

The direct costs of each robot kit—exceeding $2,000—are usually included in the corporate sponsorship. While some teams find sponsorship on their own, CANADA FIRST assists most schools in identifying potential corporate backers. In addition, CANADA FIRST provides each national team with $350 to purchase supplementary materials not included in the kits, to allow teams to customize their robots within specified guidelines. Regional teams receive $200. CANADA FIRST also provides subsidies to teams from Atlantic Canada who do not have access to the same financial resources as teams from major urban areas. A limited number of travel subsidies are available to help ensure national participation in the competitions.

Space for the competitions is provided at a discounted rate by various high schools, Space Camp Canada, and, most recently, by Centennial College.

CANADA FIRST employs one person on a full-time basis, and has two part-time employees, including the President. More staff, in the form of volunteers, are employed during competitions. Professional engineers, as well as engineering technicians and technologists, who serve as building mentors and competition panelists, are either paid by sponsoring companies, or volunteer their own time.

CANADA FIRST also relies on student enthusiasm to promote its programs and generate sponsorship opportunities. The most successful form of new school recruiting has been to provide information on the Robotic Games to 11th and 12th grade students participating in a summer science program administered by Shad International, a Canadian-based nonprofit organization. When they return to their schools, participants share their knowledge of the CANADA FIRST competition with school administrators and teachers and generate support for the program.

Students and teachers are also playing an increased role in finding their own corporate sponsors. In recognition of that role, CANADA FIRST, is offering an entrepreneurship award for the first time this year.

Brief History

The initial CANADA FIRST national competition, held in March 1994, brought together nine teams encompassing 200 students and 60 teachers and engineering mentors from the provinces of Ontario and Nova Scotia. By the third event in February 1996, national participation had swelled to 760 students and 222 teachers and engineering mentors representing 18 teams. Launched in December 1995, a regional Ontario/Quebec pilot competition featured an additional 8 teams. The regional competition also marked an

expansion in the program's scope to include a junior competition targeted at grades 9-11 in Ontario, and forms 3-5 in Quebec.

In 1996/97, CANADA FIRST hopes to expand its coverage to include more than 2,000 students from across Canada. Four recent initiatives include:

- *Pilot Post-Secondary Competition*—100-200 students from five Ontario Community Colleges. Seed money for the pilot project came from Industry Canada, the Canadian Council of Technicians and Technologists, and the Ontario Association of Certified Engineering Technicians and Technologists, who provided 50% of entrance fee; the colleges raised the additional $2,500 from local sponsors.

- *Science Wave*—Internet science quiz, conducted during Canada's National Science and Technology Week in October. The Wave challenged 300-400 junior high students to find answers to 18 multiple choice questions in two hours, using the Internet. Previous and prospective CANADA FIRST teams were given a $500 credit toward entry, and helped mentor junior high teams for the exam. The government of British Columbia and Industry Canada also provided funding for the project. CANADA FIRST plans to expand the quiz in the future and perhaps include it as a regular feature on its Web page.

- *Fourth Annual National Competition*—students from 22 high schools from British Columbia to Newfoundland. As an example of CANADA FIRST's commitment to national participation, this year's competition includes several students, a teacher and a mentor from Grise Fiord, North West Territories, Canada's most northerly community (population 150). Almost 1,000 students will participate.

- *National Qualifier*—300-400 students expected, to be held in Ontario. By holding regional events CANADA FIRST seeks to lower the costs for first-time competitors through lower entrance fees and lower travel expenses. Future qualifers will be held in Quebec, Ontario, British Columbia and Alberta, alternating from east coast to west to ensure all interested teams have a chance to participate.

Results

CANADA FIRST is one of an increasing number of Canadian education-business initiatives that specifically promote the practical application of technology. In only four years, the program has succeeded in bringing together hundreds of students and academics—many from non-technical fields—to work closely on a team project. It has expanded to include a wider scope of geographical regions and students of various ages, as well as both a regional and national forum. Female participation in the Games has also increased. In 1994, women represented only 5% of the participating students and all engineering mentors were male; in 1996, over 15% of students and more than 20% of mentors were female. The organization continues to receive inquiries from educators and students about opportunities for younger students.

Additionally, a number of students who have participated in the Games have later gained employment at sponsoring corporations. There is also evidence that many program participants are entering engineering and/or science-related programs upon graduation, although it is difficult to establish any direct link between participation in the Robotic Games and course choice. Finally, participants praise the opportunity to build relationships with both peers and mentors in solving a joint problem, thus enhancing community/business/education partnerships.

Since its inception, CANADA FIRST has attracted the attention of community newspapers, local news, cable broadcasts, as well as national news stations and CNN, as an innovative program for getting young people involved in applied science.

Observations and Conclusions

CANADA FIRST promotes students' interest and excellence in math, science, and technology by turning technology into a competitive team sport. The program brings together students from a variety of interests, both technical and non-technical. CANADA FIRST is also one of the few "sporting events" to include both male and female students on the same team. The

program allows schools either to curricularize elements of the project, or to run the project strictly as an extra-curricular activity.

In order for the students to emerge as the principal beneficiaries of the program, CANADA FIRST insists that teachers and engineering mentors serve only as assistants in the various stages of the competition. Thus, students gain the basic technical, management, and practical skills that come with running a project themselves.

The Robotic Games are an expensive undertaking and may not be appropriate in areas where the opportunity for substantial business sponsorship is limited. The robot kits, in particular, are expensive, and the price has continued to increase as the program develops better remote-control devices. However, prices are expected to decrease as more devices are produced.

CANADA FIRST initially targeted large corporations for donations, but found that the smaller number of such corporations with smaller budgets made it necessary to seek additional sources of funding. As a result, nearly half the teams in the 1997 competition receive support from a coalition of business and association sponsors. In addition, CANADA FIRST has been able to recruit non-technical sponsors such as Centennial College, which regarded its participation as a way to attract future students. To ensure that the competition includes individuals from economically disadvantaged regions, mechanisms such as subsidy funds and discounted entrance fees were also developed.

Despite economic limitations, the CANADA FIRST Robotic Games vividly illustrate how businesses can support educational efforts, "changing public attitudes about technology, by challenging Canadian minds in fun and meaningful ways," and lay the foundation for creative community/school/business partnerships.

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[1] CEGEP is a two year pre-university program which would be equivalent to grades 12 and 13 in the United States. It is offered only in Quebec, where high school ends at grade 11.

THE TECHNOLOGY CHALLENGE/ BRITISH PETROLEUM COMPANY

compiled by Samuel S. Robfogel

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British Petroleum Company p.l.c. is one of the world's largest petroleum and petrochemical groups. Its key strengths are in oil and gas exploration, production, refining, and marketing, and in chemicals. BP has well-established operations in Europe, the United States, Australia, and parts of Africa and is expanding its presence in other regions, including South America. The company sponsors a wide variety of programs addressing issues in education, the environment, and community development.

The Technology Challenge operates in 60 secondary schools located throughout Malaysia.

Brief Description

The BP Technology Challenge is a technology-based team activity designed to develop problem-solving skills in students. Team competition may take place in the classroom, between classes, or between schools. The program introduces scientific and technological concepts to young people in a simple, positive, and non-threatening way. Equally important, the program is inexpensive and easy to operate in schools of all kinds.

Objectives

- To encourage and nurture the creative and innovative spirit among high school students;
- To complement school curricula that foster creativity and innovation and recognize students' efforts;
- To help develop a "creative culture" among the young; and
- To encourage innovative uses of waste materials.

Key Inputs

BP, which conceived and designed the basic Challenge program, provides administrative and financial support for Challenge organizers. This includes cash prizes for participants (a total of approximately $5,000 in prize money was awarded in 1994) and promotional activities. The Ministry of Education determines which schools will participate, and staff from the Mara Institute of Technology design the specific competitions. The Malaysian Invention and Design Society, a non-governmental organization, assists in judging the competitions. BP Malaysia estimates that key actors need to spend approximately 500 staff hours in planning, managing, and promoting a Challenge event.

Brief History

The BP Malaysia Technology Challenge is an outgrowth of the BP Technology Challenge introduced in New Zealand in 1989. The Challenge enjoyed such a positive reception in New Zealand that BP organized Challenges in other countries. BP Malaysia began its version of the Technology Challenge in 1993. BP also runs Challenge events in Singapore, Scotland, and Papua New Guinea and plans to launch pilot programs in Turkey and South Africa.

The Technology Challenge fosters innovative thinking and the use of a wide range of skills and ideas by asking student teams to use materials that they encounter daily—such as newspaper, string, and tape—to construct devices capable of meeting specific performance criteria. The challenges are adapted from "real-world" problems. In Malaysia, for example, the program emphasizes innovative uses of waste materials. Teams compete against other teams within their own school and in regional events. The program also encourages clear, concise, and confident communication of ideas by sometimes asking teams to give presentations on one of the challenges they complete.

In view of the Challenge's initial success with 11- to 14-year-olds, some countries (although not yet Malaysia) have decided to extend the program to primary school pupils. At some locations, challenge events are also being run by teacher trainees and school boards of trustees to help them develop teamwork and problem-solving skills.

Results

BP has created a popular education tool that has become an important part of the curriculum of many schools. In addition, BP has enhanced its image as a "good corporate citizen" through extensive, positive media coverage. The larger Technology Challenge events are nationally televised and covered by the print media throughout Malaysia.

Sixty secondary schools in Malaysia now participate in the Technology Challenge. Each sends a team of eight students and one teacher to the annual competitions at the national level.

Some of the solutions to challenges have been so creative that judges have encouraged students to seek patents and to commercialize their inventions.

Observations and Conclusions

The BP Technology Challenge is an innovative and relatively inexpensive method of enriching the work of schools. In response to businesses' growing demand for highly skilled technical workers, the Challenge provides children an educational introduction to technological concepts that is also fun. BP's administrative and financial support for organizers makes it possible for all schools, regardless of their size and location, to participate.

The Technology Challenge can be adapted to virtually any culture and educational system. In addition to the countries currently participating, Australia, the United States, and parts of Europe have expressed an interest in initiating Technology Challenges.

PARTNERSHIP FOR SCHOOL REFORM/ THE PANASONIC FOUNDATION

compiled by Samuel S. Robfogel

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The Panasonic Foundation, Inc., is a corporate foundation established in 1984 by an endowment from Matsushita Electric Corporation of America, the parent company of Panasonic, Technics, and Quasar.

The Foundation's current partners include the school systems of Allentown, Pennsylvania; Cincinnati, Ohio; Lancaster, Pennsylvania; Minneapolis, Minnesota; San Diego, California; and the New Mexico State Department of Education. Former partners include Baton Rouge, Louisiana; Dade County, Florida; Englewood, New Jersey; Santa Fe, New Mexico; and Seattle, Washington.

The Foundation provides technical assistance through more than 200 consultants, most of whom are practicing teachers and administrators in exemplary restructuring schools and school districts across the country.

Brief Description

The Panasonic Foundation enters into five- to ten-year partnerships with educators and community leaders to help them overhaul their public school systems. Instead of grants, the Foundation provides technical assistance designed to support, facilitate, and nurture systemic school improvement.

Objectives

The ultimate goal of the Partnership Program is to improve student learning in the primary and secondary public schools of the United States. Its specific objectives are:

- To enhance the professionalism of teachers and other school-site personnel; and
- To increase the capability of schools and school systems to conceive, plan, and implement their own reform efforts.

Key Inputs

The Foundation's technical assistance takes the form of consultations with experts, workshops, seminars, and conferences. For the most part, consultants are practicing teachers and administrators who come to the partnership sites. If appropriate, the Foundation takes local educators and others with a vested interest in the outcome of the program, such as school board members or parents, to visit exemplary schools or districts, and may also provide funding to attend conferences or workshops. The Foundation administers its program and all related activities directly and covers most of the fees and expenses associated with participation. Depending on the resources of a given partner, the Foundation may seek a cost-sharing agreement.

Brief History

The Matsushita Foundation (the former name of the Panasonic Foundation) was established in 1984 to commemorate the Matsushita Electric Corporation of America's 25th anniversary. In 1985, the Foundation's directors decided to establish a grant program in elementary and secondary education. By mid-1986, however, it had become clear that the grant program would not lead to the kind of fundamental changes that were needed in U.S. public schools. Grants could only provide short-term and project-oriented support instead of the sustained, long-term effort that was sorely needed.

The guiding principle of the Foundation's work is that all students can achieve significantly higher levels of learning, but that this is only feasible if schools and school systems completely change the way they are organized and operate. Thus, state policies, student performance standards, and state-mandated curriculum parameters all need to be aligned and the role of the state redefined to support and facilitate local reform. In large part, this process will consist of decentralizing education policy by allowing individual schools to make more decisions (regarding, for example, how money is spent at the schools, how student and teacher time is organized, what courses are taught, what instructional materials and methods are used, and how student learning is measured). It is also essential for parents to be involved in designing school programs.

The Foundation custom-builds its assistance programs to meet the specific needs of each partnership district. For example, it may:

- Provide on-site consultants to help schools and districts develop and implement their restructuring plans;
- Hold retreats for school boards, school staffs, central offices, community groups, and others;
- Organize forums and focus groups to help communities determine where they stand on various educational issues;
- Link school and district personnel from partnership districts with others from around the country interested in education reform;
- Conduct workshops for teachers, administrators, and parents on such topics as effective teaching practices, reliable assessment strategies, and different ways of organizing school schedules; and
- Convene community fora to increase support for educational reform.

Prospective partnership districts must serve substantial proportions of disadvantaged youth; be willing to allocate time and resources to developing a serious restructuring agenda; be dedicated to achieving a continuous, long-term improvement in policy, authority, and the allocation of resources to agenda restructuring; and fully support the Foundation's guiding principles concerning systemic, school-based, whole-school reform.

To supplement the Partnership Program, the Foundation produces two publications: *P³*, a newsletter that identifies ongoing reform efforts in partnership schools and school systems, and *Strategies*, a series about reform issues for school leaders in education reform, published in collaboration with the American Association of School Administrators.

Results

Through the Panasonic Foundation's support, several schools have already become national leaders in the drive to improve schooling. A Baton Rouge partnership school has received a large grant from the U.S. Department of Education for an accelerated education program, and a Santa Fe partnership school has had more than 100 visitors from schools across the country observe its achievements. In addition, the Partnership Program has been the subject of many articles in education and philanthropy journals, which thereby promote further school reform efforts and establish a favorable reputation for the Panasonic Foundation.

Anecdotal evidence suggests that the program has increased teacher professionalism and parental involvement in their children's schools. There are also indications that restructuring in partnership schools has lowered student absenteeism, reduced failures, and improved student achievement.

Observations and Conclusions

The Foundation has served as a catalyst for the reform process in its partnership sites by helping solidify the commitment to change and creating a milieu that has facilitated change. Moreover, the Foundation's resources have provided the expert guidance needed to make informed decisions about the best approaches to school improvement.

Through the Panasonic Foundation's support, several schools have already become national leaders in the drive to improve schooling.

The obstacles to reform are nonetheless great. Particularly troublesome are the rigid, hierarchical structures that have characterized schools and school systems for decades. Some school administrators have responded negatively to the Foundation's empowerment of reform-minded teachers. As a result, the Foundation is seeking better ways of incorporating administrators into the reform process.

As the Foundation looks to the future, it remains committed to nurturing reflective thinking among school and district personnel, so that improvement is seen as an ongoing process rather than a one-time occurrence.

The Panasonic Foundation has demonstrated that fundamental reforms in school structure and organization are possible, and they can have a positive impact on student performance.

THE PARTNERSHIP FOR KENTUCKY SCHOOL REFORM/ASHLAND, INC.

compiled by Samuel S. Robfogel

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Ashland, Inc. is a worldwide energy and chemical company with central operations in Kentucky, Minnesota, Ohio, and West Virginia. It is among the prominent independent refiners in the United States and is a regional retail marketer of gasoline, a top U.S. marketer of motor oil and car-care products with a growing international presence through its Valvoline division, the largest North American distributor of chemicals and plastics, and one of the world's leading suppliers of chemicals. Ashland also is the largest U.S. highway contractor and a major U.S. coal, gas, and oil producer. The company has a long history of supporting education through financial contributions and various activities, including advertising.

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The Partnership for Kentucky School Reform is a nonpartisan coalition of more than 50 representatives from Kentucky's business, civic, governmental, and educational organizations committed to promoting and supporting quality education over a 10-year period. Ashland, Inc., in addition to Humana Inc. and United Parcel Service (UPS), provide leadership to the Partnership on behalf of the National Business Roundtable. The Partnership works closely with the Prichard Committee for Academic Excellence, an organization of citizen volunteers committed to improving Kentucky schools.

Brief Description

Ashland's own program centers on a multi-media advertising campaign to increase public awareness of the need for quality schooling. In addition, Ashland executives serve as leaders in designing and implementing the Partnership for Kentucky School Reform's public relations programs. The Partnership's primary goal is to promote parent participation, technology education, and the professional development of teachers. In addition to running an advertising campaign, the Partnership has held more than 100 public rallies to build support for new legislation on education.

Ashland encourages its employees to become involved in educational reform through a series of work-site presentations that allow employees to meet with education professionals and learn about the problems schools face.

Objectives

- To promote public understanding of the Kentucky Education Reform Act (KERA) and garner support for its successful implementation;
- To gain the support for educational reform among Ashland employees and Kentucky business leaders; and
- To help the Partnership for Kentucky School Reform (1) provide an ongoing, nonpartisan forum for the identification and resolution of problems in education, and (2) secure technical assistance and expertise to facilitate ongoing reform and improvement in Kentucky's schools.

Key Inputs

Every year since 1983, Ashland has devoted its entire corporate-image advertising campaign to education reform in the four states in which it has major facilities, at a total cost of approximately $35 million. Over this period, the company has run approximately 60 television advertisements highlighting Kentucky's education reform activities. Since 1991, it has contributed more than $1 million to the Partnership's public information campaign. In addition, many of the advertisements for Ashland products and services have carried information about Partnership activities and provided an address and a toll-free telephone number that the public can use to contact Partnership offices. The company also uses employee newsletters, its electronic mail

system, and fliers included with employee paychecks to disseminate information about education activities and ways of becoming involved in them.

Brief History

Ashland began its advertising campaign in 1983, when a host of problems were identified in Kentucky's schools. The state ranked at or near the bottom of the nation's schools according to virtually every major indicator of educational performance—including teacher salaries, dropout rates, student test scores, and spending per student. No Kentucky school districts were financed to the level of the national average. Most telling of all, Kentucky had the lowest percentage of citizens with a high school degree.

Ashland's interest in education reform was of a pragmatic nature. The firm needed more employees qualified to handle the new technologies it was adopting. Furthermore, the company recognized that it could sell more gasoline, oil, and coal in a strong rather than a weak economy. A better educated work force would command higher wages, pay more taxes, and have more discretionary income. In Ashland's view, economic prosperity and education were tightly linked.

Ashland and the Partnership supported KERA in part because it was designed to meet the changing needs of employers in Kentucky. More important, it sought to teach students to think, not recite; to learn how to discover facts, not simply memorize them.

Ashland has created several information campaigns to promote employee participation in KERA-related activities. The first of these was a survey of employees already active in education who would be featured in fliers to be included with employee paychecks. Ashland chose this medium because it was inexpensive and would reach all of its Kentucky employees.

Ashland organized "fairs" that provided employees with information about KERA at the work site, gave them a chance to speak with education professionals, and promoted volunteerism. The fairs' displays were staffed by education experts and were designed to help employees obtain specific information about KERA's components. These events also featured a luncheon speaker from the Department of Education, a primary school classroom in which employees could observe the new reforms, and an evening session used to emphasize the importance of reading to children.

Results

Although many factors certainly played a role in Kentucky's education reforms, Ashland's advertising campaign helped pass two governors' education programs that introduced a number of much-needed improvements. Most notably, they raised teacher salaries, reduced class sizes, and made graduation requirements tougher.

In response to the reforms, student academic achievement in reading, writing, mathematics, science, and social studies improved 19 % between 1992 and 1994. Students in 95 % of Kentucky schools raised their academic performance. Thirty-eight percent of all schools earned monetary rewards for achievement. Kentucky's high school graduation rate reached 70 % for the first time in history, and teacher salaries rose 20 %.

Ashland employees currently serve on school boards, participate in parent associations, and volunteer to speak in local schools. The company has received many inquiries from other businesses regarding its education initiatives and has sent representatives to a number of regional and national conferences.

Observations

Ashland began its activities before many other businesses identified education as an important issue. Part of the company's success has been grounded in the leadership it provides for the Business Roundtable, which made a ten year commitment to work with educators across the nation. All of these efforts were bolstered by President George Bush's Education 2000 initiative, which sought to achieve various improvements in education throughout the country by the year 2000.

The company's advertising campaign is just one of its education reform programs. Ashland also gives cash awards to outstanding teachers and prints a publication that provides students with advice on how to be successful. In addition, Ashland has worked closely with many national organizations dedicated to school reform, including the National Alliance of Business, the National Association of Manufacturers, the Chemical Manufacturers Association, and the American Petroleum Institute.

Conclusions

Through its active participation in the Partnership and its own corporate campaign, Ashland has helped instill confidence in education reform among parents, teachers, and community leaders. This, in turn, has played an important role in advancing education reform throughout Kentucky. The company's leadership within the Business Roundtable and other organizations dedicated to education reform has encouraged many previously uninvolved individuals and businesses to work on education reform.

K-3 MATHEMATICS SPECIALIST PROGRAM/ THE EXXON EDUCATION FOUNDATION

compiled by Samuel S. Robfogel

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The Exxon Education Foundation is a nonprofit corporation funded by the Exxon Corporation. Its policies and objectives are set by a Board of Trustees, and its annual programs are formulated by a small professional staff in counsel with educators. Since its establishment in 1955, the Foundation has made grants totaling $406 million to a broad range of programs designed to improve education from kindergarten through college. These grants and programs are limited to institutions in the United States.

The Foundation's K-3 Mathematics Specialist Program was developed in concert with a planning coalition of educators from primary school to the university level, leaders in business and industry, professional engineers and scientists, parents, and the National Council of Teachers of Mathematics (NCTM).

Brief Description

The K-3 Mathematics Specialist Program provides teachers with grants and non-financial assistance for in-service planning, training, and support activities aimed at reforming how mathematics is taught in kindergarten to third grade (or K-3). The NCTM coordinates the program, and the reforms advocated are based on its *Standards for Curriculum and Evaluation, Professional Teaching Standards for School Mathematics,* and *Assessment Standards for School Mathematics*. The primary objective of these *Standards* is to empower students to value mathematics, reason and communicate mathematically, become confident of their mathematical abilities, and become mathematical problem solvers. The program seeks to place less emphasis on the traditional rote memorization of rules and more on children learning to collaborate; less on single-answer, one-method problems and more on problem-solving strategies. In essence, the standards treat students not as "empty vessels" into which knowledge "must be poured" but as beings capable of constructing mathematical meaning for themselves. Thus, the teacher's role is to create the appropriate environment and provide the leadership and encouragement students need to develop this skill.

To date, the K-3 program has been implemented at more than 70 sites. Although specific activities vary from site to site, they follow two general models: in one, the teacher is responsible for all the math instruction for one or more elementary grades in a given school; in the other, the teacher works closely with other teachers to help them improve their math instruction. In the first case, the teacher becomes a subject specialist and is primarily responsible for teaching mathematics at a particular grade level or levels. In the second case, the individual is charged with planning and delivering in-service experiences that will enable regular classroom teachers to strengthen their understanding of math pedagogy. Many of these math specialists will also plan and run programs for students' families and serve as advocates of mathematics reform.

Objectives

- To reform the way mathematics is taught in the earliest elementary grades and thereby arouse students' interest in math and encourage them to pursue advanced courses in math and science in later years;
- To determine what steps teachers must take to improve mathematics instruction and to promote these efforts in other, non-program schools across the nation;
- To establish a network of mathematics teachers to support ongoing innovation and reform; and
- To encourage students from minority populations in the United States to pursue careers in mathematics and related fields in which minorities are currently under-represented.

Key Inputs

The Exxon Education Foundation provides teachers with grants to implement the K-3 Mathematics Specialist Program. These grants enable professors of education and mathematics at nearby universities, professionals in engineering and the sciences, and students' families to work together to improve mathematics education in their community's schools. The idea is to ensure that the reforms embody real mathematics learn-

ing—not simply entertainment with numbers. The Foundation also supports an electronic mail "list-serve" that enables teachers in the program to exchange information about their projects, produces newsletters for teachers, parents, and administrators, and coordinates communication between project sites through a program liaison. The Foundation has provided approximately $7,000,000 in grants over the period 1988 to 1995.

Brief History

In 1987 the Exxon Education Foundation and the NCTM joined forces to establish new standards for mathematics education. Their central concern was to respond to serious deficiencies in mathematics instruction in the United States and meet the growing need for mathematics skills in the workplace. In 1988, the Foundation launched the K-3 Mathematics Specialist Program.

In the Foundation's view, these needs could only be met by revamping primary mathematics. To do that, it would be necessary to develop primary school mathematics specialists. Individual sites were asked to design and implement pilot projects indicating how such specialists might be developed in accordance with local conditions. The K-3 Math Specialist Program was primarily intended to change the behavior of teachers, either through programs directed at individual teachers or at entire schools. In this way, the Foundation hoped to contribute both to the development of individual children and to mathematics reform nationwide.

The Foundation is particularly interested in projects that promise to bring some lasting change in elementary mathematics instruction

Some project sites limited their reforms to re-designing the content of local mathematics curricula and securing new instructional resources. Others went further, re-examinining the entire practice of teaching. Yet others focused on strategies to deepen their own knowledge of mathematics and thereby arrive at entirely new approaches to working with their students.

Results

The *Standards* have had a pervasive influence on education reform. Across the United States, groups working on mathematics education projects have taken strides to align their work with the *Standards*. Sessions and lectures on the *Standards* figure prominently in the programs of national meetings in mathematics education, and teacher training programs are beginning to incorporate ideas from the *Standards*. Some teachers involved in the K-3 Program have become leaders in education reform at the regional and state levels.

The K-3 Mathematics Specialist Program has also created a communication network between mathematics researchers, educators, and practitioners—a rare achievement in primary education. Collegiality has increased, many teachers report, because of the program's emphasis on teachers nurturing each other through intellectual stimulation, support, and camaraderie. Moreover, the larger teaching community that now exists because of these efforts enables individuals to share ideas on a national level. To further support this exchange of ideas, the Foundation sponsors an annual conference for teachers from K-3 projects across the country.

Seventy-three Planning Grants were awarded from 1988 to 1994, and 54 sites subsequently received implementation grants. According to the Foundation's 1993 to 1995 evaluation, 47 of those sites were attempting to change elementary mathematics instruction. About half of these active sites have received some funding in the past two years, and the remainder participate in the project's network and sustain themselves. Approximately 1,200 to 1,500 teachers across 24 states are involved in the project.

Students' self-confidence in mathematics has grown in tandem with teachers' own self-confidence. With mathematics integrated into other subject areas, children at a number of sites, could talk more broadly about how they were learning, researching, and solving problems. Teachers and administrators have been amazed by the ability of the children to give appropriate or correct answers and to understand higher mathematical concepts at a younger age than in the past. Parents comparing the experiences of their older children under the traditional model of teaching math with those of their younger children under the K-3 Mathematics Specialist model find the younger ones more adept at mathematical reasoning and more at ease with mathematical concepts.

Observations

Although the Foundation is decidedly concerned with promoting mathematics reform at all levels, it empha-

sizes improving math instruction in the primary grades. The fact is that math performance patterns are shaped largely in the early school years. This realization and experience with university students have led the Foundation to conclude that progress in mathematics education depends greatly on improvements at the elementary level.

According to project participants, one barrier to changing their instructional practices is their present system's dependence on standardized testing, especially in communities that expect traditional grading procedures. Equally problematic is the diversity in teaching philosophies at the school and district levels. Many teachers feel they do not have the skills or base of knowledge needed to work with teachers whose approach differs from their own. The program's network of teachers, administrators, and parents has helped many participants overcome these obstacles.

Because the K-3 program oversees a large number of ongoing projects, planning grants to new sites are limited to two to four per year. Often these grants are for teachers in a single school. The Foundation is particularly interested in projects that promise to bring some lasting change in elementary mathematics instruction at the local, regional, and national levels; and that can help institutionalize the "rich" professional development teachers need in order to meet the demands of this task. Thus, proposals for grants must show a deep understanding of the complexity of such efforts, at least a beginning awareness of the potential of the approach to mathematics teaching and learning described in the NCTM *Standards*, and some evidence of the school district's commitment to support these teacher-led efforts.

Conclusions

The work of teacher-math specialists has been critical to the success of the program. Few regular classroom teachers have the time or the flexibility to collaborate in developing their professional teaching abilities and improving instruction in their schools. Given that time and other resources, math specialists can help teachers focus their efforts on long-term meaningful reform. In many schools, the math specialists, in conjunction with project directors, lead staff development initiatives and identify outside resources, materials, and consultants to bring into the schools.

The Exxon Education Foundation and Lesley College have produced a comprehensive evaluation of the K-3 Math Specialist Program in terms of its past, present, and future challenges. Much of the information presented here has been adapted from that report. "This major intervention," the report concludes, "has been enormously successful in achieving its original goal of improving the quality of the mathematics instruction young children receive by enhancing primary teachers' access to mathematics educational experiences. The patterns, themes, and stories emerging from site activities also indicate that this program has served to generate significant ideas that will inform larger discussions occurring in the [U.S. and other countries] on school change and education reform."

Conclusions and Comments

by Jeffrey M. Puryear

The cases presented here demonstrate the extraordinary potential of business-education partnerships, and provide detailed information on how they have developed in Latin America and the Caribbean. Although representing just a small proportion of the initiatives underway, they offer different perspectives on the role of business in education and document a new and growing concern by corporate leaders. They also suggest several conclusions regarding business engagement with education.

1. Business is beginning to have a significant positive impact on education in Latin America.

Business groups in a number of Latin American countries have initiated impressive programs to assist education. These include measures to strengthen schools in industrial communities, establish innovative private schools for the poor, reform school management, develop innovative curricula in mathematics and technology, connect schools to work, and improve national education policy. Some programs—such as an effort in El Salvador to disseminate teaching materials via newspaper or a Colombian initiative to develop a technology curriculum in primary schools—are as creative as any in Canada, Europe or the United States. Many are introducing new concepts and approaches to schools that have not changed for decades.

These efforts demonstrate that education can be improved and schools for the poor made better. They also reveal the significant creative potential of school-business partnerships. Much good work has already been done under the solid leadership of groups such as the Bradesco and Mariani foundations in Brazil, the Delfino Foundation in Venezuela, and the Marcelo Astoreca Foundation in Chile. In all these cases, business has shown that it can become a key actor in educational reform.

Despite these activities, businesses in Latin America and the Caribbean have still not done as much to strengthen schools as firms in Canada, Europe or the United States. Most make no effort at all, and those that do usually support traditional programs in a single school, often in a neighborhood surrounding the firm. The majority do little more than cover equipment or construction costs. Some have found the public sector too difficult to work with and have established their own private projects and schools instead.

As already mentioned, however, a few firms have launched creative endeavors designed to achieve genuine reform. Their attempts to work directly with public schools, develop and disseminate new curricula, or influence national education policy represent an important change in business thinking.

The challenge now for corporate leaders is to build on the initiatives under way and to persuade the broader business community to direct its talent and resources toward resolving education problems.

2. Business involvement in education is good for the firm and for the country.

The most compelling argument for business involvement in education is that it can improve the competitive advantage of firms. The shift to open economies and global competition that has taken place in Latin America over the past decade has increased the demand for a more educated labor force. As a result, firms have begun to pay more attention to the skills and habits their workers acquire in school. Human resources are now more important than natural resources in maintaining competitive advantage. Firms with well-educated and flexible workers are most likely to prosper. The successful economies of Southeast Asia invested heavily in high-quality public education several decades ago.

A second argument is that a firm, particularly one in an isolated setting, cannot expect to retain its qualified employees unless good schools are available for their children. If local schools fail to meet the demands of its highly skilled workers, the firm itself must search for an acceptable alternative. Some firms respond by establishing high-quality private schools, with an innovative curriculum, sophisticated teaching methods, and modern equipment and materials. Often these schools are open to the children of nonemployees as well and thus raise the quality of education in the entire local community, as do the Instituto Los Lapachos in Argentina and the Colegio San Jorge in Chile.

Firms have also found that investing in education improves their image. Since good education is in strong demand but is scarce among public schools in Latin America and the Caribbean, firms that strengthen local schools develop a strong and highly positive image. Two cases in point are the educational efforts of Falconbridge Ltd. in the Dominican Republic and of the Inti Raymi Mining Company in Bolivia: both firms saw their corporate image improve greatly as a result of their interest in local education.

Some firms take a broader approach, seeking to act as "good corporate citizens." In their view, business is a vital part of their society and has an obligation to help keep that society healthy. Since nothing is more important for the economic and social future of Latin America and the Caribbean than the education of its youth, business leaders should make a special effort to improve the educational system. This was another motivation in the Falconbridge case and also figured prominently in business support for EDUCO in El Salvador and for EDUCA in the Dominican Republic.

Others support education for purely charitable reasons. A "toma de conciencia" (awakening of conscience), they say, has helped them see their social obligations. This concern leads them to target education, since improving the quality of education can have an enormous impact on the quality life of all citizens. The Ingenio Pantaleón case in Guatemala reflects this argument, as does the Delfino Foundation case in Venezuela.

A few proponents of business involvement in education also argue that public schools cannot improve without more input from the clients they serve. State-dominated education systems, operating outside the market, are insulated from society's demands for change. Public schools are out of touch with the information and skills demanded by modern firms. State bureaucracies are under no obligation to ensure that education matches the quality or efficiency needs of communities, parents, and employers. If public schools are to improve, business (along with other outside groups) must help make it happen. Education, as the leaders of EDUCA in the Dominican Republic contend, is the responsibility of all and not just of the government.

Whatever the corporate reason for working to improve education, the important point is that more and more Latin American business leaders are recognizing that good education means good business.

3. Business offers education more than money.

One of the most striking aspects of business-education partnerships is that their contribution is not limited to financial support. In many cases, of course, that is all they do. But corporate leaders are discovering that they can provide other kinds of assistance as well.

Business is particularly adept at promoting innovation. Most public schools (and many private ones) lack the incentives and the freedom to launch innovative programs. They operate under rigid rules, are isolated from outside forces, and are slow to respond to new ideas. Private firms face fewer constraints. They know how to make decisions, assemble resources, hire the appropriate talent, and establish the organization needed to test new ideas. They can provide the risk capital necessary to experiment with new approaches to school management and teaching. Those are the very qualities that can make the education system more dynamic. Many of the cases in this report—notably the efforts of the Paper and Carton Manufacturing Company in Chile, Ingenio Pantaleón in Guatemala, and the *Diario de Hoy* in El Salvador—demonstrate how powerful that function can be.

Business has the means to establish private foundations that can influence school systems over time. Although most firms lack the specialized knowledge required to directly address problems in education, they can help create and maintain institutions dedicated to educational improvement. These can become seedbeds of ideas and strong advocates for change from outside the system. They can marshall the creativity, authority, and persistence needed to develop new approaches and get them adopted. An endeavor of this kind obviously requires a significant initial investment, but the resulting organization will have a professional staff, operate over the longer term, and may attract funds from many sources. Most of the initiatives described in this report involve private foundations. The Mariani and Bradesco foundations in Brazil, the Delfino Foundation in Venezuela, and the Andes and Marcelo Astoreca foundations in Chile are particularly impressive examples of the sustained, professional impact of such groups.

Business can promote policy reform in education. Business has the capacity to influence national policy in many sectors but has rarely done so in education. Two of the cases documented here—that of EDUCA in the Dominican Republic and CESE in Mexico—demonstrate that business leaders working together can constitute a formidable force for change. To expand upon these initiatives, business leaders need to focus specifically on the policy level, pool their efforts, and press steadily for reforms.

Business can communicate the business perspective. Although corporate leaders cannot be expected to know more about teaching than teachers, their experience in managing organizations, dealing with change, maximizing production, and minimizing costs can be applied with great value in education. Business concepts and disciplines—such as listening to customers, decentralizing decision making, and measuring performance—are seldom applied in public schools. It is a major challenge to introduce these concepts into the rigid and hierarchical school systems of Latin America and the Caribbean, as attested by the Presidents' Forum in Colombia, which is trying to instill a "culture of quality" in schools, and by the Mexican Business Development Association (DESEM), which is teaching entrepreneurship in public schools.

4. Business can choose from a variety of approaches.

As already noted, business leaders can assist schools in many ways. At least four distinct types of business-education partnership have emerged:[1]

The first is based on simple aid, consisting of funds, goods, and services. Businesses in these kinds of partnerships help schools do what they are already doing. No attempt is made to reform the way schools work or the priorities educators set. The goal is to provide existing institutions and programs with additional resources. This is the most common form of educational assistance that business provides in all countries. This report includes few such cases because the project's consultants found that more complex and creative initiatives had greater impact.

The second kind of partnership focuses on program change. In this case, businesses endeavor to reform a particular school or a particular program. These partnerships are larger and more complex than those built around simple aid. Their goal is to change existing practice. Some operate at the school level, seeking to restructure a school's functions, or to establish a wholly new school. Others work on developing a new program within an existing school. These kinds of partnerships require greater effort and commitment, but they can have considerable impact. Most of the cases presented here fit this category, particularly the San Joaquín School and Arauco Foundation cases in Chile, the Pantaleón Refinery case in Guatemala, the Falconbridge case in the Dominican Republic, and the Alto Paraná case in Argentina.

The third kind of partnership is the joint venture, in which groups of businesses and schools work together to devise programs and policies aimed at reform. Here, the potential for change is greater because many schools are involved and the combined force of several businesses carries more clout. Some joint ventures operate from within educational systems, supporting educators already working to bring about change. Examples include the EDUCO case in El Salvador, the Education in Technology initiative in Colombia, and the CEAT case in Chile. Others work from outside the system, pressing for reforms. These are most common when deep structural changes are sought. Examples include the "Association for the Education of Girls" program in Guatemala, the EDUCA program in the Dominican Republic, and the CESE effort in Mexico. All these partnerships take a broader view of education systems, and the emphasis is on promoting greater accountability and increasing community involvement.

The fourth type of partnership is primarily concerned with policy change. In this case, business leaders seek to influence educational policy. Their initiatives target policy rather than schools and consequently are much closer to political action. They range from establishing measurable standards for student and teacher performance to promoting increased competition among schools and fostering greater autonomy to enable schools to experiment with new approaches to management and teaching. Business efforts to promote policy change have had a considerable impact in Canada, Europe and the United States but are just getting under way in Latin America and the Caribbean. The case studies highlight two such initiatives—that of EDUCA in the Dominican Republic and of CESE in Mexico.

5. Several factors are crucial to success.

Experience in Latin America, as well as in the United States and Europe, suggests that the success of business-school partnerships depends on three key factors.

The commitment of business leaders is crucial. When business makes a firm decision to improve education, its activities generally have a significant impact. Business's capacity to innovate, manage, and fund gives it a strong comparative advantage from the outset. Commitment transforms this combination into a powerful force. Business leaders thus need to decide they want to play an important role in educational reform.

Governments need to welcome business involvement in schools. Here, experience is mixed. Legal restrictions, a tradition of educational centralism, and anti-business attitudes have worked against alliances among business and schools. But where governments have reached out to the business community, significant progress has followed. Governments in several countries have adopted specific measures to work with business in improving schools. That willingness to collaborate has produced many effective initiatives. Where it is absent, most business activity is confined to private schools.

Business should take a professional approach. Few firms have the necessary expertise to address issues in the field of education, and they either recruit education specialists for their staff or work with an

intermediary organization—typically a foundation—to get the job done. In Latin America and the Caribbean, the tendency has been for business to establish its own professionally staffed foundations or to collaborate with existing nongovernmental organizations specializing in education. In doing so, they significantly increase their capacity for success and help strengthen a community of reform-minded education professionals that can promote change.

6. What is missing?

First, a great deal more needs to be done. Business-education partnerships are still few and far between. The cases presented here are exceptions rather than the rule. Moreover, it is more common for business leaders to respond to the initiatives of educators rather than develop a distinctive business approach. The potential impact of business on schools in Latin America is far from being realized.

Experience needs to be communicated. Business leaders working on education in Latin America have almost no contact with one another and little knowledge of successful experiences in the United States and Europe. A meeting organized in Chile in 1993 by the Andes Foundation and the United Nations Children Fund (UNICEF) was a useful exception. More contact more often would help expand activities and lead to stronger programs.

Evaluations should be carried out. Little effort is made to carefully measure the results and impact of the programs that are under way. Most of them are judged on their inputs rather than output. Few firms take the time and effort to assess and compare programs in detail. Good evaluations are more common in countries with national testing systems—as the Don Bosco case in Chile demonstrates. More needs to be done in this area.

A systemic approach is missing. Most activities in Latin America and the Caribbean target only individual schools. They operate well at that level but have had little impact on the broader educational system. Yet some of the most intractable obstacles to better education—such as finance and management—are systemic in nature and require fundamental institutional reform. Business needs to address these broader issues as well.

[1] The categories here are based on Timpane (1991).

Suggested Readings

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