

PN-ACB-286

## **HIGHER EDUCATION AND GLOBAL DEVELOPMENT**

### **POLICY ROUNDTABLE #4**

**Increasing the Relevance of Higher Education to Development:  
What U.S. and Mexican Public/Private Partnerships Can Do**

April 7-9, 1997

Convened at the National Center for Higher Education  
Washington, DC

#### **Association Liaison Office for University Cooperation in Development**

A program of the American Council on Education with  
American Association of Community Colleges  
American Association of State Colleges and Universities  
Association of American Universities  
National Association of Independent Colleges and Universities  
National Association of State Universities and Land Grant Colleges

#### **Sponsored with the U. S. Agency for International Development**

Cooperative Agreement PCE-5055-A-00-2012-00  
Bureau for Global Programs, Field Support and Research  
Center for Human Capacity Development

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## Policy Roundtable IV: The Relevance of Higher Education to Development

### EXECUTIVE SUMMARY

The fourth in a series of Policy Roundtables on Higher Education and Global Development was convened by the Association Liaison Office for University Cooperation in Development (ALO) and the U.S. Agency for International Development (USAID). The Mexican Asociación Nacional de Universidades e Instituciones de Educación Superior (ANUIES) joined ALO and USAID to host the fourth Policy Roundtable on April 7-9, 1997. The Roundtables focus on emerging, cross-sectoral issues and the changing circumstances of development cooperation as these may involve higher education. They aim to bring higher education expertise to bear on the identification of key and emerging development problems, strategic approaches for their amelioration, and effective models of partnership for development cooperation.

The fourth Roundtable, *Increasing the Relevance of Higher Education to Development: What U.S. and Mexican Public/Private Partnerships Can Do*, sought to (i) review outcomes and features of low-cost, development-oriented partnerships between Mexican and U.S. higher education institutions and their private sector partners; (ii) enable USAID and others to assess “lessons learned” in utilizing higher education partnerships for local and international development; (iii) promote models of higher education/private sector cooperation for economic and social development; and (iv) discuss ways to link participating institutions electronically, and to invite other interested institutions and private

sector groups to tap into on-going efforts through electronic means. The six partnerships featured had each received seed grants of less than \$15,400 under a USAID cooperative agreement that ALO administers for the higher education associations.

Some assumptions were offered about the changing nature of global development cooperation. An evolution is occurring from development “assistance” to development “cooperation.” International organizations are shifting from providing answers toward providing information; from providing direct technical assistance toward providing lessons from useful experiences elsewhere. Despite the decline of foreign aid budgets in wealthier nations, there is a dramatic increase in the trade of ideas globally. Increasingly, government, academia and the corporate sector are coming together around shared objectives. Institutions of higher learning on all continents face increasingly similar challenges, challenges which require innovative solutions. Roundtable participants welcomed the opportunity to demonstrate collectively the value of these partnerships given these circumstances.

By all accounts the results of the six U.S./Mexico partnerships have been impressive. All share some fundamental characteristics, but vary significantly in form and content. Together they serve as models for ways in which U.S. universities, colleges and community colleges may effectively ally with higher education institutions abroad to

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## Policy Roundtable IV: The Relevance of Higher Education to Development

contribute to development through partnerships with their private sectors. As models these strategic alliances contribute to on-going discussions about new forms of development cooperation, and the challenges of higher education and economic reform in countries with increasingly open, market-driven economies. Their immediate and tangible results serve to effectively promote international engagement among a broader U.S. constituency.

Reviewing the partnerships allowed Roundtable participants to make some generalizations about elements necessary for their success. The initial ALO grants, although modest, made the difference between institutions having good intentions to cooperate and being well positioned to further the collaboration along expeditiously. The reciprocal visits of administrators and faculty allowed participants to develop personal rapport, and jointly define core competencies and mutually beneficial areas of cooperation. A broad institutional commitment to a lasting relationship was helpful in terms of rallying support for the effort at many levels of the institution. Engaging the private sector and other partners at the early stages of the negotiations also proved advantageous.

Participants drew several policy implications of these model approaches for higher education cooperation in development. Funding needs to be available to support the partnerships until they are self-sustaining. If indeed the relationships pass through three stages as was suggested -- the initial phase, the growth phase and the self-sustaining phase, the six U.S./Mexico partnerships have reached the

“growth phase” in which initial funding is exhausted, but they are not yet self-supporting. Roundtable participants were encouraged to approach their business and industry counterparts with creative ideas for private sector funding keeping in mind the interests of the business community. Within higher education, incentives must be created for faculty involvement in these types of arrangements; guidelines for tenure and promotion must reward faculty for their participation in activities such as these. All those involved must be willing to dedicate a fair portion of their efforts to ensuring that the fruits of these partnerships are well-known to a wide audience in the developed and developing world. Higher education with USAID may consider utilizing multi-media campaigns to promote the results and successes of these partnerships, and the usefulness of the model, to a broad audience.

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## Policy Roundtable IV: The Relevance of Higher Education to Development

### ABOUT THE ROUNDTABLES

This is the fourth in a series of Policy Roundtables on Higher Education and Global Development convened by the Association Liaison Office for University Cooperation in Development (ALO) and the U.S. Agency for International Development (USAID). The Mexican Asociación Nacional de Universidades e Instituciones de Educación Superior (ANUIES) joined ALO and USAID to host the fourth Policy Roundtable on April 7-9, 1997. The Roundtables focus on emerging cross-sectoral issues and the changing circumstances of development cooperation as these may involve higher education. The purposes of the Policy Roundtables are to bring higher education expertise to bear on the identification of key and emerging development problems, strategic approaches for their amelioration, and effective models of partnership for development; predict and describe the future of development cooperation to advance human, economic, and democratic development; and promote the constructive engagement of thinkers from the higher education community and USAID on topics of common concern. The Roundtables are helping define the content and process of future development cooperation, and the implicit agenda shared by higher education and USAID.

Previous Roundtables were:

1. *The Look of Development Cooperation Ten Years Out: What New Roles for the*

*State, Higher Education, Business and Industry, and the Community?*

2. *Higher Education, the Corporate Sector, States and Communities: Forming New Partnerships for Economic Development*
3. *The Greying of Development Expertise: What's Needed and How Will the Next Generation Get Trained?"*

The fourth Roundtable on *Increasing the Relevance of Higher Education to Development: What U.S. and Mexican Public/Private Partnerships Can Do* provided an opportunity for representatives from six pairs of U.S. and Mexican higher education institutions to share the progress to date of institutional relationships initially proposed during a February 1995 invitational meeting on "The Relevance of Higher Education to Development." The conference, hosted in Mexico City by ALO, ANUIES and the Institute of International Education's Office for Latin America, sought to engage educators, business leaders, and government officials in an intensive examination of existing collaboration between Mexican and U.S. higher education institutions and the private sector.

The resulting pilot initiative, the Partners in Development Program, consists of six pairs of Mexican/U.S. higher education institutions which aim to enhance the institutions' contributions to economic and social

development through collaboration with business and industry on sector-specific topics. Such higher education partnerships with the private sector are demonstrative of the ways in which universities, colleges and community colleges are able to enlarge their mandate of service to the local community, the state, the nation and the region. Institutional leaders expand capacity and diversify their funding sources by providing services seen as relevant by their external constituencies, and faculty relate their teaching and research to community needs and the challenges of an increasingly open economy. Students benefit from increased opportunities for study, travel and internships, and communities profit from the societal gains achieved at the local and regional level.

The agenda of the fourth Roundtable was to:

- o review outcomes and features of partnerships between Mexican and U.S. higher education institutions and their private sector partners,
- o enable USAID and other development organizations to assess “lessons learned” in utilizing higher education partnerships for local and international development,
- o promote models of higher education/private sector cooperation for economic and social development, and
- o discuss ways to link participating institutions electronically, and to invite other interested institutions and private sector groups to tap into on-going efforts through electronic means

As a backdrop to the meeting, one speaker from the World Bank offered the following assumptions about recent trends in the education sector. Educational expenditure, and other indicators in the agricultural, industrial and economic sectors, demonstrate widely varying global educational standards. To determine the rewards of investments in education, analysis has shifted from a focus on personal financial gain to a focus on per capita exports. Current international economic phenomena have scrambled our ideas about whom our competitors are. These factors provide new rationales for making well-placed investments across the education sector, from basic through advanced.

The changing nature of educational cooperation suggests that while the foreign aid budgets of industrialized countries are declining, collaboration across national boundaries in the education sector are increasing exponentially. Data, analytic techniques, reform ideas and expertise are those commodities which are being traded, primarily through international organizations such as the United Nations Educational, Scientific and Cultural Organization; International Association for the Evaluation of Educational Achievement; the Organization for Economic Cooperation and Development; and the World Bank. The dilemmas of higher education institutions in the world are becoming increasingly similar; creative solutions are required.

In this context, convening the U.S. and Mexican participants of the pilot network initiative, the Partners in Development Program, with some of their private sector partners, provided an

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**Policy Roundtable IV: The Relevance of Higher Education to Development**

opportunity for representatives of USAID and other international organizations to draw conclusions about the critical elements and impact of such international higher education partnerships, and the value they offer in furthering development objectives. Participants were taken by the serendipitous nature of the relationships as mention was made of their spin-offs and leveraging of resources. Their constraints and limitations also became clear, particularly in discussions of requirements for sustaining and supporting the linkages in the future. Although the primary focus was the U.S./Mexico pilot development network, the presence of representatives from similar ALO-supported networks in Latin America, East Central Europe and Africa added to the proceedings.

Roundtable discussions have been candid, which has added to their value. This report seeks to provide a sense of the discussion without attributing specific comments to the persons who made them. Many statements in the report deserve greater elaboration than was possible during the Roundtable. The report includes such observations to reflect the range and spirit of the exchange.

The ALO and USAID hope this report will promote further debate and discussion about worthwhile ways to join the resources and expertise of the higher education community in support of the nation's, and the world's, interests in global development in support of the nation's, and the world's, interests in global development.

## **INCREASING THE RELEVANCE OF HIGHER EDUCATION TO DEVELOPMENT: WHAT U.S. AND MEXICAN PUBLIC/PRIVATE PARTNERSHIPS CAN DO**

### **Features of the U.S./Mexico Partners in Development Program**

The pilot development network between U.S. and Mexican higher education institutions is a low-cost model for higher education partnership in service to development. It builds on linkages among U.S. and Mexican higher education associations; supports efforts at regional economic integration by focusing on the public service roles of higher education and its business and community partners; brings a broader array of citizenry into global development cooperation; and uses modest seed money to leverage multiples of resources from cooperating institutions and private sector partners.

**Association to association linkage:** The initiative was devised around a partnership between higher education associations: the Mexican Asociación Nacional de Universidades e Instituciones de Educación Superior (ANUIES) and the Association Liaison Office for University Cooperation in Development (ALO), on behalf of six presidentially-based, U.S. higher education associations. They are the American Council on Education with American Association of Community Colleges, American Association of

State Colleges and Universities, Association of American Universities, National Association of Independent Colleges and Universities, and National Association of State Universities and Land-Grant Colleges.

**Regional significance:** The North American Free Trade Agreement (NAFTA), to which the U.S., Mexico and Canada are party, declared the establishment of a free trade area among the three nations. The partnerships between higher education institutions which have resulted from the ALO/ANUIES initiative are well placed to take advantage of the increase in trade and investment opportunities between the U.S. and Mexico, particularly as these opportunities involve their private sector partners and relevant government ministries.

**Non-traditional players:** The participating U.S. colleges and universities offer a range of experience in the international arena. Some are well-known for the contributions they have made in this area, while others are fairly new to such efforts. Many parts of the U.S. and Mexican institutions, some relatively new to international engagements, have been tapped for their expertise. From their domestic experience, the institutions offer models of collaboration with business and industry, local and regional government, and private voluntary organizations which their partner institutions may adopt, modify, or decline as deemed appropriate.

## Policy Roundtable IV: The Relevance of Higher Education to Development

### *Relatively modest resources and management*

**burden:** The total amount of the grants awarded to the U.S. institutions as part of the Partners in Development Program ranged from \$11,013 to \$15,394. The pilot network imposes minimal or no management burden on USAID.

### Results and Impact of Partnerships

The six U.S./Mexican partnerships share some common attributes. All developed around sets of reciprocal visits of administrators and faculty to partner institutions. The visits provided those involved the opportunity to jointly identify and define sector-specific areas of collaboration.

Without apology, these areas are described as being in the mutual self-interest of all parties. With regard to results, all the relationships have achieved some short-term development outcomes, yet were envisioned to be of benefit to the institutions over the long-term.

Each of the partnerships is noteworthy for some particularly interesting feature: Purdue University/Instituto Tecnológico y de Estudios Superiores de Monterrey for its use of advanced communications technology; the Maricopa Community College/Universidad Autónoma de Baja California Sur for its private sector and state and local government involvement; Ohio State University/Colegio Postgraduado en Ciencias Agrícolas for its involvement of the Ohio AgriBusiness Association and counterpart interests in Mexico; California Polytechnic State University, San Luis Obispo/Instituto Tecnológico de Culiacán for its creation of a

virtual organization for international technology transfer; West Virginia University/Universidad de Guanajuato for its emphasis on providing learning opportunities for their respective student populations; and Montana State University/Universidad Autónoma de Baja California for its numerous spin-offs related to teaching, research and service in environmental sustainability, technology transfer and economic development.

**Models identified for increasing the role of higher education institutions in economic and social development.** Although at various stages of implementation, the U.S./Mexico partnerships add to the continually growing knowledge base of successful models of development cooperation. The cases described herein demonstrate that modest investments of resources may serve as a catalyst, and that initial investments often have multiplier effects as new players become involved in partnership activities. The end result is problem-focused collaboration that attracts serendipity.

**Policy dialogue enhanced.** As the results of these partnerships become known to others in academia in Mexico and the U.S., and their private sector, government and community partners, there is an increasing awareness of the importance of supportive public policy at the national level to recognize and allow for creative experiments in new forms of global development cooperation. National governments must be willing to provide the financial resources and incentives to encourage higher education

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**Policy Roundtable IV: The Relevance of Higher Education to Development**

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institutions to integrate public service with teaching and research that is in the national interest.

***Challenges identified for higher education and economic reform in newly industrialized***

***countries.*** Colleges and universities are bringing the fruits of their engagement in such partnerships to their students and communities. In the U.S. and Mexico, students and faculty are learning about the challenges in achieving economic development while attending to environmental, social equity, and other concerns.

***Development communications expanded.*** These U.S./Mexico partnerships developed from discussions on higher education's role in global development, and sets of reciprocal visits of university and college administrators to their partners' institutions. Individual institutions have described their partnerships at higher education association meetings, and at informal sessions at USAID and multilateral development banks.

New communication technologies make institutions more aware of their common interests, and more able to address them. To build and sustain the U.S./Mexico relationships, participants are exploring mechanisms to link the twelve institutions electronically. This will enable the network to mature through on-going communication, perhaps an Internet discussion group hosted by one of the participating institutions. This information network will contribute to the exchange of information,

experience and ideas on the notion of public/private partnerships and may serve as a forum for the discussion of broader topics relating to increasing the relevance of higher education to development.

***Regional cooperation increased.*** Within the context of NAFTA, the ALO/ANUIES collaborative effort serves to further the goal of economic integration through regional higher education cooperation. NAFTA is a tremendous opportunity for institutions of higher learning, and their private sector partners, as they experiment with innovative and enriching relationships to achieve this end.

***Resources leveraged from diversity of sources.*** The institutions successfully leveraged relatively modest funding to attract additional resources from several sources including foundations and corporations. If one were to include these as well as in-kind staff costs and foregone indirect costs, the average amount leveraged per grant ranges from two to twenty-fold the original investment. The initiative demonstrates a way to expand the array of partners engaged in global development, particularly in an era of declining public support for such efforts.

***Broader U.S. constituency for development cooperation promoted.*** As private citizens, those involved in the U.S./Mexico pilot development network are more likely to speak on behalf of increased U.S. involvement in international development cooperation. These individuals who clearly understand the benefits of such

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## Policy Roundtable IV: The Relevance of Higher Education to Development

cooperation will serve the interests of development by advocating for cooperation internationally.

### Critical Elements for Success

Although the partnerships vary widely in scope and area of focus, there are ingredients mentioned by some or all of the partners which have made for a productive, cooperative working alliance. A list of these ingredients follows:

**Seed money.** Participants in the Partners in Development Program invariably agree that the seed money provided by ALO was crucial to their being able to implement the activity as proposed. Some of the Roundtable participants referred to long-standing agreements with higher education institutions overseas which have not progressed in ten years as far as the U.S./Mexico partnerships have in two years. Despite an institutional commitment to international activities, institutional linkages are not effective without the funding which allows administrators and faculty to visit each other's campuses to know their partners and their partners' institutions, and to jointly envision and design programs.

**Broad institutional commitment.** Seed money is vital, but will not be effective if the institution is not committed to international engagement over the long-term. For administrators and faculty to be effectively involved, they must know that there is support for the effort throughout the institution. Word of the results of these

partnerships needs to be spread within participating institutions.

**Mutual self-interest.** Roundtable participants were unequivocal in their opinion that in order for a partnership to succeed, it must be designed to be of benefit to both institutions and all others involved. The partners identify their own priorities and create their own models rather than respond to an external directive. These relationships have little basis in altruism. One Roundtable participant applied this reasoning to U.S./Mexico relations at the national level. Interactions concerning the two countries, in the area of higher education or otherwise, tend to be in the national self-interest of both. The ALO/ANUIES effort seeks to foster prosperity for peoples on both sides of the border.

**Private sector involvement in early stages of partnership.** If indeed the aim of these partnerships is to demonstrate the value of involving higher education institutions to a greater degree in local and regional development through partnership with business and industry, then private sector entities must be regarded as true partners in the process from the earliest stages of the relationship. A Roundtable participant representing the private sector reminded the group that when approaching business and industry, one must present one's proposal for their participation in a manner which makes them aware that their "bottom line" is understood and respected.

**Well-defined focus.** Although the six U.S./Mexico partnerships have spurred some traditional student and faculty exchange programs, the notable activities are those which promote local and regional economic development in specific program areas. Topics are as varied as tourism, water resources management, and agribusiness, but in all cases the nature of the collaboration is well-defined; activities have specific goals and measurable results.

**Alumni affiliation.** In several of the cases, the partnerships have built upon associations with alumni, usually Mexican graduates of U.S. universities and colleges. Roundtable participants mentioned that the value of alumni relationships in furthering understanding and loyalty toward the partner institution should not be underestimated. This led to further discussions about tapping the expertise of alumni of U.S. institutions who are now well-positioned in their own societies to assist in pursuing development agenda.

**A long view.** Developing truly effective, mutually beneficial partnerships requires persistence. As one Roundtable participant stated, an impatient time scale simply will not do. Agreeing to a flexible time frame for the development and implementation of the partnerships may assist in ensuring that the partnerships be of use to the institutions for many years to come.

**Personal relationships.** Roundtable participants referred to the importance of the seed money in enabling representatives to travel to partner institutions to know their partners first as individuals in their society, and secondly as representatives of their campus. Although the rewards of this nurturing period cannot be quantified, most representatives agreed that personal relationships and cultural empathy are key to the success of these partnerships.

### **Policy Implications**

In a rapidly changing world, the implications for using these types of international higher education partnerships to further economic and social development are many.

**Sustained funding sources.** Although the Roundtable participants recognize that a modest amount of seed money can yield extraordinary impacts with regard to initiating projects, they are also aware that the extent to which good ideas can thrive depends upon more stable and predictable sources of funding. As described by one Roundtable participant, the partnerships pass through three phases: the initial phase, the growth phase and the self-supporting phase. Most of the six U.S./Mexico partnerships are now entering the growth phase; initial seed monies have been exhausted, however, the activities are not yet able to support themselves. Until the partnerships are self-sustaining,

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## Policy Roundtable IV: The Relevance of Higher Education to Development

government agencies and the partner institutions should consider support for core functions to maintain early gains. In the continuous search for alternative sources of funding, Roundtable participants were encouraged to approach their business and industry counterparts with creative ideas for private sector funding, keeping in mind the immediate needs of the private sector to generate income.

***Faculty incentives.*** Higher education institutions must create incentives for faculty involvement in these types of arrangements by ensuring that guidelines for tenure and promotion reward faculty for their participation in international activities such as these. During their most productive years, faculty are often constrained by guidelines which do not credit them for approaching such activities with the creative, entrepreneurial spirit required. As one Roundtable participant stated, enlightened support, including financial support, from administrators is essential to inspiring faculty.

***Public relations-style campaigns.*** According to one USAID representative, the primary challenge for academia is to describe the role that higher education can play in the development process, particularly in economic growth and other quality of life areas. Higher education must make this case to a development community which is unaware or skeptical of higher education's performance in these areas. Public

presentations should marshal the evidence of development results abroad and at home. When business and local government partners join with higher education in making the case for international development cooperation, the message can be very convincing. The USAID representative added that the U.S./Mexico Partners in Development Program, and other ALO-supported pilot development networks, assist in creating a climate for new experiments elsewhere.

## **APPENDICES**

# ASSOCIATION LIAISON OFFICE FOR UNIVERSITY COOPERATION IN DEVELOPMENT

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American Council  
on Education  
American Association  
of Community Colleges  
American Association  
of State Colleges  
and Universities  
Association of American  
Universities  
National Association of  
Independent Colleges  
and Universities  
National Association of  
State Universities  
and Land Grant  
Colleges

## AGENDA

### HIGHER EDUCATION AND GLOBAL DEVELOPMENT: Policy Roundtable #4

April 7-9, 1997

### Increasing the Relevance of Higher Education in Development: What U.S. and Mexican Public/Private Partnerships Can Do

*Sponsored with the U.S. Agency for International Development*

**National Center for Higher Education  
One Dupont Circle, N.W., Washington, DC  
Conference Center B-1**

#### April 7, 1997

Out-of-town participants arrive. Lodging at the Radisson Hotel Barcelo, 2121 P Street, N.W. or the Courtyard Marriott Hotel, 1900 Connecticut Avenue, N.W.

**6:00 - 8:30 p.m. Reception and dinner buffet for out of town guests  
Radisson Barcelo Hotel, Phillips Ballroom**

#### **Welcome**

Dr. Joan M. Claffey  
Director, Association Liaison Office for University  
Cooperation in Development

Dr. Emily Vargas-Baron  
Deputy Assistant Administrator  
Center for Human Capacity Development  
Bureau for Global Programs, Field Support and Research  
U.S. Agency for International Development

Lic. Alberto Fierro  
Deputy Cultural Attache  
Embassy of Mexico

**April 8, 1997**

**8:15 a.m.**      **Coffee, pastries. Meet participants.**

**8:30 a.m.**      **Introductions and Agenda**

Dr. John C. Vaughn, Roundtable Moderator  
Executive Vice President, Association of American Universities

**8:45 a.m.**      **Fostering New Partnerships**

- o The Association Liaison Office for University Cooperation in Development

Dr. Joan M. Claffey, Director

- o Asociación Nacional de Universidades e Instituciones de Educación Superior

Mtro. Alejandro Mungary Lagarda, Academic Secretary

- o U. S. Agency for International Development

Dr. Emily Vargas-Baron, Deputy Assistant Administrator

**9:15 a.m.**      **Case I - Collaborating in Instruction, Research, and Economic Development - Purdue University and Instituto Tecnológico y de Estudios Superiores de Monterrey**

**Purdue University:** Dr. Michael Stohl, Dean of International Programs; Dr. Luis M. Proenza, Vice-President of Research and Dean of the Graduate School

**Instituto Tecnológico y de Estudios Superiores de Monterrey:** Dr. Fernando J. Jaimes, Dean, Graduate Studies and Research; Ms. Leticia Santos, Director, Department of International Programs

- 10:00 a.m. Case II - Collaborative Training Programs for the Hospitality and Water Resources Management Industries - Maricopa Community Colleges and Universidad Autónoma de Baja California Sur**
- Maricopa Community Colleges:** Ms. Bertha A. Landrum, Director of Business and Workforce Development; Ms. Rebecca Brown, Director for International Education
- Universidad Autónoma de Baja California Sur:** Ing. Sergio Zamora Salgado, Director General of Academic Affairs; M.C. Oscar Palos Arocha, Head of the Department of Economics; and M.C. Manuel Angeles Villa, Research-Professor in Economics
- 10:45 a.m. Break**
- 11:00 a.m. Development Challenges for Higher Education: What's Next?**
- Dr. C. Peter Magrath, President, National Association of State Universities and Land-Grant Colleges
- 11:15 a.m. Case III - Partnering with Agribusiness - Ohio State University and Colegio Postgraduado en Ciencias Agrícolas**
- Ohio State University:** Dr. David O. Hansen, Associate Dean and Director of International Programs in Agriculture; Dr. Jerry R. Ladman, Professor, Department of Agricultural Economics
- Colegio de Postgraduados en Ciencias Agrícolas:** Dr. Angel Lagunes Tejeda, Director General; Dr. Francisco Escobar Vega, Director de Asuntos Internacionales
- Ohio AgriBusiness Association:** Mr. Gary King, President and CEO
- 12:00 p.m. Lunch provided**

**1:00 p.m.**

**Case IV - International Virtual Organizations to Meet Technological Development Challenges - California Polytechnic State University at San Luis Obispo and Instituto Tecnológico de Culiacán**

**California Polytechnic State University:** Dr. Joseph Montecalvo, Jr., Teaming Co-Director; Dr. Susan Opava, Dean, Research and Graduate Program; Dr. Rubén Rojas-Oviedo, Chair, Mechanical Engineering Department (Alabama A & M University)

**Instituto Tecnológico de Culiacán:** Mtro. Francisco Miguel Cabanillas Beltran, Director

**1:45 p.m.**

**Case V - Assisting the Business and Producer Sectors - West Virginia University and Universidad de Guanajuato**

**West Virginia University:** Dr. Victor Muciño, Associate Professor, Department of Mechanical and Aerospace Engineering; Dr. Gerald E. Lang, Provost and Vice-President for Academic Affairs

**Universidad de Guanajuato:** Juan Carlos Romero Hicks, Rector; Ing. Víctor M. Ramirez, Director of Academic Exchanges

**2:30 p.m**

**Break**

**2:45 p.m.**

**Synthesis of Results and Impact and Critical Elements for Success**

Respondent(s) on Results and Impact. What conclusions may be drawn about the results of these partnerships? What is the impact on the institutions, private sector, and communities?  
Group discussion.

Dr. John Byrne, President Emeritus, Oregon State University

Respondent(s) on Critical Elements for Success. What characteristics have made the partnerships successful? Are there other ingredients the group considers key to creating a cooperative working alliance? Group discussion.

Dr. Hiram Larew, Science and Technology Specialist, Bureau for Policy and Program Coordination, USAID

**4:30 p.m. Adourn**

**April 9, 1997**

**8:15 a.m. Coffee, pastries**

**8:30 a.m. Re-Cap of Day One**

Moderator

**8:45 a.m. Case VI - Enhancing Environmental Sustainability and Technology Transfer in Mexico and Montana - Montana State University and Universidad Autónoma de Baja California**

**Montana State University:** Dr. Norman Peterson, Director of International Education; Ms. Beth Davenport, Special Programs Manager, Office of International Education

**Universidad Autónoma de Baja California:** Lic. Víctor Manuel Alcantar Enrique, Director General of University Extension; Mtro. Rene Palacios Barrios, Coordinator of the Planning and Institutional Development Commission

**9:30 a.m. Higher Education Networks for Development in --**

**Latin America:** Dr. Elizabeth Lowe, University of Florida

**Carpathian Region of East Central Europe:** Mr. Robert Thomas, Associated Colleges of the South; Dr. Tomáš Sabol, Association of Carpathian Region Universities

**Africa:** Dr. Harold Vaughn, American Association of State Colleges and Universities; Dr. Dominic Tarpeh, Association of African Universities

**10:15 a.m. Break**

**10:30 a.m.**

**Synthesis of Policy Implications for Public/Private Partnerships**

Respondent(s) on Policy Implications. What are the feasibility and limitations of using these U.S./Mexican models in other areas of the world? What factors may determine this model's applicability elsewhere? Group discussion.

Dr. John Jessup, Center for Human Capacity Development, Bureau for Global Programs, Field Support and Research, USAID

**11:00 a.m.**

**Perspectives of Donor and International Organizations on Professional Networks for Development Cooperation**

Dr. Stephen Heyneman, Chief, Human Resources and Social Policy Division, Europe and Central Asia Regional Office, World Bank

**11:45 a.m.**

**Mechanisms for Future Partnership/Network/Consortia**

Group discussion on ways in which this particular network may benefit other Mexican and U.S. higher education institutions -- ways in which to link participating institutions electronically, and invite others to tap into on-going efforts through electronic means.

Mexican higher education representatives

U.S. higher education representatives

**12:30 p.m.**

**Adjourn**

## Higher Education and Global Development Policy Roundtable #4

Lic. Víctor Manuel Alcantar Enriquez  
Director General  
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Blvd. Benito Juárez, Unidad Universitaria  
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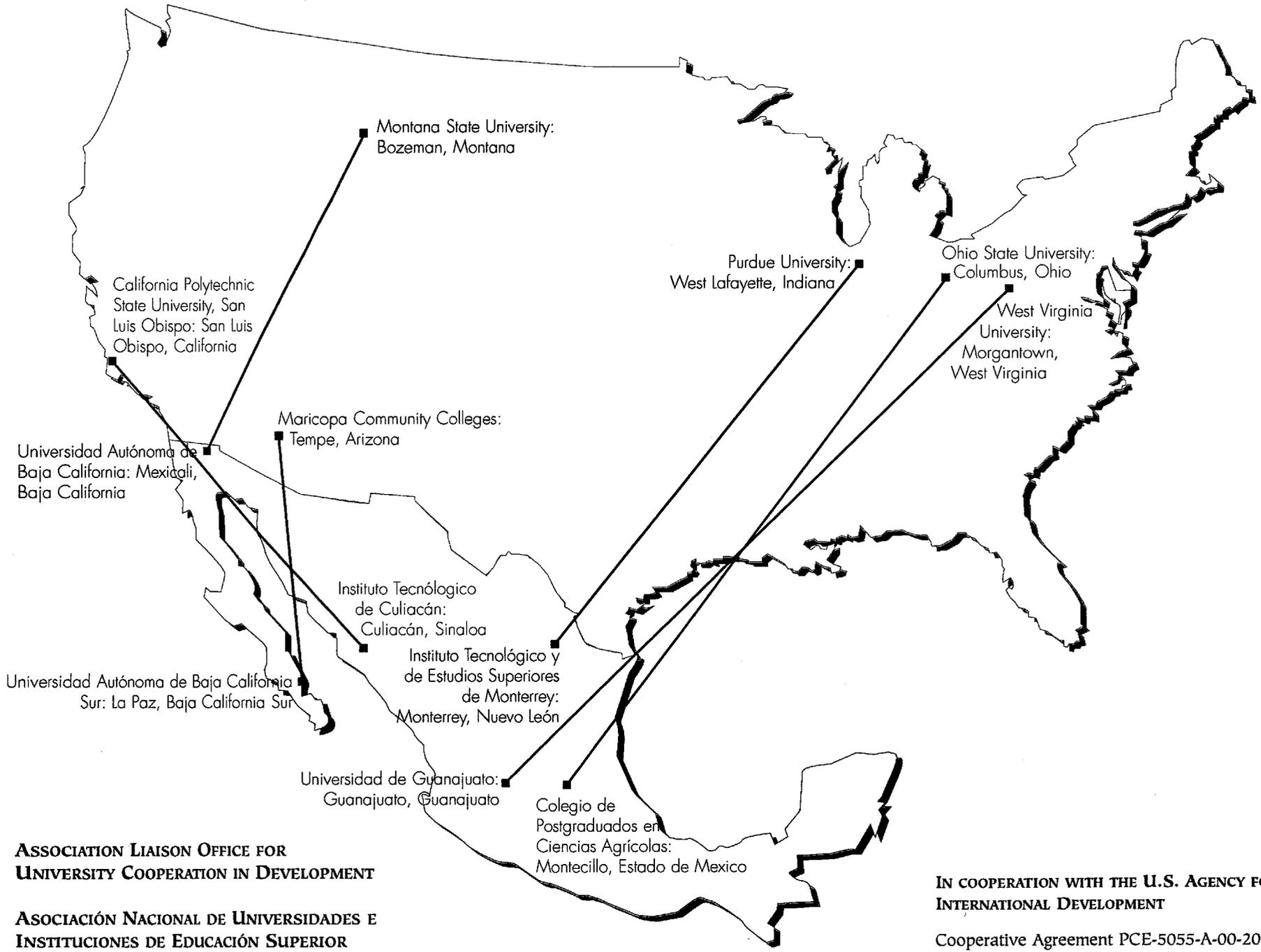
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# Conference of the U.S./Mexico Partners in Development Program

April 7-9, 1997 ■ Washington, D.C.



**ASSOCIATION LIAISON OFFICE FOR  
UNIVERSITY COOPERATION IN DEVELOPMENT**

**ASOCIACIÓN NACIONAL DE UNIVERSIDADES E  
INSTITUCIONES DE EDUCACIÓN SUPERIOR**

**IN COOPERATION WITH THE U.S. AGENCY FOR  
INTERNATIONAL DEVELOPMENT**

Cooperative Agreement PCE-5055-A-00-2012-00

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**Case Presentation**

**Purdue University: West Lafayette, Indiana  
and  
Instituto Tecnológico y de Estudios Superiores de Monterrey:  
Monterrey, Nuevo León**

**Conference of the Partners in Development Program Initiative  
April 8-9, 1997  
Washington, D.C.**

**Association Liaison Office for University Cooperation in Development  
and  
Asociación Nacional de Universidades e Instituciones de Educación Superior**

**In cooperation with the U.S. Agency for International Development  
Cooperative Agreement PCE-5055-A-00-2012-00**

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## The ITESM-Purdue Alliance

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### DEVELOPING THE PARTNERSHIP

#### PHASE I: BACKGROUND

During the past two years, the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) and Purdue University have initiated a university wide set of linkages. Building upon faculty relationships in the agricultural sciences and engineering and a visit by the International Trade Division of the Indiana Department of Commerce to ITESM, Dean of International Programs, Michael Stohl; Vice President for Research and Dean of the Graduate School, Luis Proenza, both of Purdue, and Fernando Jaimes, Dean of Graduate Studies and Research, ITESM, planned an initial visit by Purdue to ITESM to explore potential collaboration. From February 6-8, 1995, the Purdue delegation consisting of Drs. Proenza and Stohl accompanied by David Sammons, Director of International Programs in Agriculture; Larry Huggins, Associate Dean of Engineering; Herbert Moskowitz, Director of the Center for the Management of Manufacturing Enterprises; Mikhail Atallah, Professor of Computer Sciences; and Glenn Sullivan, Professor of Horticulture, visited ITESM for wide ranging talks and visits. On this occasion, the Purdue delegation met and spoke with the President of the ITESM System, the President of the Monterrey Campus and 30 members of ITESM's academic community, including senior administrators, deans, directors of graduate

programs and research centers, and faculty. Upon their return the Purdue delegation briefed the academic deans, the Executive Vice President for Academic Affairs and the President of the University on the potential of the collaboration. Consultation between Purdue and ITESM counterparts led to the decision by Purdue to invite a delegation from ITESM to participate in a return visit and to explore further collaboration. Shortly thereafter, the Association Liaison Office for University Cooperation in Development (ALO) announced its decision to sponsor the partnership.

## **PHASE II: FIRST STEPS IN THE ALO SPONSORED PARTNERSHIP**

A delegation from ITESM visited Purdue from September 28 to October 1, 1995. Led by Ramón de la Peña, President of the Monterrey Campus, the delegation included Fernando J. Jaimes, Dean of Graduate Studies and Research; Ricardo Contreras, Director of Satellite Distance Education/National System; Patricio López del Puerto, Dean of Science and Humanities; Juan Vega, Dean of the School of Agriculture and Food Technology; Eugenio García, Director of the Integrated Manufacturing Systems Center; and Alberto Bustani, Director of the Environmental Quality Center.

This visit, supported by ALO with funds provided by the U.S. Agency for International Development, enabled the two institutions to build upon the foundation established by Purdue's visit to ITESM in:

1. partnership activities that will link the two universities, the private sector and the state in economic development initiatives,
2. partnership activities that will link the two universities, the private sector and the state in collaborative research initiatives,
3. partnership activities that will link the two universities in the development of their curricular offerings.

The visit deepened our understanding of our respective institutions and added a further layer of faculty and administrative linkages. The representatives of Purdue and ITESM agreed to a comprehensive strategy to create linkages in teaching, research and service and which includes a short and long term strategy. This strategy seeks to accomplish important goals in the short term while at the same time building a firm base for developing broad collaborative academic and economic development projects for the long term.

During the visit the ITESM representatives met with sixty Purdue faculty and staff including:

1. all senior Purdue administrators,
2. directors of key research centers,
3. representatives of the International Trade Division of the Indiana Department of Commerce and representatives of key industrial partners brought to the Purdue campus by the Office of Industrial Relations.

The ITESM visit led to a good deal of interest among the faculty. Following the visit, a number of collaborative projects were identified.

### **A. Teaching**

1. Our two institutions have long distance teaching/learning opportunities. Technical details such as satellite footprint, etc. are being investigated to put the power of the two institutions together. Our respective Schools of Engineering proposed an experimental trade of courses each in the sending university's home language which will not only enable us to share engineering teaching resources, but also develop opportunities for delivering foreign language across the curriculum.
2. Purdue's Spanish Department was preparing to receive the ITESM course sequence "Socio-Cultural Values in Latin America."
3. Internships and Study Abroad  
Faculty from Engineering and Management of the two schools agreed to explore the development of an internship program with their students at the other's institution and host country. A study abroad exchange relationship for academic year, semester and summer were discussed.

### **B. Research**

1. Encourage the Development of Collaborative Research Opportunities  
Purdue and ITESM faculty began to identify specific areas for collaborative research and funding opportunities.

Faculty have begun exploring joint preparation of proposals in agriculture, biotechnology, business development, environmental policy and remediation and remote sensing.

2. The Development of Joint Workshops and Faculty Visits  
ITESM partners invited faculty with whom they interacted to conduct workshops and short courses. Faculty in Technology and Management discussed topic development and schedule.

### **C. Service**

1. Faculty and staff from the Purdue CIBER and the ITESM's International Competitiveness Center planned to explore economic development opportunities.
2. The Center for Agribusiness at both institutions continued their collaborative efforts to develop the export and processing of melons and the further development of the industry.

### **FOR THE LONG TERM: A COMPREHENSIVE APPROACH TO DEVELOPING THE PARTNERSHIP**

1. In Teaching: To explore new educational delivery systems and develop new technologies including using distance education to expand the teaching of foreign language across the university.
2. In Research: To explore new areas of investigation and new sources of funding.
3. In Economic Development: To explore new ways to link our domestic and international clientele and to assist in increasing trade and investment between our countries.

### **RESEARCH: SEEKING NEW FUNDING PARTNERS**

1. Our strategy involved exploring industrial, NSF, CONACyT and foundation sources building upon the strong industrial linkages of both partners.
2. We targeted a number of foci for the collaborative enterprises and identified the research centers within each institution to serve as initial partners.

## RESEARCH: NEW COLLABORATORS

ITESM	Purdue
Environmental Quality Center	Environmental Science and Engineering Institute, Laboratory for Applications of Remote Sensing (LARS) and Natural Resources and Environmental Science (NRES)
Biotechnology Center	Biotechnology Institute
International Competitiveness Center	Center for International Business Education and Research (CIBER) and Center for Agricultural Business (CAB)
Informatics Research Center	The Departments of Computer Science and Agricultural Engineering
Integrated Manufacturing Systems Center	The Center for Integrated Manufacturing Technology

### PHASE III: ITESM VISIT MAY 20-22, 1996

A delegation from Purdue University, consisting of Dean of International Programs, Michael Stohl; Dean of Engineering, Richard Schwartz; Dean of Agriculture, Victor Lechtenberg; Dean of Technology, Don Gentry; Associate Vice President for Research, Gary Isom; Gordon Coppoc, Head of Basic Medical Sciences, School of Veterinary Medicine and John Schneider, Director, Office of Industry and Relations, visited ITESM from May 20-22, 1996.

The purposes of the visit were: (1) to visit with the faculty and staff of the ITESM to explore collaborative research opportunities, (2) to visit with an invited set of six corporations to identify areas of common interest and complementary resources for sponsored research projects for which Purdue and ITESM research teams working collaboratively could develop research proposals, and (3) to meet with local Alumni to create opportunities for continued association.

### Results thus far:

1. Summer and Semester student exchange in agriculture, the liberal arts and computer science.
2. Negotiation with U. S. Agribusiness to participate in an internship program with ITESM graduate students.
3. Curricular development and faculty exchange in Management and Technology.
4. A research project in biotechnology and collaboration for joint submission of research proposals in the environmental area.
5. A proposal for a project in manufacturing with a large international firm in the electronics industry.
6. Discussion of the development of a joint Executive Masters program.
7. Development of a research project for the teaching of calculus which also includes faculty from UNAM.

### ASSESSMENT

After somewhat more than two years and three high-level visits by delegations from Purdue and ITESM to the partner university, both institutions are convinced that there is a strong future for collaboration in many areas. Particularly promising has been the recent advance with the manufacturing project, a direct outgrowth of the evolving partnership. However, though the development of specific collaborative projects and programs between faculty is beginning to take place, we must recognize that thus far this has been small scale and that expanding this scale presents important challenges. Examining the factors that come into play at this critical state of partnership development and the means to enhance potential for successful expansion in a reasonable time frame would be a valuable topic for discussion at this meeting.

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**Case Presentation**

**Maricopa Community Colleges: Tempe, Arizona  
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Universidad Autónoma de Baja California Sur: La Paz, Baja California Sur**

**Conference of the Partners in Development Program Initiative  
April 7-9, 1997  
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**Association Liaison Office for University Cooperation in Development  
and  
Asociación Nacional de Universidades e Instituciones de Educación Superior**

**In cooperation with the U.S. Agency for International Development  
Cooperative Agreement PCE-5055-A-00-2012-00**

## **Maricopa Community College District, Arizona and Universidad Autonoma de Baja California Sur, Mexico**

### **Development of the Partnership**

The Maricopa Community College District (MCCD) was first introduced to the "Partners in Development" program in February 1995 at a conference on "Relevance of Higher Education to Development." Chancellor Paul Elsner and Bertha Landrum, Director of Business & Workforce Development of MCCD and Dr. Ray Waddoups, then Vice-President of Motorola University presented a session on the Maricopa Community Colleges/Motorola University Partnership that was established in 1989. The objective was to illustrate how a partnership model can operate between industry and education.

At that time a partnership between MCCD and another Mexican University was proffered, however, following discussions did not lead to viable plans. In the meantime, Dr. Jesus Druk Gonzales, Rector of Universidad Autonoma de Baja California Sur (UABCS) visited MCCD with a tour group sponsored by the Association Liaison Office for University Cooperation in Development (ALO) and Association Nacional de Universidades e Instituciones de Educacion Superior (ANUIES), in October 1996 and expressed an interest in partnering if the other arrangement did not work out. In Spring 1996, MCCD and UABCS initiated contact and arranged for Javier Gaitan, now Secretario General, and Manuel Angeles Villa, professor of Economic, both of UABCS and Bertha Landrum to meet in Phoenix in June 1996 to collaborate on a proposal to ALO. The proposal was accepted and an agreement with a commencement date of September 24, 1996 was issued to the partnership.

## **Goals of the Partnership**

Using the language in the letter of agreement, “The aim of the proposal activities is to develop long term collaborative relationship in:

- human resources training
- international economic development and
- research

between the two institutions, with their respective private sectors and states, to further economic development. There will be two areas of focus:

- (i) the tourism and services industry, and
- (ii) water resources management.”

Goals of the project are to result in

- a. Develop a training curriculum and implementation plan that addresses the staffing needs of the hospitality and restaurant industry of Los Cabos and La Paz, with a training site in the Los Cabos area with industry collaboration
- b. Develop a UABCS plan to respond to needs of small business
- c. Establish an exchange between international business faculty of UABCS and MCCD to increase knowledge of how to do business with respective countries
- d. Identify education and training approaches to water resources management in the Phoenix area that can be applicable in Baja California Sur.
- e. Develop a strategy for UABCS to engage with its state economic development office on issues regarding water resources management.
- f. Investigate possibilities for low water use agriculture to identify methodologies adaptable to Baja California Sur.

These goals were identified due to the desire of UABCS to become a recognized partner in the economic development milieu of Baja California Sur and to respond to the requests of the hospitality/tourism industry to help address the problem of a shortage of people prepared for positions in this industry, particularly in the Los Cabos area. The municipalities had identified water use and resources as a critical factor influencing the future economic development of the state.

### **The Process for Addressing the Goals**

The agreement stipulated 4 exchange visits, 2 each by representatives of UABCS and 2 from MCCD personnel “get inside the works” or immersion in each locality and interact directly with the people working on the same types of issues and personally illustrate practices that work.

The first visit was planned for representatives of UABCS to come to the Phoenix area and MCCD in October 1996, but a student take over of the UABCS campus prevented administrators and faculty from using their offices, phones and other communication. Once the student problem was resolved the visit was scheduled for November 11-16, 1996, for four faculty to participate as follows:

Jose Luis Diaz de Leon, Research Professor of Agricultural Sciences

Manuel Angeles, Professor of Economics

Jose Antonio Navarro, Professor of Economics

Ismael Rodriguez, Professor of Economics

The meetings in and around the Greater Phoenix Metro area and with MCCD were set up to key in on the following 3 major areas to get ideas flowing:

- a. Economic Development — included a review of the MCCD economic development program with staff of the Office of Business & Workforce Development; a meeting with staff of the Greater Phoenix Economic Council, the marketing/business attraction organization for the 19 communities of Greater Phoenix; familiarization with MCCD international business and international faculty and student exchange programs; and meeting with MCCD/State Director of Small Business Development Center Network that assists small business to improve performance and profitability.
  
- b. Hospitality Industry Human Resource Development — included a series of visitations with the key players in developing a collaborative approach to developing a pipeline of talent for careers in the industry in Scottsdale, Arizona; meeting with City of Scottsdale Director of Tourism and Hyatt Hotels training coordinator in a discussion of how they established an industry/education/government group and leveraged shared resources to address the issue of shortage of people prepared to pursue careers in their industry; meeting at Scottsdale Community College with International Business and Hospitality and Restaurant Management faculty and Northern Arizona University staff to illustrate how their programs operate, ladder together and their roles in the Scottsdale partnership for hospitality industry careers development; not in the original schedule, a tour, lunch and meeting with staff of MCCD's Skill Center was added to look at the food preparation program, and back office skills training that supports reservations and travel agency operations; and, finally dinner at the Scottsdale Culinary Arts Dining room where students host, prepare, and serve a gourmet dining experience as they prepare to become chefs.

- c. Water Use and Management — Arizona has addressed some extremely critical water issues in the past 30 years and now has a 50 year water supply while the population has more than doubled in those years along with more than 100 golf courses in the Greater Phoenix area alone, many of them watered by treated waste water. While many acres have been taken out of agricultural production, it has been possible to increase yields on acreage with fairly high levels of salinity of the water. Visits included meeting with International and Mexico Programs staff of Salt River Project, an electrical and water management utility, for discussions on water management training programs, the halophyte project; visit to the Maricopa Agricultural Center in the open desert 50 miles south of Phoenix for a site tour and discussion of low water use agriculture research, especially with water having high saline content. (See attached itinerary to visit.)

Now the seeds had been planted. It should be noted that UABCS faculty had conducted an initial survey of the “Tourism Employment and Training Needs in the Touristic Corridor of Los Cabos in Baja California Sur, Mexico”, which provides a general frame of reference of the industry employment needs.

The exchange visit for MCCD and industry and government representatives was set for February 16-21, 1997, in Baja California Sur in Los Cabos and La Paz. It was arranged for the following persons to participate:

Bertha Landrum, Director, Business & Workforce Development, MCCD

\*Richard Wetzel, Director of Tourism, City of Scottsdale, AZ

\*Denise Pruitt, Training Coordinator, Hyatt Hotels

\*Jamie Nielsen, Training Manager, Hyatt Hotels

Larry Williams, Coordinator, Hospitality & Restaurant Management, Scottsdale Community College

\*Leon Button, Professor, International Business, Scottsdale Community College

\*Reyes Medrano, Professor, International Business, Paradise Valley Community College

\*All or part of these individuals cost of participation came from resources outside the USAID funded project.

The staff of UABCS had worked to set-up a series of meetings that would engage the representatives of MCCD and the Scottsdale partnership in an interaction or immersion with the local communities of Los Cabos and La Paz.

#### **Meetings in Los Cabos, BCS**

The 2 days of working meetings in Cabo San Lucas brought in representatives of the hoteliers, restaurateurs, secondary schools, public trade schools (CONALEP), Fonatur, municipal water and water treatment officials and coordinators of tourism. Dr. Jesus Druk Gonzales, Rector of UABCS opened the meeting followed by a presentation by the State Office of Economic Development and Promotion and the state economic development plan. Dr. Gustavo Foria, state tourism coordinator assisted in convening the sessions.

After formalities, brief presentations were given by UABCS and MCCD regarding the aim of the project and the economic development impact for tourism development in developing human resources with the industry. The Hoteliers discussion revealed their disappointment with the CONALEP training program for not turning out people qualified

to work in their establishments. They expressed interest in joining together into a collaborative enterprise such as the one described by Richard Wetzel of the City of Phoenix, the Hyatt Hotels representatives and Larry Williams of Scottsdale Community College.

While the president of the Los Cabos Hotels Association acknowledged the need for qualified personnel and expressed concerns about where the money would come from, other hotel managers were more positive. Discussions centered on expanding and relocating the small UABCS center currently in Cabo San Lucas and the need to professionalize careers in the industry. The hoteliers agreed to form a council of education, industry and government representatives to explore development of a program.

The municipal water representatives and National Water Commission representatives were very interested in looking at training programs in low water use landscaping and water/wastewater treatment and desired to collaborate with UABCS on water conservation issues.

### **Meetings in La Paz, BCS**

In one day of meetings in La Paz, the Rector again opened the meetings and Dr. Farias again stayed the entire day to help chair the meetings. Again in addition to UABCS and MCCD representatives, the participants were from the hotels, restaurants, the State Economic Development Agency, National Water Commission, Municipal Water Authority, and the secondary vocational and technical education institutions and a labor representative.

The hoteliers were very interested in coming together in an alliance to tackle the shortage of qualified personnel. They requested a survey of their needs and a pair of consultants from Arizona to come and analyze their training needs. The educators were interested in improving their performance and expressed a need for support and faculty training from the industry and money for better equipment reflecting the realities in the business, especially in foods preparation. Discussion also centered on the possibility of UABCS developing an Associate Degree program with the industry.

In Water management the discussion centered on a need for conservation of their water resource and repair to the leaks in the municipal system where 30% of the supply is lost. These measures would improve the water table levels that are the water source for the community. The group concluded that an education, industry, government partnership was needed to address the issues. The municipal water representatives wanted to come along on the next trip to Phoenix to meet with municipal water personnel and investigate water conservation efforts.

Both groups in Los Cabos and La Paz appeared to be at a point of agreement to form Advisory Councils with UABCS and to begin the process of designing educational programs and deciding where these would occur.

UABCS and MCCD faculty were also able to meet together and discuss curriculum exchange and developing respective courses on how to do business in both countries.

Future work emanating from this first series of exchange visits are as follows:

- a. Creation of linkages between education, industry and government
- b. Develop a plan for education and training support with hospitality industry

- c. Embark on the feasibility study on water resource issues and educational support
- d. Conduct survey of employment/training needs in La Paz and further work on Los Cabos needs
- e. Set up exchange (consultant) visits in hospitality industry
- f. Exchange visit of Los Cabos/La Paz municipal water treatment personnel with counterparts in Phoenix area
- g. Work on international trade and small business courses to promote US-Mexico business

### **Results to Date**

In just seven short months this project has moved forward in the following ways:

- a. The key players in both the Los Cabos and La Paz areas have been able to come together, agree that there are needs in training/education for the hospitality industry and that there is a water resource issue and education can help deal with some parts of that issue.
- b. UABCS has been invited to join the State Council of Tourism Development.
- c. UABCS is recognized as a contributing member in economic development by the State Economic Development and Promotion Agency, the State Office of Tourism Coordination and Fonatur.
- d. UABCS has been added to the CNA—National Water Commission membership
- e. The secondary schools in La Paz have agreed to add a course in Tourism and water culture
- f. UABCS plans to seek approval for a Associate degree in hospitality management

- g UABCS has been invited to form a small business development and deregulation entity

**Challenges for the Future**

- a. One obstacle is time. The Partnership grant ends September 30, 1997 and means the access to the dollar resources would end, but more time is needed between now (May 1997) and the end date to accomplish goals.
- b. Resources to implement the training programs to prepare people for the industry are scarce. In particular the schools need better equipment, the faculty need training and appropriate teaching materials, texts need to be developed.

**Case Presentation**

**Ohio State University: Columbus, Ohio  
and  
Colegio de Postgraduados en Ciencias Agrícolas: Montecillo, Estado de México**

**Conference of the Partners in Development Program Initiative  
April 8-9, 1997  
Washington, D.C.**

**Association Liaison Office for University Cooperation in Development  
and  
Asociación Nacional de Universidades e Instituciones de Educación Superior**

**In cooperation with the U.S. Agency for International Development  
Cooperative Agreement PCE-5055-A-00-2012-00**

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**PARTNERING WITH AGRIBUSINESS - OHIO STATE UNIVERSITY AND  
COLEGIO DE POSTGRADUADOS EN CIENCIAS AGRICOLAS**

**Background, Partnership and Objectives**

In September 1996, a Partnership Agreement was signed between the Mexican Colegio de Postgraduados en Ciencias Agrícolas (CP) and The Ohio State University College of Food, Agricultural and Environmental Sciences (CFAES). This strategic alliance was entered into by both institutions because of their mutual recognition of the benefits of collaboration, especially as the two nations become increasingly integrated under NAFTA.

The relationship began in 1994, when the Ohio governor led a trade mission to Mexico, and invited the CFAES to participate. At that time, the OSU Vice-President for Agriculture and the Director of The Office of International Programs in Agriculture met with counterparts at the CP. A Memorandum of Understanding was signed.

The 1995 grant from the Association Liaison Office for University Cooperation in Development (ALO) to the CFAES was most propitious for establishing the full-fledged partnership. Grant funds covered reciprocal visits of four administrators of both institutions to each others campus, with the purpose of getting to know the respective programs and personnel as well as to begin drawing up plans for cooperation. In February 1996 a proposed Strategic Alliance and Short-Term Action Plan were prepared. In September 1996 the Partnership Agreement was signed.

The objectives of the Partnership are to enhance:

- internationalization of the two institutions' respective educational, research and outreach programs;
- greater understanding of each other's agriculture/agribusiness sectors and cultures by their respective faculty, students and clients;
- transfer of technological knowledge in their respective education, research and outreach programs;
- linkages between Ohio and Mexican agricultural and agribusiness firms, especially under the NAFTA; and
- joint contract ventures in the areas of technical assistance, training, research and related areas in both national and international arenas.

## Key Activities

There are four main areas of activities under the partnership:

- Education;
- Research, outreach and transfer of technology;
- Trade and investment linkages (Ohio/Mexico) under NAFTA; and
- Joint contract ventures.

## Outcomes of ALO grant and Partnership

### **1. Establishment of Partnership**

The ALO grant was used to finance those activities leading to the establishment of the Partnership. Also, to finance participation by the CFAES in the Third General Meeting on Collaboration Among Higher Education Institutions in Education and Research, held April 28-30 in Guadalajara, where a report was made on the CFAES/CP joint activities in the area of agribusiness.

The partnership has flourished to the mutual advantage of both institutions. The following present the main existing and proposed products, organized by the above areas of activity.

### **2. Education**

- a. **OSU Study Abroad Program in Mexico.** This annual program will offer OSU students the opportunity to spend an academic quarter at the CP studying, for OSU credit, Mexican history, culture, agricultural development and NAFTA. The CP is responsible for local arrangements and instruction. Detailed contents have been established, the program should start in Winter Quarter 1997.
- b. **Ohio leadership program visits Mexico.** In March 1997, the 32 participants of the Ohio LEAD program (young adults from the agribusiness and agricultural production sectors) spent one week in Mexico. The CP worked closely with the CFAES in planning and implementing many of the activities, such as visits to farms and agribusinesses.
- c. **Enhanced capacity for agribusiness teaching and research.** A CP professor of agricultural economics and four CFAES agribusiness specialists visited each others campus in early 1997 to explore ways of collaboration in the area of agribusiness. The following are the main activities that should take place.

- 1) The CFAES will work closely with the CP to strengthen its teaching, research and outreach in agribusiness. Some principal activities will be in the areas of:
  - a) CFAES training CP faculty in Ph.D. programs in agricultural economics and agribusiness. One faculty member entered the program in September 1996. Others are programmed to follow.
  - b) CFAES working with the CP in the development of materials for agribusiness course work.
  - c) Internships of 3-6 months for CP agricultural economics faculty at OSU and with Ohio agribusiness firms. It is expected that three persons will participate in 1997.
- 2) CFAES faculty will benefit from this collaboration and interchange and will introduce new material on Mexico and NAFTA in their course work and research.

**c. Visiting professorships.** The first visiting professorship should be begin in the next academic year when a CP faculty member in rural sociology spends an academic quarter at OSU teaching a graduate seminar in rural development. Other visitors in both directions are expected in the future.

**d. Involvement of other disciplines.** Initial activities have been concentrated in agribusiness. It is expected that other disciplines will be involved. Indeed, a CP faculty member initiated his Ph.D. program in rural sociology in March 1997.

### **3. Research, outreach and technology transfer**

**a. Joint research.** A CP professor and a CFAES professor are working together on a project analyzing the transition of the Mexican agricultural sector in the last decade. Other projects are expected in several disciplines.

**b. Research.** Research across a number of disciplines is envisioned. Visiting faculty and graduate students from both institutions are welcome at each other's campuses.

**c. Outreach.** In September 1996, three CP faculty, one of whom is on leave as Director of Rural Development in the Secretariat of Agriculture, Livestock and Rural Development, and a prominent Mexican producer, made a

presentation on Mexican Agriculture to Ohio agribusiness persons at the state-wide Farm Science Review. The seminar was co-sponsored by the Ohio Department of Agriculture. More than 30 persons attended, many are interested in exporting to Mexico.

An article on NAFTA and the Partnership was authored by a CFAES agricultural economist, was published in Challenge and distributed widely in Ohio.

CFAES agricultural economists presented a seminar, "A Primer on Mexico," to the CEO's and other high-level officers of Countrymark and Growmark Cooperatives in Indianapolis in October 1996.

- d. **Technology transfer via agricultural extension.** The CFAES and CP have developed preliminary plans for ways in which OSU Extension could work with Mexican counterparts. The Director of OSU Extension visited Mexico and the CP visiting professor of rural sociology will also work with OSU Extension in order to explore ways of cooperation.

### 3. **Trade and investment linkages under NAFTA**

- a. **Seminar on Mexican agriculture at Ohio Farm Science Review.** The above-described seminar was designed to enhance these linkages.
- b. **Visits to agribusiness firms.** CP administrators and faculty have visited Ohio agribusiness firms during each of their visits to Ohio. A delegation of CFAES agribusiness faculty and CP counterparts visited Mexican agribusiness firms in a visit to Mexico. The President of the Ohio Agribusiness Association participated in these visits, a demonstration of the commitment by Ohio firms to develop stronger ties with Mexico.
- c. **Outreach.** Discussions are underway between the two agricultural economics departments as to how the CP and CFAES might work together in agribusiness outreach activities in Mexico and Ohio. Under consideration are seminars and visits by agribusiness persons to each other's countries.

### 4. **Joint contract ventures**

- a. **Joint ventures in technical assistance.** It is envisioned that the CP and CFAES can offer strong teams in providing technical assistance to the public and private sectors in each of their two countries as well as other nations.

- b. **Agricultural Modernization Project in Ecuador.** The CP and CFAES are committed to work with the Midwest Universities Consortium for International Development Activities, Inc. (MUCIA) in the submission of a bid for this project, which is funded by the World Bank, and is directed to improving agricultural research and outreach in that country. Joint CP/CFAES visits have been made to the World Bank. A site visit by MUCIA, CFAES and CP personnel was undertaken in 1996.

### Financial support

The ALO grant was a key element in the establishment of the Partnership. The CP and the CFAES have covered the costs of administering the program from their respective base budgets. Each of the specific activities has had its own separate funding. The following are some examples. The USDA Cochran Fellowships were used to cover part of the travel for the CP presenters at the Farm Science Review. The CP faculty members studying at OSU have full scholarships from the Fulbright Program or the Kellogg Foundation. The OSU agribusiness faculty visiting Mexico obtained funding from an OSU International Travel Grants Competition. Other visits have been made by faculty travelling on other funds. The CFAES Study Abroad Program and the visit by the Ohio LEAD Program are both self-financed. The visiting professorships at the CFAES are partially financed by OSU salary savings as well as Mexican sources. The CP faculty working on the Ohio agribusiness internships will have funding from the Mexican National Science and Technology Council (CONACYT) with some support from the agribusiness firms.

### Assessment of Partnership

The Partnership, initiated with the ALO Grant, has been very successful for both the CP and CFAES. Administrators, faculty and students at both institutions recognize the opportunities for and mutual benefits of working together. The momentum generated has led to strong support from the central administration of both institutions, and, in the case of the CP, by the Secretariat of Agriculture, Livestock and Rural Development, which provides the base funding for the CP and from which an under secretary serves as the chair of the Board of Directors. Funding is a limitation, because each activity must seek out separate funding. Some activities, such as the Study Abroad Program are self financing, but most require special contacts, sought out on an ad hoc basis. Sources in Mexico, such as CONACYT, have been very important.

There has been a certain serendipity in both the programming and funding. Unanticipated targets of opportunity have appeared on the programming side which have proven to be very useful. With respect to funding, both CP and CFAES have been fortunate in obtaining

funding from diverse sources in support of specific activities.

In the longer run this situation is a concern. It is not clear that sources of financing will be available for many of the wide range of activities that the two institutions would want to undertake. A modest amount of central funding, from the ALO or other sources, would be useful. Such funds would be particularly important in initiating activities between CP and CFAES academic departments and faculty. Once the initial contacts were established, and mutual interests developed, then the base would be laid for obtaining extramural support.

**Case Presentation**

**California Polytechnic State University, San Luis Obispo: San Luis Obispo,  
California  
and  
Instituto Tecnológico de Culiacán: Culiacán, Sinaloa**

**Conference of the Partners in Development Program Initiative  
April 7-9, 1997  
Washington, D.C.**

**Association Liaison Office for University Cooperation in Development  
and  
Asociación Nacional de Universidades e Instituciones de Educación Superior**

**In cooperation with the U.S. Agency for International Development  
Cooperative Agreement PCE-5055-A-00-2012-00**

**U.S./Mexico Partners in Development Program  
Policy Roundtable at the National Center for Higher Education, April 7-9, 1996**

**S U M M A R Y**

**1) Initial Institutional Partners (1994).**

- California Polytechnic State University, (Cal Poly), San Luis Obispo, CA.
- The National Directorate of Technological Institutes (DGIT-SEP) through the Technological Institute of Culiacán, Sinaloa (ITC).

**1.1) Expanded Project Partners (1995)**

- National Manufacturing Industries Association-Culiacán Branch (CANACINTRA-Culiacán).
- The Sinaloa Sciences Center (CCS), Culiacán, Sinaloa, México.

**1.2) New Partners to Join Project (1997)**

- Alabama A&M University, (AAMU), Huntsville, AL.

**2) Development Objectives**

- Develop an international partnership between the US and Mexico to create opportunities for faculty and students of the two countries to participate/assist in project development where applied technology is used to add value to products and processes,
- Increase "international hands-on" student project case studies to accommodate recommendations from the National Research Council (NRC) on reforms for engineering education,
- Establish a self-sustainable organization to facilitate international joint industrial ventures by entrepreneurs in the US and Mexico for mutual economic growth and human resource development in engineering and sciences, and
- Increase bi-national technology transfer, innovation and commercialization in:
  - **Integrated manufacturing**
  - **New processes and product design**
  - **Enviro-tech projects (on site equipment demonstrations, air/water quality)**
  - **Energy systems for production/processing**
  - **Automated communication systems**
  - **Engineering and health/medicine (bio-electromechanical systems)**
  - **Food processing and agricultural post-harvest processing sciences**

**3) Key Activities**

**3.1) The Cal Poly North American TEAMING Initiative**

The Initiative for Technological and Educational Advancements in México for Innovation and Needed Growth (TEAMING) resulted in the Cal Poly - Secretariat of Public Education (SEP) agreement for cooperation for academic and human resource development. The agreement establishes the legal framework for the relationship between Cal Poly and the National Directorate of Technological Institutes (DGIT). This framework can provide Cal Poly faculty connectivity to a diverse Mexican faculty from polytechnic four-year colleges in approximately one hundred Mexican cities.

### 3.2) Cal Poly - SEP Agreement.

The Cal Poly - SEP agreement secured the partnership of Cal Poly with ITC and the National Directorate of Technological Institutes (DGIT). Thereby enabling approximately one hundred other IT's to also participate in the partnership.

### 3.3) The Center for Technological Innovation of the Pacific C.A.

CTI is now a regional coalition, in Culiacán, Sinaloa, of private industry, the state government, the Technological Institute of Culiacán (ITC) and Cal Poly. CTI is a non-profit civil association (C.A.) designed to provide mechanisms to enable faculty, staff and students of both institutions to participate and organize: a) Industrial symposia; b) courses for professional development, training seminars, workshops and other research endeavors; and c) proposals for industrialization projects in manufacturing, product/process development, enviro-tech projects and food processing. CANACINTRA-Culiacán is part of a network reaching seventy-nine cities that allows the exploration of business-related projects as well. In cooperation with ITC, the Sinaloa Sciences Center (SSC) and CANACINTRA-Culiacán, the Center for Technological Innovation of the Pacific was officially registered and recognized by both the government of Sinaloa and the Mexican Ministry of Foreign Relations (SRE) on July 10, 1996.

## 4) Development Outcomes

In addition to the milestones mentioned above, the following two graphs illustrate the impact of the support of the projects proposed. In general terms, communication and the quality of the technical topics discussed have increased as shown below.

**Distribution of Activities by Cal Poly's Participants**

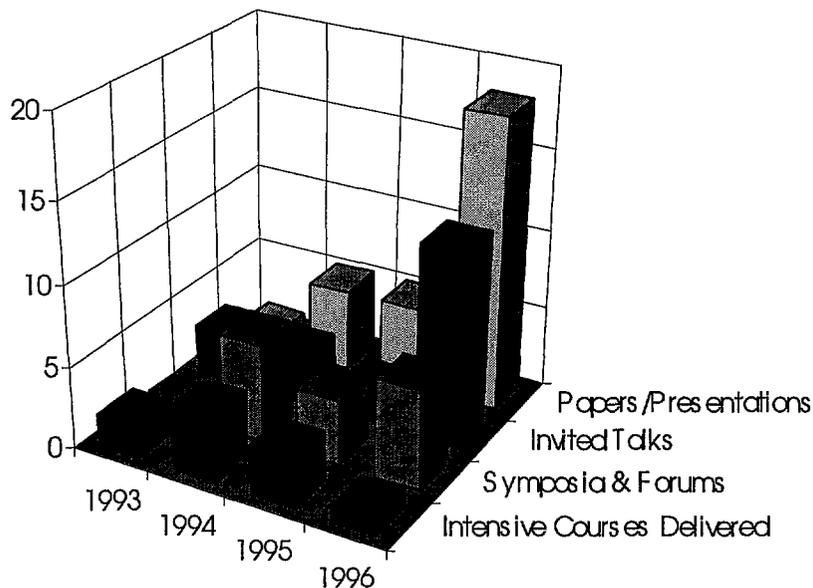


Fig. 1. Effect of ALO-USAID grant on Cal Poly faculty and students/activities around

the Cal Poly - ITC partnership (awarded Oct. 1995).

### Direct Participants (Best est. from records)

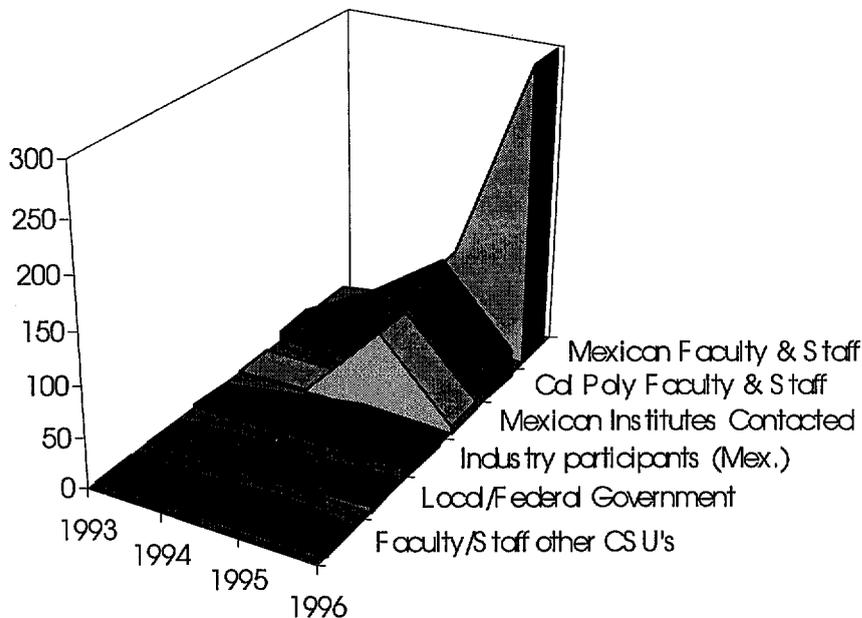


Fig. 2. Progress on expanding the partnership for development.

### 5) Other Benefits

A strong interest has been demonstrated by other participating institutions in developing organizations like the Center for Technological Innovation in their region. Among them are:

- Instituto Tecnológico del Mar, Mazatlan, Sinaloa
- Instituto Tecnológico de Tijuana, Tijuana, Baja California
- Instituto Tecnológico de Tlalnepantla, Tlalnepantla, Edo. de México.
- Instituto Tecnológico de Toluca, Toluca, Edo. de México.
- Instituto Tecnológico de Ecatepec, Ecatepec, Edo. de México.
- Universidad Tecnológica de Netzahualcoyotl, Netzahualcoyotl, Edo. de México.

### 6) Financial and In-Kind Support for the Collaboration

(Brief non-comprehensive estimated averages, 1994-1997).

#### ° Cal Poly

- i) Dr. Rojas-Oviedo, Director (9/15/1994 to 6/15/1996.) for the CTI- Cal Poly - ITC Project, the Cal Poly North American TEAMING Initiative and coordinator for projects between Cal Poly and other IT's of the DGIT. Half-time assignment plus operational expenses for two academic years.
- ii) Dr. Joe Montecalvo Jr., Co-Director of the CTI project. One-third or released time for two quarters from 9/15/1994 to 6/15/1996.
- iii) Air travel support for eight Cal Poly faculty and one Cal Poly student to IT del Mar in

March 1996.

° **ITC**

- i) Ing. MS Juan de Dios Garcia-Gerardo and Ing. Angel Velazco, ITC faculty to work on CTI and related projects.
- ii) Covered expenses for organizing and hosting the First State Symposium on Technological Innovation and Industrial Development in 1994, including air-travel, lodging and meals of invited Cal Poly speaker or presenter. (Participants: President Baker, Deans Lee, Jen and Opava, Vice Chancellor Patiño, Mr. Jaime Oaxaca, 2 pilots (all expenses covered except air-travel because a private jet was preferred for convenience by Cal Poly administrators and guests.); Fifteen other visits by Cal Poly faculty at other times were fully covered during 1995.

° **IT del Mar and ITC**

- i) Covered expenses for organizing and hosting the Second State Symposium on Technological Innovation and Industrial Development; Sinaloa in the year 2001. Expenses included meals, lodging and local transportation for eight Cal Poly faculty and one Cal Poly student in March 1996.

° **ITC and Sinaloa State Government**

- i) Thirteen ITC faculty to participate in talks, seminars, lab visits at Cal Poly for a week. Air travel, hotels and meals were paid by state government and ITC

° **CANACINTRA-Culiacán**

- i) Lic. Rene Gonzalez-Obeso and his staff to work with all legal aspects of CTI del Pacifico A.C.

° **CANACINTRA-Culiacán, Culiacán City Government and ITC**

- i) Support to pass legislation for the donation of land to house the CTI of the Pacific in an industrial park in Culiacán. Land surface 13.116 acres (5329m<sup>2</sup>).

° **Sinaloa Sciences Center and ITC**

- i) Verbal agreement has been reached so that CTI will begin its operations in three offices provided by the Sinaloa Sciences Center (SSC). SSC will provide also a number of computer accounts to facilitate the work of the visiting associate faculty members.
- ii) Supporting Dr. Javier Delgadillo, SSC Academic Secretary and Dr. Jorge Gastellum, Director for Research, to work on behalf of the CTI project.
- iii) ITC will provide necessary computers and office furniture for the SSC location of CTI.

° **ALO - ACE - USAID**

- i) Dr. Ruben Rojas-Oviedo and Dr. Joe Montecalvo, secured a grant for \$15,500 to support TEAMING and CTI development from 10/31/95 to present.

° **Chilton Publishing Co. and ITESM-Campus Edo. de Mexico**

- i) Drs. Rojas-Oviedo and Reza Pouragabagher. Air fare and lodging expenses to participate in EXPOMANUFACTURA 1996, as speakers and panelist, (Monterrey, Mexico).

° **Alabama A&M University**

- i) Dr. Ruben Rojas-Oviedo to develop a new partnership with ALO, ITC, CTI, SSC and Cal Poly, released time and operating expenses.
- ii) Support to cover air transportation, hotel and meals to present a paper on the partnership efforts. The Seventh National Technology Transfer Conference and Exposition, October 1996.

## ° NASA Tech Briefs and the Technology Utilization Foundation

- i) Dr. Ruben Rojas-Oviedo and Dr. Joe Montecalvo. Covered registration fees for the Seventh National Technology Transfer Conference and Exposition,

## 7) Assessment on the Value and Limitations of the Partnership.

### 7.1) Some limitations of the partnership

As this partnership continues to evolve and expand, it transcends the regional views, boundaries and reach of traditional educational activities. The partnership brings new experiences as well as new challenges that characterize uncharted initiatives in international engineering and science education. Some ideas on these issues are:

#### a) Prevailing "Culture" and Uncharted Educational Initiatives

A fundamental element in the progress of this kind of partnership is the input and support of private industry in terms of sponsored projects and research. However, the use of participation in international projects as a means to develop new skills in college students seems to lack support in US engineering schools, though an integral part of engineering education in their European counterparts. European coalitions tend to produce very competitive technology-based products fabricated with components from different countries. This situation is somewhat similar to alliances of nations of the Pacific Rim. Here at home, when attempting to generate more interest in these initiatives from industry, we face a dilemma: while industries have a "corporate culture" regarding desirable international experience for new graduates, the "corporate culture" is not the same across the board. Huge multinationals, medium size companies, newly formed companies, or smaller companies, all have different needs with respect to the global economy and with respect to what is considered technology-driven markets. If "desirable competencies" of BS. graduates are not well defined, then they become difficult to sponsor, promote and develop. International joint projects in applied engineering or applied science by faculty and students is, for the most part an uncharted domain in the US. Government organizations and foundations need to contribute and support these innovative educational endeavors so that these skills are developed here by US graduates and do not become the exclusive domain of overseas institutions of higher learning.

#### b) International Technological Initiatives are Misunderstood

Government organizations, foundations and world organizations seem to understand agricultural, political, economic and social world issues very well to the extent that they provide mechanisms for funding. That does not seem to be the case with global technology transfer, technology development and the powerful role that the development of a skillful bi-national workforce can have in shaping agricultural, environmental, economic and social issues in neighboring developing economies. Applied technology transfer and deployment is not just "technical assistance". It may be useful to examine a recent example from the UN. The United Nations Department for Policy Coordination and Sustainable Development (DPCSD) produced a study: "Transfer of environmentally sound technologies (EST) to small and medium sized enterprises; A financing perspective." The study shows that while interest in EST exists among International Venture Capitalists (IVCs); There is a *shortage of information on ESTs from a business perspective* and skepticism on the value of technology. Investors' views on the technological processes were not uniform, but they were more homogeneous when they considered environmental risk factors. *Lack of information appeared to be an important constraint.* The executive summary illustrates the need for technological support. *Few*

*investors helped the companies they invest in to access information on environmentally sound technology. However, a majority expressed interest in doing so, if adequate information were made available to them, noting that, this is an area worthy of further support and action. There was a high level of interest in receiving possible deals from sources such as technology centres, suggesting another area for future action. However, investors were generally concerned about the quality of deals they received (rather than the quantity) and put a high level of emphasis on aspects such as a good business plan and experienced management, so these matters should be addressed before prospective deals are passed to IVCs. Government financial support in this area would be useful.*

### **c) The Value of the Partnership**

The Cal Poly - ITC partnership has proven to be of great value to participants. This is the result of finding a match between Cal Poly's "learn by doing" philosophy and ITC's practical approach to engineering. A learn by doing philosophy is characterized by producing graduates capable of developing real projects. In Mexico, most undergraduate engineering schools are oriented in similar form; graduates are capable of practical work. Therefore, institutions of higher education with programs that focus on developing project oriented skills in individuals, are in a better position to participate in this kind of partnership.

This partnership has revitalized options for international professional development for faculties and students of the two schools. A Center for Technological Innovation (CTI) has been created and it will add much more value to the partnership. However, in its present development stage it is not a self-sustaining operation.

Maintaining the partnership at this level of development has been quite difficult even though a great deal of leveraging has occurred, in part, because of the importance of the organizations that have supported the CTI project. However, the level of complexity of the needed organizational support has continued to increase. At Cal Poly, a new organizational structure is proposed to: i) have faster response times; b) increase the effectiveness of the information about CTI; and c) increase the capacity to coordinate with partners in México and with future partners such as Alabama A&M University.

We conclude that the need to develop international project development competencies in motivated future graduates is real. To help them learn how to design good business plans and gain management experiences in technology transfer projects, organizations like CTI deserve additional funding and support to: a) develop US competencies in this area, and b) reach self-sustainability in the near term.

**Case Presentation**

**West Virginia University: Morgantown, West Virginia  
and  
Universidad de Guanajuato: Guanajuato, Guanajuato**

**Conference of the Partners in Development Program Initiative  
April 8-9, 1997  
Washington, D.C.**

**Association Liaison Office for University Cooperation in Development  
and  
Asociación Nacional de Universidades e Instituciones de Educación Superior**

**In cooperation with the U.S. Agency for International Development  
Cooperative Agreement PCE-5055-A-00-2012-00**

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**WEST VIRGINIA UNIVERSITY (WVU)  
MORGANTOWN WEST VIRGINIA**

**DAVID C. HARDESTY, PRESIDENT  
GERALD E. LANG, PROVOST/VP**

**IN PARTNERSHIP WITH**

**UNIVERSIDAD DE GUANAJUATO (UG)  
GUANAJUATO MEXICO**

**JUAN CARLOS ROMERO HICKS , RECTOR  
VICTOR MANUAL RAMIREZ-HERRERA, ACADEMIC EXCHANGE DIRECTOR**

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## (i) INSTITUTIONAL PARTNERS

### West Virginia University

West Virginia University (WVU) is located in Morgantown, West Virginia, a city of 26,000 residents near West Virginia's northern border. WVU serves as both the research and doctoral-degree granting institution in West Virginia and is one of only 43 public land-grant institutions.

Since its founding in 1867, WVU has developed into the center of graduate and professional education, research, and extension programs in West Virginia. Coal and energy are a major focus of University research because of WVU's location in the heart of the eastern coal fields. Fourteen colleges and schools offer 164 bachelor's, master's, doctoral, and professional degree programs.

WVU is accredited by the North Central Association of Colleges and Schools, and numerous individual academic programs are accredited by many other specialized agencies. In addition, the Carnegie Foundation for the Advancement of Teaching has designated WVU as a Research I institution; less than three percent of the 3,600 accredited institutions in the United States are among this group.

### University of Guanajuato

The UG was founded in October 1732. Through donations from the wealthy in that time period, the present day main campus was constructed. UG has 18,500 students with campuses in nine cities. It offers five programs in five areas: Natural Science and Engineering, Humanities and Social Sciences, Economics and Administrative Science, Arts and Architecture and Health Sciences. It has 34 undergraduate programs, 17 specialties, 19 master degrees, 5 doctorates and 20 extension programs. Like other public universities in Mexico, UG handles the main High School Program for the State of Guanajuato.

UG is a public institution supported by federal and state funding. It receives additional resources through research from private and public sectors. UG researchers are linked with partners in numerous countries and are in the process of forming international networks.

Guanajuato is the home of rich silver deposits. Even today gold and silver mines are active and productive. Therefore, Guanajuato has one of the most prestigious Mining and Engineering schools in the country and attracts students from all over Mexico. Other engineering schools originated from this school. These include; Civil, Chemistry, Electrical, Mechanical and Electronic Engineering.

**(ii) DEVELOPMENT OBJECTIVES**

The focus of the collaboration between WVU and UG, is to identify approaches for increasing the involvement of higher education institutions in economic development, while fulfilling the missions of education, research and service. This may be accomplished through outreach programs in areas such as agriculture, environment, mineral and energy resources, and engineering. The specific objectives are to:

- identify future partnership activities that will strengthen university/private sector relationships, and
- identify programs which will assist business and producer sectors of Guanajuato, Mexico, and West Virginia identify points for mutually beneficial collaboration.
- produce superior quality graduates, through exposure to local and international realistic professional environments.
- enhance employment opportunity for WVU and UG graduates, with local and multinational corporations.
- attract more students to WVU and UG, while increasing the visibility of both institutions at the national and international levels.
- expose students and faculty of both universities, to the dynamics of corporate relations between West Virginia and Mexico.
- attract opportunities for technology and economic development between West Virginia and Guanajuato.

The approach used by WVU and UG, may be used as a collaboration model by other institutions to bring the international dimension to higher education.

**(iii) KEY ACTIVITIES**

**Guanajuato Administrators at WVU**

The first ALO-supported UG delegation to visit WVU consisted of Rector Juan Carlos Romero Hicks; Victor Manuel Ramirez-Herrera, Academic Exchange Director; and Sergio Arias-Negrete, Research Director. The visit occurred in January 1996.

**Visit objectives were to :**

- Orient the UG administrators with WVU's administration and other counterpart colleges and departments relevant to the UG
- Attend meetings with University leaders and speak with community, business and industry leaders on approaches to cooperation
- Visit with selected WVU administrators at the West Virginia Congressional Delegation in Washington, DC
- Visit WVU alumni, and representatives from other higher education institutions
- Review WVU's economic partnerships in the State which included the West Virginia High-Tech Consortium and the NASA software evaluation facility
- Meet with other higher education institutions and with WVU alumni, to understand how WVU develops linkages within the community

An innovative initiative for engineering education was discussed. Students from both institutions will work together to resolve specific industrial problems. This training will take place in both countries and be assisted by faculty from both institutions. It is hoped that this project will provide students with better opportunities to work in multinational industries.

A meeting was held in Senator Robert C. Byrd's office in Washington D.C., to discuss the pilot program in Engineering Education, proposed by Dr. Victor Mucino and Dr. James E. Smith, of the Center for Industrial Research Applications (CIRA). Explicit information about how the research and links of CIRA may be integrated into this program. Highlights of the program include:

Innovative solutions to industrial problems:  
Offer WVU engineering students the possibility of carrying out industrial internships and to acquire administrative experience:  
Provide consulting and planning to industries; and  
Develop high-tech opportunities to industries.

The delegation also met with Dr. Arturo Garzon, Regional Coordinator of Special Programs and Information Systems at the headquarters of the Organization of American States (AOS).

In summary, this trip provided an opportunity for the Guanajuato delegation to become acquainted with the new WVU administration and to discuss new initiatives for collaboration. They met with faculty in the WVU School of Engineering; WVU administrators from Academic Affairs and Research; International Students and Scholars; WVU Agriculture and Forestry, and the Department of Foreign Languages.

### WVU Administrators at Guanajuato

The WVU delegation visited Mexico, Guanajuato and Queretaro as part of the Higher Officials exchange sponsored by the ALO. During the visit, they discussed detailed plans regarding the initiative in engineering education, which involves industrial outreach programs, scheduled to begin in the Summer of 1997.

The objectives of this visit were:

- First and foremost, to consolidate the institutional relationship between West Virginia University and the University of Guanajuato, as Sister Universities.
- Second, to examine and further pursue various initiative programs which offer the greatest potential to strengthen and expand the horizon of the collaborative activities between the two institutions.
- Third, to seek diversification within the programs being pursued jointly between WVU and UG, by involving industry, national research centers and federal and state agencies in Mexico and the USA.
- Fourth, to assess the outcomes of ongoing programs in nutrition and landscape and architecture.
- To consolidate the commitment for the new "Initiative in Engineering Education Across Disciplines and Cultures: School-Industry Outreach in North America".

The delegation visited with administrators of UG and other institutions such as CONACyT (The National Council for Science and Technology), UNAM (National University of Mexico), UAQ (Autonomous University of Queretaro), IMT (Mexican Institute of Transportation), General Motors of Mexico, CONCYTEG (Science and Technology Council of Guanajuato, and COFOCE (The Coordination of International Trade of Guanajuato) in order to identify potential opportunities for academic development and industrial applied research.

### (iv) DEVELOPMENT OUTCOMES

Various interdisciplinary scenarios are being considered to develop collaborative research programs as well as education pilot programs in engineering, education agriculture, architecture, and nutrition.

- For the first year, the initiative in engineering education will focus on industrial projects to be conducted by intermixed groups of students, two from WVU and two from UG. They will concentrate on the technical area of Computer Aided Design Applications, which corresponds to a technical elective course currently offered in the undergraduate program at WVU. Student

interaction will bring about a trans-cultural component which will extend beyond the language communication barrier into the professional culture, and will address techno-cultural issues related to the field and industry abroad.

The uniqueness of this program resides in the interaction between US and Mexican students, who conduct "team work" and deliver, the common language relating to the engineering discipline. Another element that adds value to their engineering education is exposure to the international professional environment; a "Stand Out" in their resumes. This joint-venture between UG and WVU Schools of Engineering should not be exclusive to one discipline but should serve as a catalyst for other schools.

- The UG has had a relationship with the WVU College of Agriculture and Forestry since 1989. Cooperation already exists in this area and should be developed in more depth. Dr. Marian Liddell of the Division of Family Resources, has conducted training workshops using "hands-on" teaching techniques for fostering nutrition education. Student nurses who attended these workshops have developed the tools that will assist them in teaching nutrition within communities.

The Nutrition and Health Project will continue in the Schools of Nursing and Medicine through 1999. This program will train professionals and students to develop techniques in nutritional education that will benefit low income families in Guanajuato and West Virginia. Nutrition and health radio messages developed by students and faculty and reviewed by professionals are cited for broadcast in 1997-98.

- The Creativity Program of Prof. Alon Kvashny of the School of Agriculture and Forestry at WVU, started with a conference on the subject and has developed into an annual workshop conducted at UG. Landscape Architecture is not available for study at UG, but has since gained interest through Prof. Kvashny's efforts. The Architecture School at UG is now planning a course on the subject.

Dr. Kvashny conducted workshops and presentations in Creative Problem-Solving to third and fourth year students. Presentations were also made to students in the School of Nursing. There is potential to broaden the teaching of the Creative Problem-Solving process beyond the Schools of Architecture, Design and Nursing to include the Schools of Engineering, Industrial Relations, and Administration. Besides, Creative Problem Solving, other projects could be introduced such as team building skills, grouped process, and team work.

- Dr. Bill Bryan of WVU has been working steadily with the Agricultural Science Institute (Intituto de Ciencias Agricolas) to develop a program in agriculture. Dr Bryan has mentored two students from Guanajuato to conduct one year study at WVU.

- For three years West Virginia and Guanajuato were engaged in youth exchanges as part of a pilot project supported by the Kellogg Foundation. This program was called 'Liderazgo

Juvenil' or 'Juvenile Leadership' and was sponsored by WVU's CIP, directed by Mr. Richard Fleisher. Thirty teenagers from West Virginia and Guanajuato (15 from each state) participated each year. Each delegation was accompanied by two teachers/youth development specialists. These exchanges included orientation and training workshops, an educational camp program and community service activities.

#### (v) BENEFITS

Faculty exchanges bring about a better understanding of a different culture, and enhance different teaching methods. To teach with an interpreter present, subject matter must be simplified to avoid discipline jargon. The focus must be on the application of the subject matter and presented in a different cultural context.

Through collaboration with faculty and professionals from other cultures, faculty gain a different point of view to resolve problems associated with teaching, actual projects and research.

Student exchanges bring about a higher level of understanding of another culture. Students who are challenged by language, culture, and course content while in college are better informed for making decisions in the future.

The benefits of the initiative in engineering education with school-industry outreach, will include:

- superior engineering graduates for West Virginia and Mexico
- opportunities for technical assistance for industry in Mexico and West Virginia
- opportunities for industrial applied research for faculty from WVU and Mexico
- professional development for industrial practitioners.

This should be an "everybody wins" program.

Dr. Marian Liddell's continuous program with the UG Nursing School educates teachers who will go into communities and train mothers and children on sound nutrition habits through various means of communication including mass communication.

Professors from UG have been trained at WVU. Horacio Cardiel from UG completed his doctoral program at WVU and Martha Lengling received her M.A. from WVU in Foreign Languages. Her specialization was in TESOL.

#### Some specific exchanges and the people associated with them:

1998 WVU Student, Brian Jones will attend UG Spring 98. He was one of the CIP "Juvenile Leadership" exchange students.

1997 Victor Mucino and ten WVU students will initiate the program in engineering at UG.

1997 Alon Kvashny, WVU College of Agriculture and Forestry spent one month at UG to assist with development of a one year certificate and Master's Degree program in Landscape

Architecture.

1997 Elena Avonce Moréna, Celaya School of Nursing, Coordinator of Nutrition and Health Project with WVU, for Council for International Programs will spend four months at WVU for faculty development in the Division of Family Resources. Her supervisor will be Marian Liddell.

1996 Professor Francisco Patlan, on sabbatical leave from UG for one year and teaching wood printing at the WVU Art Department.

1996 Two WVU students, Sandra Santiago and Adrianna Blank conducting semester abroad at UG.

1996 Victor Mucino and Matt Aquaro (student) went to UG and industry

1996 Two UG faculty taught at WVU for one year.

1996 Marian Liddell and Alon Kvashny took five students to UG.

1996 Two UG students came to WVU to work under Dr. Bill Bryan. They are Alejandro Aguirre and Gerardo Durán-Rojo.

1993 WVU Marian Liddell faculty two months UG

1993 Horacio Cardiel, UG Graduate Student at WVU College of Ag. and Forestry.

1992 Ten WVU undergraduate students participated in a summer study tour at UG supervised by William Bryan and Dale Colyer of the College of Ag. and Forestry.

(vi) FINANCIAL

WVU Nutrition Projects	\$17,500 (IP and WVU)
Creative Problem Solving	\$8,700 (IP and WVU)
Student Visits	\$4,000
Engineering	\$10,000 (\$6,000, COE, \$4,000 IP)
CIP	
<b>H.J. Heinz Co. Foundation</b>	<b>\$15,000</b>
UG Nutrition Projects	\$22,000
Creative Problem Solving	\$4,700
ALO	\$12,049

(vii) ASSESSMENT OF VALUE/LIMIT

Both universities have similar physical characteristics including main campus terrains and multiple campus environments. They also have common elements in their ethos and histories. From these campus commonalities as well as common interests promoting this new academic/industry program, patterns of student interchanges have the potential to evolve providing an environment for international academic/industry outreach.

The agreement between WVU and UG promotes student and faculty exchanges between universities and therefore between cultures.

Student recruitment at WVU and UG is underway, as well as industrial visits by the participating faculty who are in the process of identifying industrial projects and industrial liaisons to interact with the student teams. The initiative in engineering education with industrial outreach program is new to Mexico and the US. No other program of this type is offered to students and faculty.

TREMEC has tentatively agreed to sponsor a project for WVU and UG, which will involve graduate and undergraduate students. The project would be a "proof of concept" for a transmission simulator.

WVU and UG have established a commitment to begin the exchange program in Engineering. Proposals are being prepared for submission to the NSF-CONTACyT (consortium) and the state of Guanajuato's CONSYTEG (Council for Science and Technology of the AT&T of Guanajuato).

The UG used knowledge gained from its relationship with WVU to develop 'El Centro Universitario de vinculacion con el Entorno' (VEN). This center was created to generate a close relationship between the UG and Private and Public Sectors. The financial investment was made with substantial economic help from Universidad Politecnica de Valencia in Spain. UG hopes to involve the support of industry, public in its academic programs.

## LIMIT

Language, culture and finances can be barriers to the success of programs between WVU and UG. Funding, unless assisted by outside sources, can limit programs.

**Case Presentation**

**Montana State University: Bozeman, Montana  
and  
Universidad Autónoma de Baja California: Mexicali, Baja California**

**Conference of the Partners in Development Program Initiative  
April 8-9, 1997  
Washington, D.C.**

**Association Liaison Office for University Cooperation in Development  
and  
Asociación Nacional de Universidades e Instituciones de Educación Superior**

**In cooperation with the U.S. Agency for International Development  
Cooperative Agreement PCE-5055-A-00-2012-00**

## **Description of Collaboration Between Universidad Autonoma de Baja California, Mexico and Montana State University**

### **Development Objectives:**

To develop a collaborative partnership between Montana State University (MSU) and the Autonomous University of Baja California (UABC) emphasizing economic development, technology transfer, and environmental sustainability issues. Exchanges of senior university officials were arranged highlighting the ways in which MSU and UABC are contributing to economic development and environmental sustainability in their respective states. The UABC delegation's visit to MSU was intended to provide UABC university officials with an introduction to the mechanism and methods established at MSU for fostering economic development in the state. The reciprocal visit acquainted MSU officials with the institutional capabilities and technology transfer needs of UABC. Together these visits allowed MSU and UABC to develop a plan of cooperation for research on environmental technologies and educational and cultural exchanges.

### **Key Activities:**

Exchange visits by senior university officials established the foundation for a permanent relationship between MSU and UABC. A delegation from UABC visited MSU for 8 days in March 1996. A delegation from MSU visited UABC for 7 days in May 1996.

### UABC Delegation Visit to MSU

Highlights include:

- ▶ meetings with MSU's President and Vice President for Research
- ▶ a visit to MSU's Advanced Technology Park
- ▶ discussions with the Director of the Center for Economic Renewal and Technology Transfer (CERTT)
- ▶ discussions with the Director of Intellectual Property Administration and Technology Transfer (IPATNT)
- ▶ a tour of the MSU Center for Biofilm Engineering and discussions with its technology transfer officer
- ▶ meetings with the Dean of the College of Business
- ▶ visit to Montana State University - Billings
- ▶ and a visit to Montana Tech

### MSU Delegation Visit to UABC

Highlights include:

- ▶ meetings with the President and Vice President of the University
- ▶ a tour of the Agricultural Sciences Institute
- ▶ discussions with the Dean of the School of Business and Administration
- ▶ a tour of the Computer Center and Engineering School
- ▶ visit to the Ensenada campus and the Institute of Oceanological Research
- ▶ discussions with the State Director of Ecology

- ▶ a tour of the Research Center for Physics, Optics, Seismology, and Marine Ecology

### **Development Outcomes:**

The exchange visits established the foundation for a permanent collaborative relationship between MSU and UABC. Areas of mutual interest for cooperative research as well as student and faculty exchanges are being developed. For example:

- A group of 10 students with MSU's Community Service program visited various UABC campuses during spring break (this March). The students, who were hosted by UABC community service students, performed community service work in outlying rural communities. A group of UABC students will be making a reciprocal visit this summer.
- MSU's Director of Intellectual Property Administration and Technology Transfer Office, Dr. Rebecca Mahurin will visit the National University of Mexico in Mexico City and the UABC Ensenada campus this April to present seminars on MSU interactions with the private sector and how MSU encourages and oversees technology development and commercialization.
- 22 Industrial Relations Officers from 11 Northern Mexico universities will attend a 4 day workshop provided by MSU on Technology Transfer issues this June. This workshop is being organized by UABC with funding provided by the Mexican Federal Government. The universities include: Autonomous University of Baja California, Autonomous University of Baja California Sur, Autonomous University of Ciudad Juarez - Chihuahua, University of Occident, Autonomous University of Sinaloa, Autonomous University of Sonora, Technological University of Chihuahua I, Technological University of Chihuahua II, Center for Scientific Research and Higher Learning in Ensenada, and Autonomous University of Chihuahua, Sonora State Center for Higher Studies.
- A group of MSU Billings and Bozeman students will spend 4 weeks at UABC's Ensenada campus and marine research center this summer to study Marine Biology. This is a unique opportunity for MSU students as only freshwater biology courses are available at MSU campuses.
- A Montana based company is making arrangements to conduct field trials with its experimental whitefly bio-pesticide in Baja California near Mexicali in collaboration with UABC researchers.
- UABC and MSU Agricultural Scientists have exchanged valuable plant and seed materials.
- MSU and UABC are pursuing opportunities for funding of collaborative activities in the environmental technology area, including workshops and joint research with industry. A preproposal was submitted to the North American Fund for Environmental Cooperation, a NAFTA-established environmental initiative

involving the U.S., Canada, and Mexico.

- MSU veterinary scientists will visit the UABC's veterinary laboratories to advise on the future development of these laboratories and to train UABC scientists. A mechanism will be developed to allow short training visits of UABC veterinary science professors and students to MSU. Ideas for joint research projects will be explored.
- The Northern Plains and Rockies Center for the Study of Western Hemisphere Trade at MSU will welcome visiting researchers from UABC to study topics of mutual interest, such as the economic feasibility of importing Montana grain to Baja California for use in intensive feedlot operations.
- The Center for Biofilm Engineering at MSU will provide fellowships for qualified visiting graduate students and professors from UABC to conduct research in the environmental technology field, on topics such as bioremediation of heavy metals, volatile organic compounds, or other contaminants.
- The Museum of the Rockies at MSU and the Museum of UABC are investigating ideas for exchanges of exhibits—for example, an exhibit of North American Plains Indian cultures in exchange for an exhibit on the Indian tribes indigenous to Baja California.
- Several MSU Deans will visit UABC during the year to explore collaborative activities with their colleagues.
- Regular semester and academic year student exchanges will begin next academic year.
- A joint degree Business program, modeled on a UABC - Cal State San Diego pilot program, is being developed.
- Short-term intensive Spanish language programs are being developed for MSU students to study at UABC.

**Other Benefits:**

As evidenced by the activities and plans listed above the MSU/UABC partnership has moved well beyond the bounds of environmental sustainability and technology transfer into community service, language exchanges, museum exchanges, and more. The partnership has also reached beyond the 2 universities. The workshop on technology transfer planned for this June at MSU will link another 10 Northern Mexico universities with the MSU university campuses.

**Financial and in-kind Support for the Collaboration:**

MSU and UABC staff time and overhead expenses to date = approx. \$24,000

Community service exchange programs = approx. \$3,500

Dr. Becky Mahurin's seminars in Mexico in April (travel, meals & accommodations) = approx. \$1,500

Technology Transfer Workshop to be held at MSU in June = approx. \$15,000

MSU summer program in Marine Biology = approx. \$25,000

Plant and seed materials = \$1,000

TOTAL = \$70,000

**Assessment of the Partnership:**

We believe that in our case this approach to higher education partnership development has been very successful. It has enabled a critical mass of leadership individuals from the two institutions to gain a good level of knowledge about the partner university and develop a solid working relationship with their counterparts. In our case, the institutions have turned out to be well matched, the individuals involved are professionally compatible, and the initial investment has been multiplied many time over. While the funding for initial exchanges was sufficient to allow for one visit to each university, we believe that it is important for the Association Liaison Office to consider providing the opportunity for partnerships to apply for follow-up funding.

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## **SUMMARY OF OTHER PILOT DEVELOPMENT NETWORKS**

As with the U.S./Mexico Partners in Development Program, other ALO-supported networks have sought to develop linkages between U.S. higher education associations and institutions and counterparts overseas to model partnerships for global development. Although at varying stages of progress, these collaborative networks expand the array of partners engaged in global development, leverage relatively modest resources to attract additional support, and create the foundation for long-term partnerships among higher education associations and institutions. These networks are of growing interest for future efforts in international cooperation.

### **U.S./LATIN AMERICA**

**Goals and Objectives:** "Higher Education in the Americas: The Role of Universities in Hemispheric Development" seeks to strengthen universities' roles in the economic, social and democratic development of the hemisphere, particularly through partnership between the private and public sectors. The means of achieving this goal has been through an on-going exchange of ideas and experiences related to managing higher education's increased role in development. For the lead institution in this effort, the University of Florida, this type of networking contributes value-added through the international mission of the university; Latin American institutions gain through exposure to ways in which to develop more entrepreneurial institutions.

**Key Features:** The initiative was devised around an alliance among the University of Florida's Office of International Studies and Programs and Center for Latin American Studies, with other Florida higher education institutions, the Inter-American Organization for Higher Education (IOHE) and the State of Florida. Through networking and public/private partnerships, these groups aim to serve Florida's foreign policy interests. This particular effort grew from a September 1995 program through which thirty senior Latin American university leaders gathered in Florida to examine approaches to higher education partnerships for economic development, and to define a research agenda to support sustainable economic development and democracy throughout the hemisphere. Prior to this meeting, participants completed a course in university administration offered by the IOHE Institute of University Management and Leadership. The total cost of the activity was budgeted at \$140,000 of which \$90,000 was provided by the University of Florida, IOHE and the host institutions, and \$50,000 by ALO.



**Outcomes:** Participating Latin American academic leaders prepared case studies on higher education partnerships linking institutional interests to the themes of higher education and development. The cases were classified into three broad categories: universities and economic development, information systems management, and accountability. Through the Office of International Studies and Programs at the University of Florida, abstracts of the case studies have been made available online through the Higher Education in the Americas Pilot Network homepage at address <http://www.oisp.ufl.edu>. It is hoped that this information network will serve as a forum for exchange of research, information, and ideas and will also attract more contributions of case studies from program participants and others. As part of higher education reform efforts in Brazil, academic leaders have taken into consideration these innovative approaches to higher education partnership with local government and the private sector, and are developing a system of higher education institutions based on the U.S. community college model. The University of Florida is planning a future effort to bring together academic leaders from Latin America to discuss their role in hemispheric development.

A report on the *Proceedings of the First Meeting of the Higher Education in the Americas Pilot Network* is available from the University of Florida's Office of International Studies and Programs.

## **U.S./CARPATHIAN REGION OF EAST CENTRAL EUROPE**

**Goals and Objectives:** The pilot development network, "Building Bridges Between Institutions of Higher Education in the Carpathian Region of East Central Europe and the Southeastern United States," seeks to enable institutions in the Carpathian region to know how U.S. colleges and universities incorporate public service functions with their research and teaching functions to address economic, social, and democratic development, and to enable U.S. partners to cooperatively address challenges of higher education and economic reform.

**Key Features:** The initiative builds on a partnership between the Association of Carpathian Region Universities (ACRU) and the Atlanta-based Associated Colleges of the South (ACS), with participation of the University System of Georgia and others. ACRU, representing 24 universities in border regions of Hungary, Poland, Romania, Slovakia, and Ukraine, aims to advance academic, cultural and scientific cooperation in the Carpathian Euroregion. ACS, a consortium of nationally recognized, liberal arts institutions in the southeastern U.S., strengthens the academic programs of its member institutions by assisting them to build projects in their collective interest. ACRU and ACS are similar in that they represent the interests of institutions less known internationally, and less often included in global

development programs. The participating U.S. institutions are involved because of their efforts to better their communities rather than their expertise in international development.

Building Bridges developed using a series of meetings on the public service role of U.S. higher education, and a set of reciprocal visits to partner institutions in the southeastern U.S. in April 1996 and the Carpathian region in October 1996. The total cost of the activity was budgeted at \$350,000, of which \$200,000 was provided by ACRU, ACS and the host institutions, and \$150,000 by ALO. Additional contributions have come through the corporate sector and foundations. As with other ALO-supported pilot development networks, Building Bridges imposes minimal or no management burden on USAID.

**Outcomes:** Through Building Bridges, representatives from ACRU member institutions have had the opportunity to observe a range of public service activities, and to reflect upon the usefulness of incorporating public service into their institutions' missions. The core group of academic leaders from ACRU now knowledgeable about public service are expanding the dialogue on increasing the role of universities in local and regional development. They are more aware of the importance of supportive public policy at the national level to enable universities to institutionalize the public service function. Many of the smaller U.S. institutions, noted for their international interests and public service but not for their contribution toward global development, are bringing the fruits of their engagement to their students and communities. Students and faculty are learning about the challenges in achieving economic development while attending to environmental, social equity, and other concerns. Spin-off activities have included exchanges of faculty and students in ecology and national heritage, and joint efforts in distance education, eco-tourism and libraries. The ACRU/ACS alliance has matured through on-going communication via an Internet discussion group hosted by ACRU on its homepage at address <http://acru.tuke.sk>. Like the ALO-supported networks with Mexico and Latin America, Building Bridges has leveraged resources from a diversity of sources, increasing its initial investment by two to three-fold.

*The Report of Phase Two of the Cooperative Pilot Network Activity Building Bridges Between Institutions of Higher Education in the Carpathian Region of East Central Europe and the Southeastern United States* is available from the Associated Colleges of the South.

## U.S./AFRICA

**Goals and Objectives:** The projected pilot development network joining colleges and universities in the U.S. and Africa seeks to increase the relevance of African higher education to development, and enhance the ability of U.S. colleges and universities to teach about Africa.

**Key Features:** The network will build upon a burgeoning relationship between the Association of African Universities (AAU) and the American Association of State Colleges and Universities (AASCU) and other higher education associations. The AAU, whose secretariat is based in Accra, Ghana, serves as the principal forum for consultation, cooperation, and exchange of information among universities in Africa and between them and the international academic community. The AAU has 142 members in 43 countries. AASCU, consisting of more than 400 U.S. state colleges and universities and university systems, represents issues in state-supported higher education, and, in the international arena, assists member institutions plan and implement programs which internationalize their campuses. It is envisioned that the U.S./Africa pilot network will include at least six pairs of higher education institutions.

**Agenda:** The *AAU Core Program of Activities: 1997-2000* describes the major components of the AAU program as being in the areas of leadership and management, the university's role in the education sector, quality of training and research, and gender sensitization. The proposed AAU/AASCU pilot development network dovetails with AAU's focus on developing leadership and management capacity in African universities to enable them to respond adequately to the challenges in the national and global environments in which they operate. This is important as African universities seek to be more relevant to their constituencies, and, with the private sector, serve as engines of development. The network will be launched contingent on continuing USAID/ALO cooperation.

The Association of African Universities homepage may be found at the following address: <http://www.zamnet.zm/aau/aau.htm>.

**International Growth**  
**and the**  
**International Trade in Educational Reform**

**Stephen P. Heyneman**  
**World Bank**  
**Washington, DC**

# **Basic Education and Economic Development : The Change in Standards for Both**

## **A. Traditional view.**

Quality of basic education is low.

Potential impact for investing in basic education is higher than for other levels.

## **B. Problem with this view.**

Expectations for economic performance have changed.

Standards of basic education have changed.

Education sector is inter-dependent across levels and specializations.

## **C. New Rationales for Making Educational Investments.**

Higher individual productivity  
using new concepts of economic competitiveness.

Stronger sector efficiency  
using new concepts of sector inter-dependence.

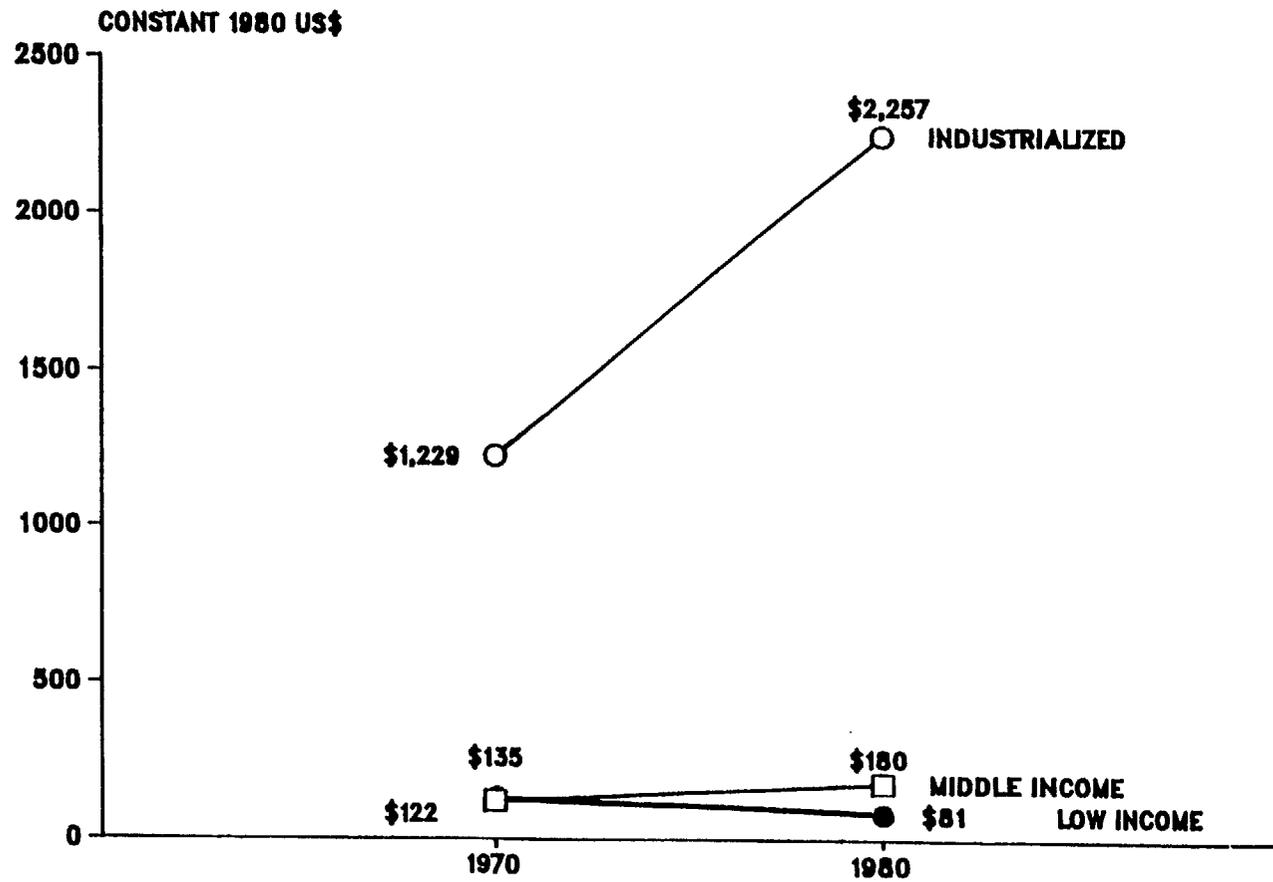
Stronger contribution to social cohesion and social stability  
using new understanding of education mechanisms.

## **D. International Trade in Education Reform**

TRADITIONAL VIEW:

QUALITY OF BASIC EDUCATION IS LOW

# TOTAL RECURRENT EXPENDITURES PER STUDENT

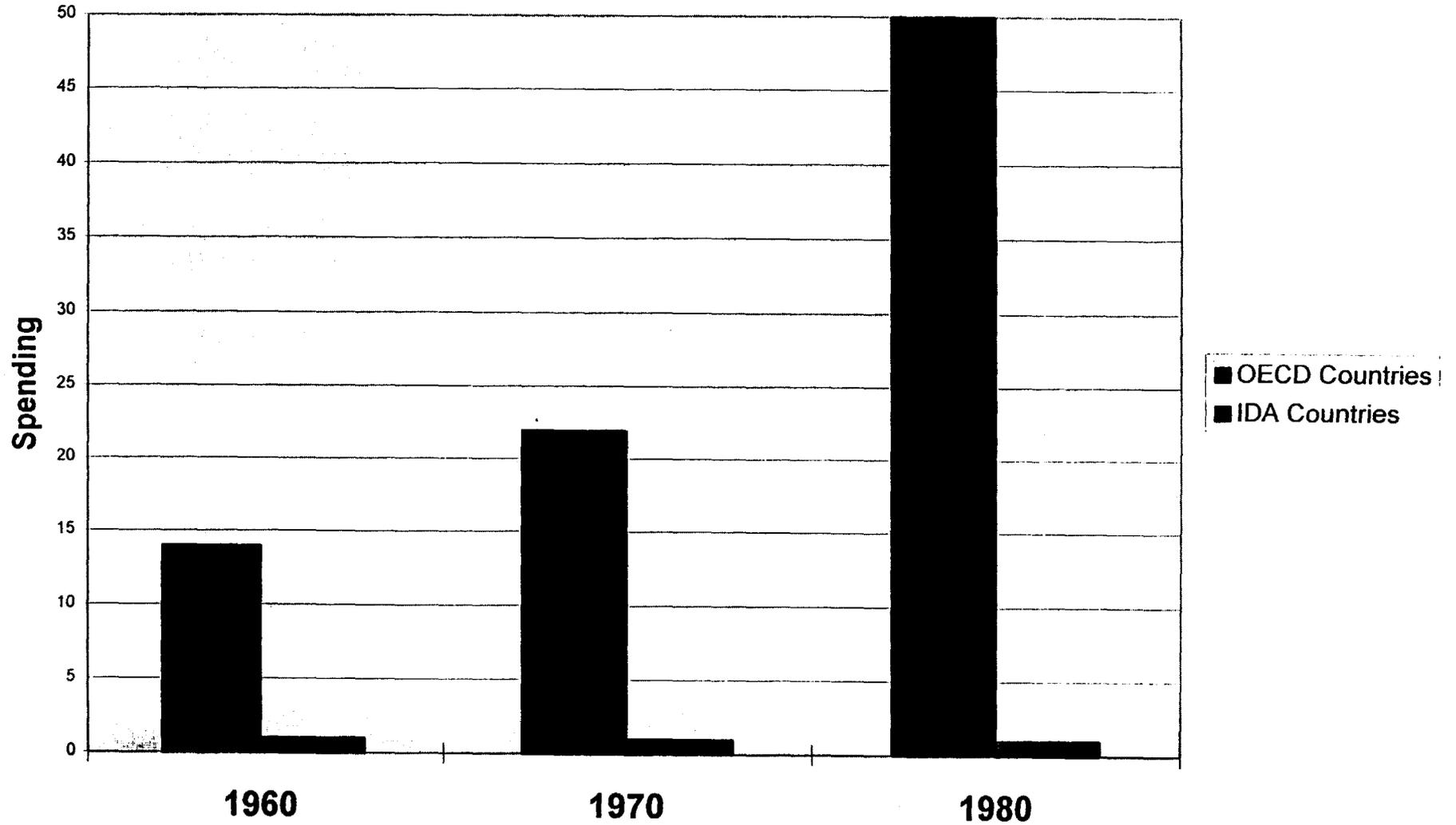


SOURCE: FULLER, 1986.

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# EDUCATION SPENDING GAP

(Spending per year, per student in dollars)



df

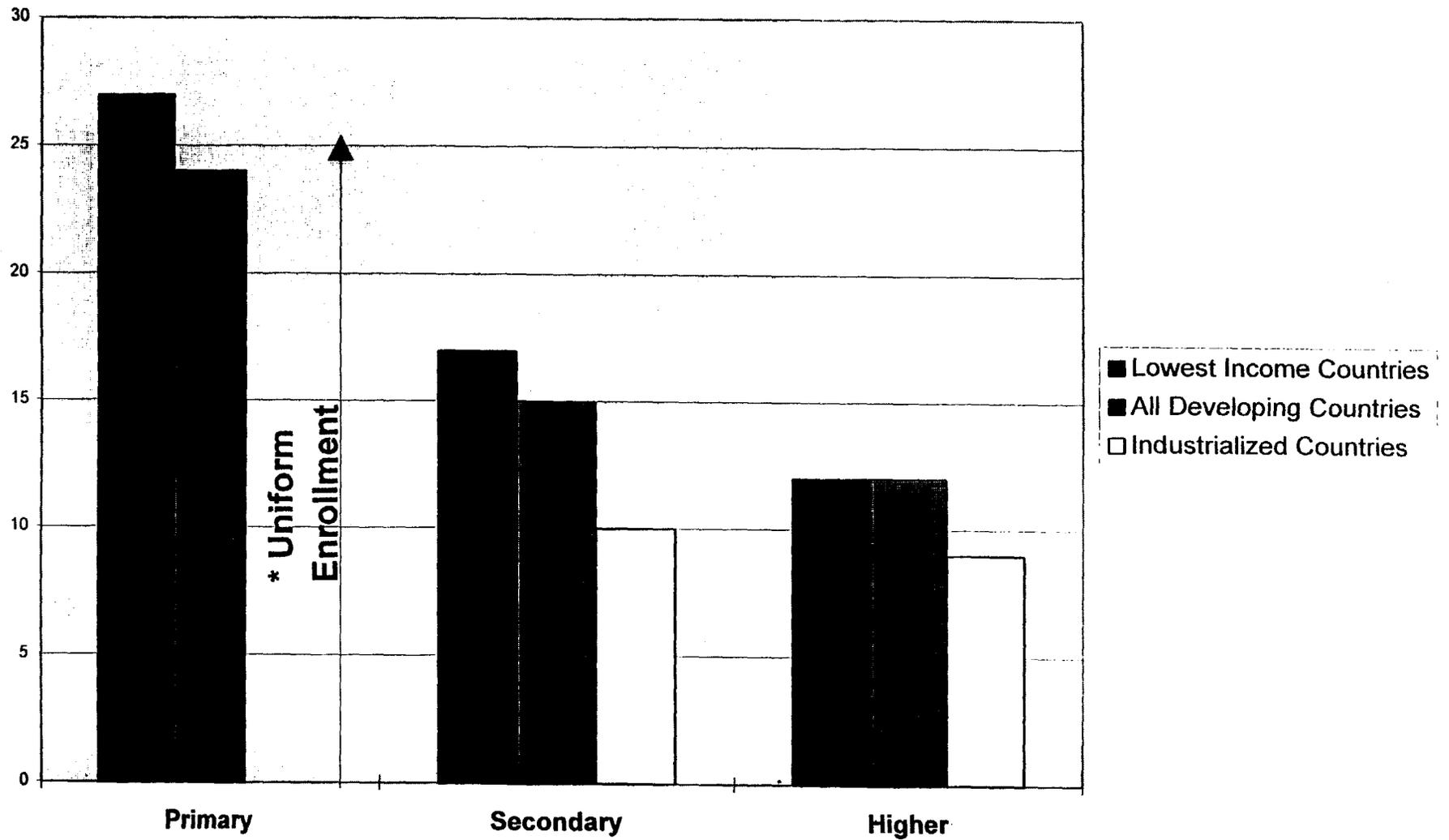
TRADITIONAL VIEW:

IMPACT OF INVESTMENTS IN

BASIC EDUCATION IS HIGHER THAN FOR

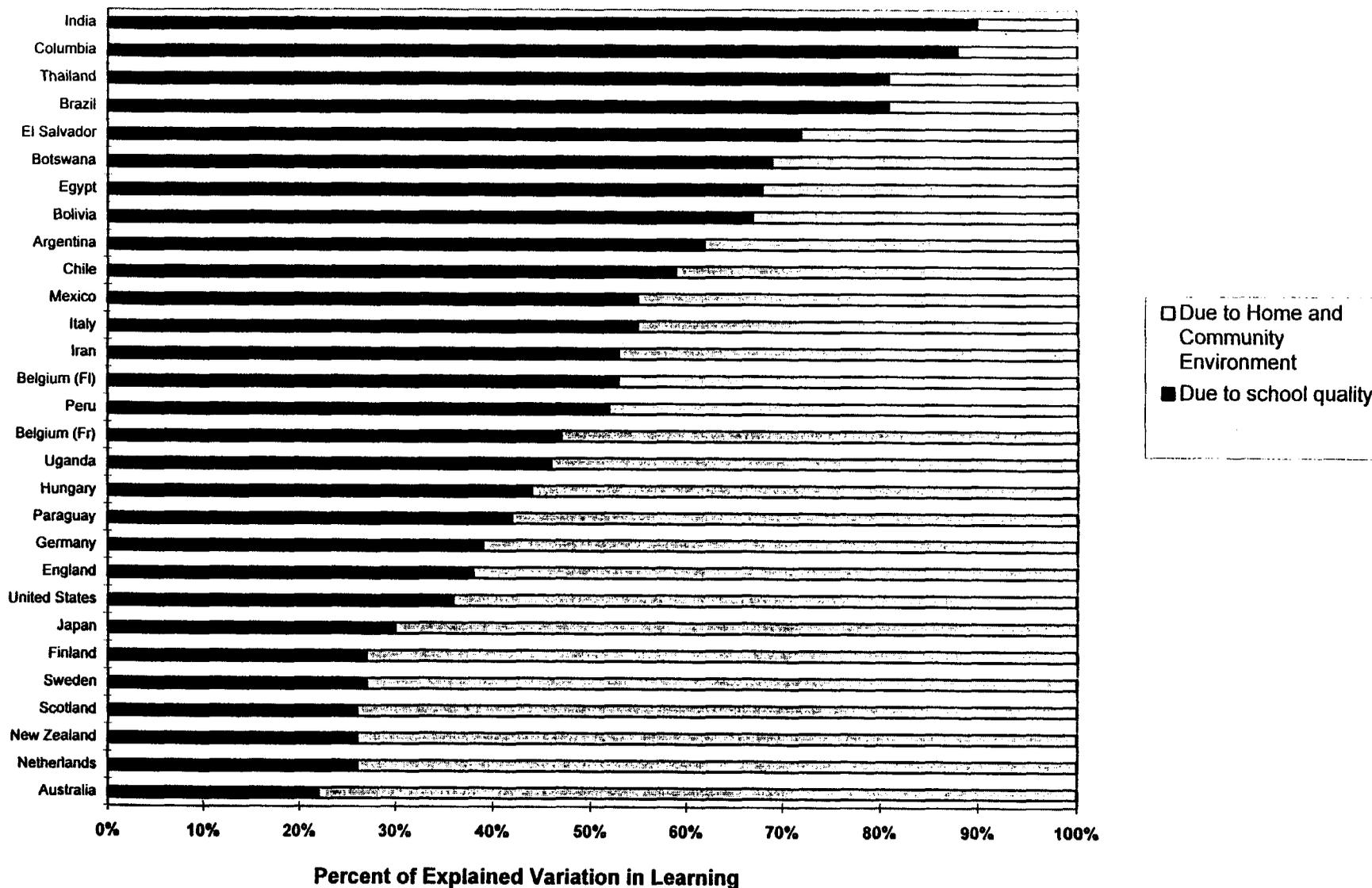
OTHER LEVELS

# RATES OF RETURN TO EDUCATION



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# INFLUENCES ON PRIMARY SCHOOL SCIENCE ACHIEVEMENT



Notes: Technical details in: "The effect of primary school quality on academic achievement across 29 high and low income countries." American Journal of Sociology, May 1983.

Correlation between the influence of school, quality national GNP per capita [R=-0.72(P<0.001)]

Source: Heyneman and Loxley, 1985.

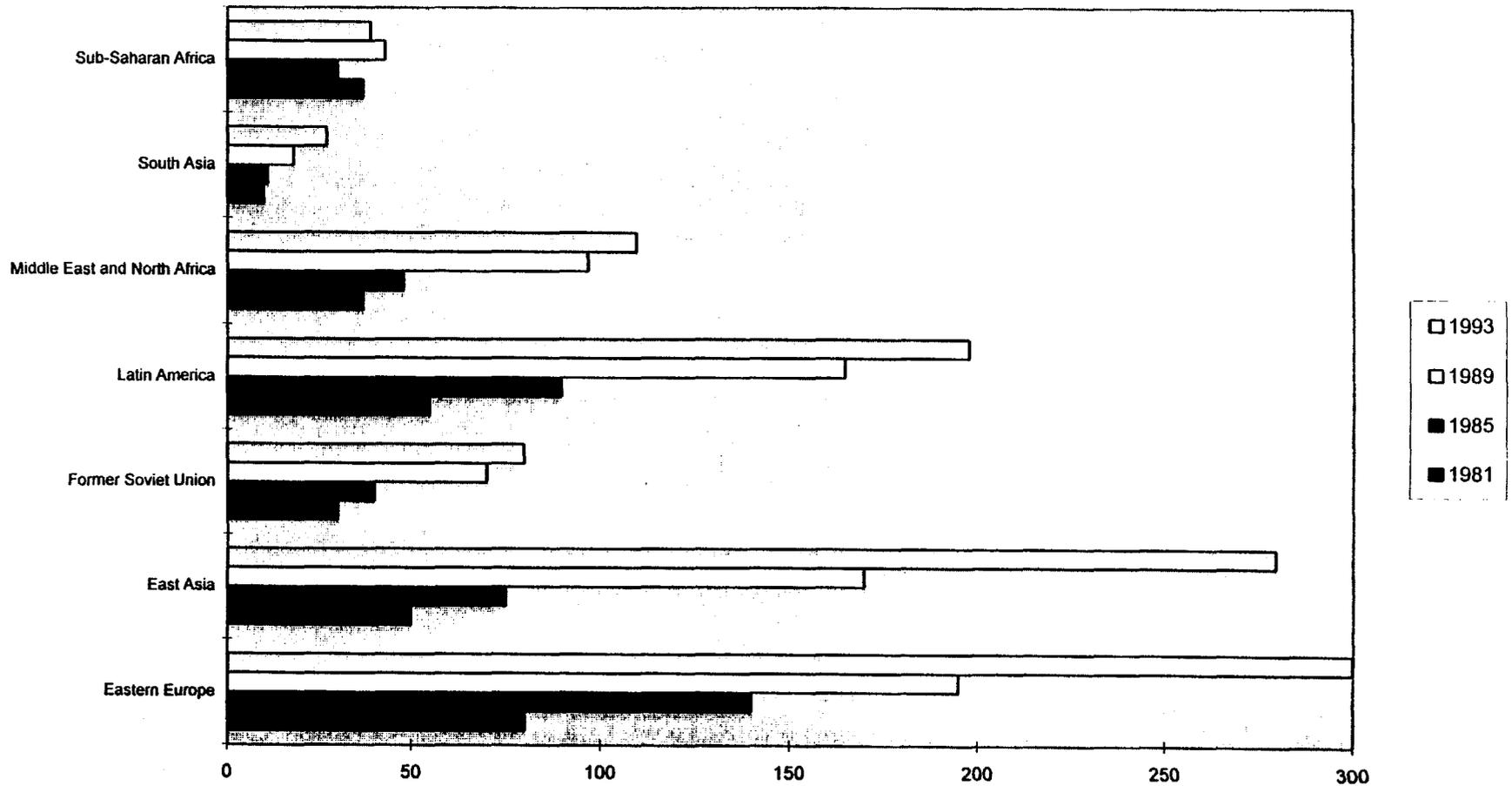
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PROBLEM WITH THE TRADITIONAL VIEW:

EXPECTATIONS FOR ECONOMIC PERFORMANCE

HAVE CHANGED

## PER CAPITA EXPORTS OF MANUFACTURED GOODS, BY REGION, U.S. DOLLARS



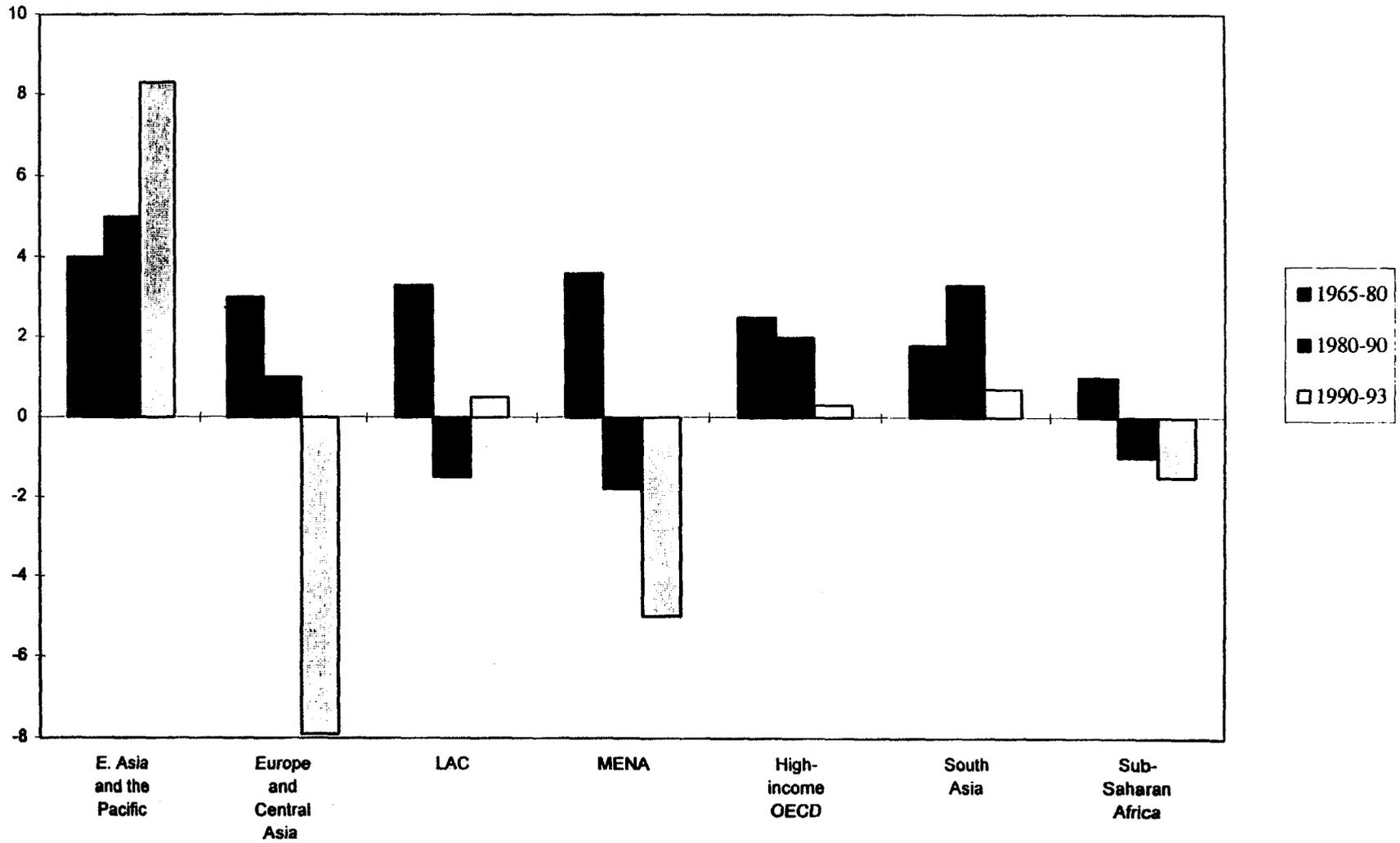
**Note:** Middle East & North Africa includes Algeria, Egypt, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Syria, Tunisia, and United Arab Emirates.

**Source:** Will Arab Workers Prosper or Be Left Out in the Twenty-first Century?  
1995, p. 12.

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Percent per year

### GROWTH OF GDP PER WORKER BY REGION



Source: World Development Report 1995, page 13

PROBLEM WITH THE TRADITIONAL VIEW:

STANDARDS OF BASIC EDUCATION

HAVE CHANGED

<b>Farmer-Entrepreneurs' Technology Level</b>	<b>Agricultural Inputs</b>	<b>Minimum Learning Requirements</b>
<b>Level A:</b> Traditional farming techniques passed from parent to child	Local varieties of seeds and implements	Addition and subtraction — not necessarily acquired through formal education
<b>Level B:</b> Intermediate technology	Small quantities of fertilizer	Addition, subtraction, division, and rudimentary literacy
<b>Level C:</b> Fully improved technology	High-yielding varieties: proven seeds rate of application of seed; fertilizer, and pest control per acre	Multiplication, long division, and other more complex mathematical procedures; readings and writing abilities, and rudimentary knowledge of chemistry and biology
<b>Level D:</b> Full irrigation-based farming	All above inputs; tubewell access during the off-season; and water rates per acre	Mathematics, independent written communication, high reading comprehension, ability to research unfamiliar words and concepts; elementary chemistry, biology, physics; and regular access to information from print and electronic sources

Source: Hame (1979)



<b>MATCH BETWEEN WORKPLACE AND EDUCATION QUALITY <sup>a</sup></b>			
<b>Traditional</b>		<b>Future</b>	
<b>WORKPLACE</b>	<b>EDUCATION</b>	<b>WORKPLACE</b>	<b>EDUCATION</b>
Passive order-taking in a hierarchical work organization; heavy supervision to control workers.	Teachers convey knowledge to passive learners.	Workers expected to take responsibility for identifying and solving problems and for adapting to change by learning.	Under teacher support and guidance, students assume responsibility for learning, in the process developing knowing-how-to-learn skills.
Emphasis on limited responses to limited problems and getting a task done.	Emphasis on facts and getting right answers.	Workers deal with non-routine problems that have to be analyzed and solved.	Emphasis alternative ways to frame issues and solve problems.
Focus on the specific task independent of organizational context or business strategy.	What is to be learned is stripped of meaningful context.	Workers expected to make decisions that require understanding the broader context of their work and their company's priorities.	Ideas, principles, and facts are introduced, used, and understood in meaningful context.

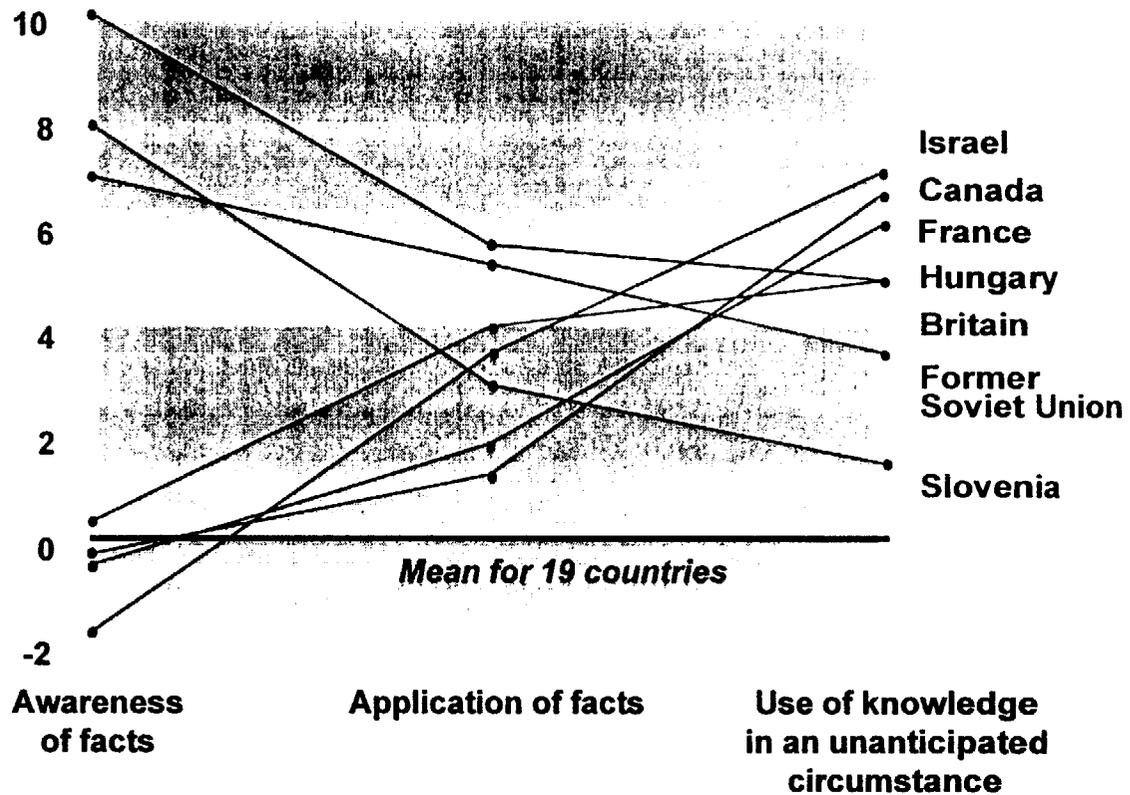
Source: Golladay, Berryman and Avins (1995).

## CATEGORIES OF SCHOOL QUALITY

	Level of Expenditure on Non-Salary Materials/Student (1986)	Indicator	Product	Example
A	1	1 textbook/class. With some exceptions the teacher has the only available book. Pupils expected to copy the text from the blackboard and memorize.	Rote memorization of unsophisticated and poorly interpreted information.	Uganda Liberia Haiti
B	3:1	1 textbook/student. Each student has access to one book in each subject. Comparatively few prerequisite pedagogical skills.	Major expansion of information and efficiency of presentation; little progress on self-generated skills of learning.	Philippines Peoples Republic of China
C	40:1	Several textbook titles available/student; pupils in lower grades work on locally-designed exercises, teacher picks and chooses from among the best or the most appropriate available materials; requires significant intellectual independence on the part of teachers.	Latitude of educational programs based upon individual student ability; significant increase in the mastery of cognitive skills.	Malaysia
D	300:1	15 titles or 40 copies/student available in supplementary reading materials in each school in addition to a wide variety of curriculum packages, reference books, maps, dictionaries, film strips, lesson tapes, documentary films and computer-assisted instruction. Significant managerial skills required on the part of teachers at all levels of education.	Self generated habits of learning; ability to investigate new ideas and to recognize strong and weak supporting arguments; major improvement in cognitive creativity; wide exposure to culture as well as science.	Japan USA Sweden

ap

**Socialist education emphasized accumulating knowledge rather than applying it.**



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## Education Expenditures and Mathematics Achievement

Country	-A-	-B-	Ratio A/B
	Public Expenditure on Education/capita*	Proportion Over the International Median in 8th Grade Math	
	(\$)	(%)	
Norway	1111	46	24
USA	1040	45	23
Kuwait	848	3	287
Singapore	724	94	7
England	649	48	14
Japan	602	83	7
Israel	584	56	10
Korea	362	82	4
Hong Kong	309	80	4
Czech	297	70	4
Hungary	272	60	4
Thailand	206	54	4
Iran	183	9	20
Latvia	147	40	3
Lithuania	71	34	2
Romania	55	36	2

\* Calculated by multiplying the GNP/capita (in international dollars) by public expenditures on primary and secondary education.

Source: TIMSS

**Expectations for Performance in Biology:  
France and the MENA Countries Compared**

<b>MENA</b>	<b>FRANCE</b>
Simple information  Use science principles to explain	Complex information Thematic Information Abstracting, deducting scientific principles Use science principles to explain Constructing and using models Designing investigations Interpreting investigation data

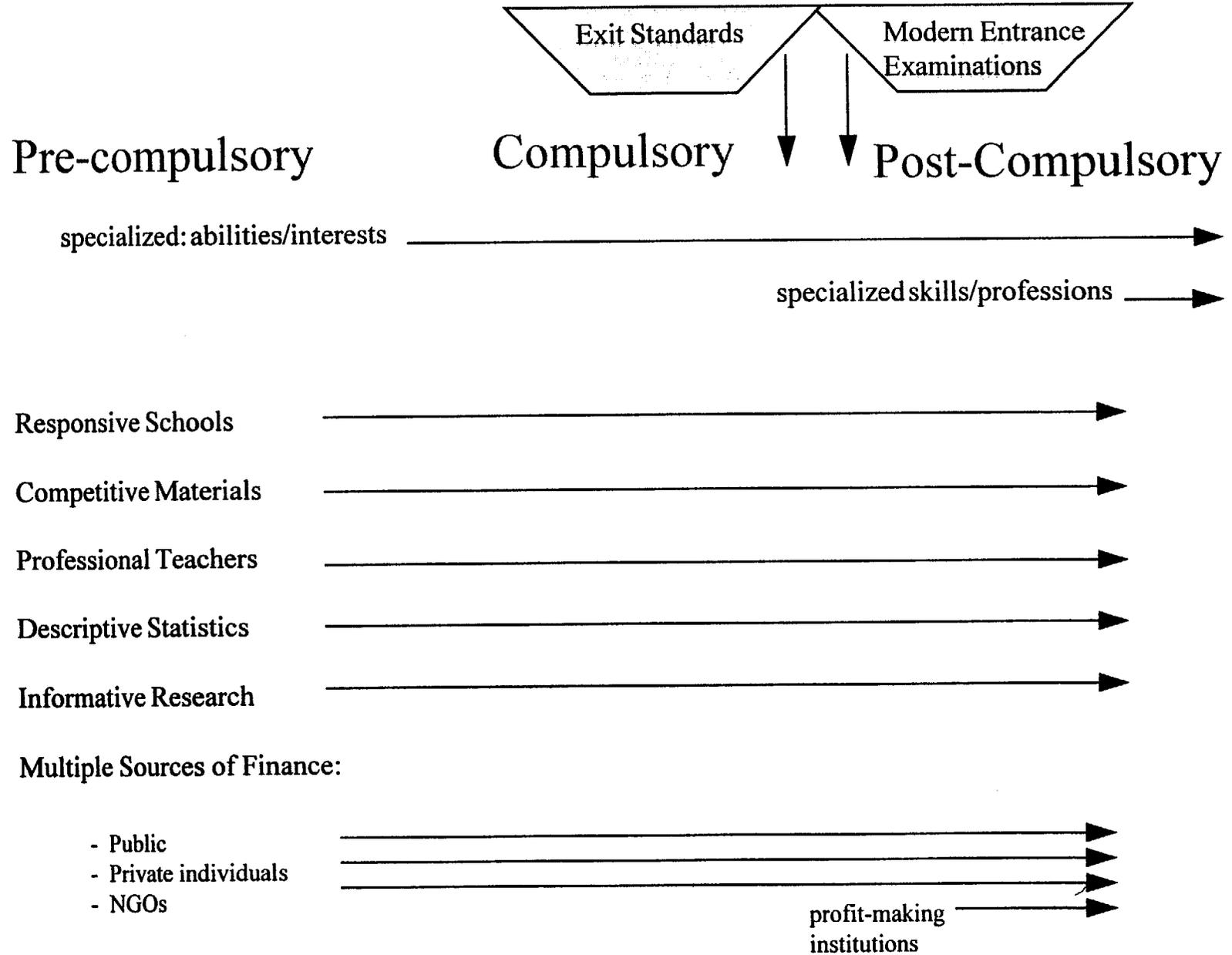
**Expectations for Performance in Mathematics:  
France and the MENA Countries Compared**

MENA	FRANCE
Representing  Performing routine procedures Using more complex procedures       Justifying and proving	Using equipment Performing routine procedures Using more complex procedures Solving Predicting Verifying Generalizing Justifying and proving Describing/discussing

PROBLEM WITH THE TRADITIONAL VIEW:

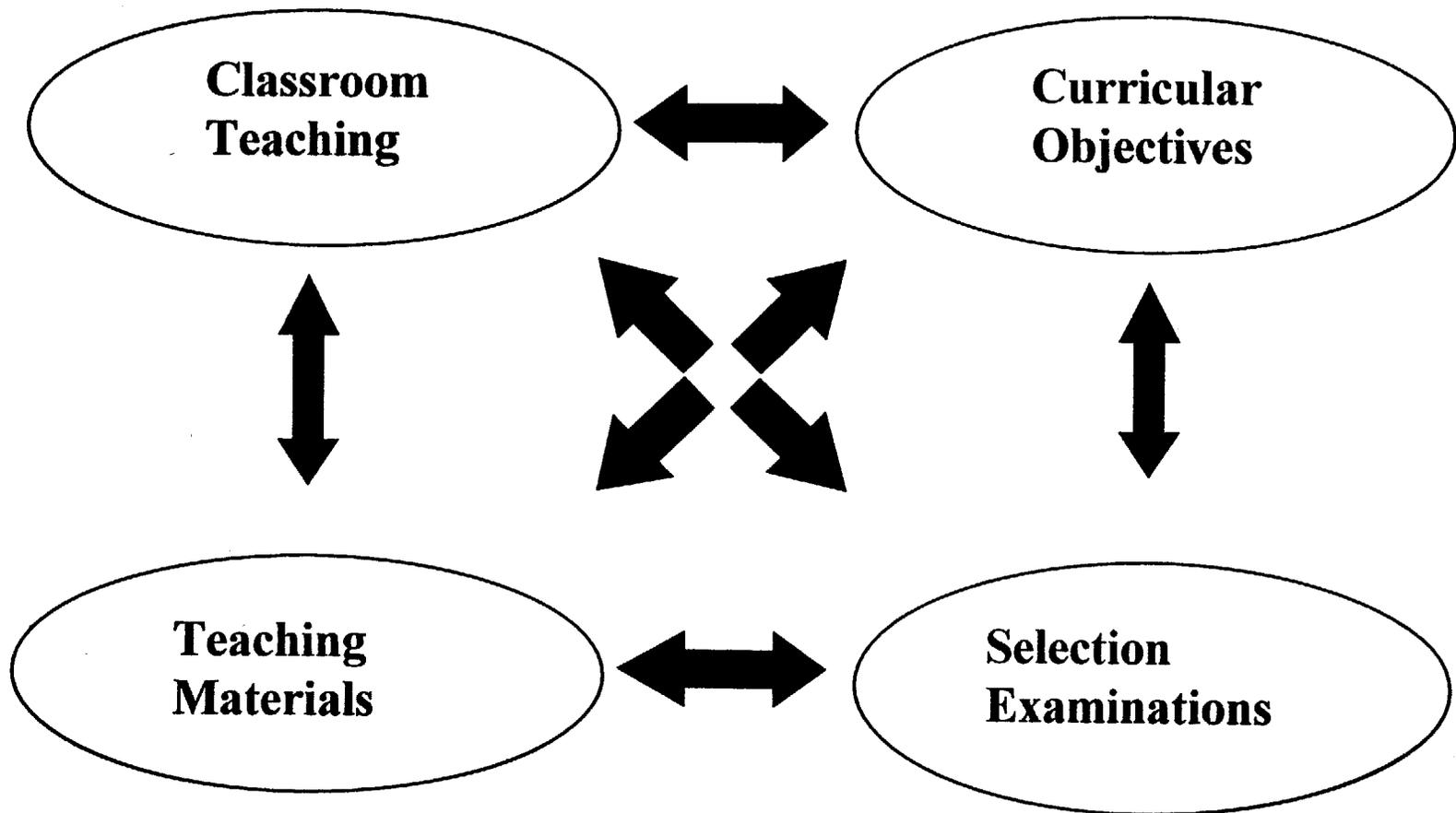
EDUCATION SECTOR IS INTER-DEPENDENT

# Cohesive Education Sector

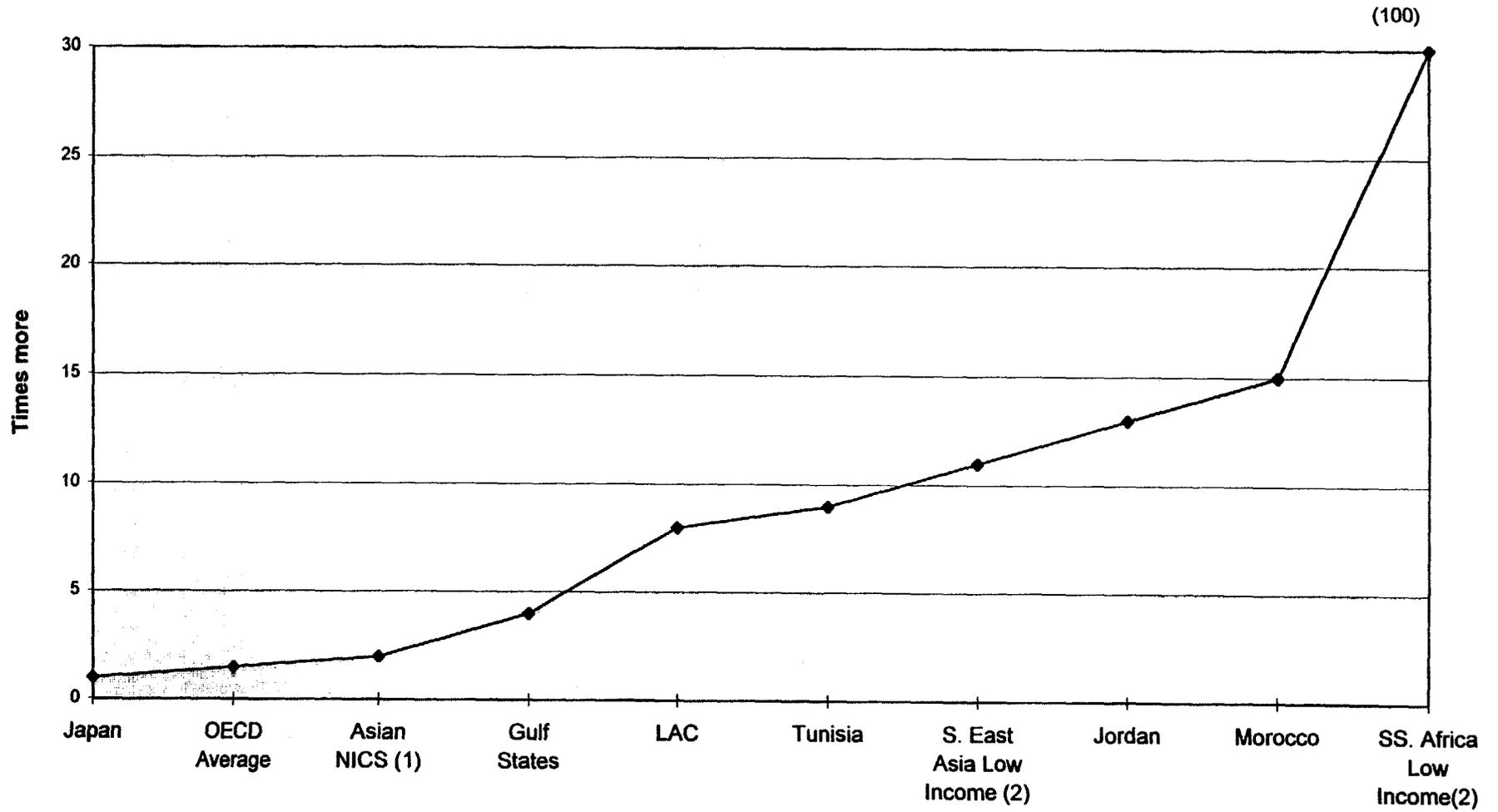


ops

## Mechanisms to Reinforce Education Sector Coherence



# RATIO OF PRIMARY EXPENDITURES/STUDENT WITH TERTIARY EXPENDITURES/STUDENT



(1) NICS: Newly industrialized countries (Singapore, Korea, Taiwan, Hong Kong).

(2) Low Income: GDP < \$100/year/capita.

Source: Heyneman, 1993, p. 213, Lewin, 1995, Chart 9.

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## **NEW RATIONALES FOR MAKING EDUCATIONAL INVESTMENTS**

**Higher individual productivity using new concepts of economic competitiveness.**

**Stronger sector efficiency using new concepts of sector inter-dependence.**

**Stronger contribution to social cohesion and social stability using new understanding of education mechanisms.**

# Higher Individual Productivity

## Education Quality

## Labor Force Versatility through

- Better balance between public/private functions
- Portable
  - pensions
  - health insurance
- Lowered regulations governing turnover

## Supportive Youth Policy

## Stronger Contribution to Social Cohesion and Social Stability

1. Equal Opportunity through
  - access to quality
  - modernized selection examinations
2. Curricular Content
3. Classroom Climate
4. Institutions for achieving Education Consensus

## **STRONGER SECTOR EFFICIENCY**

- \* Descriptive statistics**
- \* Restructured vocational education**
- \* Competitive educational materials**
- \* Professional teachers**
- \* Diversified finance and delivery of higher education**

**NUMBER AND TYPE OF AGREED EDUCATION  
INDICATORS IN O.E.C.D. COUNTRIES**

	1992	1993	1994
Resources/Processes	21	21	26
Context	5	7	13
Outcomes	10	10	12
Total	36	38	51

## O.E.C.D. EDUCATION INDICATORS

RESOURCES AND PROCESSES	Available in MENA*
<b><i>FINANCIAL RESOURCES</i></b>	
Expenditure on Education	
Educational expenditure relative to GDP	Yes
Expenditure of public and private educational institutions	No
Expenditure for educational services per student	No
Allocation of funds by level of education	Yes
Current and capital expenditure	Yes
Sources of educational funds	
Funds from public and private sources	No
Public funds by level of government	Notional
Share of education in public spending	Yes
<b><i>PARTICIPATION IN EDUCATION</i></b>	
Participation in formal education	Yes
Early childhood education	Notional
Participation in secondary education	Yes
Transition characteristics from secondary to tertiary education	Yes
Entry to tertiary education	Yes
Participation in tertiary education	Yes
Continuing education and training for adults	No
<b><i>PROCESSES AND STAFF</i></b>	
Instructional time	
Teaching time per subject	No
Hours of instruction	No
School processes	
Grouping within classes	No
Human resources	
Staff employed in education	Yes
Ratio of students to teaching staff	Yes
Teaching time	No
Teacher education	Yes
Teacher compensation	No
Teacher characteristics	No
<b><i>EDUCATIONAL R&amp;D</i></b>	
Educational R&D personnel	No
Educational R&D expenditure	No

\* Available to officials in the Ministry of Education only. Countries in the MENA region generally do not publish educational statistics for use by the general public.

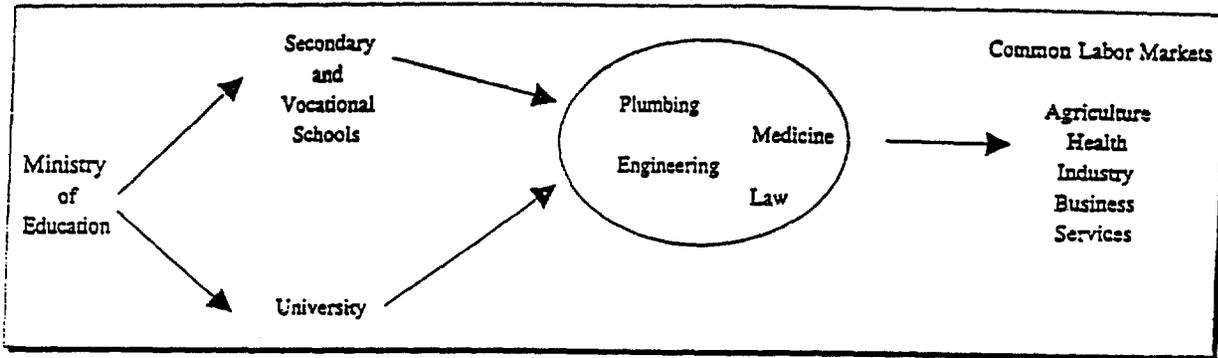
<b>O.E.C.D. EDUCATION INDICATORS</b>	
<b>Contexts of education</b>	<b>Available in MENA</b>
<b><i>DEMOGRAPHIC CONTEXT</i></b>	
Educational attainment of the population	Yes
Gender differences in education	Yes
Youth and population	Yes
<b><i>SOCIAL AND ECONOMIC CONTEXT</i></b>	
Labor force participation and education	Yes
Unemployment among youth and adults	Notional
National Income per capita	Yes
<b><i>OPINIONS AND EXPECTATIONS</i></b>	
Importance of school subjects	No
Importance of qualities/aptitudes	No
Public confidence in the schools	No
Educational responsibilities of schools	No
Respect for teachers	No
Priorities in school practices	No
Decision-making at school level	No
<b>Results of education</b>	
<b><i>STUDENT OUTCOMES</i></b>	
Progress in reading achievement	No
Amount of reading	No
<b><i>SYSTEM OUTCOMES</i></b>	
Upper-secondary graduation	Yes
University graduation	Yes
University degrees	Yes
Science and engineering personnel	Yes
<b><i>LABOR MARKET OUTCOMES</i></b>	
Unemployment and education	Notional
Education and earnings	No
Educational attainment of workers	Notional
Labor force status for leavers from education	Notional

N = 49

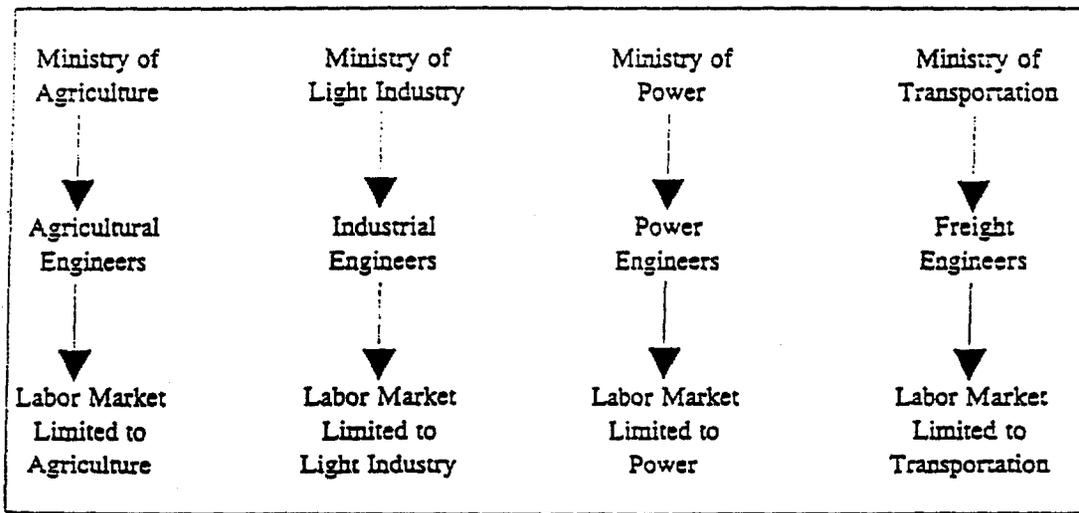
Yes = 43 %

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Structure of Professional Training in OECD Countries  
Flexible Institutions Driven by the Labor Market

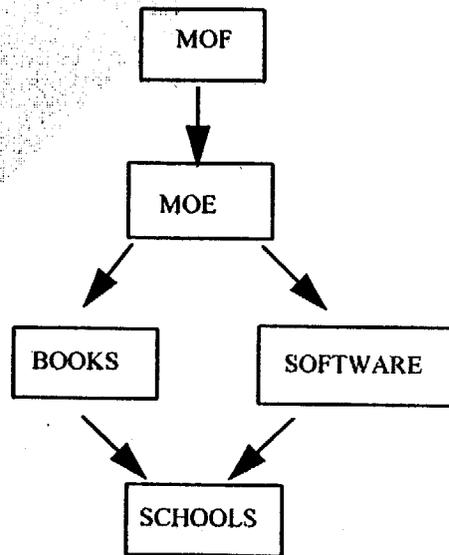


Structure of Professional Training In Russia  
Segmented by Sector

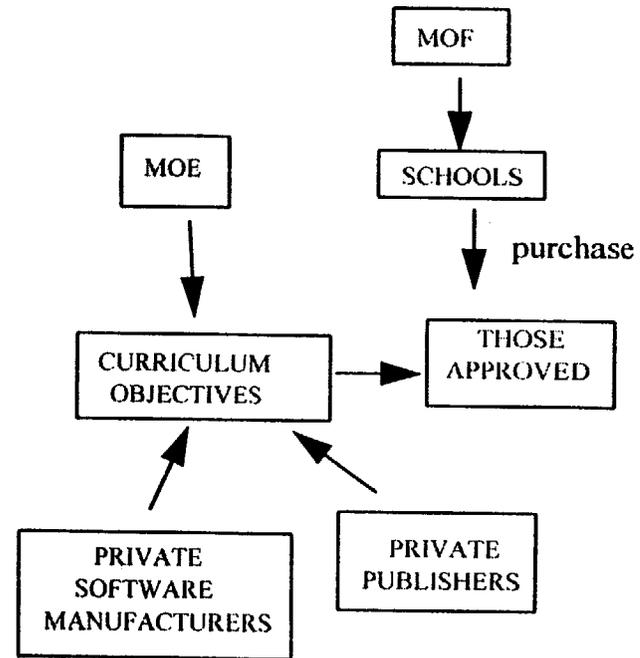


## EDUCATIONAL MATERIALS PRODUCTION IN ECA: CURRENT AND FUTURE METHODS

### Current Method



### Future Method



<b>PROFESSIONALIZATION OF TEACHERS</b>															
<b>% Reaching</b>	<b>100</b>		<b>80</b>				<b>50</b>				<b>20</b>				
<b>Salary Scale by Comparison to Apprentice</b>	<b>1</b>		<b>2</b>				<b>4</b>				<b>8</b>				
		<b>Exams*</b>					<b>Exams *</b>				<b>Exams *</b>				
<b>Years Teaching</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
	<b>Apprentice</b>		<b>Grade 1 Teachers</b>				<b>Grade 2 Teachers</b>				<b>Grade 3 Teachers</b>				

- \* Based on:
- (a) Subject matter knowledge;
  - (b) Knowledge of didactics;
  - (c) Observed classroom performance;
  - (d) Contribution to the profession or to the school.

## HIGHER EDUCATION 1960 - 2020

ISSUE		1960	1990	2020
A	% of age group enrolled	< 10 %	20 %	20 - 40 %
B	Variety of higher education delivery	Low	Low	High
C	% of higher education budget publicly financed	100 %	100 %	< 100 %
D	Mechanism of Public Finance	Inputs	Inputs	Outputs and Student Choice
E	Quality of higher education	High	Low	High

## **D. International Trade in Education Reform**

- Aid for education decreasing
- Trade in education increasing
  - Who is trading?
  - What is being traded?
    - Data
    - Analytic techniques
    - Reform ideas
    - Experts
  - How is trade conducted?
    - International Institutions
      - UNESCO
      - IEA
      - OECD
      - World Bank
    - Bilateral Agencies
    - Private Business
      - publishing
      - testing
      - software
      - consulting

## **SUMMARY**

An open and competitive economy requires:

- a competitive labor force
- social stability

These require:

a cohesive education system

comparable in quality to those in competitive economies

increased trade in education reform

**ASSOCIATION LIAISON OFFICE  
FOR UNIVERSITY COOPERATION  
IN DEVELOPMENT**

The Association Liaison Office for University Cooperation in Development (ALO), established in 1992, coordinates the efforts of the nation's six major higher education associations to build their partnership with USAID and to help their member institutions plan and implement development programs with colleges and universities abroad. Uniquely situated to broaden and deepen the involvement of the American higher education community in partnerships for global development, ALO serves to mobilize the community's resources toward this end.

For more information or for additional copies of this report you may contact:

Association Liaison Office  
for University Cooperation in Development  
Suite 700  
One Dupont Circle NW  
Washington DC 20036

Telephone: 202 857-1827  
Fax: 202 296-5819  
Internet: alo@aascu.nche.edu  
[http://www.aascu.nche.edu/alo/alo\\_home.htm](http://www.aascu.nche.edu/alo/alo_home.htm)

**U.S. AGENCY FOR  
INTERNATIONAL DEVELOPMENT**

Since 1961, the U.S. Agency for International Development (USAID) has been charged with implementing programs which further American self-interest and demonstrate American humanitarian concern. Spending less than one half of one percent of the federal budget, USAID works in four interrelated areas crucial to achieving U.S. foreign policy objectives: improving health and population conditions; promoting economic growth; protecting the environment; and supporting democracy. In addition, USAID's assistance to victims of famine and other natural and man-made disasters saves thousands of lives every year.

To learn more about USAID and its programs, visit their web site at:

<http://www.info.usaid.gov>

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