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FINAL REPORT:

BRIDGES FIRST ANNUAL CONFERENCE

January 1988

Reported by: Tom LeBlanc
Graduate Assistant
Project BRIDGES

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BRIDGES FIRST ANNUAL INTERNATIONAL CONFERENCE

INTRODUCTION

Thomas D. LeBlanc

The First Annual BRIDGES International Conference¹ was held at the Research Triangle Institute in Raleigh, North Carolina, January 25-30, 1988. The two major objectives of the conference were: 1) to provide education decision makers from developing countries with an opportunity to share their knowledge and ideas about the kinds of policies most likely to improve the quality of education; and 2) to evaluate the strategy and progress of the BRIDGES Project in terms of educational experiences and needs in various countries.

The conference included key members of ministries of education from several developing countries as well as team research leaders from American-based universities, all of whom² are participating in this state of the art, collaborative, educational policy research effort. Among the many themes which emerged from the fruitful exchanges between the North-South participants, the most dominant was the proposal that the "systems approach" be applied to the various policy research endeavors. There was a consensus among the participants which was critical of the atomization of variables, reflected by an uneasiness over the use of lists of variables without a context within which to measure their contribution to the learning process.

The conference was divided into four main phases. In the first phase, discussions were generated around the six policy variable domains which BRIDGES has identified as central to its research efforts across countries: physical resources, teacher training, teacher characteristics, classroom management, school management, and learning technologies. Presentations of these domains were made by the research team leaders. This phase also included an in-depth presentation of an example of BRIDGES research in Thailand.

The second phase focused on summary reviews of the BRIDGES research program in which a panel of country participants described the country-specific research being carried out in conjunction with BRIDGES. In their presentations, they attempted to describe the projects in terms of how correct the research themes are, whether the projects are well-designed, and the

¹ Funding for this Conference and for the Basic Research and Implementation in Developing Education Systems Project is provided to Harvard University by the United States Agency for International Development (Contract DPE-5824-1-00-5076-00).

² See Appendix 1 for a list of the participants, their affiliations, and the countries they represented.

appropriateness of the presentations of proposals. This part of the conference ended on a presentation by the secretary of Education in Sri Lanka, Mr. Wijemanna, who very eloquently challenged researchers to assess the utility of basic education.

The third phase was devoted to presentations of the software and data development part of the BRIDGES Project. This program was divided into three units: 1) the strategic outline of the data analysis, projections, and management information system for education which is being developed and implemented in Indonesia; 2) the development of the Women In Development database sub-project; and 3) three educational planning models (STEP, EPM, and EIM) being developed under the project in conjunction with the other research team leaders in BRIDGES.

In the final phase of the conference, the participants discussed the future agenda of BRIDGES and, in particular, considered: 1) the research agenda; 2) software development; and 3) the information network. This part of the conference had the specific objective of providing inputs to the management of the BRIDGES Project in an effort to improve the support provided to the participants in their work.

In sum, a lot of communication took place between policy makers and researchers. Dr. Noel McGinn, principal investigator and project director, aptly described one of the major outcomes of this conference as a sharpening of research themes through the contributions that decisions makers made about how they see the problems their systems are facing and the kind of information they need. At the same time, there was a broadening of the understanding of what policy options are available and what their likely consequences are on the part of decision makers because of the contributions that researchers made.

BRIDGES BASIC OBJECTIVES AND STRATEGIES

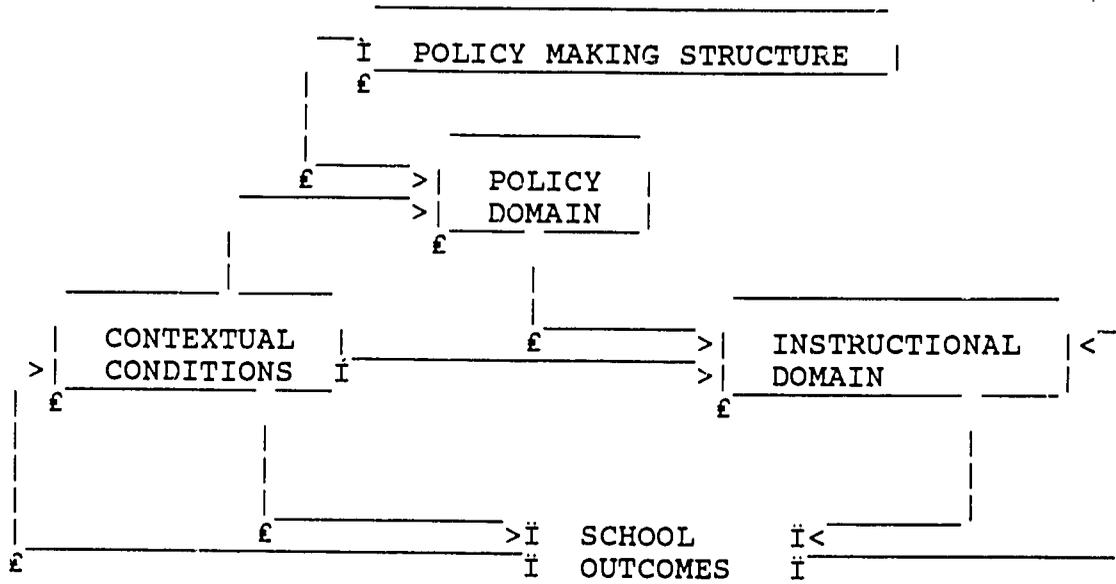
Dr. Noel McGinn

In general, the purpose of the BRIDGES Project is to improve the knowledge and understanding of policy choices for the organization and operation of national education systems in developing countries. The countries currently participating in the BRIDGES Project include Burundi, Egypt, Indonesia, Pakistan, Sri Lanka, Thailand, and Yemen. The activities of the project include the compilation of existing knowledge on education, the connection of empirical research on education to the outcomes of interventions, the development of tools for planning and policy making, and training in all these different areas.

Figure 1 illustrates a categorical scheme which describes the kind of research that the BRIDGES Project should do within the framework of how policies affect the quality of performance of

education systems. Fundamental elements of the categorical scheme are that learning is the major output of education systems and that access, retention, and costs are outcomes which are instrumental to learning and upon which policies can impact.

Figure 1. BRIDGES Model of Determinants of Educational Outcomes.



The basic principle upon which this categorical scheme rests is that learning is a function of time. This relationship can be expressed as the time trying to learn relevant material divided by the time required to learn the relevant material, where "relevant" is defined by the state or the education system. Given this argument, efforts to improve education systems should focus on two questions: 1) how can we increase the time spent by students on school learning? and 2) how can we reduce the time required to achieve the learning objectives of the school system?

There are three categories within which variations of the time spent in school and variations of the difficulty of learning can be placed: contextual conditions, the policy domain, and the instructional domain. We cannot directly change the contextual conditions that affect what takes place in the classroom. However, given that education policies interact with contextual conditions in the process of instruction, we can modify policies so as to maximize learning outcomes.

In the development of the BRIDGES research strategy, BRIDGES has sought to develop a list of the major categories of factors in the contextual conditions, the policy domain, and the

instructional domain³ which will help us to develop a more complete understanding of the complex set of policy options that decision makers have to improve the quality of their education systems.

PART I

POLICY DOMAIN PRESENTATIONS

POLICY DOMAIN 1: PHYSICAL RESOURCES

Dr. Donald P. Warwick

There are a set of assumptions behind the conversations which take place between the leaders of donor organizations and recipient countries that are directly relevant to physical resources. Primarily, donors and recipients alike are interested in building facilities. Yet, a research review which the BRIDGES Project commissioned the Institute for International Research to conduct entitled "Literature Review of the Relationship Between Facilities and Achievement," concluded that we don't know very much about the subject, that there are serious problems of definition, and that there is no direct evidence, despite our firmest beliefs, that having a school building helps learning.

The basic problem is one of "atomism." In other words, an attempt is made in the research to take a list of forty items in the area of facilities and to relate each item to achievement one by one. However, another way of looking at school facilities is from the "systems approach," which looks at school facilities as a set of items -- including the teacher -- which go together. For example, a blackboard is a nice facility to have but without chalk, it doesn't help much. Furthermore, without a teacher to use the items, the students aren't going to get very far. The systems approach is more dynamic and leads to a different style of research. It leads to questions concerning research design and the inclusion of external conditions.

The questions this raises for the future are: where do we want to go with research, what do we want to find out, and what is the best way of doing it? Some form of experimentation is needed. BRIDGES needs studies that: 1) define what the important conditions are more broadly; 2) are not so atomistic; and 3) take into account in considerable detail the kinds of things that are discussed. We want to look at physical resources in light of the people who are actually working in the field.

³ See Appendix 2.

POLICY DOMAIN 2: TEACHER CHARACTERISTICS

Dr. Chris Wheeler

A list of variables by themselves in the area of teacher characteristics is relatively meaningless until they are put into a context. There are numerous statistics which characterize the teaching force in Thailand. But in order to understand why these statistics are useful, we must expand the context by going outside the cluster of variables found under the rubric of teaching and look at other variables from other areas. When we move to other clusters of variables selectively, we find additional information about Thailand which helps us to see important areas of possible improvement. For example, there are an adequate number of facilities, textbooks, universal attendance, a low teacher-student ratio, and improving teacher qualifications. However, students still score below minimum standards in important areas on national examinations. Therefore, putting together variables in the area of teacher characteristics with some from other areas indicates that an area of possible improvement is the "quality of teaching" or what can be referred to as "teacher productivity." But in order to understand the importance of focusing on teacher productivity, it is necessary to view the historical context of the development of the primary school system in Thailand.

Lists by themselves are not as useful as looking at the context of individual countries. The historical perspective may be especially helpful in directing our research studies -- qualitative and quantitative -- to some of the central dynamics of each country. When we learn more about what seems to improve quality in individual countries, general themes emerge across countries. In the end, we may find that there are clusters of patterns based upon the level of economic development of the different countries that we're studying.

POLICY DOMAIN 3: TEACHER TRAINING

Dr. Weining C. Chang

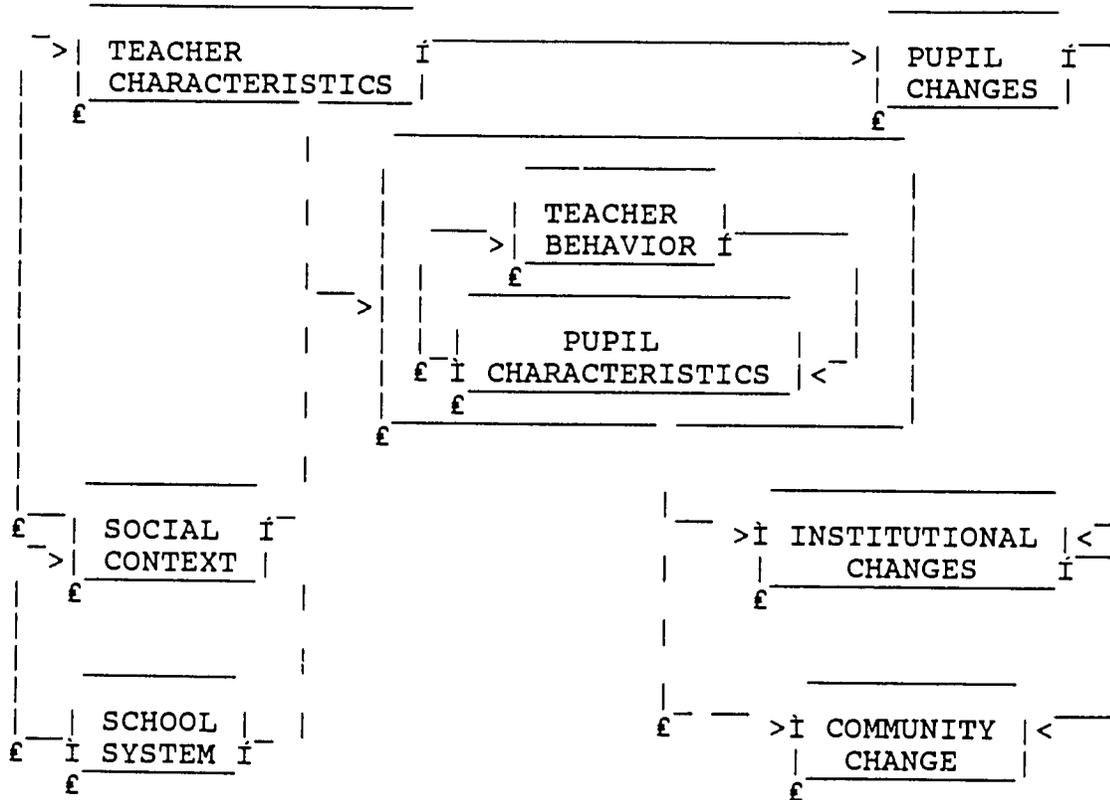
The role of the teacher has long been recognized as central to the education system. However, recent empirical evidence has revealed significant results concerning the contributing effects of the teacher in developing countries. Specifically, the World Bank's analysis of teacher education in a number of developing countries has revealed the following: 1) an uneven distribution of teachers between urban and rural areas; 2) dissonance between what the teachers are trained for and what they are expected to do; 3) an abundance of unqualified teachers; and 4) an improper balance in the teacher training curriculum between content knowledge and pedagogy.

Results of research indicate that training has a positive effect on teacher performance and student achievement in developing countries. There also seems to be a "bracket effect" of

knowledge and skills that teachers must possess for teaching different subjects at different levels. Below this bracket, they cannot teach effectively, and above it, any additional training does not seem to be cost effective.

Finally, figure 2 attempts to capture the observation that teacher effectiveness is intricately embedded within the teaching situation, where variables other than teacher qualifications interact with teaching behavior. It is suggested that future research focus on this context-oriented nature of teacher effectiveness. Teacher training programs should be designed on the basis of this type of research. It is also suggested that teacher training be treated as a lifelong process whereby teachers, after initial pre-service training, will continually reevaluate and renew their content knowledge and teaching methods.

Figure 2. A View of the Teaching Situation.



POLICY DOMAIN 4: CLASSROOM MANAGEMENT

Dr. Andrea Rugh

There are important elements which play a part in the classroom instructional environment. These include lecturing, questioning, recitation, practice, seat work, and ways of grouping children. Classroom management, therefore, is the intervening mediating variable between policy initiatives that provide certain levels of resources to the classroom environment and the resultant outcomes in the learning of children. Research which relates inputs directly to outputs encourages educational planners engrossed in questions of equitable distribution of scarce resources to think that merely providing these resources, in and of themselves, will produce equivalent results in learning. This kind of research, however, falls short of showing us how the effects were achieved or how a greater effect might be eked out of similar levels of inputs.

Three of the minimum essential ingredients at the classroom level that are necessary to promote classroom learning as we think of it now are teachers, time and text. In other words, effective learning depends upon the effective instructional strategies of teachers, the presence of appropriate instructional materials and the effective utilization of time. Put another way, effective learning depends upon a successful articulation of all these elements that touch the classroom environment. All the resources need to come together in a way that furthers the common goal of learning.

Ultimately, studies that focus on the management capacities of teachers to utilize educational resources need to consider the part played by all the actors -- human and material -- which impinge on the instructional environment. Research can identify those organizational and management factors that under existing conditions are predictive of higher levels of student achievement.

BRIDGES is conducting research on classroom management in Pakistan and Yemen. In Pakistan, intensive studies will be conducted in a sample of classrooms identified as having especially effective or ineffective teachers. Two background papers are now being prepared on the curriculum development process and teacher training models to provide some idea of the training and support systems teachers enjoy. In Yemen, work until now has concentrated on an analysis of existing data present in a school facilities survey. From this study, the research team will identify a group of effective and ineffective schools. Studies will be conducted to try and identify the ingredients of successful achievement so training and material resources can be concentrated in replicating these effects. The Pakistani and Yemeni studies will be quite similar in order to facilitate cross-cultural generalizations.

POLICY DOMAIN 5: LEARNING TECHNOLOGIES

Dr. Dean Nielsen

This policy domain focuses on the innovative and appropriate use of instructional programming and/or educational media in primary education and distance education for teacher training. There are three phases under the primary education research study known as IMPACT⁴: 1) programmed instruction; 2) interactive radio; and 3) other innovations. In phase one, the focus is on low-cost learning systems used in Indonesia, the Philippines, Thailand, Bangladesh and Liberia. The research questions include: 1) What elements of the general IMPACT model have been adopted in various countries and what elements have persisted? 2) Why have certain elements of the model been adopted and institutionalized and some not in the various countries? and 3) What economies have been achieved through the adoption and institutionalization of these elements?

Distance education is increasingly being seen as a low-cost and effective way of achieving the objectives of improving the quality of education and extending "basic education" from 6 to 9-10 years. Also, governments have begun to invest heavily in such distance education programs. The research questions include: 1) What kinds of technologies are being used in distance teacher training, and how are they different from those used in conventional programs for training teachers? and 2) How cost effective are distance teacher training programs in comparison with equivalent conventional teacher training programs? The definitions include distance educational technologies, cost assessment, effectiveness, teachers, and courses. The research methods include data collection and data analysis of educational technology/technology mixes, educational costs, effectiveness and cost effectiveness through sampling and country comparisons.

This study will provide policy makers with information useful to them in the following ways: 1) Information on the cost effectiveness of various distance education programs which can be used in determining investments; 2) Information indicating in which subjects and at which levels distance education shows comparative advantage in terms of effectiveness and cost effectiveness; 3) An analysis indicating how much it will cost to train a teacher to a certain competency level; 4) Information on the relative effectiveness and cost effectiveness of different kinds of media or technology mixes; and 5) Information which determines which aspects of teaching can be conveyed effectively through distance education and which aspects cannot.

⁴ IMPACT is an acronym for Instruction Managed by Parents, Community and Teachers. It was originally conceived in 1973 and designed to provide mass primary education through educational innovation dissemination strategies.

POLICY DOMAIN 6: SCHOOL MANAGEMENT

Dr. William Cummings

There are two areas of management change which are in the corpus of BRIDGES research. The targets of management reform focus on how the principal runs a school and on the innovation of clusters. In Sri Lanka, part of the definition of what is behind an outstanding performance by a principal is psychological. Under the word leadership, two main dimensions are "task oriented" and "participatory" leadership style. Other features of principal behavior include "value instructional management," which is measured by whether the principal visits classrooms, sets up sessions for teachers to talk to each other about instructional matters, the extent to which he communicates with the teachers, and even whether he teaches. Another dimension is working with teachers and the school in relation to the external environment.

BRIDGES research is also focusing on training, selection, qualifications and educational level. Dr. Cummings' hypothesis is that the principal should not have risen from the school in terms of his last job in order that he be free from co-optation by the school and the community so as to lead effectively and to be objective about the situation in which he is working.

At a higher organizational level, a description of the school system organization in Thailand and Sri Lanka takes into account the settings in which the BRIDGES Project is working. The Thai school system has primary and secondary schools which are separate units. In Sri Lanka, there are three types of schools: type III schools with grades 1-6; type II with grades 1-10; and type I with grades 1-13.

From the point of view of the organization of systems, the way in which the units are organized has some consequences for the next level of organization. This can be illustrated by looking at three different models of schools. The first model would be a group of independent schools. In the second model (which is the Thai model), several primary schools are clustered together around a learning center, but the secondary school is still outside the cluster. In the third model (the Sri Lankan model), there is a core school which will tend to be one of those type I schools mentioned above. The core principal of that type I school would be accorded the principal for the cluster. He would receive a deputy principal to help him run his school while he coordinates the activities of the several schools. This would result in a greater sharing of existing resources among schools.

In the Sri Lankan case, there is a phenomenon of shifting the unit of organization from the individual school to the cluster level. There is also organizational change on another level. Currently, the circuit office is staffed by one person in charge of talking to schools about everything that concerns them. He is

the intermediary between the schools and the district office which has a lot of staff. The new arrangement, in theory, would have much smaller regional offices. The officers would be transferred to division offices. Division offices would be multi-functional and closer to the next level in the sense that their span of control would be only 4-5 units and those 4-5 units would be clusters. The clusters would be brought together through meetings of the principals.

PRESENTATION OF AN EXAMPLE OF BRIDGES RESEARCH IN THAILAND

Dr. Chinnapat Bhumirat

The goal of his presentation was to share with the participants the need for the research project which is being conducted in Thailand and how it will contribute to the improvement of the education system in Thailand at the primary school level. The four main points of this presentation included: 1) A general background of the education system and the general problems associated with primary education in Thailand; 2) The research methodology used in the research project to address those problems; 3) A detailed description of the component variables on which their study will focus; and 4) The generalizability of research strategies to attain a common understanding about how conceptual frameworks and research can contribute to policy formulation.

There are four areas in which to place the general background of the education system and the problems associated with primary education in Thailand. These include the teaching-learning process, administration, the budget, and the disparity of quality. The problems and needs in primary education quality for the development of the sixth education development plan include unsatisfactory achievement levels, character development (i.e., morality and ethics), inefficient management, and health problems. In the broad picture, the research will focus on teacher performance and school management factors.

As the macro model for school policy in figure 3 suggests, the ultimate goal of the research in Thailand is the student learning outcome. The closest component to this outcome is school quality as determined by teacher productivity which, in turn, defines the efficiency of the utilization of teachers as well as the effectiveness of the teaching component. Although the family and community background component also affects school quality, it is an uncontrollable factor. Therefore, the study will concentrate on how educational policy affects school quality or teacher productivity.

Figure 3. A Macro Model of School Quality.

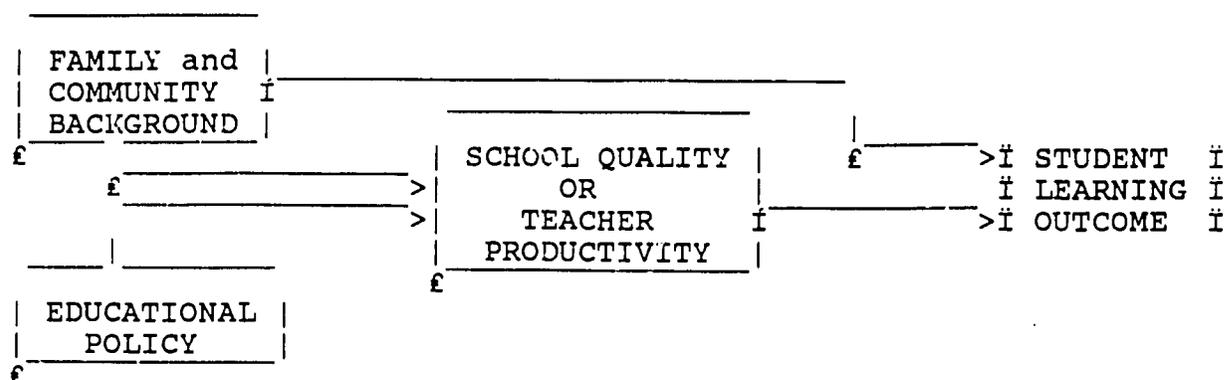
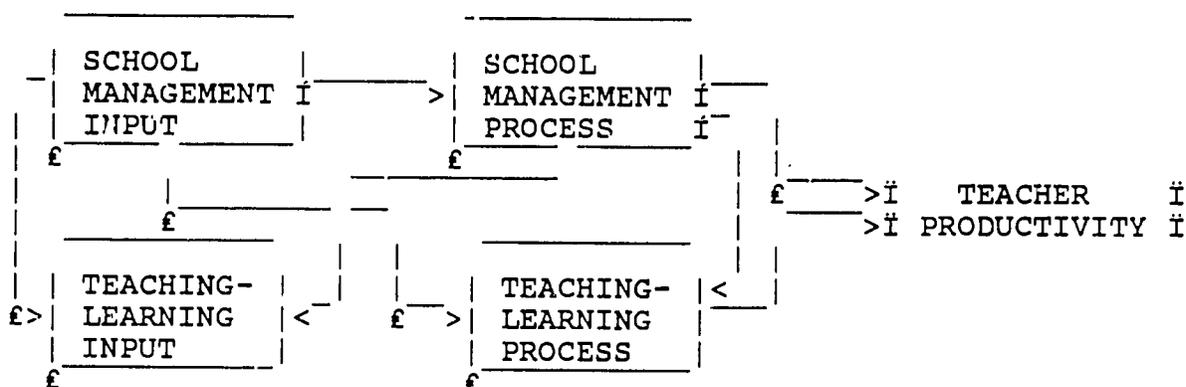


Figure 4. A Micro Model of School Quality.

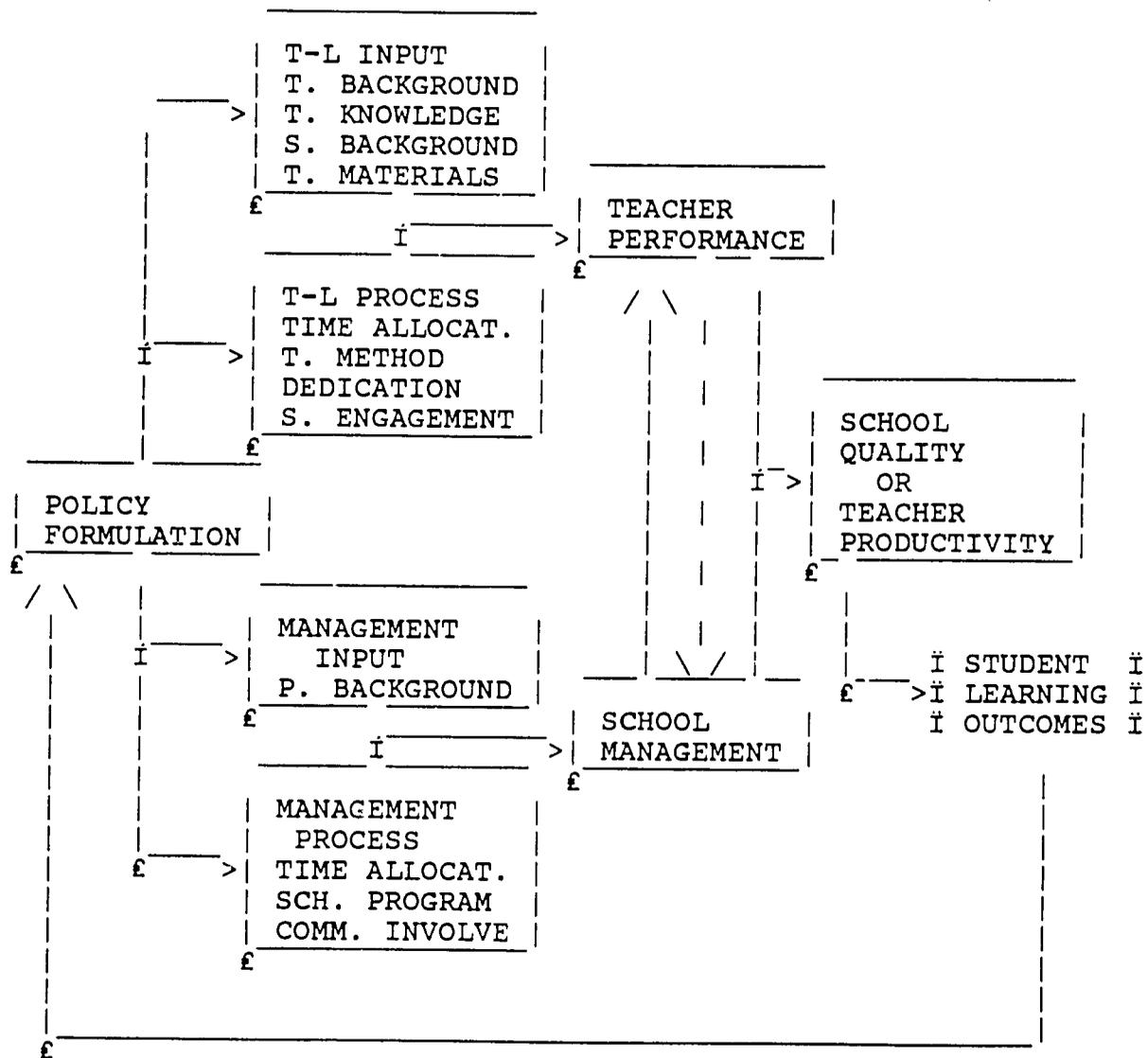


The details of the research study include a quantitative survey combined with a qualitative in-depth study to obtain the necessary information. A micro model for school quality (see figure 4), demonstrates how the school management input and process variables interact with the teaching learning input and process variables in determining teacher productivity. A conceptual framework for variable classification further elaborates the examples of other variables which will be examined in detail. In the end, it is hoped that these variables will yield information which can be used to determine the student learning outcome. This information will then feed back into policy formulation.

Finally there is a need for a common understanding of the way in which we look at the problems we're trying to solve in the countries participating in BRIDGES and the contribution of the BRIDGES Project in this regard. The role of education is more than just a subsystem of society. The education system serves to bring the socio-economic conditions up from the past and carry

them into the future. From the systems approach, we can view input, process, and output as the three main components. Applying a model adapted from Johnston's "Indicators of Educational Systems"⁵, both the various sub-components of which the three main components are comprised and the outcomes of this system feed back into the planning process. In the long range plan, we will need to discern how the graduates of primary education are serving the labor market, the community and the society. In the final analysis, we will be looking for a new or future socio-economic condition.

Figure 5. Conceptual Framework for Variable Classification.



⁵ Published by the International Institute for Educational Planning, UNESCO, 1981.

PART II

COUNTRY SUMMARY REVIEWSSri Lanka

Dr. G.B. Gunawardena

The historical evolution of the BRIDGES Project in Sri Lanka began in December 1986. At the time, a strong request had been submitted by the Ministry of Education to concentrate on management reforms which had been introduced into the system in 1984. With that in mind, they decided to focus on three areas in which they would look at where the management reforms had the greatest impact. These areas include principal effectiveness (i.e., school management), teacher behavior, and school-community relations. The research design frameworks for projects in these three areas were formulated during the first three months of 1987. They looked at the management reforms which had been introduced to the system at district, division, cluster and school levels.

During the recent annual workshop in Sri Lanka, an attempt was made to develop a workplan for the second year of the project. After consulting the National Institute for Education and the Ministry of Education, it was suggested that the BRIDGES team look into two areas: decentralization and teacher education. Administrative and political decentralization is being examined with an eye to the establishment of provincial systems. A preliminary study at the district level will be conducted in order to determine the research plan.

The second project is in the area of teacher education (i.e., pre-service and in-service training) which is both complex and broad. There are a number of strategies for both university graduate teachers and non-graduates. For graduate teachers, there are three programs: institutional, distance mode, and a post-graduate education degree program. For the non-graduates, there are two-year teacher schools, distance mode, and pre-service training. The objective is to determine the effectiveness of the initial teacher education programs for non-graduates in order to determine the inputs for policy formulation. These include both the pre-service and in-service programs.

Pakistan

Dr. Abdul Ghafoor

The problem facing Pakistan is universal primary education. With a literacy rate of only 36% and a primary education participation rate of about 50%, the magnitude of the problem accentuates the inability of the system to provide education to all the specific age groups. The present government is interested in increasing

the percentage of literacy and in promoting primary education. For the promotion of primary education, mosques are being used as one indigenous solution. Adult literacy is being promoted through the use of school buildings during off-school hours as well as providing economic incentives through various pilot projects.

At a meeting of the US-Pakistan Subcommission held at Islamabad in 1986, recommendations were made for possibilities of institutional linkages between the Harvard Graduate School of Education and the Academy of Educational Planning and Management. Major areas of research were jointly identified and include: 1) providing statistical indicators that are simultaneously of high quality and of use to program managers in the provinces and in the federal government; 2) improving information in key education policy areas; 3) using computers and computer-based models to improve educational planning and the implementation of education programs; and 4) increasing the academy's ability to do field research in the planning and implementation of primary education.

Specific projects in which some progress has been made are: 1) minimal basic facilities for primary schools and impact of physical facilities on students; 2) classroom performance of teachers; 3) access to primary education, especially girls'; 4) management and implementation; and 5) development of management information systems. To the present, these projects have been identified and developed. However, headway has not been made because the research team has been trying to explore the possibilities of developing implementable research designs. In addition, another area of research has been proposed: the financing of education.

Egypt

Dr. Reda Abd Elfattah Afifi

The goals of the project include the following: 1) Construction of a database concerning educational information; 2) Development of annual planning and methods for operating budgets; 3) Modernization of methods of collecting data by using computer programs; 4) Giving necessary training to use computers in planning for education and for preparing statistical programs; and 5) Making the necessary studies about efficient methods for using resources to improve and increase the number of enrollments and to decrease expenses.

In terms of what was done in 1987, BRIDGES started by developing methods of collecting information and putting up a group of planning methods and systems analysis. Team groups have been organized from the Ministry of Education and BRIDGES. At the beginning of 1987, the Ministry was provided with 12 microcomputers by USAID which were distributed within the Ministry of Education to the Department of Statistics and

Planning, to two other key departments within the Ministry and to eight governorates. Under the charge of the First Undersecretary, the BRIDGES Project held a training course for three weeks to introduce 50 employees to microcomputers. Also, a primary flow chart for information has been prepared as a result of various visits by BRIDGES team members to different governorates, directorates, schools and education departments in the Ministry.

For the future, the Ministry of Education expects the following to be accomplished: 1) providing training to statistical departments all over the governorates in the use of minicomputers; 2) there is a strong general feeling in the Ministry of Education that training courses need a push and need to be generalized to all those who will use computers to realize the goals of the BRIDGES Project in Egypt; and 3) continuing the work which BRIDGES started in establishing a database to serve policy decision making.

Indonesia

Dr. Martini Widodo

The research project being conducted in cooperation with BRIDGES at the open university in Indonesia started in July 1987. It is a collaborative research project directed to questions of distance education techniques concerning: 1) support efforts of the open university with the impact of teacher training; and 2) generalizability of lessons learned in teacher training using distance education methods. This is being done because great numbers of students are graduating from secondary education institutions and the country cannot afford to educate all of them by traditional means, especially since the cost of tertiary education is one hundred times that of primary education. Also, advances in technology are creating a bottleneck in the economic sector. The development of the country will depend more and more on laborers with advanced skills.

Indonesia has seen a rapid rise in enrollment. Growth will continue and new schools will open up. The country needs to cope with modern technology. It needs to improve teaching skills more manageably and cost effectively through distance education to enhance the open university's ability to make an impact on the quality of secondary education in Indonesia.

Only one of seven areas is being studied during the first year. The open university can only be studied in one area because of limited staff and the open university is newly established. The questions we're posing are in the area of financial and unit cost effectiveness of the open university. Two broad questions are: Are teacher training techniques manageable? How can teacher training courses be made available to the most people and how can it be done economically and effectively.

The design of the study is finished. The project has distributed questionnaires through the mail to open university students. The staff is now waiting for the responses. So far, about 60% of those surveyed have responded. In February, the data will be processed. In July, a final report for this activity will be published. There is strong hope that results will be given from the answers which are embedded in the design.

Educational models and software have been developed for making projections using simulation techniques. It is expected that modeling will be expanded through collaborative work with BRIDGES. Currently, modeling is done only at the national level, but it is anticipated that modeling will eventually be carried out to make projections at the regional level.

Burundi

Mr. Thadee Butare & Dr. Deogratias Kanyarugano

Burundi is a unique case in the sense that BRIDGES hasn't really started its first project. The work to be conducted will have two main parts. The first will be a study of the correspondence between educational levels and work opportunities. The second will be a follow up study of students finishing primary school. This part is important because it will reveal whether these programs are adapted to the social context. At the moment, only 13% of the primary student population continue on to the secondary level.

There are two components of the study. One concerns the effectiveness of primary schooling. This will be divided into two separate studies: the quality of the primary education system and the extent of its external effectiveness. First, in a household survey of families in catchment areas of three primary schools, the levels of education and the agricultural practices of household members will be examined. Second, there will be a qualitative examination through intensive observation of the schools in which the concentration will be on how well the schools are preparing the students.

In the second component of the study, the firms in the modern sector will be examined. The levels and types of education in firms and the types of jobs and education provided by the schools will be the primary focus.

A CALL FOR BASIC EDUCATION

Mr. Edward Laurence Wijemanna

True to the term "BRIDGES" should be its interest in basic education. Couldn't BRIDGES have a research project in Sri Lanka whereby those who complete the primary cycle are tested on just the basic skills? In other words, it would be possible to map

achievement in basic skills and use those results as the basis for determining whether differences exist. These basic skills -- reading, writing, and arithmetic -- are very important. First, without that foundation, a person can accomplish nothing. Second, when one develops that foundation, he/she can pick up talent. That is precisely what happens in Sri Lanka. Despite the unevenness of the system, using just language and number competence, the students pick up talent, and then the Ministry picks them up for scholarships, even in the most remote areas of the country.

A pendulum is swinging in Sri Lanka where it is felt that too much "soft" pedagogy has gone into the primary schools. The old ways of memorizing the multiplication tables, learning or memorizing the scriptures and old poetry, are not necessarily bad ways of teaching. In addition, whereby American primary schools can provide per capita costs of \$3,300, Sri Lanka can spend only one-hundredth of that. Soft pedagogy -- learning for understanding and learning by doing -- are very good when you can afford it. But Sri Lanka has a long way to go before it can achieve such standards.

Human nature is terrifically resilient. A bright child with intelligence, even if made to memorize the multiplication tables, will see meaning in it when s/he comes to the correct stage. Finally, BRIDGES should take in hand something on this basic skills idea in the primary grades. This would certainly be considered very progressive in Sri Lanka.

PART III

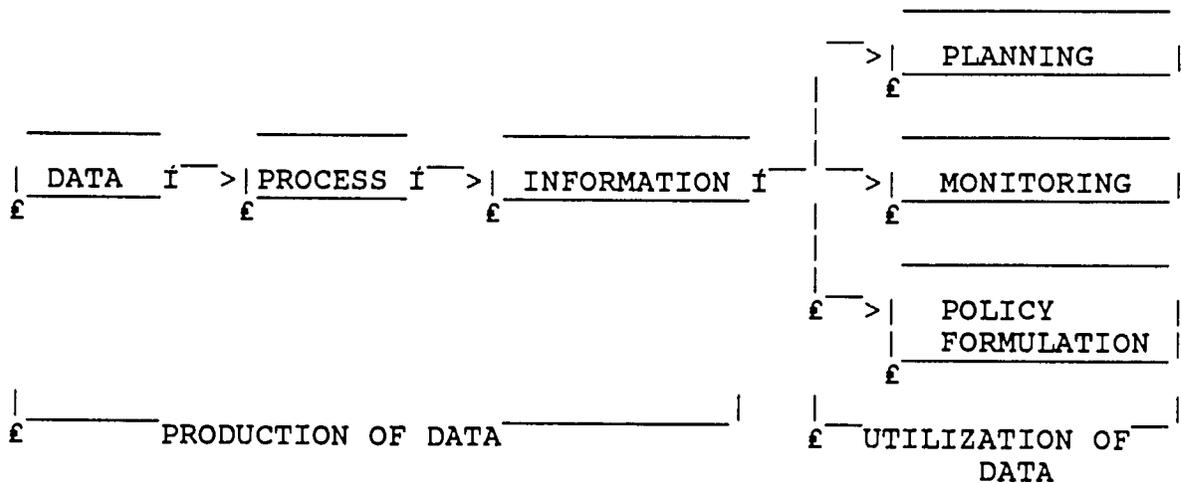
BRIDGES SYSTEMS FOR PRESENTATION OF RESEARCH FINDINGS

1. MANAGEMENT INFORMATION SYSTEMS: INDONESIA

Dr. Boediono

The logic of development of the integrated information system was derived from my field experience. The basic concept underlying the theory is that information is data which is already processed; for example, when we collect data from the schools, process it and then create statistics which used for planning, monitoring, and policy formulation. As figure 5 shows, the concept of information that I use not only improves the production of the data, but the utilization of the data.

Figure 6. Storage and Retrieval of Information.

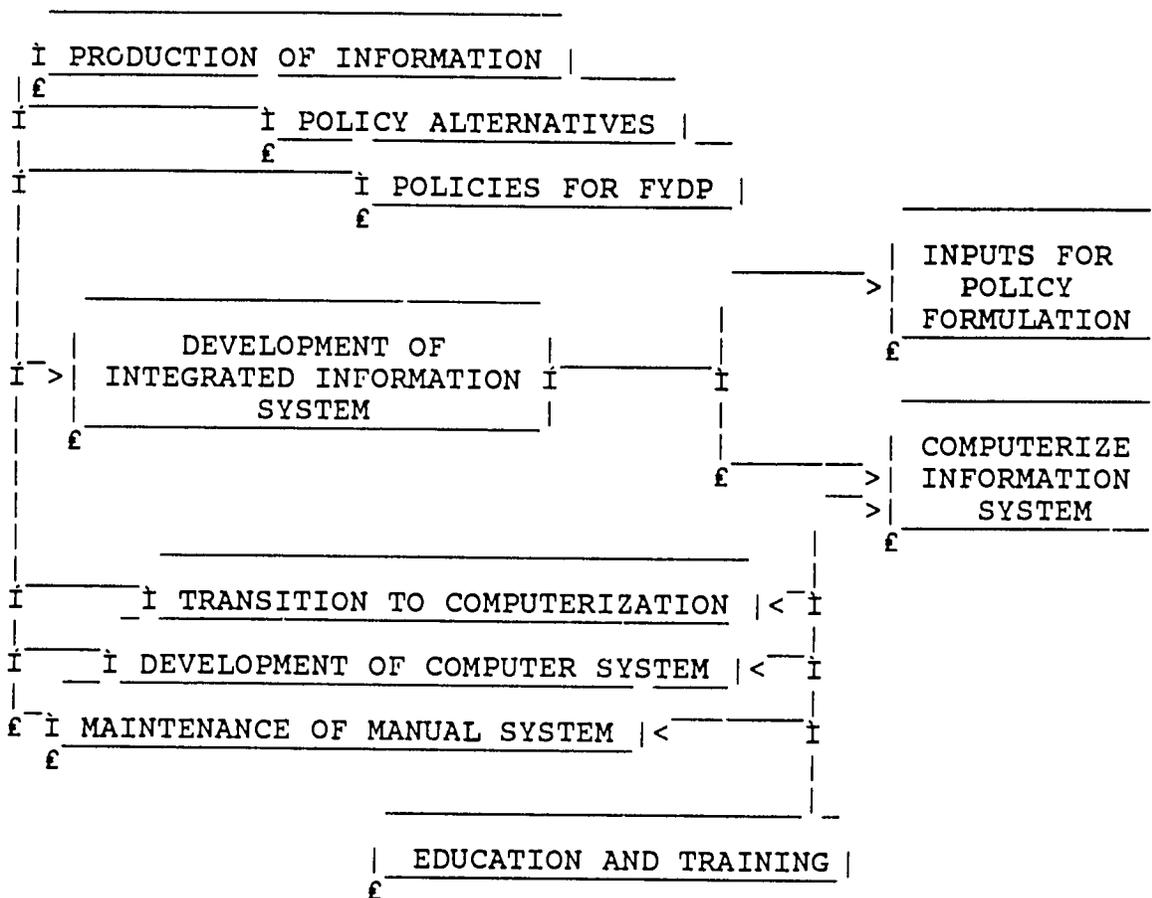


At the Ministry of Education in Indonesia, we have several director generals. Each director general collects his own data and uses it for his own purposes. In effect, each has his own parallel information system. But at the national level, the data is related to every facet of education. So what we need is the creation of a unique database which can be used for many applications: for example, to create models. One model in particular will relate the education system to our manpower requirements and, ultimately, to the world economy. The main idea is that when we have our database, it can be used for many purposes.

The main activity that we are focusing on for the computer network is the creation of a computerized information system which will parallel our manual system. At the beginning, we have to maintain our manual system because in Indonesia, there are 27

heterogeneous provinces. For certain provinces, we can introduce the computerized system itself but for others, it is not yet feasible to do so at the moment. But there are some provinces in which we are using both the manual system as well as introducing the computerized system. These are called the transition provinces.

Figure 7. Using Data for Policy Formulation.



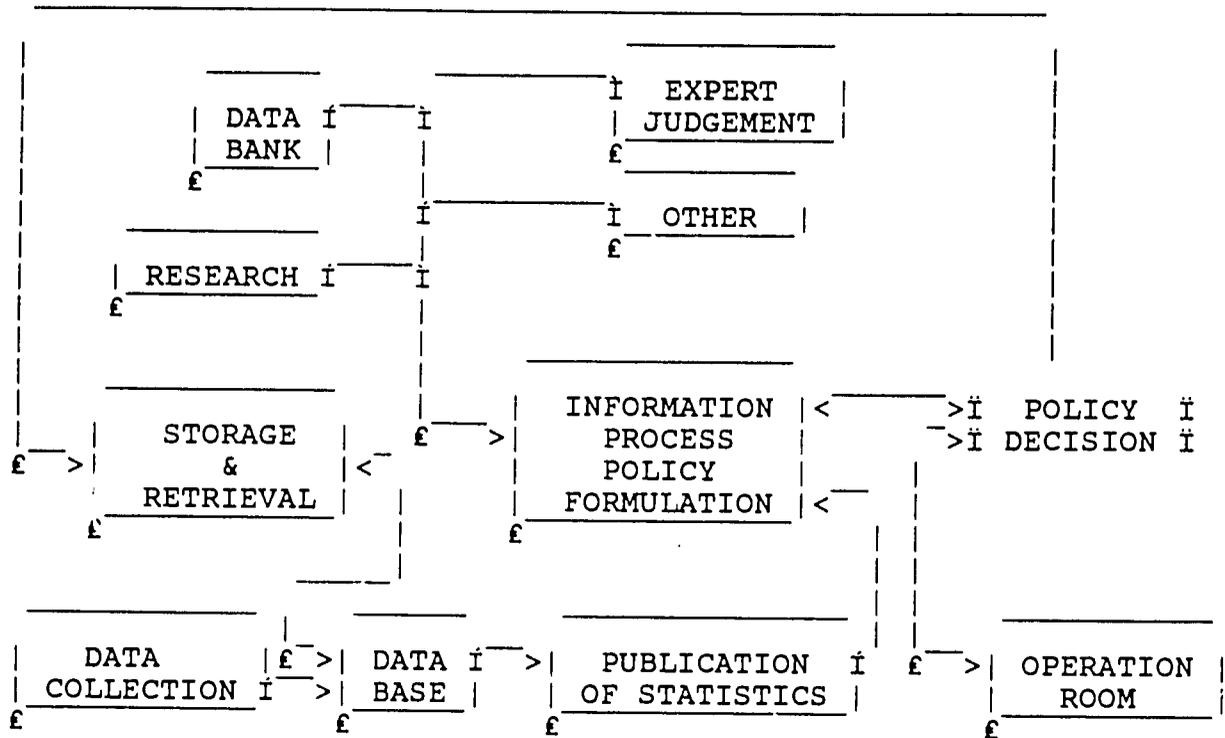
Therefore, training and education to improve the information system will be directed not only to the introduction of the new computerized system, but also to maintenance of the manual system as well as how to make the transition to computerization.

This is connected to trying to provide production of the data. The question arises how we're going to use the data? We'll use it as input into policy formulation. This means that from the statistics that we produce from the computer system for annual reports, we can also analyze the data for policy purposes.

The following figure shows the logic from which the theory was derived from field work. Development of the information system

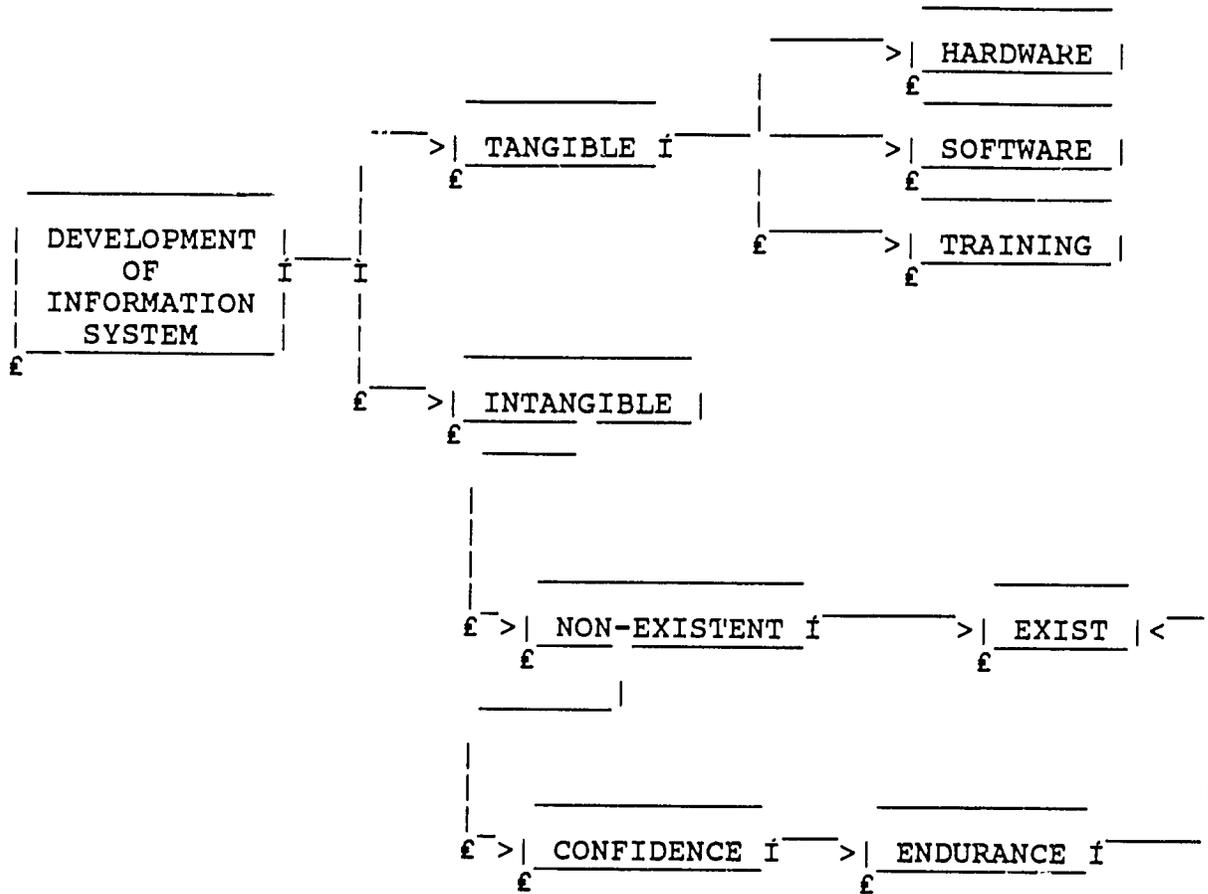
means that we have to group data collection activities. The problem is to improve the flow and quality of the data. After we collect the data, then we can create the database using the computers at the central office. Once we have finished the database, then we can create a program so that we can publish the statistics and save and retrieve the data whenever we wish. To reiterate, the first stage of development of the information system is the improvement of the production of the data.

Figure 8. The Policy Decision Making Paradigm.



People think that once we improve the production of data that decision making will automatically be improved but this is not the case. Statistics are only one area used in policy analysis. Other areas, for example, are research, expert judgement, and other sources. Thus, the development of the databank is important. A databank is different from a database. The database is concerned with quantitative analysis but the databank contains qualitative information (i.e., the results of research). It is important is to create a database and the databank and use them for policy analysis, the results of which can be sent to the policy makers in a central way, Therefore, the database and databank must be developed simultaneously. It is not possible to develop them sequentially. Just to develop the database will take 5 to 10 years.

Figure 9. The Process of Developing the Information System.



From the perspective of field experience, the development of the information system not only incorporates tangible products like the hardware, software, and training, but intangible products as well. In other words, as figure 8 illustrates, the intangible aspect of the design of the system requires bringing into existence a management information system which only exists as an idea in my mind. This requires the development of unique confidence which will be generated from the logic I use to convince my audience (i.e., the Minister of Education) that the management information system can exist and provide benefits in the future. Likewise, there is a question of endurance. In other words, if a problem arises in the implementation of the system, it will be important to focus on solving the problem at hand rather than dwelling on the difficulties because we will need consensus to successfully bring into existence in the future something that does not exist now.

2. WOMEN IN DEVELOPMENT

Mr. Ernesto Cuadra

The basic purpose of this project is to develop a better understanding of the official situation of females in 70 USAID assisted countries. Thus far, we have essentially built a database that will help the people concerned with Women In Development to get access to some basic statistics about education and then, from that information, improve the understanding of the situation of females in these countries.

Our emphasis is on the use of the database as a tool for encouraging people to ask questions about specific topics. In this case, the topic is women's access to education. There are two parts to this presentation: 1) to tell you a little bit about what we've been doing; and 2) to present to you some preliminary analysis of the information that we have collected.

We conducted a research or literature review based on what BRIDGES has done on access to education. Our main focus was to try to understand the topics that are affecting women's access to education. From that research review, we developed a basic strategy to project data to form this database (i.e., to project information that will allow us to answer some basic questions concerning the occurrence of access to education in some countries).

On the basis of this literature review, we decided to divide our data collection efforts into four main areas: 1) access to education; 2) educational attainment (i.e., level of education reached, participation rates); 3) educational resources and expenditures at different levels; and 4) basic socio-economic background indicators that will allow us to make some projections. From the literature, we also came up with the conclusion that in order to have a meaningful database, we will need to have all this information broken down by gender and rural/urban areas.

Currently, we have begun to do some basic analysis. The question that we are interested in at this time is how to organize the countries in a way that will allow us to compare them in two basic dimensions: 1) access to education (i.e., the number of children enrolled in primary education over the school-aged population); and 2) the dimension of "bias." In other words, we want to have an indicator of the situation of girls compared to boys. To reflect that "bias," we are basically measuring the number of girls that are enrolled per 100 boys to yield percentages. In order to keep it simple, we divide each of the dimensions into high and low access and high and low bias.

We define high access (H_a) as the gross enrollment ratio greater than or equal to 70%. We chose this as our threshold because universal primary education has been a goal in many countries for

many years. Therefore, we felt that 70% was not a very high level of universal primary education. Then, we define low bias

Table 1. Twoway Contingency Table of WID Data.

		<u>BIAS</u>	
		H _b	L _b
<u>ACCESS</u>	H _a	H _a H _b	H _a L _b
	L _a	L _a H _b	L _a L _b
		f	t

(L_b) as the female gross enrollment ratio to the male gross enrollment ratio times one hundred. So, if this is greater than or equal to 70, we would say that a country has low bias. This means that there are 7 girls for every 10 boys enrolled in primary education.

As table 1 indicates, we'll have some countries with high bias and high access, etc. Basically, we're interested in understanding why some countries have high access-high bias while others have low access-low bias, etc. Ideally, we want countries to attain high access-low bias status. We want to see how the countries move towards this situation.

We don't think that countries with low access-low bias will necessarily move to high access-low bias. We suspect that these countries may move first in the direction of high access and then in the direction of low bias.

This work will eventually take us to case studies. So, the objective of this exercise at the beginning was to identify the countries that it would make sense to study in more detail. We want to have some combination of countries that will allow us to understand how these countries move toward these high access-low bias situations.

Table 2. Distribution of Countries by Access and Bias.

Access-Bias	1975	1983
H _a H _b	13%	8%
H _a L _b	44%	64%
L _a H _b	37%	20%
L _a L _b	6%	8%

Table 2 shows the basic distribution of the results. Out of 70 countries in 1975, 44% were in the high access-low bias cell and in 1983, this increased to 64%. It should be pointed out however that in working with this dichotomy, some of the improvement in access in some countries is masked since the improvement in bias may be much lower than the improvement in the access. Therefore, they may have remained in the same category.

This is the kind of analysis in which we have been engaged up to now. The following table summarizes the results of our analysis.

Table 3. Transition of Countries by Access & Bias.

1975	1983
	> L _a L _b - Rwanda
L _a L _b	> H _a L _b - Guatemala
	> H _a H _b - (NONE)
	> L _a H _b - Senegal
	> L _a H _b - Pakistan, Yemen, Burundi
L _a H _b	> H _a H _b - Gambia, Nepal
	> L _a L _b - Sudan, Malawi
	> H _a L _b - Oman
H _a H _b	> H _a H _b - C.A.R., India
	> H _a L _b - Tunisia, Mozambique, Egypt
H _a L _b	> H _a L _b - Indonesia, Cameroon, Lesotho, Sri Lanka, Thailand

3. COMPUTERIZED EDUCATION MODELS

Dr. Scott Moreland

There are three types of models which are being developed under the BRIDGES Project. The first kind of model is a planning model. STEP (System for Tracking Educational Progress) is an example of this first type of model. It is used for projecting and for analyzing the trends in enrollment data. It is meant as a sort of "nuts and bolts number-cruncher" type of model. It may suggest areas for policy analysis and policy research but it's not meant to help one actually decide on different educational policies. That task is left to the second class of models which we're starting to think about now and that's one which we're calling an Educational Policy Model (EPM).

EPM is, in the grand scheme of things, seen as a central synthesizer of the whole BRIDGES Project because what we're going to be doing is taking results from the research reviews and from the research done by the BRIDGES teams in the various sites and we're going to feed the resulting data into some kind of a model. In particular, what we're looking for in the research reviews and in the research from BRIDGES is a relationship between policy variables and educational outcomes. We're going to design a microcomputer system for the retrieval of information about relationships between policy variables and educational outcomes. For example, if you want to know among all the research that's been done by BRIDGES, what's the relationship between teacher salary scales and achievement, the computer will be able to respond to you in that way -- it will be able to tell you what the various results are, bibliographical references and a synopsis of the results. This is a data information and retrieval system.

Second, we hope to get out of these relationships not just qualitative information about whether when policy X gets implemented, variable Y goes up or down. But we also want to know how much it goes up or down. So, we need some kind of quantitative relationship. That quantitative relationship will be fed into the modeling part -- what we're calling the "quantitative engine" -- which will have two components: 1) policy variables which have some impact on learning which is seen as one outcome or output of the educational system; parallel to that 2) a flow model or enrollment model which includes the number of students in school through the access and retention rates -- entrance, repetition, and dropout rates -- the number of warm bodies flowing through the system.

Ultimately, what's interesting is putting these two together in what we might call achievement. This is basically the stock of educational attainment in the country. We would like to be able to allow the user to define the indices of learning. Particularly in learning, there would be an index of learning which would be the function of a vector of variables which we

would aggregate into the index. The user would be able to determine which variables are more important in defining learning. This would be interesting in and of itself because it would allow us to show the relationship between various policy variables and various definitions of these indices. The index would be an artificial index that only this model would have.

The third class of models is what I'm calling the Educational Impact Model (EIM). This is one where we're looking at the relationship between educational achievement and the general socio-economic system. This will be a generalized, stylized model of an economy, probably initially based on international cross-sectional data, and probably taking some of the data from the Women In Development Database, and relating educational achievement to such things as fertility, labor force participation, economic productivity, migration and a host of other variables that one can link to educational achievement.

The aim there is to provide a macroeconomic alternative to the cost-benefit analyses that are sometimes done by people at the World Bank where they're looking at the relationships essentially at the micro-level between educational achievement and earnings. It would be interesting to see if you increase expenditures on education at the macro-level what the impact is on macroeconomic indicators through this model. Then we could do cost-benefit analysis and so forth.

The fourth category of work is a synthesis of the above in an educational planning and policy training game. This will be a simplified educational planning model with some elements of the policy model and perhaps some elements of the impact model. This would basically be an introduction to all of this kind of analysis and would be used in some of the training that may go on in the future under projects such as BRIDGES.

PART IV

THE FUTURE AGENDA OF BRIDGES1. RESEARCH

Dr. William Cummings

The research group worked on the different groups of variables without being comfortable with any final taxonomy. The feeling is that the causal ordering of the model suggested by Dr. Chinnapat⁶ has to be worked out by the different countries. In terms of the areas of work that different countries are involved in, figure 8 presents a general outline of the areas specific to each country (see below). In terms of speculating beyond that outline, there is reluctance to make any commitments because there are key issues (i.e., the general concern of BRIDGES with policy options) which still need to be addressed in more detailed discussions.

The very broad types of options, starting with what comes out of the educational system, are a distinction. Areas of improvement in educational systems, starting with the quantity and quality of the systems, are a topic which should be taken up. Under quantity, attention should be devoted to the distribution of both the outcomes as well as the different measurements in the system. In other words, more work needs to be done on the position of these countries relative to each other in terms of the areas of improvement in which they're interested. These suggestions call for more complicated models of educational systems. That is, models which capture the interaction between different parts of a dual education system, even at the primary level.

There are issues in terms of determining the best ways of allocating resources to the two different parts of the system. It opens up the specter of the strategies of privatization, which is only one approach in this particular model. The issue of dropouts -- even more so than access -- in working with the original sort of systems diagram breaks down when dealing with the question of access.

⁶ See "An Example of BRIDGES Research in Thailand" above.

2. SOFTWARE DEVELOPMENT

Dr. Scott Moreland

There are three main areas of software development in which recommendations are suggested. In the area of computer software, there are a number of recommendations. One is that BRIDGES needs to recognize that in some countries where they're working with the dissemination and adaption of the existing BRIDGES products (i.e., STEP), they need to recognize that part of the project has to address the specific administrative tasks of scheduling, personnel record keeping, project teaching, information systems technical assistance, and software development. These are areas of immediate need for the collaborators with whom BRIDGES is working. Although this may not be within the scope of the BRIDGES Project, it's probably in the long run interest of the project and the collaborating countries to provide that assistance. This can be summarized as the need to provide assistance with administrative software for specific countries.

The second recommendation in this area deals with the whole issue of training and technical assistance as an adjunct to the dissemination of the BRIDGES computer software projects. This has to be addressed in order for the software to be successfully used and disseminated, even on a pilot project basis, in the BRIDGES countries. Some of these needs are being addressed but not in a systematic fashion. This can be termed as the need for training and technical assistance in the dissemination of software.

The third recommendation, related to the second, is the need to adapt generalized models to some countries. That is, a generalized model that BRIDGES develops or disseminates may need to be adapted in some way. There may be some structural or programming changes in which variables will need to be added for the countries to get much better use out of the models or software. Ideally, BRIDGES needs to provide some kind of training and/or technical assistance.

In the area of training, BRIDGES needs to have a discussion of the current training activities that are planned for the scope of the BRIDGES Project. Those should be contrasted with what might be considered the ideal constellation of training activities. In other words, without recognizing that there are budget and scheduling constraints, think ideally about what you would like to see as a set of training activities. This is a fundamental issue in the project.

Second, the holding of regional workshops is recommended. Perhaps these could be similar to the Harvard workshop that took place last summer (and which is being planned for this summer). One could be done for Subsaharan Africa, the Far East, and the Near East. The content of these would be basically planning and microcomputer use, but tailored more specifically to the needs of

the participant countries.

The third area of recommendations concerns publications which are one of the kinds of media BRIDGES is disseminating on the project. The first recommendation is relevant to research findings. First, there should be a common format for the publication of the research findings. And second, within that format it is recommended that there be an executive summary of some sort or perhaps even a separate abstract of the research findings which explicitly lists the policy variables that were being considered and relating those to the policy options. This is based on one of the objectives of the BRIDGES Project which is the implicit cross-national comparisons of some results. That might extend to methodology, etc. Of course, this should be discussed by the research team leaders. Another note on research findings is in terms of communications within the project. One way that this could be facilitated is to encourage the authors to disseminate interim findings if they so desire.

The second recommendation is relevant to literature or research reviews. One question which was raised is whether BRIDGES needs to address a mechanism for keeping them current. The second aspect of research reviews is a recommendation that the reviews note in their bibliographies that abstracts have been prepared for all the literature reviews by the BRIDGES Project.

In terms of the abstracts, a question arises in terms of accessibility. There's a dilemma faced by the volume of these abstracts and how they can be made physically available to potential users. One recommendation would be to make them available through the generation of a listing of the abstracts which have been made, or to develop an abstract database which would be publicly accessible.

In terms of the Forum, it is recommended that it be made more comprehensive to cover future activities and products of the project. Forum is a welcome addition, but unless you're up in the BRIDGES office everyday, it's difficult for people not based at Harvard to know what's going on in the project as a whole. An example is the existence of the abstracts. If that were listed some place, one would know about it. It would be a directory of BRIDGES activities -- past, present and future.

3. NETWORK INFORMATION

Dr. Jack Schwille

In terms of the strategies which are included in the domain of networking information, there is the feeling that BRIDGES should be putting more emphasis on several things: 1) more cognizance within the project of the national networks within participating countries; 2) more emphasis on the South-South relationships within the BRIDGES Project; and 3) in terms of the STEP model, the need to focus on the products and the minimum conditions

needed to get the best use of these products. The software cannot really go out without BRIDGES providing training in the form of workshops. More attention needs to be given to the documentation as task-oriented, referenced, and updated as people get more experience with the software and learn how to use it more effectively. There is the desirability of a hotline so that people who are using the software could call and get technical assistance. There has to be a sort of user bulletin that keeps people updated on the developments in the software area.

Among the possible formats and nature of the newsletter which will be circulated within the project, a distinction should be made between a newsletter which has the function of reaching audiences outside the BRIDGES Project. This would be a more finished product oriented to a large audience. Another newsletter would be oriented to the BRIDGES family itself and keep people abreast of what's going on in the project. The dissemination of newsletters between the participatory country institutions is also encouraged. The hope is expressed that the overall workplan for the BRIDGES Project be distributed to all countries participating in the project.

BRIDGES' management is also encouraged to pursue the idea of regional workshops which might focus on particular topics and foster South-South collaboration of the projects within particular regions. The appeal is made that when materials are made for training within a particular country, that BRIDGES try to make efforts to disseminate those materials to other countries. An example is given of the qualitative methods workshops conducted in Thailand.

One of BRIDGES audiences is, of course, the USAID missions. The more the missions appreciate the value of the work that's being done, the more likely it is that BRIDGES will get assistance in sending people to meetings to strengthen its networks.

Finally, whenever participants get products from BRIDGES, if they could think of other people who could benefit from the products, this would ensure that the materials are distributed more widely. Also, the BRIDGES Directory for each country needs to be expanded. If each country would prepare a listing of the active BRIDGES participants in the country, then Harvard has agreed that the BRIDGES directory would be expanded and they would have a better listing of participants from each country. They have the primary network but need the secondary network. Also, to enhance the image of BRIDGES within each country, it is suggested that the BRIDGES emblem be distributed more widely.

APPENDIX 1. PARTICIPANT LIST

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