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The Global Academic Revolution[#]

Implications for India

Philip G. Altbach[*]

Abstract

Massification of higher education worldwide, the development of a global knowledge economy, the dramatic rise of private higher education, and the movement to establishing world-class research universities in many countries are key global trends. Understanding how this "academic revolution" works, and how it affects different countries is a necessity. India, despite its large size and status as the world's third largest academic system, lags behind many countries in coping with the central forces of 21st century academe.

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[#] This Article is based on Philip G. Altbach, Liz Reisberg, and Laura E. Rumbley. *Trends in Global Higher Education: Tracking an Academic Revolution.* A Report Prepared for the UNESCO 2009 World Conference on Higher Education. Paris: UNESCO, 2009.
http://www.unesco.org/tools/fileretrieve/2844977e.pdf.

An academic revolution has taken place in higher education during the past half century, marked by transformations unprecedented in scope and diversity. Comprehending this ongoing and dynamic process while being in the midst of it, does not form an easy task. Arguably, the developments of the recent past are at least as dramatic as those in the 19th century when the research university evolved, first in Germany and then elsewhere, and fundamentally redesigned the nature of the university worldwide. The academic changes of the late 20th and early 21st centuries are more extensive due to their global nature and the number of institutions and people they affect. In our view, four fundamental and interrelated forces have impelled the current academic revolution—mass higher education, globalization, the advent of the knowledge society and the importance of research universities in it, and information technology. These forces have in turn created additional changes such as the rise of the private sector and privatization, the accountability movement including today's stress on measuring the outcomes of higher education, distance education, and others.

Now, in the early 21st century, the world is experiencing this revolution. Higher education has become a competitive enterprise. In many countries, students must compete for scarce places in universities, and in all countries admission to the top institutions has become more difficult. Universities compete for status and ranking and generally for funding from government or private sources. While competition has always been a force in academe and can help produce excellence, it can also contribute to a decline in a sense of academic community, mission, and traditional values.

The Phenomenon of Massification

Central to the reality of higher education in the 21st century is massification – the tremendous expansion of enrollments that has taken place worldwide in the past thirty years. The "logic" of massification is inevitable and includes greater social mobility for a growing segment of the population, a new pattern of funding higher education, increasingly diversified higher education systems in most countries, generally an overall lowering of academic standards, and other tendencies. Like many of the other main trends discussed here, while massification is not an entirely new phase, at this "deeper stage" of ongoing revolution in higher education must be considered in different ways. At the first stage, higher education struggled just to cope with demand – the need for expanded infrastructure and a larger teaching corps. During the past decade systems have begun to wrestle with the implications of diversity and to consider which subgroups are still not being included and appropriately served.

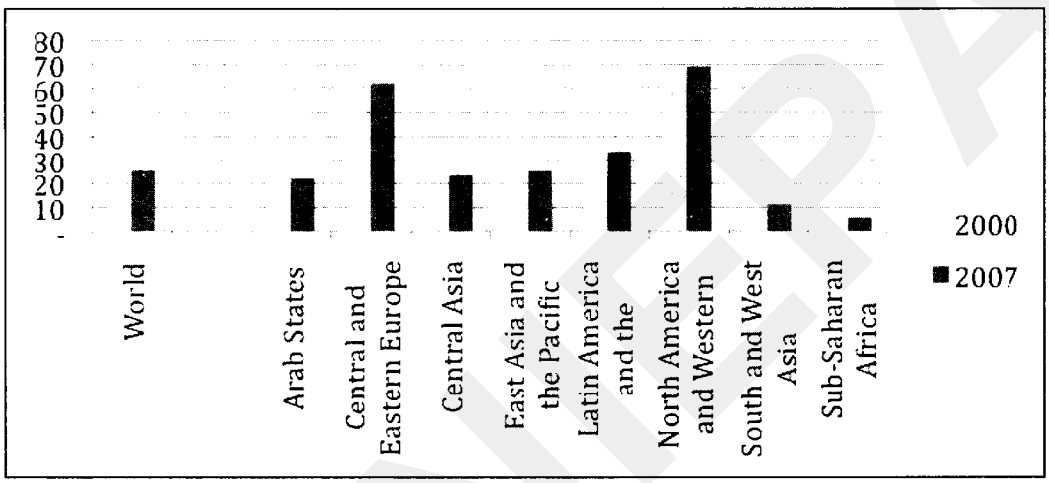
The United States was the first country to achieve mass higher education, with 40 percent of the age cohort attending postsecondary education in 1960. While some developing countries still educate fewer than 10 percent of the age group, almost all countries have dramatically increased their participation rates. Western Europe and Japan experienced rapid growth in the 1980s, followed by East Asia and Latin America. China and India, which enroll 20 percent and 10 percent of their age groups, respectively, are currently the world's largest and third-largest academic systems. Their higher education systems will be expanding rapidly in the coming decades and may indeed account for close to half the world's enrollment growth.

Globally, the percentage of the age cohort enrolled in tertiary education has grown from 19 percent in 2000 to 26 percent in 2007, with the most dramatic gains in middle- and

upper-income countries. There are now more than 150.6 million tertiary students globally, roughly a 53 percent increase over 2000. In low-income countries tertiary-level participation has improved only marginally, from 5 percent in 2000 to 7 percent in 2007. Sub-Saharan Africa has the lowest participation rate in the world at 5 percent. In Latin America, enrollment is still less than half that of high-income countries. However, growth is taking place everywhere, with dramatic consequences.

FIGURE 1

Tertiary Gross Enrolment Ratio: Percentages by Geographical Region – 2000 and 2007



Source: UNESCO Institute of Statistics, 2009.

Demographics will continue as a driving force for development and reform in the coming decades. The patterns and geographical scope will vary, but the basic thrust will remain. In 2008, the Organization for Economic Cooperation and Development identified several key demographic trends for the period to 2030:

- Student participation will continue to expand, as will higher education systems. Only a few countries will see a contraction in student numbers.
- Women will form the majority of student populations in most developed countries and will substantially expand their participation everywhere.
- The mix of the student population will become more varied, with greater numbers of international students, older students, part-time students, and other types.
- The social base in higher education will continue to broaden, along with uncertainty about how this will affect inequalities of educational opportunities between social groups.
- Attitudes and policies relating to access as well as the consciousness among disadvantaged groups will change and become more central to national debates.
- The academic profession will become more internationally oriented and mobile but will still be structured in accordance with national circumstances.

- The activities and roles of the academic profession will be more diversified and specialized and subject to varied employment contracts.
- For many developing countries, the need for ever-expanding numbers of university teachers will mean that overall qualifications, now rather low, may not improve much, and current reliance on part-time staff in many countries may continue (OECD 2008).

Globalization and Internationalization

Globalization, a key reality in the 21st century, has already profoundly affected higher education. In this report, we are concerned with how it affects universities. We define globalization as the reality shaped by an increasingly integrated world economy, new information and communications technology, the emergence of an international knowledge network, the role of the English language, and other forces beyond the control of academic institutions. Internationalization is defined as the variety of policies and programs that universities and governments implement to respond to globalization. These may include sending students to study abroad, setting up a branch campus overseas, internationalizing the curriculum, or engaging in international partnerships.

Universities have always been affected by international trends and to a certain degree operated within a broader international community of academic institutions, scholars, and research. Yet, 21st-century realities have magnified the importance of the global context. The rise of English as the dominant language of scientific communication is unprecedented since Latin dominated the academy in medieval Europe. Information and communications technology has created a universal means of instantaneous contact and simplified scientific communication. At the same time, these changes have helped to concentrate ownership of publishers, databases, and other key resources in the hands of the strongest universities and some multinational companies, located almost exclusively in the developed world.

For the "haves" in the developed world globalization on higher education offers exciting new opportunities for study and research no longer limited by national boundaries. For many in the developing countries, the trend represents an assault on national culture and identity. It is undoubtedly both. At the very least, with 2.5 million students, countless scholars, degree programs, and even universities moving around the globe there is a pressing need for international cooperation and agreements. But such agreements, as is the case with the General Agreement on Trade in Services (GATS) of the World Trade Organization and the implementation of common standards of quality assurance, may sow the seeds of deep inequalities because the established academic "powers" in Europe and North America tend to dominate debate and policy.

International student mobility is one of the central parts of contemporary higher education globalization. Mobility will increase, rising to more than 7 million students by 2020 according to some estimates. The flow of international students has been a reflection of national and institutional strategies—but mainly of the decisions of individual students worldwide. The overwhelming direction of mobility is from the developing world to North America, western Europe, and Australia and especially to the English-speaking nations. Asia is the major sending region. However, mobility within the European Union and increasingly among Asian countries is growing in importance. Globally, international student mobility largely reflects a South-North phenomenon.

Internationalization has been prominent at regional and international levels. The Bologna process and Lisbon strategy in Europe are the clearest examples of international engagement at this level, with the first drawing more than forty countries into a voluntary process of enabling the creation of a European higher education area. This has become a reference for similar efforts elsewhere in the world (ENLACES in Latin America, development of a harmonization strategy in the African Union, and other initiatives).

The last decade has also seen a veritable explosion in numbers of programs and institutions that are operating internationally. Qatar, Singapore, and the United Arab Emirates stand out as examples of countries that have boldly promoted internationalization as a matter of national policy; they have recruited foreign universities to establish local campuses, with the goal of expanding access for local student populations and serving as higher education "hubs" for their regions. But for the world's poorest and most resource-deprived institutions, the opportunities to engage internationally can be extremely limited.

Inequality among national higher education systems as well as within countries has increased in the past several decades. The academic world has always been characterized by centers and peripheries. The strongest universities, usually because of their research prowess and reputation for excellence, are seen as centers. African universities, for example, have found it extremely challenging and complex to find their footing on the global higher education stage. They barely register on the world institutional rankings and league tables and produce only a tiny percentage of the world's research output.

There is a growing tension around the center-periphery dynamic. Developing countries often desire world-class universities on par with the traditional universities at "the center." Today's mania for ranking academic institutions and degree programs adds to this tension. Institutional rankings favor universities that use English as the main language of instruction and research and have a large array of disciplines and programs and substantial research funds from government or other sources. These rankings have methodological problems, but they are widely used and influential and show no signs of disappearing.

The wealth of nations and universities plays a key role in determining the quality and centrality of a university or academic system. This places developing countries at a significant disadvantage and puts special strains on most academic systems facing the dilemma of expanded enrollment and the need to support top-quality research universities.

Inequalities in Access

Despite many policy initiatives in recent years, broader postsecondary participation has not benefited all sectors of society equally. A recent comparative study of fifteen countries shows that despite greater inclusion, the privileged classes have retained their relative advantage in nearly all nations.

Providing higher education to all sectors of a nation's population means confronting social inequalities deeply rooted in history, culture, and economic structure that influence an individual's ability to compete. Geography, unequal distribution of wealth, and resources all contribute to the disadvantage of certain population groups. Participation tends to be below national averages for populations living in remote or rural areas and for indigenous groups.

A number of governments have put measures in place to increase access: Mexico's Ministry of Education has invested in the development of additional educational services in disadvantaged areas with some success: 90 percent of students enrolled are the first

members of their family to pursue higher education and 40 percent live in economically depressed areas. Initiatives in Ghana, Kenya, and Tanzania have lowered admission cutoffs for women to increase female enrollment. The Indian government obliges universities to reserve a set of spaces for disadvantaged caste, tribal, and other groups. There has been modest improvement, but participation of lower castes, rural populations, and Muslims continue to lag behind the general population. Brazil has mandated universities to reserve space for the disabled and for Afro-Brazilian students.

Even in countries where enrollment is high, inequalities persist: in the United States, participation rates for minority students continue to lag behind. Community colleges have made tertiary education more accessible, but research shows that the likelihood that community college students will continue on to a four-year degree is largely determined by the socioeconomic status of the student's family, regardless of race or ethnicity. The United Kingdom continues to be concerned about widening access, especially to its top universities.

Cost remains an enormous barrier to access. Even where tuition is free, students have to bear indirect costs such as living expenses and often loss of income. Scholarships, grants, and/or loan programs are demonstrating some degree of success but cannot by themselves remove economic barriers. Fear of debt tends to be a greater deterrent for students from poorer backgrounds. Income-contingent loan schemes (where repayment plans are tied to post-graduation earnings) have gained popularity in Australia, New Zealand, and South Africa but are still more attractive to middle- and lower-middle-class students. Mexico has introduced loan programs that make the private sector more accessible to a broader spectrum of families. Chile has implemented a new loan program that targets students from low-income families

Teaching, Learning, and Curricula: Persistence and Pertinence

Access is more than "getting through the door." True progress depends on levels of completion for all population groups. Here data are scarce. But what is clear is that an increasingly diverse student body also creates pressure to put in place new systems for academic support and innovative approaches to pedagogy. Research shows how university teaching influences student engagement in the classroom. For example, Mexico has created new "intercultural universities" grounded in indigenous philosophies, cultures, languages and histories. Student diversity has also contributed to an increase in the popularity of many professionally oriented programs and institutions, notably in the business and information and communications technology fields. In much of the world, however, the challenge of ensuring that today's diverse student population completes the academic programs and is prepared in terms of skills for a changing economy and labor force remains only partly fulfilled.

Quality Assurance, Accountability, and Qualifications Frameworks

Quality assurance in higher education has risen to the top of the policy agenda in many nations and has a growing international salience. Postsecondary education has to prepare graduates with new skills, a broad knowledge base and a range of competencies to enter a more complex and interdependent world. Agencies throughout the world are struggling to define these goals in terms that can be understood, measured, and shared across borders

and cultures. Globalization, regional integration, and the ever-increasing mobility of students and scholars have emphasized the need for transparent quality assurance arrangements that can be understood across borders. The explosive growth of both traditional institutions and new providers—such as, distance learning based programs and private (including for-profit) colleges and universities—raises new questions with regard to standards of quality. Quite naturally, "consumers" of higher education (students, parents, employers) are demanding some kind of certification of institutions and the qualifications they award.

Although quality is a multidimensional concept, a pattern for evaluating higher education has been established in most of the world. In a break from the past, this new pattern tends to rely on peers rather than government authorities. Institutions are more often evaluated against their own self-defined mission than against an institutional model defined by a regulatory agency. In many cases, the regulatory function of many government and parastatal agencies has shifted to a validating role. An increasing emphasis is also being put on "outcomes" of higher education. Evaluators are looking for new data and indicators that demonstrate that students have mastered specific objectives as a result of their education. These new initiatives, many still in their early phases, are also linked to increasing emphasis on accountability. They will require considerable development because the accurate definition and measurement of educational outcomes are difficult, and neither the metrics nor the methodologies have been fully formed.

Financing Higher Education and the Public Good/Private Good Debate

Higher education is increasingly viewed as a major engine of economic development. Government tax revenues are not keeping pace with the rapidly rising costs of higher education. The expansion of student numbers has presented a major challenge for systems where the tradition has been to provide access to free or highly subsidized tertiary education. In financial terms, this has become an unsustainable model, placing pressure on systems to fundamentally restructure the "social contract" between higher education and society at large. Parents and/or students are increasingly responsible for tuition and other fees. Even in western Europe, long the bastion of free public higher education, tuition fees are now part of funding postsecondary education in all but a few northern European countries.

Traditionally, postsecondary education has been seen as a *public good*, contributing to society through educating citizens, improving human capital, encouraging civic involvement, and boosting economic development. In the past several decades, higher education has increasingly been seen as a *private good*, largely benefiting individuals, with the implication that academic institutions, and their students, should pay a significant part of the cost of postsecondary education. Funding shortages due to massification have also meant that higher education systems and institutions are increasingly responsible for generating larger percentages of their own revenue This debate has intensified due not only to the financial challenges of massification but also to a more widespread political inclination toward greater privatization of services once provided by the state. The growing emphasis on cost recovery, higher tuition, and university-industry links often conflicts with the traditional social role and service function of higher education. Some universities sponsor publishing houses, journals, theater groups, noncommercial radio and television stations, and in many other ways serve as key intellectual centers. These roles are particularly important in

countries with weak social and cultural outlets and few institutions fostering free debate and dialogue.

Economic crisis, massification, and widespread acceptance of the private-good argument have led to a growing privatization of higher education worldwide, deterioration in conditions of study, problems for the academic profession, and the general impoverishment of academe. The austerity has been most crippling in sub-Saharan Africa, but it is serious throughout the developing world and countries in transition and has affected rich countries as well. In response to these financial pressures, universities and national systems have sought solutions on the cost and demand side. The first—increasing class sizes and teaching loads, substituting lower-cost part-time faculty for full-time academic staff—are difficult, academically problematic, and heavily contested.

Policy solutions on the revenue side include cost sharing—generally associated with tuition fees and other "user charges." Tuition fees have been introduced in countries where higher education was formerly free or nearly so (China in 1997, United Kingdom in 1998, Austria in 2001, and others). Many countries, most notably in sub-Saharan Africa and in central and eastern Europe, have significantly increased charges for student living.

Some countries—notably Japan, South Korea, the Philippines, Indonesia, Brazil, and others—have kept the public sector relatively selective and elite, shifting the burden of mass enrollments to private higher education.

The Private Revolution

The growth of private higher education worldwide has been one of the most remarkable developments of the past several decades. Today, some 30 percent of global higher education enrollment is private. Private higher education has existed in many countries for centuries and has traditionally been the dominant force in such East Asia countries as Japan, South Korea, and the Philippines and, of course, constituted a key part of the American higher education landscape, but it was a minor element globally. Now private higher education institutions, many of them for-profit or quasi for-profit, represent the fastest-growing sector worldwide. Countries with over 70 percent private enrollment include Indonesia, Japan, the Philippines, South Korea, and Taiwan. The private sector now educates more than half the student population in such countries as Mexico, Brazil, and Chile. Private universities are rapidly expanding in central and eastern Europe and in the countries of the former Soviet Union, as well as in Africa. China and India have significant private sectors as well.

In general, the private sector is "demand absorbing"—offering access to students who might not be qualified for public institutions or cannot be accommodated in other universities because of overcrowding. While some selective private universities exist, in general the private sector serves a mass clientele and is not seen as prestigious. Legally for-profit institutions constitute a small higher education subsector, but there is notable growth in developing regions. The sector is run mostly on a business model, with power and authority concentrated in boards and chief executives and with faculty holding little authority or influence. Students are seen as consumers.

A related trend is the privatization of public universities. In the United States, most of the great public research universities now receive under a quarter of their operating budgets from the state. They are expected to generate the rest from student tuition, research,

university-industry linkages, the sale of university-related products, and other entrepreneurial activities and in many ways are privatized. Privatization of state universities is a new development in much of the rest of the world. Countries such as Australia and China have been explicit in asking universities to earn more of their operating expenses by generating their own revenues. In some cases, such financial sources contribute to the commercialization of the institution and conflicts with the traditional roles of the university.

Information and Communications Technology

It is obvious that academe is influenced or, some people would argue, transformed by the information and communications technology development. It has been said that the traditional university will be rendered obsolete by information technology, distance education, and other technology-induced innovation. The demise of the traditional university will, in our view, not take place. But major change is taking place, and it is one of the key parts of the academic transformation of the 21st century.

The Internet has truly revolutionized how knowledge is communicated. E-mail has become a ubiquitous means for academic interaction of all kinds. Electronic journals have become widespread and in some fields quite substantive. Traditional publishers of books and journals have increasingly turned to the Internet to distribute their publications. Examining the deeper implications of this trend reveals that it has exacerbated the division between "haves" and "have-nots." Some parts of the world, particularly Africa, remain relatively underserved by high-speed Internet access. South Korea and Singapore are at the forefront of countries providing access to high-speed Internet service.

The Academic Profession

The academic profession is under stress as never before. The need to respond to the demands of massification has caused the average qualification for academics in many countries to decline. It is possible that up to half of the world's postsecondary teachers have only earned a bachelor's degree (in China only 9 percent of the academic profession have doctorates, 35 percent in India). This is especially the case in developing countries. In Latin America, up to 80 percent of academics are part time, with no security of employment or involvement with the university, and part-time employment is a growing trend elsewhere, including in the United States. In many countries, universities now employ part-time teachers who have full-time jobs at other institutions and are thus unable to give full commitment anywhere (eg., China, Vietnam, and Uganda). The variation in academic salaries among countries is quite significant, contributing to a brain migration to countries that pay more. In many countries, academics are unable to live on their salaries and must moonlight. A recent study of academic salaries in fifteen countries show that full-time academic staff can survive on their salaries but they do not earn much more than the average salary in their country (Rumbley, Pacheco, and Altbach 2008).

In terms of accountability and assessment, the professoriate has lost much of its autonomy. The pendulum of authority in higher education has swung from the academics to managers and bureaucrats with significant impact on the university.

The Research Environment

The three missions of the modern university—teaching, research, and public service—live in constant tension with each other. To the extent that they enjoy autonomy to develop their own plans and programs, universities must make hard choices in setting priorities and allocating resources, as do governments and other agencies responsible for system planning for higher education.

Research universities are at the pinnacle of the academic system and are directly involved in the global knowledge network. They require major expenditures to build and are expensive to maintain. Their facilities, including laboratories, libraries, and information and technology infrastructures, must be maintained to the highest international standards. Research production in key areas, such as information technology and the life sciences, has become extremely important to national development agencies as well as for the prestige of individual institutions. Government support for university-based research has increased in recent years in order to encourage work in such fields as biotechnology and informatics. In the European Union, the share of higher education expenditure on R&D spending has increased consistently over the last few years. The government sector funds directly or indirectly 72 percent of all academic research in Organization for Economic Cooperation and Development countries. The so-called triple helix of university-government-industry linkages has resulted in important organizational changes within the university. Special offices have grown and prospered and helped to generate new income streams for the university.

Intellectual property is a growing challenge in higher education but especially in research universities. Who owns knowledge? Who benefits from research? Universities, seeking to maximize revenues, want to protect intellectual property—research results that promise patents, licenses, and income. The topic often brings into focus the potential conflicts between those who produce research and knowledge and sponsors who may wish to control the knowledge and benefits that come from it.

In the developing world, scientific and technological research after World War II was largely a state-supported enterprise concentrated in government research institutes. This has changed quite radically since the 1990s with the downfall of the Soviet Union. The most revealing change, however, has taken place in China where the trend to fund university-based research is now more in line with the West. A number of other middle-income and developing countries are pushing forward ambitious agendas to raise the amount and quality of their research activities. In South Korea, the Brain Korea 21 plan of 1998 promoted the principle of selection and concentration of research efforts within the traditional top universities. In Latin America, university-based research continues to be concentrated in a few large-scale public universities. The Brazilian system awards some 10,000 PhDs and 30,000 master's degrees each year, a 300 percent growth in ten years. Graduate programs are ranked in terms of their research productivity and financed accordingly.

The Implications for India

India is among the nations most dramatically affected by the trends identified here because it is at the beginning of the massification phase of academic development while at the same time its economy is growing rapidly. The strain and challenges for Indian higher

education are evident everywhere. India hardly appears on any of the global higher education rankings while at the same time overall enrolment rates are well behind China and other middle-income countries. India provides higher education access to slightly more than 10 percent of its young people, while China enrolls more than double that proportion, and most industrialized nations now educate 50 percent or more of the relevant age group. Further, India's non-completion rates are quite high. India lacks significant high-quality research-based universities at the top, while at the same time it has yet to provide access to those who demand it at the bottom (Altbach 2009; Altbach 2006).

The lack of selective high-quality postsecondary education at the top is of special importance as India seeks and the economy matures and ever higher skill levels are needed. The Indian Institutes of Technology and of Management, and a few other small and specialized institutions provide world-class education, but they are not research universities and they serve only a tiny number of students. The fact is that none of India's universities are of "world class" quality—and none have internationally competitive facilities. It is a testimony to the ingenuity and dedication of a small group of academics that India produces as many research articles and patents as it does. India needs perhaps fifty internationally competitive research universities if it is provide the highly educated personnel needed and the research output required for a modern economy.

India needs to recognize the need to build a clearly differentiated academic system to serve both elite and mass. At present, with the exception of a few small and specialized institutions, the bulk of Indian colleges and universities have no clear mission. Only a few of India's 25,000 undergraduate colleges have specific goals or purposes. Its 480 universities are not provided either the resources or the mandate to build a distinctive and innovative profile. Clearly differentiated missions—and patterns of funding as well—are part of successful academic systems in other countries.

India simply does not spend enough on education in general and higher education in particular. Under 1 percent of GDP is spent on education—compared to the 5 percent recommended by many experts. Developed countries typically spend around 5 percent. If higher education is to provide both high quality at the top and mass access at the bottom, significantly more must be spent.

Accountability and quality assurance are considered central to any successful mass higher education system. India's arrangements are neither effective nor do they encourage quality. The affiliating system inherited from British colonialism was intended to ensure accountability and control of India's undergraduate colleges by university authorities, and has succeeded in putting most colleges into a highly bureaucratized and controlled environment that has impeded innovation and autonomy while maintaining basic standards and common policies. The universities, although they have some formal autonomy, are funded and generally under the control of the state governments. They have in some cases become politicized. Government control is more concerned with satisfying bureaucratic rules than ensuring quality. The central government agencies responsible for supporting higher education—the University Grants Commission and the All-India Council for Technical Education, have been widely criticized for ineffectiveness and are being significantly transformed by the government. Quality assurance has been spotty and largely ineffective. India will need to build mechanisms to effectively deal with these issues.

Internationalization in its various manifestations is a key element of 21st century higher education. India, as one of the world's top exporters of students, is a significant contributor

to internationalization—largely to the detriment of the country itself. However, India's colleges and universities are themselves largely insulated from current thinking about internationalization. Most have few meaningful formal overseas relationships or links. India is largely at the periphery of internationalization trends. However, significant changes are taking place. Foreign universities are increasingly interested in working with Indian counterparts because of India's rapid economic growth and higher education potential. Recent decisions by the central government to open India's higher education sector to overseas collaboration and institutions may mean change as well.

India has some advantages in the international arena. Its use of English for a significant part of the higher education system makes it easier to forge international links and participate in programs. A few Indian institutions have already established overseas branches or programs. The decisions of Indian students concerning study abroad are important globally since India is such a larger exporter of students.

India has a large private higher education sector that has traditionally been heavily subsidized by the state and tightly controlled by the public universities. The large majority of India's 25,000 colleges are private. But they are subject to university regulations on almost every aspect of their operation. And traditionally most have been subsidized. This situation is changing—there are now a number of private universities that are largely free of government control and receive no public funds. There are also a growing number of colleges that receive no public subsidy although they are affiliated to public universities and remain under their control. The unsubsidized private higher education sector is rapidly expanding—ensuring that it can serve a public purpose, will be a challenge.

It is clear that India is affected by global trends. So far, there is little evidence that the country is seriously considering the lessons of the global academic environment or systematically creating an internationally competitive academic system.

Conclusion

We live today in the midst of a serious global economic crisis that will have repercussions in society at large and within higher education in ways that are not yet clear. Many countries and universities will experience financial problems with serious consequences in the short and perhaps the medium term, although the impact will vary worldwide and some nations will be affected less than others. The severity of the economic downturn is perhaps the major factor, but specific national and local policies will play a significant role as well. Current estimates indicate that certain of the least-developed countries will be most affected, in part because their universities have few resources or infrastructures to fall back on. The crisis is likely to have the following implications:

- Research universities are likely to see significant constraints on their budgets as governments will be unable to provide the resources needed for their continued improvement.
- In many cases, the priority will be to allocate funds to ensure that access to the higher education system is not dramatically cut. In countries where student loan programs exist, either in the public or private sectors, severe constraints on their availability to students may be implemented.

- The system will face pressures to establish or increase tuition fees for students.
- Cost-cutting practices at many universities will result in a deterioration of quality. More part-time faculty are likely to be hired, class sizes increased, and other savings implemented.
- "Freezes" on hiring, construction of new facilities, improving information technology, and purchasing books and journals are likely developments.

We are convinced of the centrality of the higher education enterprise globally and the need for strong, vibrant postsecondary institutions to support the knowledge economy as well as to provide the education necessary for social mobility and economic progress essential to societies across the globe.

The role of higher education as a public good continues to be fundamentally important and must be supported. We emphasize this because this aspect of higher education is easily neglected in the rush for income and prestige.

The multiple and diverse responsibilities of higher education are ultimately key to the well-being of modern society, but this expanded role adds considerable complexity and many new challenges. Understanding the broader role of higher education in a globalized world is the first step to dealing constructively with the challenges that will inevitably loom on the horizon. The enormous challenge ahead is the uneven distribution of human capital and funds that will allow some nations to take full advantage of new opportunities while others risk drifting further behind.

References

Altbach, Philip G. (2006): Tiny at the Top. *Wilson Quarterly,* (Autumn), pp. 49-51.

Altbach, Philip G. (2009): The Giants Awake: Higher Education Systems in China and India. *Economic and Political Weekly.* 44 (June 6), pp. 39-51

Organization for Economic Cooperation and Development (2008): *Higher Education to 2030, Vol. 1: Demography,* ed. S. Vincent-Lancrin. Paris: OECD.

Rumbley, Laura E., Iván Pacheco, and Philip G. Altbach (2008): *International Comparison of Academic Salaries: An Exploratory Study.* Chestnut Hill, MA: Boston College Center for International Higher Education.

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A Model of International Student Selection of a U.S. Ph.D. Institution

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Abstract

This paper represents the first to use individual level data to examine international students' decisions about which Ph.D. institution to attend in the U.S. A discrete choice random utility model of the determinants of the choice of a Science and Engineering Ph.D. program is developed. The model considers how several institutional, geographical, and individual attributes affect the institutional choices of Ph.D. students from China, India, South Korea, and Turkey. Primary data for the study come from the Survey of Earned Doctorates, administered by Science Resources Statistics, National Science Foundation. The results suggest there is a strong positive relationship between the number of existing students from the country of origin at an institution and the probability of attending that institution. The results are robust across all program tiers and nationalities. The major implication is that programs wanting to attract the best international talent should create, strengthen and promote networks with potential students' home countries.

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Introduction

The United States has been a very popular destination for international Science and Engineering (S&E) graduate students and postdoctoral scholars for a considerable period of time. In fact, the U.S. is the top destination country of foreign S&E students (both undergraduate and graduate) worldwide (National Science Board, 2010). Several studies have documented the significant contributions of foreign-born students and scientists in S&E in both the private sector and in academe (Libaers, 2007, and No and Walsh, 2010). High-tech firms, government agencies, and research institutions depend on the work of foreign-born scientists and engineers in the development of new innovations and scientific progress, which plays a crucial role in economic development in the U.S. According to a 2003 National Science Board task force study, however, S&E programs in other countries have grown stronger relative to U.S. programs. This, combined with increased international student visa regulations in recent years has diminished U.S. universities' ability to attract the best foreign talent (The National Academies, 2005).

Despite the important roles that foreign doctoral students and workers play in the engine of economic growth, relatively little is known to date about the factors that influence their decision making process. One factor that is likely to play a particularly important role in foreign students' institutional selection process are networks, which according to Massey et. al. (1993) are given by, "sets of interpersonal ties that connect migrants, former migrants, and non-migrants in origin and destination areas through ties of kinship, friendship, and shared community origin" (p. 448). Through these networks, students learn about application procedures, instructional quality, housing and employment opportunities, as well as the general culture and environment of the surrounding city. In doing so, they draw both on the experience of the alumni as well as the support of current students and faculty at their target institution.

This research represents the first attempt to analyze the institutional selection choices of foreign science and engineering doctoral students. In particular, we examine how several institutional, geographical, and individual variables affect the institutional choice of foreign nationals, with special attention paid to the impact of networks. Findings from this paper can provide crucial insights to higher education institutions and communities in crafting policies to attract highly talented S&E foreign students. These insights can also be extended to implementing policies intended to attract or retain this valuable cohort of the workforce after they earn their degree.

To explore the role of networks on the institutional choices of foreign students, we estimate a discrete choice model on a set of U.S. Ph.D. institutions in which the individual could have potentially been accepted. We measure three dimensions of networks: (1) alumni networks; (2) current student networks; and (3) community networks. The individual level data come from Survey of Earned Doctorates (SED), administered by Science Resources Statistics of the National Science Foundation. The SED is collected directly from individual doctoral recipients in the U.S. and has a response rate above 90 per cent. It provides information on the degree granting institution, as well as socio-demographic characteristics, place of birth, field of training, etc. The empirical analysis analyzes a sample of approximately 1,900 foreign Ph.D.s who received their degree in one of ten S&E fields during the period 1997-2001. The analysis is unique in that it represents the first to examine doctoral institution selection as well as the first to focus on the choices of international

students at any level. Also, this research represents the first to explicitly model the influence of networks on the institutional selection process.

The remainder of this paper is organized as follows. Section 2 discusses the school choice selection process of foreign students and network theory. Section 3 develops the empirical model while Section 4 describes the data used to estimate the models and provides descriptive statistics. Section 5 presents the results of the empirical models and Section 6 concludes with a summary of key findings.

Background and Network Theory

Most studies on institution selection by students view the process as involving a number of stages. Some studies have detailed up to seven stages in this process; however, most empirical models of student choice define three broad stages (Hossler and Gallagher, 1987; Jackson, 1982). In the first stage, students form aspirations towards pursuing a degree. This is the longest period, which can last from early childhood through college, and involves a number of preparations in anticipation of pursuing a doctoral degree. Informal interactions with potential institutions start at this period. For foreign students, this stage also involves the decision concerning whether to study abroad or in their home country.

The second stage involves the identification of the specific country and programs in which they are considering applying and enrolling. In this stage, students acquire information from various sources and networks can begin to play an important role (Flint, 1992). Upon taking the necessary tests for the application, students clarify their list of institutions. Sending application materials and test scores to the selected institutions finalizes the second stage.

For the purposes of this paper, the third and final stage is the most relevant.[1] From the student's point of view, this stage involves admission, enrollment and actual attendance. During this stage, after institutions have made their choices, students must decide whether to accept or reject the offer for admission. Therefore, we focus on student choice from a set of institutions that are believed to be possible alternatives, or programs in which the student could have been admitted had the student applied. Networks play a significant role at this stage by creating a medium for information exchange about the positions in research laboratories and/or financial assistance opportunities.[2] Existing students at or alumni from an institution could share institution or program-specific information with the applicant that would influence his or her decision as to whether to choose a specific program.

Most institution selection studies address the selection process exclusively for American students. For example, Dynarski (2003) studied the influence of tuition and expenses on graduate student choice, while Eide, Brewer and Ehrenberg (1998) examined the role of undergraduate college quality on graduate school attendance. Montgomery (2002) is the only known work which uses a discrete choice model to analyze school choice. In particular,

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[1] The admission decisions of institutions occur after the second stage but before the third stage. Networks can also play a role here. For example, previous experiences of faculty with foreign students can influence the acceptance decisions. Given our lack of admission data, however, it is not possible to model this network effect.

[2] What we refer to as network variables may also be considered "affinity" variables to the extent that the comfort level of individuals is increased by associating with others of the same nationality.

he uses a nested logit model to estimate the determinants of graduate business school choice for U.S. students, and finds that tuition is much less important than institutional quality. Many of the factors that influence U.S. students' choices, such as financial support, where to live, quality of the institution, will also influence the choices of international students. However, the choice selection processes of international students are often more complicated and always unique. For instance, selecting an institution in a foreign country involves considering issues related to international migration (visa, work and study permits, return policies etc.) and to adaptation (language barriers, cultural differences, academic differences, etc.). As a result, the implications drawn from previous analyses which focused exclusively on the choices of American students are not likely to be generalizable to international students. Furthermore, an examination of the importance of networks in studies on domestic students is often not possible or relevant.

Of studies that analyze international students, most examine either the effects of foreign students to U.S. labor markets (Stephan and Levin, 2003; Borjas, 2004,), trends in foreign student enrollment patterns (National Science Board, 2010) or the factors that pull students towards studying abroad (Tanyildiz, 2008). According to Mazzarol and Soutar (2001), better academic opportunities and financial support have been shown to be the two most important factors that influence students to study in another country. Other reasons include the improvement in future employment opportunities, cultural experience, and improved foreign language skills. Although numerous studies examine the reasons to study abroad, to date no study has examined why particular institutions are selected within a foreign country or the specific impact of networks on this choice.

Foreign Student Networks

Network theory suggests that individuals rely on their networks primarily to realize two benefits: reduced costs and reduced risks (Massey, 1993). Both of these benefits are essential and highly valued for foreign students who are moving to a new country and face a series of unknowns. Networks, however, can take many different, sometimes unobservable forms and these benefits are relayed in numerous ways. Once social ties begin to build, information related to work and living conditions starts to accumulate, making it easier for migrants who come later. In other words, each new migrant reduces the costs and risks for his/her friends, relatives, and compatriots who migrate later. Network theory proposes that individual or systematic characteristics are not the sole determining factors explaining the migratory flow.

We focus on the specific impact of networks in selecting doctoral programs by foreign doctoral students from four of the top nationalities that migrate to the U.S.: Chinese, India, Korea and Turkey. Networks are measured by the number or proportion of current students in or alumni from an S&E doctoral program. The effects of foreign student networks influence both the demand and the supply side of the institution selection equation. For instance, in addition to all the benefits that are identified in the network literature, the accumulation of foreign students from the same country of origin might be a result of the departments' positive experiences with them from previous years. Therefore, the stock of

foreign students from one origin is likely to influence the departments' decision to admit students from the same origin.[3]

Alternatively, drawing upon the "cumulative causation theory"[4], when foreign students migrate to the U.S. for a degree, non-migrants in the home country may feel additional pressure or motivation to prove their own training and talent are equivalent. A cultural gap might also emerge between the migrant and the non-migrant friends and relatives. As the number of migrants increases, the culture, language, values, and behaviors of the receiving society might become widespread, initiating a tendency for further migrations (Szelenyi, 2003).

In addition to the network variables, characteristics of the institution, geographical location, and demographic characteristics affect students' probability of selecting an institution. For instance, the importance of financial support in institution selection has been documented in several studies (Curs and Singell, 2002; Dynarski, 2003). Considering the economic conditions of developing countries, institutional financial support is likely to be an important factor for students included in this analysis. The type of institution (public/private) is also a relevant factor, as public institutions are generally more affordable and have a more diverse student body than private ones. In addition to variables related to costs, the ranking of the institution is included, as it is tied to both the perceived quality of instruction and potential future employment opportunities. The final institutional characteristic included in the model relates to students' perceptions of the institutions 'openness' to foreign students. Foreign students may be intimidated by institutions lacking in international diversity, expecting to have more difficulty becoming acclimated. Therefore, the proportion of U.S. students in the undergraduate student body is included as an explanatory variable.

Among geographical characteristics, cost of living is expected to be an important factor, especially when considering that foreign students have limited work opportunities while at school (often they are only allowed to work on campus, and for a limited number of hours). Air quality and the proportion of foreign-born populations in the surrounding metropolitan statistical area (MSAs) are included. MSAs with higher foreign-born populations could be more attractive to foreign students, anticipating that these locations are more accommodating to them and offer more diverse cultural opportunities.[5]

The quality of the student's pre-doctorate program training can also impact student's choices as well. For instance, a master's degree may provide students with the skills and knowledge needed to succeed in a top-tier program, such that students with a master's

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[3] The graduate admission process can play a role in determining the demographic and ethnic composition of academic departments and thus presented in this section. However, in this study, the focus is the decision process of doctoral students, not the admission decisions of department committees.

[4] The idea that the migratory process itself influences possible progressive movements constitutes the foundation of "cumulative causation theory". Several studies provided empirical findings and policy implications utilizing this idea (Massey 1990a; Massey 1990b; Massey and García-España 1987; and Massey and Zenteno 1999).

[5] The expectations related to the effect of location characteristics on attending an institution is guided by Sumell's (2005) study of the role of amenities in the location decisions of PhD recipients in S&E. In his study, Sumell finds significant effects of crime rate, weather, foreign population percentages and air quality on recent PhD recipients MSA employment location.

degree may be more inclined to choose higher ranked institutions than others. We also test whether students with master's degrees are particularly drawn to institutions with students of their own nationality, because these students could have expanded their networks during their studies and found new channels of information and support. Finally, a set of demographic characteristics such as age and marital status are included in the analyses to account for observed heterogeneity and examine how preferences vary across socio-demographic groups.

The Model

In order to examine the determinants of Ph.D. program choices of foreign students, we employ a discrete choice random utility model (RUM). All RUMs describe a decision maker's choice among alternatives and assume that an individual's observed choice is the alternative that offers the highest utility. In this application, we assume students consider a set of potential doctoral programs in a specific field and then select the program that they expect will yield the highest utility.

As in any RUM application, we only observe the utility maximizing choice, but do not know the actual utility level of any individual. The influence of any characteristic is measured by comparing the characteristics of observed (utility maximizing) choices to those of potential (non-utility maximizing) choices. Utility is comprised of a systematic and a random component. The utility of individual *i* attending school *j* at time *t* can be expressed as:

$$Uij = f(Z_j(z_{1ij}, \ldots z_{nj}), X_j(x_{1ij}, \ldots x_{nj}), M_i(m_{1i}, \ldots m_n)) \quad j = 1, \ldots, J, \; i = 1 \ldots\ldots n \tag{1}$$

Where Z is a vector of institutional characteristics, X is a vector of location characteristics, and M is a vector of individual characteristics. If we observe that individual *i* chooses school *k* we infer that U_{ik} (school k) > U_{ij} (school j) for all $j \neq k$. The individual-specific error terms are assumed to be random, independently-distributed variables. The utility that student *i* obtains from alternative *j* can be decomposed into a systematic part, V_{ij}, which includes the estimated parameters, and a random component, e_i, which is unknown:

$$Ui\ (school\ j) = V_{ij} + e_{ij} \tag{2}$$

The deterministic component of this equation can be expressed as follows:

$$V_{ij} = \beta' Z_j + \Phi X_{ij} + \Omega' M_i \tag{3}$$

Under these conditions, the probability that individual *i* chooses institution *j* at time *t* is given by the following equation, originally derived by McFadden (1974) :

$$\text{Prob}\ (i \text{ choose inst. } j) = \frac{e^{Vij}}{\sum_{j=1}^{j} e^{Vij}} = \frac{e^{\beta Zij + \Phi Xij + \Omega Mi}}{\sum_{j=1}^{j} e^{\beta Zij + \Phi Xij + \Omega Mi}} \tag{4}$$

Most previous RUM applications either use a universal choice set that includes all alternatives, or randomly select a smaller set of alternatives, in which every individual selects from the same subset. A universal choice set is not applicable in this model of school

selection for two reasons: 1) each individual is in one of ten S&E fields, and only institutions that have a program in their discipline are relevant and 2) each individual could not have been accepted to every institution in their discipline. Therefore, each choice sets are individual specific, and consist of institutions that offer a Ph.D. in the student's chosen discipline, and a subset of alternatives that are within the same tier.

The models consider four possible choice sets. Choice set one, the most inclusive choice set, assumes that a student could have attended a broad range of institutions. It includes all forty-three institutions for which we could get matching data.[6] There are two reasons to include a broad range of institutions in individual choice sets. First, a possible consequence of network effects is that there could be a 'mismatch' between the student quality and the ranking of the institution. In other words, a student could value networks or non-institutional attributes more than the institution's ranking and choose a lower ranked institution even though s/he was eligible for a higher ranked institution. Secondly, the admission decisions of institutions naturally has a random unobservable component, such as whether or not the student is known by someone on the admissions committee or has parents who contributed to an institution, which could influence the admission of a student to a higher ranked institutions.

The second choice set is restricted to only elite institutions, or the top ten in each field. This restriction implies that, for example, a student attending a 5th ranked institution could have been accepted by any institution in the top ten. Similarly, choice sets are stratified to only include institutions ranked between 11 and 30, and those ranked below 30. Similar assumptions are made with regard to these choice sets.

To further clarify the choice set selection process, consider the following. Suppose there are two students, one in agricultural sciences and one in civil engineering, both who earned degrees from a top ranked institution. The student in agricultural sciences has nineteen institutions, while the student in chemical engineering has thirty-three institutions in their largest choice set. The reason for this difference is that not all institutions have Ph.D. programs in each discipline. When the choice sets are restricted to only top institutions, the first student's choice set decreases to the top four institutions in agricultural sciences, the second student's choice set decreases to the top nine institutions in chemical engineering. Similarly, the number of alternatives in each choice set will vary across fields for middle and lower ranked institutions.[7]

Data and Descriptive Statistics

The purpose of the empirical model is to determine the factors that influence the institutional choices of foreign-born S&E Ph.D.s. In order to establish country specific effects, citizens of all nationalities could not be included. Therefore, the analysis is limited to citizens of four nationalities for which we could determine citizenship: Chinese, Korean, Indian, and Turkish. Chinese, Korean and Indian students are the top three foreign student

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[6] Clearly, it is not expected that individuals actually consider all available institutions prior to making their selection. Including irrelevant alternatives in the choice set will not bias the coefficients as long as all subsets of alternatives do not share unobserved attributes. See Quigley (1985) for further discussion.

[7] The number of institutions in each field are reported in Table 1.

populations in the U.S. respectively, while Turkish students are in the top ten. The analytical dataset includes individuals of these nationalities who entered an S&E Ph.D. program during the academic year 1996-1997 and graduated in or before 2002.[8] The analytical dataset includes a total of 1,863 individuals that meet this criteria.

In the analytical dataset set, 61 per cent (1,143) are Chinese, 17 per cent (325) are Korean, 15 per cent (278) are Indian, and 6 per cent (117) are Turkish citizens. To put this into context, among all the Ph.D. students (including U.S. citizens) who entered in 1996-1997 and graduated by 2002, 12 per cent are Chinese, 3.2 per cent are Korean, 2.7 per cent are Indian, and 1.1 per cent is Turkish. Table 1 shows the distribution of nationalities across the ten S&E fields and the total number of institutions included in the choice sets for each discipline. The percentage of foreign students varies from a low of 4.3 per cent in Physics to a high of 24.1 per cent in Electrical Engineering. However, the distribution of students across fields by nationality is generally representative across all four nationalities – with the exception of Turkish students in Civil Engineering - suggesting that students from each country do not have a strong observed preference for a particular discipline.

TABLE 1
Distribution of Students in S&E Fields

	All Nationalities	Chinese	Indian	Korean	Turkish	Number of Institutions
Agricultural Sciences	5.4%	5.2%	2.9%	5.5%	12.8%	19
Biology	12.3%	15.0%	11.5%	7.7%	*[9]	36
Chemical Engineering	7.9%	6.5%	17.6%	5.2%	6.8%	33
Chemistry	10.1%	12.3%	9.0%	6.8%	*	37
Civil Engineering	6.9%	4.2%	4.3%	14%	19.7%	29
Computer Sciences	6.1%	6.1%	7.6%	4.9%	5.1%	29
Electrical Engineering	24.1%	22.3%	31.3%	25%	22.2%	37
Mathematics	7.1%	7.7%	4.0%	6.5%	10.3%	34
Mechanical Engineering	14.7%	15.5%	9.7%	17.5%	11.1%	36
Physics	4.3%	5.2%	2.2%	4.3%	*	26
All S&E Fields	100.0% (N=1,863)	61.4% (N=1,143)	14.9% (N=278)	17.4% (N=325)	6.3% (N=117)	43

The random utility models include up to nineteen explanatory variables. Table A.1 in the appendix defines and presents summary statistics for all relevant variables. To identify evaluate the influence of networks on foreign Ph.D.s' choices, the models test for the impact of three different network variables: student networks, alumni networks, and population networks. Student networks include students who are from the applicant's home country, who entered the program prior to applicants' year of entry and graduated any semester after

[8] In the SED both the 'citizenship' and the 'place of birth' of the students is ascertained. In this study 'citizenship' rather than 'place of birth' is used because citizenship is a better measure for actually being 'foreign'.

[9] Percentages which correspond to 6 or fewer students are suppressed in the table and indicated by a *.

the applicant entered the program. Alumni networks include the students from the same nationality who graduated prior to the student's admission (the data begins in 1981), and population networks include the number of residents from the student's home country that live in the metropolitan statistical area (MSA) of the institutions.

As noted earlier, characteristics of the institution, geographical location, student quality, and demographic characteristics are included in the models. Characteristics of the institution include the type of institution (public/private), financial support structure, and the department rankings. Both the rankings and the institution type come from 1995 National Research Council Data. Of all students in the analytical data set, 73 per cent graduated from public institutions. The rankings of the departments vary between 1 and 75, with an average rank of 19. The SED also provides information about how students were funded during their doctoral education. The variable distinguishes between financial support provided by the institution, personal funds, grants and scholarships. To measure the willingness of institutions to provide financial support for students, the models include the percentage of all students in each department that are supported by internal funds.[10] The final institutional variable is the 'openness' to foreign students, which is measured by the number of all students who are not U.S. citizens in a department.

MSA attributes include cost of living, air quality, weather conditions, crime rate and foreign population percentages. The cost of living comparisons are obtained by using a cost of living calculator provided by Sterling's Best Places website.[11] The index created determines how much more (or less) a person needs to maintain the same standard of living in each MSA. In this dataset, the average cost of living is 105, indicating that students generally attend institutions located in higher than average cost of living areas. Crime rates are measured by the mean number of reported violent crimes each year per 100,000 residents in each MSA. Air quality is measured as the number of unhealthy air quality days as reported by the Environmental Protection Agency. Finally, the weather related variables includes the mean values for July temperatures and July relative humidity.

The ranking of students' undergraduate institutions and a binary indicator as to whether the student has a master's degree related to his or her doctoral field of study are used to measure student quality.[12] In order to have a comparable scale for each student included in the study, rankings of the undergraduate institutions are standardized as 'top', 'middle', and 'bottom' within each ranking list. In each case, the top 10 per cent of all ranked institutions are coded as 'top', the bottom third of institutions are coded as 'bottom', and the remaining institutions are coded as 'middle.' In addition to being a quality measure for international students, a brief analysis of the students' undergraduate institutions in this dataset reveals some interesting results which could contribute to the underlying network connections between foreign students in the U.S. and the potential applicants. In particular, 33% of Korean students come from Seoul National University, 37 per cent of Turkish students come from Middle East Technical University, 36 per cent of Indian students come from an Indian

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10 Teaching and research assistantships are coded as internal funds. The average percentage of internal support for all institutions in our dataset is 61.2%.

11 www.bestplaces.net

12 In the analytical dataset, only the students who completed their master's degrees prior to year of entry in the Ph.D. program are coded as having a master's degree, not those who earned their master's degrees during (or in a few cases after) doctoral studies.

Institute of Technology, and 10 per cent of all Chinese students come from Beijing University. This concentration of students from specific institutions suggests that there are potentially 'institutional' networks between U.S. and foreign Universities, in addition to the personal networks that are examined in this study.

The set of demographic characteristics such as age, marital status, and a binary indicator of whether or not the student has a child are obtained from the SED. In this sample, 23 per cent of the students are female, 71 per cent are married or living in a marriage like relationship, and approximately 30 per cent of the students have at least one child. The age ranges between twenty-two and fifty-five, and 60per cent of all students were less than thirty years old at the time of degree. Compared to all U.S. Ph.D. students, there is a smaller percentage of females in this subset, they are slightly older, and more likely to be married and have children.

Results

To test for the robustness of the results and for purposes of comparison, several models with different choice sets and specifications are estimated. The coefficient estimates and significance levels to all random utility models are presented in Tables 2-4. Table 2 presents the results from all four nationalities and ten disciplines. The choice set used for this model is the 'broadest' choice set, and includes every institution in each discipline. Table 3 stratifies the choice sets according to program rankings, while Table 4 presents the results of the estimations separately for each of the four nationalities. In all cases, the sign of the coefficient define the qualitative direction of a relation between the variable and the probability of attending an institution.

Table 2 includes four different specifications. Model 1 presents the results from the basic model, and uses the absolute number of same nationality students and alumni to estimate the coefficients to test the effect of networks on the probability of attending an institution. The coefficients on the network variables support two of the central network hypotheses of this paper. Specifically, the coefficients on 'same nationality students' and 'same nationality alumni' are positive and significant, suggesting that both a higher number of existing students and alumni from the same nationality increase the probability of attending an institution, other things constant. However, the coefficient on existing students is larger in magnitude than the coefficient on alumni, suggesting that the effect of existing students is greater than that of past students. Although alumni play a role in sharing information, providing a reference for the applicant and connect applicants with the members of applied institutions, the immediate benefits provided by current students, such as initial accommodation, is likely more valuable to foreign applicants than those provided by alumni. Furthermore, since doctoral recipients are quite mobile, their dispersion after degree could limit the amount of applicant-alumni interactions.

To place the counts in a relative framework, Model 2 uses the proportion of alumni and students in each department rather than absolute counts. The coefficient on existing students remains positive and significant, while the coefficient on the proportion of alumni is not significant. This suggests that both an increase in number of students and the concentration of these students matter in the decisions of international students, but the concentration of alumni does not.

TABLE 2
Conditional Logit Model Coefficient Estimates for the Full Sample

	Model 1	Model 2	Model 3	Model 4
	Coefficient	*Coefficient*	*Coefficient*	*Coefficient*
same nationality students	0.084***	n/a	0.251***	0.313***
	(10.6)		(16.2)	(4.06)
same nationality student squared	n/a	n/a	-0.005***	-0.006***
			(-12.2)	(-10.0)
proportion of same nationality student	n/a	3.489***	n/a	n/a
		(12.4)		
same nationality alumni	0.005*	n/a	-0.005	-0.001
	(1.72)		(-0.61)	(-0.08)
same nationality alumni squared	n/a	n/a	0.00002	0.00007
			(0.11)	(0.37)
proportion of same nationality alumni	n/a	0.622	n/a	n/a
		(0.82)		
same nationality residents	-0.001	-0.002**	0.0003	0.001
	(-0.80)	(-2.46)	(0.15)	(0.56)
same nationality residents squared	n/a	n/a	0.000003	0.000007
			(0.52)	(1.13)
program rank	-0.004*	-0.016***	-0.001	-0.022*
	(-1.76)	(-68)	(-0.40)	(-1.70)
percent internal support	0.001	0.001	0.001	0.003
	(0.19)	(0.23)	(0.40)	(0.68)
public institution	0.174*	0.336***	0.111	0.215*
	(1.73)	(3.27)	(1.12)	(1.66)
July temperature	0.005	0.006	0.010	0.012
	(0.35)	(0.75)	(1.27)	(1.06)
violent crime	0.0001	0.0002**	0.0003	0.0003*
	(0.92)	(2.48)	(1.36)	(1.67)
July humidity	0.004	0.006	0.001	-0.002
	(1.30)	(1.63)	(0.36)	(-0.34)
unhealthy air	0.002	0.002	-0.003	0.0005
	(0.64)	(0.63)	(-0,93)	(0.12)
cost of living	0.001	0.004*	0.002	0.023*
	(0.78)	(1.83)	(0.79)	(1.84)
foreign population percentage	-0.006	-0.012	-0.002	0.008
	(-0.86)	(-1.58)	(-0.21)	(0.77)
has MA_phd rank	n/a	n/a	n/a	0.004
				(0.52)
BA rank_phd rank	n/a	n/a	n/a	0.010
				(1.01)
Same stud_phd rank	n/a	n/a	n/a	0.0002
				(0.46)
Same stud_married	n/a	n/a	n/a	-0.002
				(-0.14)
children_v. crime	n/a	n/a	n/a	-0.001*
				(-1.81)
age_same stud	n/a	n/a	n/a	-0.002
				(-0.68)
children_same pop	n/a	n/a	n/a	0.0000002
				(0.12)
age_cost	n/a	n/a	n/a	-0.001*
				(1.90)
children_cost	n/a	n/a	n/23a	0.003

Contd...

				(0.90)
has MA_same stud	n/a	n/a	n/a	0.045**
				(2.24)
BA rank_same stud	n/a	n/a	n/a	-0.011
				(-0.39)
N	29721	29721	29721	17084
N(Students)	1693	1693	1693	973
Pseudo R^2	0.056	0.061	0.078	0.103
Prob.>Chi^2	0.000	0.000	0.000	0.000

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

An unanticipated finding in Model 2 is the negative and significant coefficient on the population variable, which measures the number of residents of the same nationality in the surrounding MSA. This coefficient implies that institutions located in cities with a larger number of residents in the surrounding population are less likely to be chosen by foreign students, other things constant. In assessing this result, it is important to acknowledge that the top ten PhD institutions that receive foreign students, and the top ten MSAs with the largest Chinese, Indian, Korean and Turkish populations do not overlap. The existence of residents from the same country of origin might provide cultural facilities (e.g. restaurants, local markets, etc.) – and would likely impact post-degree employment location choices. However, connections at the institution are more crucial for the doctoral applicants as their lives are mostly woven around their studies.

To examine how the probability of attending an institution changes as the student population changes, Model 3 adds a square term to the network variable. The negative and significant coefficients on the variable 'same nationality student squared' indicate that the effect of an increase in the number of same nationality students is not linear, and as expected, the effect of existing students on the probability of attending an institution increases at a decreasing rate.

As hypothesized earlier, international students have a higher probability of attending public institutions than private ones, other things constant. In addition, the positive coefficient on internal support suggests that foreign students are more likely to attend institutions with lower personal tuition expenses, although the coefficients are not significant. Surprisingly, the negative coefficients on program rank suggest that higher ranked institutions are less likely to be chosen by foreign students, other things constant. This likely reflects the higher admission standards of higher ranked programs, rather than a preference indicator.

Among the geographical characteristics, contrary to expectations, more expensive cities and cities with more violent crime are associated with higher probabilities of attending an institution. This is likely a result of the fact that the majority of institutions included in the analysis are located in larger metropolitan areas where both crime rates and living costs are relatively high. Also, the cost of living indices include all types of costs, such as housing or healthcare. Foreign students are likely to be more insulated from higher housing costs and private health insurance because these are likely to be provided by the institution at a subsidized rate.[13] Furthermore, the majority of foreign doctoral students, especially single

[13] In many universities in the U.S. foreign students are required to have health insurance that is provided by the university.

students, are likely to live on campus with extra security and thus not worry about or consider crime in the surrounding city. One would expect to find more intuitive results if more student-specific cost and crime measures were available.

Weather conditions and air quality do not seem to influence the choice of which school to attend. Although July temperature has the expected positive sign in all models, it is never significant. One possible explanation could be that weather conditions and air quality are relevant to students' choice only in comparison to where they come from. For example, air quality might influence students choice, only if the institution he/she is considering has better air quality than his/her home town. Alternatively, it is possible that foreign students are generally not concerned with or informed on the attributes of the city and are focused primarily or exclusively on the attributes of the program.

Model 4 includes interaction terms in order to measure observed heterogeneity in preferences across groups. Most of the coefficients on the interactions are consistent with expectations. For instance, the student network effect is higher for students who have a master's degree. This could reflect that students with a master's degree have a larger student network that includes other students that they met during their master's studies, or that they have had more interactions with other students about program expectations. Furthermore, institutions in higher crime rate cities are less likely to be chosen by students with children, who are generally more likely to live off-campus and naturally more concerned with the perceived safety of the area. Finally, the negative coefficient on the interaction between cost of living and age reflects that older students are more likely to choose more affordable areas, which likely reflects that older students are more likely to live off campus and have different preferences compared to their younger colleagues.

To test for the influence of choice set selection on the coefficients, we estimate the models using restricted choice sets based on institutional ranking. The choice sets for the previous models included all possible institutions in their discipline to which the applicant could apply. The restricted choice set models can limit potential bias that results from the inclusion of irrelevant alternatives, in this case institutions that students would not have been admitted to had they applied, and serves as a general robustness check on the coefficients.

The results for relevant network variables are shown in Table 3, and are consistent with those found for the broader choice set. To wit, student choice is positively affected (at a decreasing rate) by the number of students of the same nationality for all choice sets. As judged by the relative magnitude of the coefficients model, the impact of same nationality students on student choice is lowest for top ranked institutions and becomes progressively stronger for lower ranked institutions. This suggests that institutional characteristics of top ranked institutions are more influential on choice behavior than the effects of networks. Undoubtedly, receiving a degree from a top institution has large future benefits. One possible explanation is that students with a higher probability of being accepted into the top schools value the quality of the institution more than networks, while students in the lower ranked institutions have a stronger preference for networks or simply lack the ability to be accepted in top ranked schools regardless of the existence of networks.

Table 4 presents the coefficients from models run separately for each of the four nationalities. The results suggest that all nationalities are more likely to attend an institution with a larger number of fellow citizens, and the coefficient is significant at the one percent level in all models. As judged by the magnitude of the coefficients, the network effect is

strongest for Turkish students, followed by Indian, Korean then Chinese students. It is interesting to note that the magnitudes of the coefficients are inversely related to the total number of Ph.D. students from that country in the U.S. In other words, the smaller the number of students from their home country in all institutions in the U.S., the larger the importance of networks in their decision making process. In addition, the coefficients on the alumni and population variables are not statistically significant for all nationalities except Turkish students. This further supports the idea that the benefits of having an existing student body at an institution is more important than alumni or residents.

TABLE 3
Conditional Logit Model Results by Institutional Ranking

	Top (10)	Middle (11-30)	Bottom (31+)
	Coefficient	*Coefficient*	*Coefficient*
Same nationality students	0.239*** (5.31)	0.312*** (9.34)	0.347*** (6.23)
Same nationality student squared	-0.004*** (-3.83)	-0.007*** (-6.75)	-0.006*** (-4.81)
Same nationality alumni	-0.012 (-0.51)	-0.008 (-0.51)	0.028 (0.89)
Same nationality alumni squared	0.0001 (0.27)	0.0001 (0.34)	0.0002 (0.43)
Same nationality residents	-0.003 (-0.66)	0.006 (1.40)	0.001 (0.21)
Same nationality residents squared	0.000006 (0.41)	0.00002 (1.37)	0.000006 (0.27)
N	1593	3803	1398
N(Students)	418	719	506
Pseudo R^2	0.112	0.130	0.113
Prob.>Chi^2	0.00	0.00	0.00
	z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Though the random utility model coefficients show the qualitative relationship between the covariates and the probability of selecting an institution, they cannot relay information on the specific expected impact of any change in the covariates' values. For example, the results suggest that an increase in the proportion of students from the same country will positively impact the probability that students from that country will attend an institution, but are not able to inform us as to the precise magnitude of the increase in this probability. To do so, Table 5 reports the marginal effects for primary variables of interest from the full models.

TABLE 4
Conditional Logit Model Results by Nationality

	Chinese	Korean	Indian	Turkish
	Coefficient	*Coefficient*	*Coefficient*	*Coefficient*
Same nationality student	0.274***	0.391***	0.443***	1.298***
	(8.50)	(7.03)	(5.38)	(4.50)
Same nationality student squared	-0.005***	-0.014***	-0.015***	-0.091***
	(-6.41)	(-5.13)	(-3.37)	(-2.87)
Same nationality alumni	-0.002	-0.002	0.011	-0.272*
	(-0.10)	(-0.13)	(0.48)	(-1.84)
Same nationality alum squared	0.0009	0.0002	0.0003	0.017*
	(0.22)	(0.57)	(0.52)	(1.74)
Same nationality residents	-0.002	0.012	0.003	0.969
	(-0.46)	(1.21)	(0.31)	(1.35)
Same nationality residents squared	0.000001	0.00007	0.000009	-0.144
	(0.14)	(1.31)	(0.19)	(-1.22)
N	4239	1836	2403	674
N(Students)	623	143	117	56
Pseudo R^2	0.075	0.146	0.107	0.253
Prob.>Chi^2	0.00	0.00	0.00	0.00

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Each marginal effect is evaluated at the mean of the variable and shows how much the probability of attending an institution will change with a one-unit change in the value of the variable. Of continuous variables, the proportion of same students from the country of origin has the largest relative impact. The results suggest that each percentage increase in the proportion of students from the country of origin will increase the probability that a foreign student from that country will attend an institution by 39 per cent, other things constant. The effect of a 1 unit increase in the absolute number of students from their home country ranges from 1 per cent - 3.4 per cent, depending on the specification on the model.

The proportion of same alumni from the country of origin also has a substantial impact on the probability that a foreign student will attend an institution. The results suggest that a 1 per cent increase in alumni increases the probability of selection by approximately 7 per cent. The number of residents from the same country of origin in the surrounding MSA, the rank of the program, and the proportion of internal support all has a negligible impact on the probability of attending an institution. According to the marginal effect on the public institution indicator, public institutions are between 1.2-3.8 per cent more likely to be chosen by international students compared to private institutions, other things constant.

TABLE 5
Marginal Effects: Full Sample

	Model 1	Model 2	Model 3	Model 4
	Marginal Effect	*Marginal Effect*	*Marginal Effect*	*Marginal Effect*
Same nationality student	0.01040	n/a	0.02797	0.03426
proportion of same students	n/a	0.39188	n/a	n/a
Same nationality alumni	0.00062	n/a	-0.00061	-0.00008
Proportion of same alumni	n/a	0.06986	n/a	n/a
Same nationality residents	-0.00012	-0.00022	0.0000002	0.0000001
Program rank	-0.00050	-0.00180	-0.00010	-0.00243
Percent internal support	0.00012	0.00011	0.00012	0.00025
Public institution	0.02155	0.03774	0.01213	0.02291

Conclusion

This research represents the first to analyze the factors influencing the selection of a Ph.D. program. The analysis applies to an important cohort of the workforce that has been generally ignored in the literature – international scientists and engineers who earn their doctorate from a U.S. Ph.D. institution. In doing so, the results contribute to the understanding of the dynamics and motivations international students, which to date is comprised mostly of anecdotal evidence, and builds on previous studies concerning school choice and international migration. The results from the random utility models provide strong evidence that networks play an important role in the choice selection process of foreign Ph.D. students studying in the U.S. There is a strong positive and significant relationship between the number of existing students from the country of origin at an institution and the probability of attending that institution. The results are robust across all four nationalities and three tiers of program ranking. The size of the impact of networks depends on the nationality, and we find that the estimated magnitude is inversely correlated with the total number of students from each country studying in the U.S. The relationship increases at a decreasing rate, which suggests the impact of the first few students from a given country is greater than the impact of the impact of the last few. We also find in some of the models evidence that the alumni from the same country of origin can play a role in student choice, but these coefficients are less consistent and robust compared to current students. The coefficients on city attributes are generally not statistically significant, which suggest that characteristics of the institution are more important than the characteristics of the surrounding location the selection process.

These findings can assist policy formulations in higher education in various ways. First, this study provides insights about the possible 'mismatch' effect that could occur in foreign student admission. The strong network effect found in this study suggests that support provided by compatriots is very important for foreign doctoral students' institution choice. Therefore, foreign doctoral students could be attending institutions not because these

institutions are the best match for their qualifications, but because they provide them with the highest psychosocial support. If Ph.D. institutions wish to attract highly talented students from around the world, creating and reinforcing these networks can have a substantial impact. Furthermore, the strong network effect found raises the issue of the degree of integration of foreign doctoral students at an institution. Clearly, foreign students cluster in certain institutions. How well these students are able to integrate into the academic community is yet to be determined and is a subject for future research.

References

Borjas, G. J. (2004): Do *Foreign Students* Crowd Out Native Students from Graduate Programs? NBER Working Paper No. 10349, March 2004.

Curs, B. and L.D. Singell (2002): An Analysis of the Application and Enrollment Process for in-state and out-of-state Students at a Large Public University. *Economics of Education Review, 18*(3), 375-390.

DesJardins, S. L., Ahlburg, D. A., and B. P. McCall (2006): An integrated model of application, admission, enrollment, and financial aid. *Journal of Higher Education,* 77(3), 381-429.

Dynarski, S. (2003): Does aid matter? Measuring the Effect of Student Aid on College Attendance and Completion. *American Economic Review, 93*(1), 279-288.

Eide, E., Brewer, D. J., and R. G. Ehrenberg (1998): Does it Pay to Attend an Elite Private College? Evidence on the Effects of Undergraduate College Quality on Graduate school Attendance. *Economics of Education Review,* 17(4), 371-376.

Flint, T. A. (1992): Parental and Planning Influences on the Formation of Student College Choice sets. *Research in Higher Education,* 33, 689-708.

Hall, B., Jaffe, A. and M. Trajtenberg (2001): The nber (this word is unclear) Patent Citation Data File: Lessons, Insights and Methodological Tools: NBER Working Paper.

Hossler, D. and K. S. Gallagher (1987): Studying student College Choice: A Three Phase Model and the Implications for Policymakers. *College and University, 62,* 207-221.

Jackson, G. A. (1982): Public efficiency and private choice in higher education. *Educational Evaluation and Policy Analysis, 4,* 237-247.

Kerr, W. (2004): *Ethnic Scientific Communities and International Technology Diffusion. Working Paper.* Unpublished manuscript, available at:
http://econ-www.mit.edu/faculty/ download_pdf.php?id=994.

Libaers, D. (2007): The Role and Contribution of Foreign-born Scientists and Engineers to the US Public Nano Science & Technology Research Enterprise. *IEEE Transactions on Engineering Management,* 54.3, 423-432.

Massey, D. and F. García-Espańa,. (1987): The Social Process of International Migration. *Science* 237:733-38.

Massey, D. (1990a): The Social and Economic Origins of Immigration. *Annals of the American Academy of Political and Social Science,* 510(July):60-72.

Massey, D. (1990b): Social Structure, Household Strategies, and the Cumulative Causation of Migration. *Population Index,* 56(1):3-26.

Massey D. S., J. A., G. Hugo, A. Kouaouci, A. Pellegrino, J. E. Taylor. (1993): Theories of international migration: Review and Appraisal. *Population and Development Review,* 19(3), 431-466.

Massey, D. S. and R. Zenteno. (1999): The Dynamics of Mass Migration. *Proceedings of the National Academy of Sciences.* 5328-35.

Massey D. S., G. Hugo, A. Kouaouci, A. Pellegrino, J. E. Taylor. (1993): Theories of international migration: Review and appraisal. *Population and Development Review,* 19(3), 431-466.

Mazzarol, T., and G. N. Soutar (2001): *Push-pull Factors in Influencing International Student Destination Choice.* Crawley, WA: Center for Entrepreneurial Management and Innovation, University of Western Australia.

McFadden, D. (1974): Conditional Logit Analysis of Qualitative Choice Behavior. In P. Zaremka (Ed.), *Frontiers in Econometrics* (pp.105-142). New York: Academic Press.

Montgomery, M. (2002): A Nested Logit Model of the Choice of a Graduate Business Schools. *Economics of Education Review, 21*, 471-480.

National Science Board. (2003): *The Science and Engineering Workforce: Realizing America's Potential.* NSB 03-69. Arlington, VA: National Science Foundation.

National Science Board. (2010): *Science and Engineering Indicators 2010.* NSB 10-1 Arlington, VA: National Science Foundation.

No, Y. and J.P. Walsh (2010): The Importance of Foreign-born Talent for U.S. Innovation. *Nature Biotechnology,* 28, 289–291.

Quigley, J. M. (1985): Consumer choice of dwelling, neighborhood and public services. *Regional Science and Urban Economics, 15*, 41-63.

Stephan, P. E., and S. G. Levin (2003): *Foreign scholars in U S Science: Contributions and costs.* Paper presented at the Science and the University, Cornell Higher Education Research Institute.

Sumell, A. J. (2005): *The role of amenities in the location decisions of Ph.D. Recipients in science and engineering.* Georgia State University, Atlanta.

Szelenyi, K. (2003): *Explaining the migration and settlement of foreign graduate students: Global integration theory and the theory of cumulative causation.* Los Angeles: UCLA Center for Global Comparative Research.

Tanyildiz, Z.E. (2008): The effects of networks on the institution selection by foreign doctoral students in the U.S. Unpublished Dissertation. Georgia State University

The National Academies (2005): *Policy implications of international graduate students and postdoctoral scholars in the United States.* Washington, D.C.: National Academies Press.

Appendix A.1
Descriptive Statistics and Variable Definitions

Variable Label	Mean	Std. Dev.	Description of the Variable
Network Variables			
Turkish students	1.37	1.87	number of Turkish students in a department from 1996-1997
Chinese students	13.35	8.56	number of Chinese students in a department 1996-1997
Korean students	5.34	0.68	number of Korean students in a department 1996-1997
Indian students	4.72	4.17	number of Indian students in a department from 1996-1997
Same nationality students	11.44	8.12	number of students from the same country of in a department
Proportion of same nationality to total students	0.23	0.14	proportion of the number of students from the same country of origin in a department.
Turkish alumni	2.46	3.03	number of Turkish alumni in a department before 1996
Indian alumni	12.93	11.9	number of Indian alumni in a department before 1996
Korean alumni	16.47	15.14	number of Korean students in a department before 1996
Chinese alumni	17.51	12.37	number of Chinese alumni in a department before 1996
Same nationality alumni	17.16	14.21	number of alumni from the same country of origin in a department before 1996
Proportion of same nationality to total alumni	0.06	0.01	proportion of alumni from the same country of origin in a department before 1996
Chinese population	52.90	93.42	Chinese population in MSA (in 1000s)
Indian population	29.81	39.70	Indian population in MSA (in 1000s)
Korean population	26.29	50.68	Korean population in MSA (in 1000s)
Turkish population	1.38	2.22	Turkish population in MSA (in 1000s)
Same nationality population	43.48	82.89	number of residents from the same country of origin in MSA (in 1000s)
Institution Characteristics			
Public Institution	0.73	0.40	dummy variable coded "1" for public "0" for private institutions
Percentage of Internal support	61.23	12.26	percentage of support provided by the institution
Program rank	19.9	15.20	ranking of the Ph.D. program
Location Characteristics			
July humidity	61.96	8.96	mean relative humidity in July
July temperature	74.91	5.17	mean July temperature in degrees Fahrenheit
Violent crime	610.09	308.06	mean number of reported murders, robberies and assaults per 100,000 residents (1997-99)
Unhealthy air	11.45	13.28	number of days that air quality index was labeled as unhealthy in 1999
Cost of living	105.38	33.63	index of cost in MSA normalized to 100
Foreign population percentage	11.98	0.35	percentage of foreign population in MSA

Contd...

Individual Variables			
Sex	0.78	0.42	dummy variable coded "1" for male "0" for female
Age	30.95	3.31	age of the students at the time of graduation
Married	0.69	0.45	dummy variable coded "1" for married "0" for single or divorced
Children	0.3	0.45	dummy variable coded "1" for students with children "0" for students with no children
BA institution's ranking	1.44	0.52	ranking of the baccalaureate institution
Having master's degree	0.59	0.49	dummy variable coded "1" if the students has a masters degree "0" if not
Turkish citizen	0.06	0.24	dummy variable coded "1" for Turkish students "0" for others
Indian citizen	0.17	0.36	dummy variable coded "1" for Indian students "0" for others
Chinese citizen	0.60	0.49	dummy variable coded "1" for Chinese students"0" for others
Korean citizen	0.18	0.38	dummy variable coded "1" for Korean students with children "0" for others

Appendix A.2
Summary of Data Sources

Variable Description	Data Source
Network Variables	
Number of students at institution j	Survey of Earned Doctorates (SED)
Number of alumni from institution j	SED
Number of residents in the MSA of the university	Census 2000
Number of foreign professors in institution j	National Research Council (NRC) 1993 NSGF
Institution Characteristics	
Percentage of Internal support	SED
Type of the institution	NRC 1993 NSGF
Program Rank	NRC 1993 NSGF
Total number of foreign students	SED
Location Variables	
Cost of Living	Best Places
Unhealthy Air	EPA
Crime Rate	1999 Places Almanac
Weather	E.R.S. at Dept. Agriculture
Percentage of Foreign Population	Census 2000
Student Quality Variables	
Ranking of the undergraduate institution	National web pages
Having a master's degree	SED
Demographic Characteristics	
Age	SED
Married	SED
Children	SED
Sex	SED

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The Impact of Teachers' Expectation on Assessment of Pupils Learning Achievement

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Abstract

The purpose of this study was to examine the impact of teacher' expectation on the quality of their assessment from pupils. An experimental method of post-test with control group was applied including expectation maker situations, teacher's and pupil's sex. A total of 120 teachers were asked to assess eighty exam sheets of pupils in the proposed experimental situations. Study findings revealed that teachers' perceptions only partially mediated the effects of expectations to pupils learning achievement in grade-seventh, but regarding cross-relations of teachers' sex and pupils' sex there were no significant relationship in the teachers' assessment quality of those manipulated situations of expectations such as positive and negative expectations and without expectation's effect.

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Introduction

Teacher's expectation of pupils is his or her conscious and unconscious awareness of their abilities and may unintentionally affect the responses of their pupils (Rosenthal, 2002). It seems that this kind of assessment may lead to a sort of prediction on the side of the pupils that, in turn, is an environmental response produced to develop a kind of behavior accepted by the teacher. Teacher's subjective assessment is often unpredictable for the pupils; therefore, they cannot prevent teachers from including their expectations in the true assessment of the pupils' abilities. Examining teacher expectations of students can highlight the context that structures and shapes student learning, thus helping us provide optimal learning environments for student success (Tao, et al. 2006).

Traditionally in the Iranian educational system, the teacher is considered as a valid assessor of the pupils' responses and their learning performance. The outcome of assessment in such a system is a score. A score has at least two components in this kind of evaluation: the first component includes the pupil's true score and the other one includes the error score which, in turn, is made by a random error. The reason for this random error can be detected in the measurement system itself and its scoring error. According to previous studies in this field; this error has the biggest contribution to variance in the assessment of a test (Kiyamanesh, 1993). Measurement error however, can be caused by visible and invisible factors, but it is possible that the effect of teacher's expectation and its related factors may contribute to this error.

Although, in theory, equity and equality among students is emphasized and should be observed as a critical manifest in Iranian educational system (MOE, 2006), but based on the authors' observation in the country's educational context, however, assessing pupils is affected by teacher's expectation frequently. The teacher's expectation then which is due to his or her preconception about the pupils seems to lead to a kind of tendency to give special scores to the pupils. Therefore, pertaining to most of the teacher-made tests, a score given to the pupils is not his or her true score based on their performance on the test, but it seems to be the teacher's preference based on his or her expectation of pupils' abilities.

This study, with regard to the primary findings of the studies on teacher's expectation in developed countries, was conducted to discover the role of some effective variable at Iranian middle schools. The main question of the study therefore, was 'how teachers' expectancies affect on their assessment of pupils learning achievement?' And 'are the expectation effects existed as a general and common phenomenon or confined to at least some courses or subjects and sexes?' Therefore in order to answer to these questions we focused reviewing the extent and the direction of teachers' expectations of boy and girls in two subjects of social studies and experimental sciences in Iranian middle schools.

Background

Following the controversial study of Rosenthal and Jacobson that its details have been published in the book *Pygmalion in the Classroom* in 1968 many intellectual trends in this field appeared. They stated that the teachers' expectations of pupils' abilities serve the self-fulfilling prophecies. This prediction, based on visible and invisible factors, directs the teacher's expectations of pupils' abilities in a way that, eventually, the pupil's performance would be what the teacher had expected. It seems that the teacher has these expectations

under any condition, but the question is 'Do these expectations reflect the pupils' abilities accurately or serve as a random factor in determining the pupils' progress?' Previous studies show that not only the effect of mutual expectation really takes place but also it is the amount of this effect that has the practical importance.

According to the initial studies on intervening variable in expectation effect, Rosenthal (1968) has suggested a four-factor theory about mediator variables in expectation effect including a) the type of mutual relationship between the teacher and the pupil, b) feedback to the pupil which shows teachers' tendency to give different feedbacks to the pupils of high expectation, c) input that can increase the teachers' tendency to teach more materials to the pupils of high expectation, and d) output that means that teachers tend to give more opportunities to some special pupils to respond (Harris and Rosenthal, 1985).

Although primary results of Rosenthal and Jacobson's study were acclaimed, but the methodology of the study was severely criticized especially when some efforts to come up with the same results failed. This caused the researchers to think of what are variable or variables affecting expectation and why does such an issue with these reasonable results enjoy limited experimental support?

Primary expectations reveal the importance of experimental interference to create a difference among experimental conditions. Also, the time of expectation formation can be important. When the expectation is formal after a period of mutual relationship between the teacher and the pupil, there is no reason for this hypothesis that the expectation causes pupils' improvement or depression. In other words, you cannot depend on the effect of expectation as a factor, because it is probable that the pupil's past achievement has made the teacher's expectation.

Nowadays, studies on the effects of mutual relationship between the teacher and the pupils are concentrating on more complex aspects and the focus of these studies on social processes of classroom reveals new facts. Controlling the variables related to expectation effect is in a way that it does not have the problem of Rosenthal and Jacobson's first model and, in some, the investigation of the real effect of expectation in the classroom has shown a clear picture of the quality of teacher's effect. Rosenthal (2002) using meta-analytic procedures and examining moderator variables associated with the magnitude of interpersonal expectancy effects and mediator variables implicated in the communication of interpersonal expectations, shows that likewise other areas of inquiry, the expectations of classroom teachers unintentionally affect the responses of their pupils. While the Smith and her colleagues (1999) examination about whether self-fulfilling prophecies accumulate, dissipate, or remain stable over time, shows some degree of stability, but according to Ferguson (2003) it is that teachers' perceptions, expectations, and behaviors probably do help to sustain, and perhaps even to expand test score gap amongst pupils with different race and social backgrounds. He believes although, the magnitude of the effect is uncertain, but it may be quite substantial if we focus on its accumulated effects during schooling years. While in the UK, Mujis and Reynolds (2002) have shown that teachers' behaviors and beliefs have both direct and indirect influence on students' mathematics achievement. Also a recent Australian study by Cavanagh and Waugh (2004) further confirmed the positive correlation between teacher expectations and students' formal learning outcomes, pointing toward the importance of building school and classroom cultures that are optimally congenial to students' learning growth. These findings are similar to Webster and Fisher (2003) who have confirmed correlations between Australian students' achievement in mathematics and

science and their school culture and environments. Additionally, in the Korean educational context, Lee (1996) found evidence that teacher behaviors are directly affected by their instructional beliefs. Similarly, Jussim (2005) by reviewing nearly four decades empirical research on teacher expectations, concludes that (a) Self-fulfilling prophecies in classroom do occur, but these effects are typically small; (b) powerful self-fulfilling prophecies may selectively occur among pupils from stigmatized social groups; (c) whether self-fulfilling prophecies affect intelligence, and whether they in general do more than harm than good, remains unclear; and (d) teacher expectations may predict pupils outcomes more because these expectations are accurate than they are self-fulfilling. This is while the most recent study shows that the teachers early expectations is related to pupils later perceived competence, in particular when these expectations are positive and the relation between these two is stronger when the classroom motivational climate is low in autonomy support (Thoullioud, Bressoux, Bois and Sarrazin, 2006). Therefore, although studies associated with expectation effect are continuing to improve but what can be concluded is that among various influential factors in students' learning environments, teacher expectations have been found to be positively associated with students' learning outcomes and attitudes toward learning (Hernandez, 2001).

Research Aims

In order to investigate the effect of negative and positive expectations on the quality of the assessment of pupils, this study aims to study and measure the following purposes:

1. Determining the effect of positive and negative expectations on the quality of assessment of pupils learning outcomes.
2. Determining the effect of teachers' expectations on testing experimental and social studies.
3. Determining the quality of the relationship between the effects of teachers' expectations on the quality of assessing the pupils according to the teachers' sex.
4. Determining the quality of teachers' expectations on the quality of assessing the pupils according to the pupils' sex.

Samples

A stratified sample of 120 teachers[1] (nearly 50 per cent of those teachers teaching experimental sciences (ES) and social studies (SS) in Sanadaj urban' middle schools) was selected for the study, representing both males and females teachers who are teaching in Kurdistan's junior high schools. Teachers were divided based on the course and sex as follows. (a) thirty female teachers of experimental sciences, (b) thirty male teachers of

[1] According to the Department of Statistics in Kurdistan Bureau of Education 133 ES teachers and 113 SS teachers were teaching at the time of conducting this project (Population N= 246 teachers, respectively).

experimental sciences, (c) thirty female teachers of social studies, and (d) thirty male teachers of social studies.[2]

Method

In the study, the experimental post-test was used along with control group. The post-test of control group was through the random selection and replacement of experimental and control groups. By using this method it is possible to control the variables such as selecting samples method, simultaneous events along with the exact delivery, physical and mental growth and statistical differences because of employed instrumentation. In addition, since the measurement is done once, the variables of instrumentations and the quality of testing have no effect on the findings of the study (Dellavar, 2006).

The experimental study, after testing the control group was conducted for each group of teachers (Social Studies and Experimental Sciences) based on the Model 1.

MODEL 1

Experimental Study after Testing the Control Group for Both Groups of Teachers

Social Studies and Experimental Sciences Classes	Female Teachers	R	E1	X1	T
		R	E2	X2	T
		R	C1	O	T
	Male Teachers	R	E3	X1	T
		R	E4	X2	T
		R	C2	O	T

R = random selection and replacement of teachers in the experimental groups.

E_1 = experimental group No.1: including ten female teachers in each field exposed to positive expectations.

E_2 = experimental group No.2: including ten female teachers in each field exposed to negative expectations.

E_3 = experimental group No.3: including ten male teachers in each field exposed to positive expectations.

E_4 = experimental group No.4: including ten male teachers in each field exposed to negative expectations.

[2] The Effect Size: in experimental studies, the degree of generalizability of the information is based on the bulk of the sample. In this study, the bulk of sample, 10 teachers in each experimental situation with relatively high effectiveness (d= 0/8) is equal to 0/97. In experimental studies this can be desirable and is the least amount that can make sure that the findings are highly generalizable (Sarmad et al, 1998).

C_1 = control group of female teachers: including ten female teachers in each field that are not affected by expectation effect.

C_2 = control group of male teachers: including ten male teachers in each field that are not affected by expectation effect.

T = the examination paper of girls and boys in each field that were corrected and scored by the teachers.

X_1 = experimental application No.1: including the creation of positive expectations in teachers before correcting the papers of pupils of high abilities through the written and oral explanation by the tester.

X_2 = experimental application No.2: including the creation of negative expectations in teachers before correcting the papers of pupils of low abilities through the written and oral explanation by the tester.

O = the situation of having no expectation effect: including the lake of explanation to the teachers about the characteristics of the pupils.

It is worth mentioning that in each group every teacher is expected to correct forty pupils' exam papers (twenty girls and twenty boys).

The Instruments

In this study, achievement tests made by the teachers for the course of social and experimental sciences were used to compare the effect of teachers' expectation. These teachers were the best test designers in their own districts and had received the highest points (ranks) successively in this field. The test designed by these teachers was accessible to experienced teachers and experts in the related fields to calculate their validity.

Validity of the Instruments

To determine the validity of the content, the designed tests were reviewed by the members of member of the Department of education in the University of Kurdistan and instructional groups in districts and the validity of each item was determined.

The Reliability of Instruments

Due to the method of internal correlation Corenbach α was used to measure the reliability of the test. The reliability coefficients of social studies were 92 per cent and of experimental sciences was 75 per cent that were relatively high.

Therefore, in order to implement the tests in target pupils, four classes in two middle schools in Sanandaj were randomly selected. A week before the test be delivered, the pupils were informed to study the lessons to take part in a scientific competition by which top pupils were awarded. The test was administered in two schools on two subjects and was given only to the pupils of grade two (the grade (year) seven) in middle schools. Finally of 123 exam papers, eighty full answered exam sheets were selected and were divided equally into these two subjects and for these two different sexes (each one twenty papers). And they were given to the teachers based on the research design. At last, the effects of expectations on their assessment were investigated. It is worth mentioning that these papers were duplicated and copied for all the teachers and for different experimental groups.

Data Collection

Like all the other studies on the teachers' expectations, an unreal story to create the condition for the expectation effect in teachers was used. The teachers were told that an intelligence test was made and the necessary information is collected. They were asked therefore, to score pupils exam sheets for the purpose of comparing the assessment of pupil's intelligence with their true improvement in school lessons. After this explanation the positive expectation was created by marking exams envelop that *'these papers belong to the pupils who have received the highest scores on intelligence test'*. And the negative expectation was created in this way that 'these *papers belong to the pupils who have received the lowest scores on the intelligence test''*. This explanation was presented orally and was written on caver of the papers' bag.

This procedure is helpful not only in the creation of expectation effect in experimental situations but also eradicating suspicion that some teachers had about (why were they given the copied versions of these papers?). So, using this procedure, the threatening elements to internal validity of the research was relatively controlled.

The present research data was collected during a year. The experimental application could not be used for the teachers collectively because they were distributed (dispersed) throughout the city schools and they were not available. Therefore, the data collection concerning personal conditions of teachers lasted only about an academic year.

Data Analysis

In order to calculate the mean difference, three-factor ANOVA along with combined effect was separately used for each subject. The three factors were: the experimental situations of expectation in teachers, sex of teachers and pupils that were analyzed in a 3×2×2 Model. At the beginning using Hartly and Cookran's tests (Vayner 1990, p. 239) the co-variance was tested that in both tests the co-variance was 0.99 $[F_{0/99}(3,119) = 1/48 > F_{max} = 1/12]$. Since the number of observations in each group was equal, F test was not sensitive to the lack of this hypothesis (Shiolson, 1991).

Analysis of factors related to social studies

According to the results shown in the table of variance analysis (Table 2), the differences related to the effects of factors A and C were 0.99 and the mutual effects of three factors ABC were 0.95 that they show a significant difference. In other words, the created situations by expectations affected the teachers' perception of pupils' abilities and their assessment. The collected data show that there is no significant difference between female and male teachers in terms of the degree of being affected by expectation.

TABLE 1
Summary of ABC of the Subject of Social Sciences

C- Teachers		c_1 - Female Teacher		c_2 - Male Teacher		Total	
B- Pupils		b_1 - girl	b_2 - boy	b_1 - girl	b_2 - boy		
A- Situations	Positive Exp. a_1	1908.75 $\overline{X}_{111}=9.54$	2953.25 $\overline{X}_{121}=9.6$	1919.25 $\overline{X}_{112}=9.6$	3054 $\overline{X}_{122}=15.27$	9835/25	n= 200 P= 30 q= 2 r= 2
	Negative Exp. a_2	1600.25 $\overline{X}_{211}=8$	2886.5 $\overline{X}_{221}=14.43$	1841.5 $\overline{X}_{212}=9.21$	2802.25 $\overline{X}_{222}=14.01$	9130/5	
	Without Expectation effects a_3	1850.25 $\overline{X}_{311}=9.25$	2920 $\overline{X}_{321}=14.6$	1868.5 $\overline{X}_{312}=9.34$	2880 $\overline{X}_{322}=14.4$	9518.75	
Total		5359.25	8759.75	5629.25	8736.5	28484.5	

According to the above information and calculations based on raw information a summary of the information taken from (MONOVA) was prepared. This information has been presented in Table. 2.

TABLE 2
Summary of ANOVA of Three Factors Affecting Social Sciences

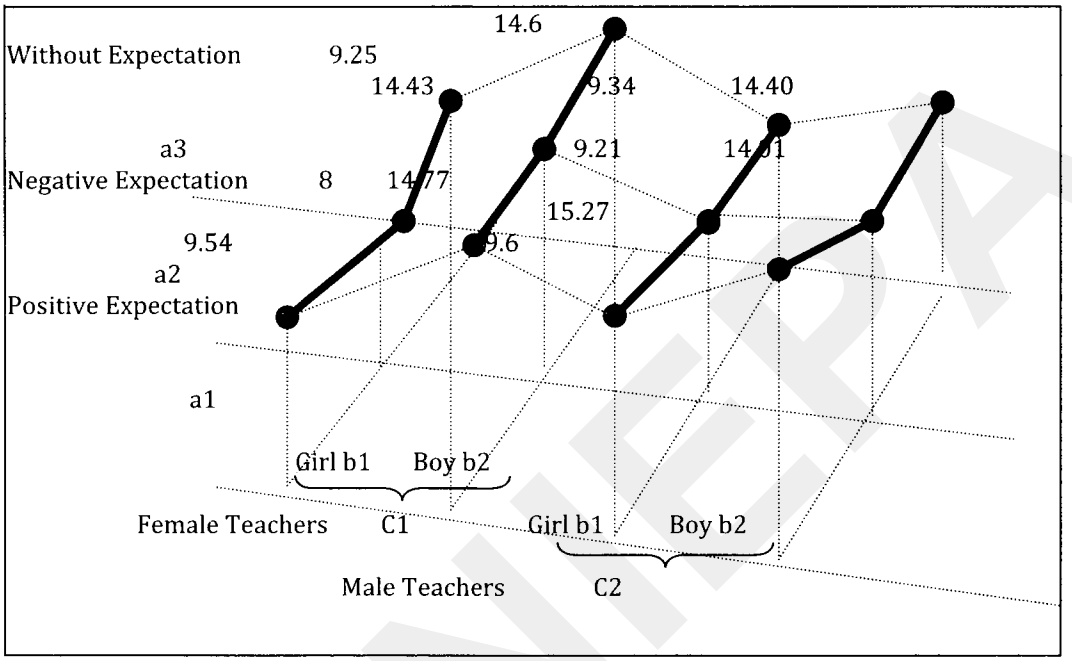
Change Sources	Total Squares	df	Average of Squares	F Value	f'
Experimental Situations	311.49	2	155.75	*10.53	0.98
Teachers	25.3176	1	25.3176	0.46	
Pupils	17644.82	1	17644.82	**318.04	0.99
Situations x Teachers	21.3756	2	10.69	0.72	
Situations x Pupils	17.36	2	8.68	0.59	
Teachers x Pupils	35.89	1	35.89	2.426	
Situations x Teachers x Pupils within groups	110.96	2	55.48	*3.57	0.63
	35329.26	2388	14.79		
Total	53496.65	2399			

$F_{0.99}(1.3388) = 6.63$ $F_{0.95}(1.3388) = 3.84$ ** P<0.01

$F_{0.99}(2.3388) = 4.41$ $F_{0.95}(2.3388) = 2.99$ * P<0.05

The study of mutual effect: This study has the interrelated effect of three variables whose diagram has been sown in a geometric Diagram1.

DIAGRAM 1
The interrelated effect of the three factors affecting social sciences



Through analyzing the above diagram, it is understood that different levels of variable A, that is, a_1 , a_2 and a_3 have slight interrelated effect in a way that if these points, a_1–a_2 or a_2–a_3, are to be extended, this interrelated effect is attained. This mutual (interrelated) effect is higher on the $(c_1 - b_1)$ and $(c_2 - b_2)$ axis because the line (15.27, 14.01, 14.40) is not parallel to the line (9.6 , 9.21 , 9.34). This means that the variance of mutual effect of AB is not equal to zero. Also, this is true about the line (9.54 , 8 , 9.25). Therefore some of these mutual effects can be because of experimental application in three created situations. Related to social studies, although the answer key was available to the teachers, the expectation effect affected the results.

About the different levels of variable C in interrelated diagram, no mutual effect can be seen between the teachers of the two different sexes. Line AB for c_1 is similar to line AB for c_2 and this speaks of the similar mutual effect of AB for c_1 and c_2. This means that SS_{abc} exists at the lowest significant point (Vayner, 1990 p. 413).

Factor Analysis of Experimental Sciences

The table of account statistical information about the subject of experimental sciences are the same as those of the subject of social studies. At first the three-factor table ABC (Table 3) and then a summary of information related to MANOVA will be presented.

TABLE 3
An Account of Experimental Sciences

C- Teachers		c_1 - Female Teachers		c_2 - Male Teachers		Total	
B- Pupils		b_1 - girl	b_2 - boy	b_1 - girl	b_2 - boy		
A - Situations	Positive Exp. a_1	1779.5 $\overline{X}_{111}=8.89$	2072.5 $\overline{X}_{121}=10.36$	1780.25 $\overline{X}_{112}=8.9$	2113.2 $\overline{X}_{122}=10.57$	7745.45	n= 200 P= 3 q= 2 r= 2
	Negative Exp. a_2	1639.5 $\overline{X}_{211}=8.2$	2030.25 $\overline{X}_{221}=10.15$	1748.5 $\overline{X}_{212}=8.74$	2015 $\overline{X}_{222}=10.08$	7433.25	
	Without Exp. Effects a_3	1595/25 $\overline{X}_{311}=7.98$	2043 $\overline{X}_{321}=10.22$	1770/25 $\overline{X}_{312}=9.34$	2005/75 $\overline{X}_{322}=10.03$	7414.25	
Total		5014.25	6145.75	5299	6133/95	2259.95	

According to the above data, the calculations related to ANOVA of three-factor was done which its summary appears in table No. 4. It is important to say that each mean in table No. 3 is the outcome of 200 observations (10 teachers × 20 pupils). For Fs whose values are more than critical F, F power was calculated.

TABLE 4
Summary of ANOVA of Three Factors Affecting Experimental Sciences

Change sources	Total Squares	df	Average of Squares	F Value	f'
Experimental Situations	86.468	2	43.234	*3.29	0.63
Teachers	31.0424	1	31.0424	1.48	
Pupils	1611.219	1	1611.22	**76.94	0.99
Situations x Teachers	4.893	2	2.45	0.186	
Situations x Pupils	2.0579	2	1.029	0.078	
Teachers x Pupils	36.64	1	36.64	2.78	
Situations x Teachers x Pupils	41.88	2	20.94	1.59	
Within groups	31426.94	2388	13.16		
Total	33241/14	2399			

$F_{0.99}(1.3388) = 6.63$ $F_{0.95}(1.3388) = 3.84$ ** P<0.01

$F_{0.99}(2.3388) = 4.41$ $F_{0.95}(2.3388) = 2.99$ * P<0.05

The data of table 4 show that expectation causing experimental situations had an effect on teachers' assessment of pupils' exam papers $[F_{0/95}(2,2388) = 2/99 < F\max = 3/29, P < 0/05]$.

The findings show that there is a difference between the male and female pupils in terms of experimental sciences. $[F_{0/99}(1,2388) = 6/63 < F\max = 76/94, P < 0/001]$.

But there is no significant difference between male and female teachers of experimental sciences in terms of the degree of being affected by expectation causing situations. The result showed that none of the interrelated effects of two or three factors is significant. It means that the changes in any of the variables cannot be attributed to the changes in other variables. Therefore, there is no mutual effect concerning the subject of experimental sciences.

Findings

The findings show that the teachers of social studies based on the situations causing expectations of pupils' abilities have made significant differences in their assessment of pupils' exam papers ($P<0/001$). These inconsistencies were in a way that in a situation causing positive expectation, they increased the level of score in comparison to the other situations. Also, in negative expectation causing situation they decreased the level of score given to the papers. In relation to experimental sciences, the overall results of experimental applications (lack of resistance to change the sex variable) were the same as those of social studies.

The sex of pupils predicted 99 percent of variance of differences. The analysis of findings showed that the teachers of social studies were affected by expectation effect because of pupils' sex, and these effects are apparent in their assessment of pupils' exam papers ($P<0/0001$). The sex of teachers was also influential. The findings showed that the male teachers regarding their assessment of male pupils' exam papers and female teachers regarding their assessment of female pupils' exam papers were affected more significantly by expectation effects. This kind of effect was only observed about social studies.

There was not a significant difference between male and female teachers of social studies in terms of being affected by created expectations ($P<0/25$). It means that male and female teachers disregarding the sex factor were equal in different expectation causing situations. But through including sex factor, the mutual relationship happens. Female teachers were affected by positive situations of expectation effect in the assessment of pupils' exam papers, but their assessment of the pupils were not affected by these negative expectations. Also, female teachers were not affected by any of the created expectation effects in their assessment of male pupils' exam papers. Male teachers were affected by both positive and negative situations in their assessment of male pupils' abilities. It means that positive expectation effects caused the scores to increase significantly ($P<0/01$) and negative expectation effects caused the scores to decrease significantly ($P<0/01$) in the assessment of male pupils' exam papers. But the effect of expectation was not observed in the assessment of female pupils in social studies.

The findings showed that there was not a significant difference between male and female pupils in the assessment of social studies ($P<0/0001$). Male pupils were not affected by positive and negative situations but female pupils' scores were affected by different kinds of expectations when their exam papers were corrected by female teachers. This finding shows that there is a difference between male and female pupils in terms of being affected by expectation effect and it is when the sex factor of teacher is included.

Through excluding sex factor of pupils, there was not a significant difference between male and female teachers of experimental sciences in terms of being affected by expectation causing situations. But by including the sex factor of pupils an interrelated effect was

observed. The findings did not show that the expectation effects (positive and negative) were observed only when the female teachers assess the exam papers of female pupils.

Discussion and Conclusion

The findings of this study can be divided into two parts: findings that support the expectation effects pattern and those which contradict some of this pattern's claims. These contradictions and inconsistencies were reported in previous studies, for example, Zana, Sheraz, Kuper, and show (1975), concluded that positive expectations of pupils' academic performance lead to academic improvement. But the teacher's positive expectations of pupil and pupil's expectation of his own abilities do not make such improvement. In this study the findings show the overall effects of expectations, but when these expectations are affected by variables of the sex of pupils and teachers, the expectation effects fall and rise and it will be discussed more.

Findings that support expectancy theory

As it was mentioned, the overall conclusion showed that the created expectations in experimental situations for the subject of social and experimental sciences were effective in the teachers' assessment of pupils' exam papers. (For Social Studies $P<0/001$) and for Experimental Sciences ($P<0/05$). This finding support the findings of the first studies conducted by Rosenthal and Jacobson (1968), Fin (1972), Williams (1972), Kerano and melon (1978) and other studies that were conducted on the relationship between expectations and pupils' academic performance and assessment.

Findings that do not support expectancy theory

This part of findings is more remarkable than those supporting expectancy theories because the inconsistent parts of expectancy theory show inconsistencies between teachers and cultural and educational conditions. These inconsistent findings include: a) concerning the subject of social studies, the male teachers in their assessment of female pupils' exam papers and female teachers in their assessment of male pupils' exam papers were not affected by experimental positive and negative expectation causing situations, and b) concerning experimental sciences, male and female teachers were not affected by positive and negative effects of expectation in their assessment of male pupils' exam papers. These findings did not come up with any significant differences among the female pupils whose exam papers were corrected by male teachers.

No other finding having such amount of interrelated effects was not found but as mentioned before, the findings that are not supporting the expectancy theory state that teacher's expectation affecting pupil's behaviors are influenced by many variables that the most important one is the teachers' degree of awareness of their expectations that is controllable to a great extent. It is probable that one of the factors that caused this study to yield such findings is the organizational cultural factor and it is because the male teachers teach in boy schools and female teachers teach in girl schools. Of course this claim has to be investigated because this cannot be inferred from the findings of this study.

However, since female teachers in their assessment of male pupils' exam papers and male teachers in their assessment of female pupils' exam papers were not affected by

expectation effect, it is suggested that not only for the subject of social studies and experimental sciences but also for other subjects the male teachers correct male pupils' exam papers at least for final test. Of course this suggestion is applicable if the female teachers teach female pupils and male teachers teach male pupils during the academic year.

Since this study investigated the overall effect of teachers' expectations on their assessment of the two subjects -social and experimental sciences- it is suggested that to determine the true score of each pupil, the mean of three corrections by three teachers should be used and not the only score given by the last teacher who corrected the paper. Of course this suggestion has not been worked upon in this study directly but it is inferred from descriptive analyzes and previous studies.

In this study, the presented explanations orally or written on the exam papers packets had created positive and negative expectation in teachers. It is suggested that while giving the packets to the teachers for correction, no explanation or words or sentences even any meaningful names should not be used because they affect teachers' views and ideas.

While cutting the top section of exam papers apart in final tests, it is better to hide the sex of pupils because it decreases the expectation effect. Sometimes, the teachers' awareness of the name of the school or sex of pupils – as this study shows, affect teachers' expectation in their assessment of pupils' exam papers and get farther from the true score.

Teachers have to be informed of the findings of this study, and the factors causing teachers' expectations of pupils have to be pinpointed in the lectures presented by officials and experts. Because teachers can control their views and behaviors, and their awareness of these factors decreases the negative effect of expectations and emphasizes the positive aspects of expectations. According to the previous discussion, teachers' expectations can be affected by their awareness and it has to be slightly controlled.

This study investigated the effect of expectation on teachers' behavior but there are many more questions that need to be answered. The $C \rightarrow D$ relationship, i.e. the effect of teachers' behavior on shaping the prospective manners of pupils has not been investigated yet. Therefore, it is suggested that more attention be paid to the behaviors of pupils affected by the teachers' expectation.

Like past pupils conducted by Rosenthal and Jacobson, in this study, the expectation – causing situations were unreal and imaginative, that is, they were created through giving oral and written explanations about the pupils' abilities. The effects of expectation can be studied more objectively and through longitudinal short-term study. Of course this attempt needs more careful planning and it is suggested that a group of experienced researchers be employed.

According to lot of research studies on the four intervening factors affecting expectation effects and their ten axes can be conducted (Harris and Rosenthal, 1985). This study only investigated the factor of atmosphere with regard to $B \rightarrow C$ relationship, that is, the effect of created expectation on the teachers' behaviors. Therefore, since the theory of four-factor is extensive and acquired information in this regard is abundant, with more power can be conducted.

References

Crano, W.D. and Mellon, P . M (1978): Causal Influence of Teacher Expectations on Children's Academic Performance – A Core Legged Panel Analysis. *Journal of Educational Psychology* 70: 39-49

Dellavar, A. (2006): *Theoretical and Practical Principles of Research in Social Sciences.* Tehran: Tehran University Press.

Ferguson, R. F. (2003): Teachers' Perceptions and Expectations and the Black-White Test Score Gap. *Urban Education,* 38, 460-507.

Finn, J. D. (1972): Expectations and Educational Environment. *Review of Educational Research,* 42, 387-410.

Harris, M. J. and Rosenthal, R. (1985): The Mediation of Interpersonal Expectancy Effects – 31 Meta-Analyses. *Psychological Bulletin,* 97, 363-386.

Hernandez, H. (2001): Multicultural Education: A Teacher's Guide to Linking Context, Process, and Content. Upper Saddle River. NJ: Prentice Hall.

Jussim, L. (2005): Teacher Expectations and Self-Fulfilling Prophecies – Knowns and Unknowns, Resolved and Unresolved Controversies. *Personality and Psychology Review,* 9(2): 131-155.

Kiamanesh, A. (1993): Generalizability Theory in Measurement. *Education Sciences Journal of Tehran University,* 16(1 and 2), 25-48.

LEE, K. (1996): A Study of Teacher Responses Based on their Conceptions of Intelligence. *Journal of Classroom Interaction,* 31: 1–12.

McGrew, K. S., & Evans, J., 2003. '*Expectations for students with cognitive disabilities: Is the cup half empty or half full? Can the cup flow over? Synthesis Report 55.*

Ministry of Education (MOE), 2006. The Fourth Education Development Plan. Tehran: MOE.

Mujis, D. and Reynolds, D. (2002): Teachers' Beliefs and Behaviors – What Really Matters? *Journal of Classroom Interaction,* 37: 3–15.

Rosenthal, R. (1991): Teacher Expectancy Effects: A Brief Update 25 Years after the Pygmalion Experiment. *Journal of Research in Education,* 1, 3-12.

Rosenthal, R. (2002): Convert Communication in Classroom, Clinics, Courtrooms and Cubicles. *American Psychologist* , 57(11): 839-54.

Rosenthal, R. and Jacobson, L. (1968): *Pygmalion in the Classroom.* New York: Holt, Rinehart and Winston.

Sarmad, Z. et al. (1999): *Research Methods in Behavioral Sciences.* Tehran: Agah Publication.

Shiolson, R. (1991): *Statistical Reasoning in Behavioral Sciences.* First Volume. Descriptive Statistics. Translated by Zohreh Sarmad and Mahtash Esfandeyari. Tehran: Tehran University Press.

Smith, E.A.; Jussim, L. and Eccles, J. (1999): Do Self-Fulfilling Prophecies Accumulate, Dissipate, or Remain Stable over Time? *Journal of Personality and Social Psychology* 77(3): 548-565.

Tao, L. et al. (2006): Teacher Expectations of Student Reading in Middle and High Schools – A Chinese Perspective. *Journal of Research in International Education* 5(3): 269–299.

Thoullioud, D.; Bressoux, P.; Bois, J. and Sarrazin, P. (2006): Relation Between Teachers' Early Expectations and Pupils' Later Perceived Competence in Physical Education Classes – Autonomy Supportive Climate as a Moderator. *Journal of Educational Psychology,* 98 (1): 75-86.

Wayner, B. J. (1990): *Statistical Principles in Experimentation.* Translated by Zohreh Sarmad and Mahtash Esfandeyari. First and Second Volume. Tehran: Tehran University Press.

Webster, B. J. and Fisher, D. (2003): School-level Environment and Student Outcomes in Mathematics. *Learning Environments Research,* 6: 309–26.

Williams, T. (1976): Teacher Prophecies and the Inheritance of Inequality. *Sociology of Education,* 49, 223-236.

Zanna, M.P., Sheras, P.L., Cooper, J. and Shaw, C. (1975): Pygmalion and Galatea – The interactive effect of teacher and student expectancies'. *Journal of Experimental Social Psychology,* 11, 279-287.

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Elementary Education in Rural West Bengal

The Socio-Economic Correlates

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Abstract

The present paper deals with the problems of educational attainment at elementary level in rural West Bengal, one of the comparatively laggard states in India. In the process, it uses Logistic Regression Analysis to explain the household decision regarding the schooling status of children. It primarily aims to empirically investigate the significant indicators and their impacts on two schooling aspects, namely problem of never enrolment in school and dropout of school in an educationally backward area. The study finds, among others, that the important variables contributing to the probability of dropping out of school are – Proportion of Educational Expenditure (EDNTOTEX), Pattern of Income (INREGIRREG), Mother's Education Level (MTHEDN) and Opportunity Cost of Schooling (OPTNTCOST). While, Fathers' Education Level (FTHEDN), Monthly Per Capita Expenditure (MPCE) and Household Dependency Ratio (HDEP) are found to be significant in predicting the probability of never enrolment. It signifies that the socio-economic correlates vary for explaining the different school level outcome attributes (e.g. dropout and never enrolment are being predicted significantly not by the same variables).

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Introduction: Relevance of the study

The relevance of educational expansion in a country like India whose economy has been moving decisively to a higher growth phase needs no further arguments. Considering the importance of education in facilitating social and economic progress in India, the Eleventh Plan of India (2007-12) places the highest priority on education as a central instrument for achieving rapid and inclusive growth (Government of India, 2008). Education, especially at elementary level, has widely been recognised as an essential human right and a key to poverty alleviation. It is also a key factor for sustainable human resource development and as such Education for All (EFA) has become a social movement at national and international level.

Recently the Universalisation of Secondary Education has become a national agenda and a scheme for universalisation of access to and improvement of quality at the secondary stage has been launched by the GOI in the name Rashtriya Madhyamik Shiksha Abhiyan (RMSA: Source: framework for implementation of Rashtriya Madhyamik Shiksha Abhiyan - http://education.nic.in/ secedu/sec_rmsa.asp) to be implemented throughout the country. But the issue that appears to be more important is to universalize the elementary education which is a pre-condition of success of RMSA in the country.

While launching the Sakshar Bharat Mission Prime Minister Dr Manmohan Singh said that although good progress has been made to make India literate, a third of the population continues to remain illiterate and half of the women cannot read or write. Again an Act has come into effect in the name of 'The Right of Children to Free and Compulsory Act, 2009' in India that has been operational since April, 2010. In this Act, it is stated that "Every child of the age of six to fourteen years shall have a right to and compulsory education in a neighbourhood school till completion of elementary education (Chapter-III, Article-3.1; Constitution of India)."

Three separate issues have been captured in the above Government initiatives- literacy achievement, universalization of elementary education and lastly the more recent issue that seeks to universalize access to and the improvement of quality at secondary stage. All are not same but has a close correlation with each other. Achievement on the latter two issues will enhance the literacy but an achievement of mere literacy (as it is officially calculated in the Indian context) does not always guarantee the success of the other two problems. In order to have a good human capital base and eligible workers in the modern technology based economy, it is essential to universalize elementary education first, which will realize the target of RMSA in the near future as it is projected so far.

In the above context, the present paper deals with the problems of educational attainment at elementary level in rural West Bengal, one of the comparatively laggard states (in respect of literacy rate, 2001) in India. In the process, it uses the Logistic Regression Analysis in explaining the household decision regarding the schooling status of children. It primarily aims to empirically investigate the significant indicators and their impacts on two schooling aspects, namely problem of never enrolment in school and dropout of school in an educationally backward area.

Methodology

The indicators of schooling, unlike literacy rate, are rather complex in nature (Duraisamy, 2001). In the literature of economics of education, the researchers generally deal with several educational outcomes, such as dropout rate, enrolment rate, grade completion, school attendance rate, retention rate, etc. some of which often may take the form of qualitative rather than quantitative in nature. For example, enrolment of children in school is a decision and this is usually taken by the parents. The parents in this situation may have two options - either to enroll their wards or not to enroll them (Majumdar, 2001).

For example, consider we have two households (HH-1 and HH-2) where HH-1 has three schooling age children. Out of them two have been enrolled and one never enrolled. On contrary, HH-2 has two schooling age children and both of them are currently enrolled. This follows that in case of HH-1 the event of never enrolment is present and for the HH-2 the event is absent. In other words, the response here is of two types – YES/NO, i.e., the dependent variable is neither interval nor is it a ratio. Actually, it is categorical in nature having binary response. The response variable may be assigned two values, 1, if some (> or = 1) of the schooling age children are never enrolled in school and '0', if all the children got admitted in school. Universal enrollment becomes more meaningful and studying such decision making behaviour of the households covers a range of dimensions where one can interpret whether all the schooling age children get enrolled in school. Also by incorporating the school dropping out in similar fashion, it can further be possible to explain whether enrolled children are continuing their school education, i.e. the probability of retention is also covered here.

Popular methods used to analyze such a qualitative dependent variable include the probit model, and logistic regression analysis or logit. The logit and probit actually yield similar results although not identical (Aldrich and Nelson, 1984; Hosmer and Lameshow, 1989, pg 168). The logistic regression does not require predictor variables to be normally distributed. It is happy with qualitative independent variables too; in fact, logistic regression is happy even if all the independent variables are qualitative. Another advantage of the logit model is its ability to provide valid estimates, regardless of study design (Harrell, 2001). The only "real" limitation on logistic regression is that the outcome must be discrete. Considering all these, we have finally preferred to go with the logit model partly because it is comparatively easy to work with mathematically, and partly because it leads to a model that is easy to interpret. Considering all, Logistic Regression Analysis has been preferred.

Background of the Analysis

Literature on economics of education has established that there is a positive association between educational backwardness and level of poverty. The explanation offered is that the opportunity cost of sending the children to school, instead of using them as household help or wage earner, is not an economically feasible option (Bhatty, 1998). This positive association has emerged in different studies (Chakraborty, 2006; Duraisamy, 2004; Dholakia 2003; Reddy and Rao, 2003; Nambissan and Sedwal, 2002; Devi, 2001; Krishanji 2001, etc).

On the other hand, Nidhi Mehrotra (1995) on the basis of field- based information from Kerala, Uttar Pradesh and Himachal Pradesh, notes that evidence of child labour does not by itself establish that poverty is the prime reason for their not attending school (cited in

Bhatty, 1998). Santha Sinha (2000) in her article noted that "—what is found is that not only are literacy rates similar between groups having dissimilar income levels but also vary widely between groups with same income levels. In other words, situations where better off families have engaged their children in work while parents with lower incomes have retained their children in school are not uncommon." Sinha also observed that there are factors other than the purely economic compulsions arising out of poverty, which dictate whether a child is sent to work or to school.

A common proposition that poverty alleviation is a prerequisite for achieving the goal of UEE has been falsified by several country experiences. Many countries have successfully made primary education compulsory and universal when per-capita income in those countries was low and poverty was wide spread. Japan introduced compulsory education in 1872, North and South Korea, Taiwan and People Republic of China, all of which made education compulsory shortly after the Second World War. In the West too, many countries have introduced the same before the industrial revolution. These countries have successfully ensured the universalization of primary and elementary education in their country and they have regarded mass education as an instrument for the reduction of poverty (Weiner, 1996), justifying the need for education for poverty reduction. While studying the determinants of schooling for boys and girls in Nigeria under a policy of free primary education it has been found (Lincove, 2009) that controlling for costs, household wealth bears a positive relation with primary school attendance. Interestingly, it has greater income elasticity for girls than boys. Girls' attendance also depends on opportunity costs generated by providing child care for younger siblings and living on a family farm. Studies from other countries also suggest more or less similar results. Most studies analyzing the determinants of enrollment (especially girls' enrollment) have found the association between household income and enrollment in school to be positive and statistically significant, whether income is measured directly using a household consumption module or indirectly through some household asset index (Federal Bureau of Statistics, 1998; Hazarika, 2001; Sathar & Lloyd, 1994; World Bank, 2002). Both, the size and significance of income effects are typically larger for girls than boys when results for boys and girls are compared.

The impact of Female Labour Force Participation Rate (FLFPR) on child schooling is still a matter of debate. From the studies of Pandey (1990), Jeejeebhoy (1993), and Mukhopadhaya (1994) it is found that in general, FLFPR has a depressing effect on child schooling. This is partly because the daughters have to shoulder the responsibilities of household chores and sibling care and partly because the lack of maternal attention and supervision discourages children's, particularly girls' schooling. An important result has been found in the village level study of Sengupta et al (2002) for West Bengal. While they find mothers' work participation has a significant negative effect on daughters' school enrolment, it also has negative but not significant impact on grade completion. However, the factor does not appear to have a significant impact on the probability of dropout or retention in school. This has also been confirmed by Jaychandran (2001). The positive relationship between FLFPR and schooling of children, especially of girls, is however not found in Andhra Pradesh where high rates of FLFPR coexist with a high incidence of child labour (highest in India) and relatively low level of school attendance rates (Jaychandran, 2001 cited in Dreze and Sen, 2002; Rao and Reddy, 2003). A recent study (Reddy and Rao, 2003) in this area also does not find any significant impact of female work participation on the enrolment ratio of both male and female. They have concluded the result by using household level data for

twelve villages in three districts of Andhra Pradesh. The studies of Psacharpoulos et al (1989) and Tansel (1997) also note that the positive effect of addition to resources from mothers' earnings can overshadow the negative impact of mothers' absence from home. Similarly, Dreze and Sen (2002), while discussing the schooling revolution in Himachal Pradesh, opined that a high level of female labour force participation raises the economic returns to female education and it is also revealed that status of women, including their educational status, will improve as a consequence of their increasing participation in labour market and development process (Rekha Wazir, 2000).

Parental education emerges as a significant determinant in household education decisions. All the field studies done under the UNDP programme confirm this result (Bhatty, 1998). It is found in rural Punjab that illiteracy of the decision-making members in the family is an important reason for continued perpetuation of illiteracy among women (Thind and Jaswal, 2004). They also noted 'the resistance was very much based on the out-dated beliefs that a woman's place was inside the house and education was of no use to her'. Jeemol Unni (1998) in her study in rural Gujarat found that the education of both parents is positively associated with the schooling of the child. However, the gender differential that she observed was very interesting. While the fathers' education positively influences boys' schooling, the education of the mother has a strong positive influence on the education of the girl child only.

In a village level survey-based study in Orissa, Sailabala Devi (2001) observed that both father and mothers' education have a positive significant influence on the probability of enrolment in primary and upper-primary levels for boys and girls. But mothers' education has a stronger influence than that of fathers on girls' enrolment. Parental level of education was also found to be significant in lowering the dropout rates. Sengupta et al. (2002) found similar result in their study in West Bengal. Malathy Duraisamy (2000) in her micro level study in two selected districts of Tamil Nadu found that a 10 percent increase in fathers' education leads to a 1 to 3 per cent increase in the probability of being enrolled and 0.1 to 0.2 percent increase in the educational attainment. A similar trend was also found in case mothers' level of education.

The study of Anuradha Pande (2000) in the rural hill areas of Uttar Pradesh revealed that the literacy level of the community as a whole has a significant impact on children's education- higher the literacy level, lower is the number of dropouts and non-enrolled children. The author also found it remarkable that fathers' education had a much greater influence on a child's chances of enrolment in school, especially of a girl child. Interestingly, it was found that the relationship between mothers' literacy level and educational status of a child is not significant unlike most other studies. An interesting result in this respect has also emerged in a recent study (Vaid, 2004) where it has been found that gender and parental level of education is only significant for father's literacy at the stage of child's transition from illiteracy to some primary school. She thus concluded that unlike the other study, a more educated mother would lead to a higher education for the daughter does not hold. It should be noted that she used the National Election Study data set (1996) of the Centre for the Development Societies, New Delhi.

However, Thomas (2000) in a study on selected backward villages in Kerala also found that across the villages, the proportion of never-enrolled children in the school going age-group (5-14 years) did not bear any systematic relation to overall literacy level. The study of Llyod and Brandon (1994) in Ghana has emphasized that mothers favour the education of

sons over daughters because of their greater dependence on sons in their old age and their expectation of greater monetary returns from investment in sons.

Kiran Bhatty (1998) in the article 'Educational Deprivation in India - A Survey of Field Investigations', has concluded that parental motivation is generally high (PROBE Survey also supported this proposition) particularly for male children but, for female children, however, it is still an obstacle. Job aspiration and improvement status are the main determinants of parental motivation for male education; in the case of female education, these motives have less influence. Jabbi and Rajyalakshmi (1997) found in Bihar that the reasons for non-enrolment of children were more economic and home related in the case of girls and more school related in case of boys.

School enrolment and attainment also bears a significant relationship with the size and composition of the family. It has been noted by several studies that there exists a negative relation between the number of children and child schooling, because the additional burden of children may put a restriction on family resources hampering child schooling. In this respect, there are many studies relating to India. Jejeebhoy (1993) in rural Maharastra found that an older girl child with many younger siblings has a corresponding lower chance of schooling. The same results were found in the study of Psacharpolous et al, 1989 and Pandey, 1990. The lower chance of schooling of a girl child is particularly true, if there are younger male children in the family. Studies from other countries also support the result. Knodel and Wongsith (1990) in their study in Thailand found the similar negative impact of a girl child belonging to a larger family. Debi's study (2001) in rural Orissa observed that larger the number of infants and old persons, lower would be the enrolment rate and grade attainment of female children. By using the state level Indian data Reddy (1995) found the similar negative impact of the variable at the state level for the year 1991.

Krishanji (2001), by using the secondary level data for the inter district analysis in Andhra Pradesh, has used child-woman ratio as an explanatory variable to predict child enrolment at primary and elementary level. It was found that the variable has an adverse effect on enrolment of female children in the age group of 5-9 years. But the same was not found significant in explaining the enrolment ratios of both male and female children belonging to the age group of 9-14 years. This analysis thus, suggests that enrolment at primary level is more responsive to the number of siblings in the family. On the other hand, Jeemol Unni (1998) found somewhat different result in rural Gujarat. Unni, focusing on the schooling decision, observes the determinants of schooling and estimates the least square equations separately for boys, girls and all children. On estimation, it was found that the number of children per household did not show any significant result upon any of the three categories of children. Similarly, Duraisamy (2001) by using the village level data in Tamil Nadu found that the number of children in the household did not exert a statistically significant effect on school enrolment and grade attainment of both boys and girls at the primary level. But the variable was found to be significant while exerting a negative influence on enrolment and grade attainment at the secondary level.

Survey Area: Selection and Description

West Bengal, among the Indian States and UTs, has certain unique characteristics so far as literacy and educational achievements are concerned. The State was in the third position after Kerala and Delhi among the other major States in 1951 in terms of literacy rate. Now in

2001, it has come down to the ninth rank among the twenty-one major States in India (Census of India; different years). The State could barely manage its position around the national average throughout the last five decades (Census of India; different years). The analysis of Education Development Index of NUEPA (based on the DISE data) categorically ranked the State at thirty-second and thirty-third as per the Educational Development Index (EDI) constructed by the NUEPA for the year 2005-06 and 2006-07 respectively (NUEPA 2007, 2008). Thus the question remains as to why the state of West Bengal with a moderately high literacy rate at 68.64% (ninth among the twenty-one states in 2001) has conflicting reality in the field of elementary school education. Accordingly, in analysing the problems of educational attainment, the State has been chosen in this study. Again, the district wise EDI also brings forth a painful picture for the State. All the nineteen districts of West Bengal have been ranked as lowly performed district (NUEPA 2007, 2008). Malda, being at the bottom-most position among the districts in this respect, is closely followed by Murshidabad and Uttar Dinajpur respectively.

The present paper focuses on the district of Uttar Dinajpur, the least literate district in the state and ranked at 518 out of 593 districts in India in terms of literacy rate. At the same time, it is placed at the rank 505 out of 569 districts for which EDI has been calculated.

Out of ten least literate blocks of West Bengal (2001), five were found in Uttar Dinajpur district. Again as per the Census 2001, there are as many as 37,956 inhabited villages/census mouzas in West Bengal. The villages under the seventeen districts have been arranged by their literacy rates and by calculating the literacy rate (person) of each of the villages in West Bengal, the villages with literacy rate below 25 per cent have been identified. As such, the State has 843 villages showing this minimum 25 per cent literacy rate. Uttar Dinajpur with 207 villages in this category tops the list, most of which (182 mouzas i.e. 88 per cent of the total deprived mouzas) is concentrated in Islampur sub-division of this district. All these explain the educational backwardness of this particular district.

Considering all these, the primary survey was carried out in Islampur subdivision of Uttar Dinajpur district of the state. In Islampur Subdivision, Goalpukur-I block with 31.6% (as per Census 2001) literacy rate and Chopra block with 43.29% literacy rate have been found as the least and highest literate blocks of the Islampur subdivision which were selected in order to capture the variational literacy development in the district. Two villages (mouzas) from each of the blocks have been chosen. For this, the villages as per the literacy rate of 2001 have been taken into account, of which one low literate village and another comparatively literate village has been purposively selected from each block with a view to capture the regional variation in educational development.

A priori information on socio-demographic characteristics of the study villages are analyzed from the data as it is found in the field survey for a better understanding of the nature of the problem. A comprehensive picture is being depicted in Table 1.

TABLE 1

Household and Children in the Survey

Indicators	Kantigach	Juropani	Dangipara	Uttar Bhagalpur	TOTAL
Total No. of Households	169	106	149	172	596
No of Households with some Schooling age (5-14Yrs) Children	135	81	122	139	477
No of Households with no Schooling age (5-14Yrs) Children	34	25	47	33	139
Size of the Sample Households	30	30	30	30	120
% of the Households Surveyed	22.2	37.0	24.6	21.6	25.2
Total No. of 5-14 years age group children in the villages	282	211	289	299	1081
Children covered in the Survey	59	72	58	61	250
% of children Surveyed	20.9	34.1	20.1	20.4	23.1

Source: - Field Survey

Kantigach and Juropani are the two lowly literate villages from Goalpokhar-I (low literate block) and Chopra block (high literate block) with a dominant Muslim and Scheduled Tribe population respectively. Dangipara (from Goalpokhar-I block) and Uttar Bhagalpur (from Chopra block) villages are the two comparatively highly literate villages from the two blocks respectively. The population distribution of these two highly literate villages reveals that the Dangipara is a Scheduled Caste concentrated village while the second has a concentration of general caste population. Thus the four villages altogether represent the different segments of population distribution of the district.

For the detailed survey, a complete enumeration (household census) of each and every household in the villages was first conducted. From the household census, the data on school-going age (5-14 yrs) children was primarily collected. The procedure facilitated in distinguishing the households categorically into two groups - households with school-going age (5-14 yrs) children and households that do not having any children belonging to this category. As such 135 households in Kantigach, eighty-one in Juropani, 122 in Dangipara and 139 in Uttar Bhagalpur were found to have children in the schooling age group (Table-1). From the listing of these households, thirty-two households from each village have been chosen by random sampling method for a detail household survey. It may however be noted here that thirty households from each village have actually been surveyed keeping two households as additional if at the time of survey some of the chosen households were not available. It has been calculated that out of total 1081 children in 477 households of four villages, 250 were covered under the detail survey thereby covering 23.1% of the total children in this respect. Again, out of total 477 households of four villages with some schooling age children, 120 households have been surveyed and as such a 25.2% of the total households comprise the actual sample size in the survey process.

All the villages are almost equally equipped with a primary school within the village, although the other basic amenities like, road, bus connectivity, electricity facility, are quite different. The detail of the same has been discussed in chapter-VI. The respondents were primarily the head of the family and thus comprise the male members of the family.

The Variables in the Logit Model

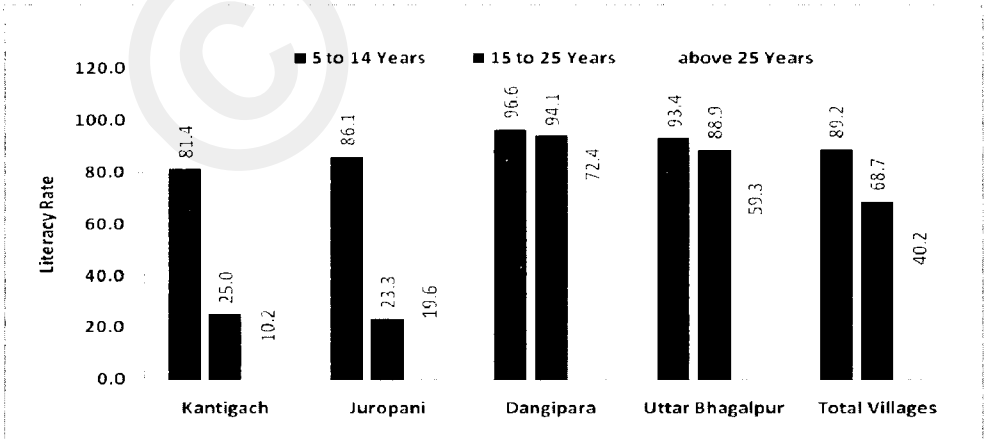
Household Income/Expenditures

Household income, as it has been pointed out, is an important economic variable that bears strong statistical relationship with educational attainment. But at household level it is rather difficult to assess the family income in the absence of accurate information. It has been observed during the survey that there is a huge discrepancy between income earned (Y), consumption (C) and savings (S) of a particular household. Three types of information were asked - total earnings, total expenditure and total savings. An interesting observation is that total expenditure and total savings altogether was much higher than the total earnings for most of the households. This indicates that there is either a tendency for the respondent to provide inaccurate information or that they are unable to calculate their earnings on a monthly basis.

Accordingly, an alternative process was adopted to capture the issue. For this only the expenditure level of the households was retained for the sake of analysis. Though it is not possible to include all the parts of expenses made by a household, five major expenditures were built-in that were commonly incurred by all the families. They are - expenses (annual) on food, clothing, housing, education and other consumer goods. Owing to the irregular nature, authenticity response on health expenditure appears to be doubtful. As such, health expenditure, although an important part, has not been included. On the basis of information on the annual expenditure, monthly per capita expenditure is calculated.

FIGURE 1

Literacy Rate of the Villages by Age Category



Source: - Calculated from Field Survey

Taking expenditure of the households as a surrogate of income, it is seen that in all the villages, expenditure on food is a major share of total expenditure. In the low literate villages (Kantigach and Juropani) more than 75 per cent of total expenditure is accounted for by food expenditure. In Dangipara, it is the lowest followed by Uttar Bhagalpur and Juropani. This high proportion of food expenditure in total expenditure has an important implication. It is generally observed that lower the level of income, the higher will be the proportion of expenditure on food. As such it seems that, the village Kantigach suffers from acute poverty (monthly per capita expenditure is found to be the lowest at Rs.333, Table 2) although the other villages also have the problem of persistent poverty too. Except Dangipara, in all the villages, it is the expenditure on clothing that occupies the second largest share in total expenditure. In Dangipara, educational expenditure gets more prominence, standing next to food expenditure. The above information regarding expenditure of households is a pointer to the fact that the households in most villages have to earn for their basic needs of food and clothing, thus making education of a child an option and not a necessity.

For a detailed understanding of expenditure of the households, the present exercise has calculated an induced expenditure variable apart from traditional monthly per capita expenditure (MPCE). This is educational expenditure as proportion of total expenditure and per capita educational expenditure which is shown in Table 2. It is seen from the table that all the induced expenditure variables bear strong relationships with the overall literacy rate at village level. However, all expenditure variables are strongly correlated with each other. Accordingly, introduction of all these independent variables may precipitate the problem of multi-colinearity in the regression model. For this, the conventional method of checking the multi-colinearlty problem will be applied.

TABLE 2
Village Level Expenditure

Name of the Village	Total	Total Population	Total Literacy Rate	Monthly Per capita Expenditure	Educational expense as % of Total Expenditure	Per capita Educational Expenditure
Kantigach	722440	181	37.8	333	4.72	775
Juropani	865775	186	45	388	6.73	987
Dangipara	1027695	199	85.2	430	8.08	1483
Uttar Bhagalpur	767210	162	76.8	395	7.36	1065

Source: Calculated from Field Survey

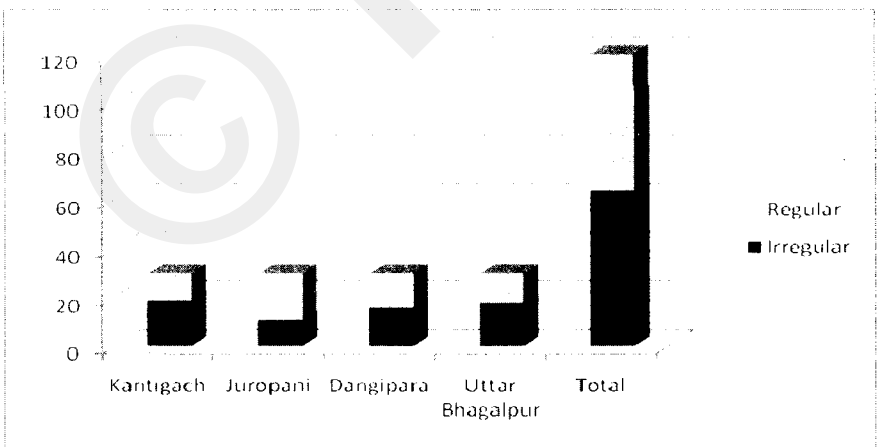
Occupational Pattern and Literacy Attainment

A common classification of occupational pattern is to distinguish between earners as agriculture labourer, cultivator, household industry worker and other worker (Census classification). This can be broadly divided into agricultural households and non-agricultural households. In the present study differential occupational pattern is also captured with classification of the households into two new categories – those who have regular/ permanent income and the other with irregular income, irrespective of the total income earned by the households.

In order to differentiate between regular and irregular nature and source of income, assessment of households into two broad categories depending upon their nature of work has been undertaken. Firstly, the self employed workers, salaried earners, working in unorganized sectors or in any other types of work that generate a steady flow of income and, secondly, the workers having uncertainty so far as flow of income is concerned, i.e. those who have to rely on seasonal income flow. In the latter category, one usually finds the small cultivators, agricultural labourers, semi-skilled labourers. Thus, occupational pattern as reflected by patterns of flow of income help in distinguishing between households which have the security of a steady income from those who do not. The logic behind such exercise is that a household earning income on a regular basis will enjoy economic security along with a guarantee of a future income.

Briefly, out of 120 households in four villages, fifty-six have been found to earn a regular income and the remaining sixty-four households are subject to fluctuations or irregularities in income earning. In Juropani, in spite of having lower MPCE, more than 60 percent of the households (19 out of 30) earn income on a regular basis. It has earlier been noted that most of the earners of this village are engaged as tea garden workers getting their wages either monthly or on weekly basis while also having access to the Provident Fund, rations, medical facilities, etc. On the other hand, in Kantigach, the workers frequently migrated to other districts and states for earning and thus being subjected to uncertainty in income earning and often having to face deception from employers. Certainty in getting employed in a distant region is also dependent on several factors like networking, information base, security, connectivity, etc., thus making the process very time dependent. In the other two villages of Dangipara and Uttar Bhagalpur, there is a blend of regular and irregular income holders with the latter being higher than the former in both the villages. The findings are provided in Figure 2.

FIGURE 2
Occupational Pattern of the Households



Source: Field Survey

Opportunity Cost of Sending the Children to School

In studying the schooling characteristics of the children, it appears that where income poverty is more acute and where there is opportunity for a child to be engaged in paid work, i.e. high opportunity cost, the parents are under pressure to choose one option from a set of two - either to send the child to school or to send him/her to work to supplement family income. The positive association has emerged in different studies (Chakraborty, 2006; Duraisamy, 2004; Dholakia 2003; Reddy and Rao, 2003; Nambissan and Sedwal, 2002; Devi, 2001; Krishanji 2001, etc).

On the other hand, Nidhi Mehrotra (1995) on the basis of field survey from Kerala, Uttar Pradesh and Himachal Pradesh, notes that evidence of child labour does not by itself establish that poverty is the prime reason for their not attending school (cited in Bhatty, 1998). Santha Sinha (2000) in her article noted that "—what is found is that not only are literacy rates similar between groups having dissimilar income levels but also vary widely between groups with same income levels. In other words, situations where better off families have engaged their children in work while parents with lower incomes have retained their children in school are not uncommon." It is also observed that there are factors other than the purely economic compulsions arising out of poverty, which dictate whether a child is sent to work or to school.

TABLE 3
Work Status Children

Name of the Village	Total Children	Children in Paid Work	Children not in Paid Work
Kantigach	30	13	17
Juropani	30	16	14
Dangipara	30	8	22
Uttar Bhagalpur	30	10	20
Total (4 Villages)	120	47	73

Source: Field Survey

For a priory analysis, the work status of up to eighteen years has been collected and the same is depicted form the survey data. It is observed that out of total 120 households, forty-seven children were found to be engaged in paid work. The extent of children in paid work is highest in Juropani (tea garden dominated tribal area) followed by Kantigach and Uttar Bhagalpur. The households are assigned the value "1" if at least 1 child is found in the labour market and otherwise "0", thus assigning it as a qualitative dummy variable with binary values.

Dependency Ratio

Among the family members, children belonging to the age group of 0-5 years and the elderly population of sixty years and above are economically dependent in the sense that they are non-earning members in the household. The presence of this group of family members creates two types of dependencies. As they are non-earners, they are financially

dependent and their financial burden is usually borne by the adult earners. This may be termed as economic dependency of a household that may have some effect on child schooling and literacy rate of the family. Again, physically, they are also dependent (except some elderly members) on other able-bodied members of the household since the latter is expected to take care of the sick and elderly in the family. This physical dependency may again be termed as household dependency which is a non-financial burden. This non-financial burden is usually shouldered by other non-earners, primarily by the school going age children or by the female members of the family unit. It may generally be assumed that larger the dependency (both economic and household dependency) of a family, lower will be the chance of a child to be schooled. Considering this assumption, the extent of both types of dependency ratio has been incorporated as an additional explanatory variable in the regression exercise. A brief picture of the dependency character as obtained from the sample households is depicted in Table 4.

TABLE 4
Village Level Dependency Ratio

Name of the Villages	Schooling age 5-14 yrs Children	Dependent member	Total Earners	Household dependency Ratio	Economic Dependency Ratio
Kantigach	59	48	42	0.81	1.14
Juropani	72	47	72	0.65	0.65
Dangipara	58	28	55	0.48	0.51
Uttar Bhagalpur	61	35	52	0.57	0.67
Total (4 Villages)	250	158	221	0.63	0.71

Source: - Calculated from Field Survey

It may be noted here that household dependency ratio is calculated as ratio of dependent members to schooling age children following the above mentioned argument. The economic dependency has been estimated by the ratio between the dependent members to earners in the family. It is seen that both household and economic dependency ratio are the highest in the least literate village of Kantigach followed by the higher literate village. The ratios have an explanatory capacity in capturing the variations in literacy character of the households, thus amply justifying the inclusion of this variable in the regression analysis.

Role of Female Members in the Household

Mothers' role is undeniably significant in determining the educational status in a family. In order to elucidate this crucial role, female Work Participation Rate (FWPR) has been considered in the model as an explanatory variable acting on the premise that it will negatively impact upon the educational outcomes of the children in the household. Taking FWPR for all the villages under survey, around 19 per cent of the female members were found to be working. A very low rate of FWP was found in the village of Kantigach where the literacy level is also very low and the same is reflected in the other villages too. This however is not in line with economic arguments present in literature where low literacy of women is associated with high WPR especially in informal sectors. However, the figure is for all the

villages which may or may not be supported at household level. The regression coefficients will provide more robust results. In the regression model, FWPR has been incorporated as a qualitative dummy variable assigning the value '1' if any female member is working and '0' otherwise.

TABLE 5
Work Participation

Name of the Villages	No of Earning members			WPRF
	M	F	Total	
Kantigach	40	2	42	2.53
Juropani	35	37	72	40.22
Dangipara	47	8	55	8.6
Uttar Bhagalpur	35	17	52	22.67
Total (4 Villages)	157	64	221	18.88

Source: Calculated from Field Survey

Parental Educational Level and Schooling of Children

Studies on educational status of the parents show that mothers' educational level has a positive relationship with the households' educational attainment and accordingly this has also been introduced in the present schema of analysis. It has been found from the sample data that out of total 120 households there were 116 mothers whose level of education had been recorded (Figure 2). Out of this, fifty-eight were found to be literate of which thirty-six were literate with below primary level of education, fifteen had received education till upper primary and the remaining seven mothers were found to have moved beyond upper primary level of education. Educational level of mothers in Kantigach village is most appalling with only seven mothers (out of twenty-nine) who are literate with below primary level of education.

Parental Empowerment

Over the past few decades the empowerment of women has been an important issue that has been adopted not only in academic research but also in policy matters. Among all the factors that can empower women, education is understood to be the all important factor that can enhance the capability of the person thereby empowering the person. To quantify the level of empowerment, an Index of Parental Empowerment as suggested by Chakrabarti and Sharma Biswas, (2008) has been adopted to serve the present purpose. The index takes into account whether decision within the household is taken by the respondent (mother) herself or jointly with husband or other family members (Yes = 1; No = 0). This index has been constructed for two dimensions - index for household matters (e.g. cooking, health, allowed to have money) and index for freedom to go outside the house (e.g. freedom to go to the market, visiting relative/friend's house, right to spend money, right to purchase jewelry, decision to stay at parental house). Following this, this index has been introduced as a variable in a modified form. For this, a simple query covering four aspects of decision making had been included under the principle query. The four specific issues with three pre-defined

possible responses were – who decide/s in the event of enrolment of children, continuation of child education, economic matters and matrimonial and other socio cultural affairs. Although there are other related issues on which decisions are usually taken, but for capturing the educational purpose, only these four specific issues have been covered. The possible three responses were - in some issues father alone, in some issues mother alone and some decisions may be taken jointly by both parents. Each parent is allotted one mark for taking part in decision making sphere. As such, a parent (father/mother) may be assigned a maximum of four marks if he/she takes part in all the familial issues and in each village 120 is the maximum level of score (Full Score; if all the thirty parents are alive) that the fathers or the mothers of that particular village can obtain. Finally, on the basis of the score/marks obtained by each parent in a household, an index assigned to each parent of the households has been calculated as follows:

$$\text{Parental Empowerment Index (PEI)} = \frac{\text{Marks or Score Obtained by the Parent}}{\text{Total Score}} \times 100$$

This index has been termed as Parental Empowerment Index (PEI). Accordingly, if a parent takes part in all the four specified decision-making spheres, then his/her empowerment index will be 100 per cent. Finally, after calculating the value of the index for both the parents in a particular household, it is again observed whether the value of the index of mother is greater or equal to that of father. In that case, it is obvious that the mothers are enjoying equal or even more decisive power in the family and accordingly it may be said that the mothers are empowered in that very particular family. In technical terms, if mothers are empowered then they are assigned with yes or '1' value and '0' if not.

The value of the index for the four villages is shown in Table-6. Noticeably it is seen that in economic matters, the fathers' role is more dominating than the other issues. Considering such an interesting association of this PEI with literacy attainment, it has been decided to incorporate the index as an additional explanatory variable to see the role of women empowerment in educational attainment.

In order to identify the underlying factors that are responsible for educational backwardness or in contrary educational attainment, certain possible exogenous factors may be considered (household related socio-economic demand side factors and school related supply side factors such as the state of educational infrastructure, staffing and amenities). Actually the phenomenon of educational backwardness arises owing to the inadequate demand for and/or inadequate supply of schooling. The supply of schooling is a state subject and is not a sufficient condition for increase in the levels of educational attainment. Although the supply side factors are necessary condition for child schooling, it is the socio-economic conditions at the household level that are more crucial in raising the demand for child schooling (Krishnaji, 2000) as such may be considered as an enhancing attribute for literacy attainment too. In a paper (Chakraborty, 2006), the schooling variation of children has been well explained by the household characteristics only.

TABLE 6

Construction of Parental Empowerment Index

Area of Empowerment	Kantigach		Juropani		Dangipara		Uttar Bhagalpur		All Villages	
	Father	*Mother*	*Father*	*Mother*	*Father*	*Mother*	*Father*	*Mother*	*Father*	*Mother*
Enrolment of children	23	14	23	27	25	28	27	21	98	90
Continuation of education	22	14	25	25	23	28	27	20	97	87
Economic matter	28	6	25	27	27	27	30	21	110	81
Matrimonial/ other socio-cultural purpose	27	15	25	29	26	29	28	24	106	97
Total Score of the village	100	49	98	108	101	112	112	86	411	355
Full Score	120	116	116	120	120	112	120	116	476	464
Index of Empowerment	83.33	42.24	84.48	90	84.17	100	93.33	74.14	86.34	76.51

Source: Calculated from Field Survey

Considering the above, among these two broad categories of explanatory variables, it has been decided to proceed with a narrower model. School level supply side variables are not included in the present analysis. In the study, only four villages are surveyed and those are almost equally provided with one pre-primary school, one primary school and one Shishu Shiksha Karmasuchi. There is very little variation in this respect. Moreover, non-participation of school is very common within a village being accessed by equal educational facilities and it is also common that within a family, schooling of children is not homogeneous. For this, the demand side household-related variables have primarily been assessed for the model.

It is expected that as proportion of educational expenditure to total expenditure (EDNTOTEX), monthly per capita expenditure of the household (MPCE), educational level of father and mother (FTHEDN, MTHEDN) increase, the probability of never enrolled and school dropout will decrease continuously as a function of these variables and households with regular income (INREGIRREG) and with mothers' empowerment will also show the increase in the probability of never enrolled and school dropout. However it is assumed that increasing economic dependency representing the ratio of non-earners to earners (ECONDEP) and household dependency measured as the ratio of old age and sibling members to total number of schooling age children (HHDEP) will lead to an increase in the probability of the response variables and it will also be higher for the households where the female members work (FWP) in the paid market and where there is an opportunity for the children to be engaged as child labour (OPTNTCOST).

TABLE 7
The Description of Variables

Variables	Notation	Description
Binary Response		
Never enrolled	PBENRLMNT	1= if at least 1 child within a household was never enrolled, 0= no children within the household were ever enrolled
Dropped out of school	PBDOSCH	1= if at least 1 child within a household dropped out of school, 0= no child within the household dropped out of school
Independent Covariates		
Economic dependency ratio	ECONDEP	Ratio of non-earners to earners at household level
Proportion of educational expenditure	EDNTOTEX	Educational expenditure as a % of total expenditure
Mothers' empowerment	EMPMTH	1= if mothers' empowerment index is greater than or equal to that of father's, 0 = less than that of father's
Fathers' education level	FTHEDN	education in completed number of years
Female work participation	FWP	1= if female members work, 0= no female works
Pattern of income	INREGIRREG	1= if the main income of a household is regular, 0= if the main income is not regular
Mother's education level	MTHEDN	Education in completed number of years
Opportunity cost of schooling	OPTNTCOST	1= if there is any children in the age group below 18 years and working, 0= if there is no children in the age group below 18 years and working
Monthly per capita expenditure	MPCE	Monthly per capita expenditure at household level (in multiples of Rs.10)

It is important to note here that in a small sample size of 120 households, the number of predictors (ten explanatory variables proposed to be included) in the model is large. A small sample with a large number of predictor variables can cause problem of model 'overfit' in the analysis. Among others, a regression model is a situation where the aim is to find the 'best', most 'parsimonious', model to predict the dependent variable or explain the variation. In such a situation, the resultant model will more likely be numerically stable and also more easily be generalized (Hosmer and & Lemeshow, 2000, p. 92). Hosmerand Lemeshow (2000, p. 95) suggest to perform a univariate analysis of each potential independent variable. Those whose univariate test has a p-value < 0.25 should be considered as a

candidate for the multivariable model. Applying this methodology of variable selection, female work participation (FWP) and empowerment of mother (EMPMTH) has been excluded from determining the probability of never enrolment (PBENRLMNT).

Result and Discussion

The results in different dimensions are being presented below. All statistics reported herein use three decimal places in order to maintain statistical precision. It may also be noted here that Evaluations of the Logistic Regression Model has been carried out by testing overall significance of the model, Hosmer and Lemeshow goodness of fit, predictive accuracy of the model, multi-colinearity in the model.

In the present analysis, the binary response variable in the first model (Model-I) is likelihood of dropout and in second model (Model-II) the response variable is likelihood of non-enrolment. The result has been analysed in two distinct ways. One is by observing the Wald chi-squared statistics and the second one is in terms of odds ratio.

Table-3 presents the results for the predicted logit of school dropout and Table-4 for the never enrolment. By observing the Wald chi-squared statistics, the result shows that the important variables contributing to the probability of dropping out of school are – Proportion of educational expenditure (EDNTOTEX), Pattern of Income (INREGIRREG), Mother's education level (MTHEDN) and Opportunity cost of schooling (OPTNTCOST).

Similarly, from the regression coefficients and its associated significance level in Table-4, the Wald chi-squared values for Fathers' education level (FTHEDN), Monthly per capita expenditure (MPCE) and Household dependency ratio (HDEP) are significant in predicting the probability of never enrolment. It may be noted that these variables were not at all significant in explaining the log of odds of the probability of dropout. It thus signifies that the socio-economic correlates vary for explaining the different school level outcome attributes (e.g. dropout and never enrolment are being predicted significantly not by the same variables). It may however be noted that the household related socio-economic variables are important in determining the probability of dropping out of school compared to enrolment/non-enrolment decision taken by the households. This opens the scope of including supply related schooling facilities as additional variables in determining the enrolment decision of the households. However it is beyond the scope of the present analysis.

The sign of the estimated β coefficients (indicating sign of partial effects of each predictor) corresponding to the significant variables is very important in analyzing the logit result. According to the first model (Table-8), the log of the odds of a child dropping out of school is inversely related to proportion of educational expenditure (EDNTOTEX), Pattern of income (INREGIRREG) and Mother's education level (MTHEDN) and positively related with Opportunity cost of schooling (OPTNTCOST). In other words, the higher the proportion of expenditure on education, the less likely it is that a child would be dropped out of school. Similarly, the higher the chance of a household to have regular income, less likely it is that a child would be dropped out of school. The households where the level of mother's education is higher, it would be less likely that the children of the household will drop out of school. Again, in a situation where there is an opportunity of children to be engaged in child labour market, there will be a higher chance that a child is dropped out of school.

TABLE 8
Variables in the Equation (Model-I)

		B	S.E.	Wald	df	Sig.	Exp(B)
1		2	3	4	5	6	7
Step 1(a)	ECONDEP	.066	.363	.033	1	.856	1.068
	EDNTOTEX	-.258*	.107	5.784	1	.016	.773
	EMPMTH	.743	.640	1.347	1	.246	2.102
	FTHEDN	-.086	.134	.409	1	.522	.918
	FWP	-.363	.611	.352	1	.553	.696
	INREGIRREG	-1.350*	.649	4.330	1	.037	.259
	MTHEDN	-.611*	.261	5.469	1	.019	.543
	OPTNTCOST	1.476*	.594	6.172	1	.013	4.374
	MPCE	-.036	.037	.952	1	.329	.964
	HDEP	-.215	.615	.122	1	.727	.807
	CONSTANT	2.088	1.540	1.839	1	.175	8.067

Variable(s) entered on step 1: econdep, edntotex, empmth, fthedn, fwp, inregirreg, mthedn, optntcost, mpce, hdep.

On the other hand, the log of the odds of a child being never enrolled in school is inversely related to Fathers' education level (FTHEDN) and Monthly per capita expenditure (MPCE) thereby representing that a higher level of father's education and monthly per capita expenditure of the households would lower the probability of never enrolment of the children and the same would be higher if household dependency on the children of schooling age becomes higher.

TABLE 9
Variables in the Equation (Model-II)

		B	S.E.	Wald	df	Sig.	Exp(B)
1		2	3	4	5	6	7
Step 1(a)	ECONDEP	.455	.437	1.087	1	.297	1.576
	EDNTOTEX	.040	.108	.138	1	.710	1.041
	FTHEDN	-.660*	.277	5.693	1	.017	.517
	INREGIRREG	-1.265	.804	2.477	1	.115	.282
	MTHEDN	.126	.232	.293	1	.588	1.134
	OPTNTCOST	-.642	.741	.749	1	.387	.526
	MPCE	-.159*	.067	5.720	1	.017	.853
	HDEP	2.179*	.928	5.505	1	.019	8.833
	CONSTANT	2.950	2.199	1.799	1	.180	19.102

a Variable(s) entered on step 1: econdep, edntotex, fthedn, inregirreg, mthedn, optntcost, mpce, hdep.

The Use of Odds Ratio – A Discussion

To determine the significant factors by observing the Wald Chi-square value and to make a judgment over the direction of relationship by assessing the sign of the estimated β coefficients, is just the beginning of interpretation of logistic regression coefficients. Contribution of significant explanatory variables to the dependent variable is the central point that needs to be discussed in the interpretation of logistic regression coefficients. As an alternative of representing the β coefficient directly, the parameter estimates of a logistic regression can be interpreted in terms of odds ratios which is simply the exponential transformation of β coefficients, i.e., odds ratio = exp(β). The result by using the odds ratio is briefly discussed below.

Household Expenditure

The estimated β coefficient of MPCE here is as low as -0.159 that results in an odds ratio equal to 0.853. With respect to odds, the influence of each predictor is multiplicative. Thus, for each 1 unit (Rs.10.00, because MPCE is measured in multiples of Rs.10) increase in MPCE the predicted odds of never enrolment decreases by a factor 0.147 (1 − 0.853). This explains that a unit increase in MPCE (Rs. 1.00 because MPCE is measured in rupees) will lower the odds of the event that at least one child within a family is never enrolled in school by 14.7%.

Educational Expenditure

Educational expenditure, as proportion of total expenditure (in percentage term), remains significant in explaining the likelihood of dropout only. The odds ratio is = Exp (β) = $e^{-0.258}$= 0.773 which explains that for each 1 per cent increase in Educational expenditure, the odds of dropout of school by one or some children within a household decrease by 22.7 per cent (1 − 0.773) or by a factor 0.227, adjusting for other variables in the model. Comparing the above, one can say that MPCE, which is calculated from total annual expenditure of the family (crude measure of family income), remains significant in determining the probability of never enrolment but has no impact in determining the probability of children's dropout from school. While proportion of educational expenditure, although significant in determining the probability of children's dropout from school, has been practically insignificant in determining the probability of never enrolment.

Parental Education

The odds ratio (Table-4) corresponding to β coefficient of father's education is 0.517 (<1) which indicates that the odds of never enrolment compared to all children enrolled decreases by a factor of 0.483 (1-0.517) for each one year of additional increase in level of father's education, controlling for other variables in the model. Similarly, the odds ratio (Table-3) corresponding to β coefficient of mother's education is 0.543 (<1) which indicates that the odds of dropping out compared to all enrolled children attending school decreases by a factor of 0.457 (1-0.543) or by 45.7 per cent for each one year of addition to level of mother's education, controlling for other variables in the model.

Nature of Income

Nature of income has been assumed to be a dichotomous covariate in our model. It has been assigned with the score 1 for the households with regular pattern of income and 0 if the main income of the family is irregular. The β coefficient of this variable (-1.350) is significant for predicting the probability of dropout. The corresponding odds ratio is 0.259. We would therefore say that the odds of one or some children within a household compared to all enrolled children attending school are decreased by a factor of 0.259 when the respondent's main income is regular compared to those with irregular income pattern, controlling for other variables in the model. Briefly, it suggests that in households with regular income pattern, less likely will be the chance of school dropout and vice-versa provided the other covariates of dropping out remains the same.

Opportunity Cost of Schooling

The availability of work opportunity where the children may be engaged is often reason enough for households to withdraw their child/children from school and send them to the labour market as wage labourers. In economic terms, this is opportunity cost of sending the children (i.e. the income to be accrued from child labour) which has to be sacrificed if instead the parents send their ward/s to school. This opportunity cost of schooling is not directly calculated here. Instead, a dummy has been introduced in the form of yes/no category. If it is found that one or some schooling age children in a household work in the labour market then the household was given a score 1 and 0 otherwise with the assumption that it will have an adverse impact on schooling outcome. The variable is found to be significant in predicting the dropout pattern of the children within a household although it is not found to be significant in predicting the enrolment decision. The official age (5+ years) of child to be enrolled in the first grade of any primary school in this state does not actually appear to be favourable for a child to work as a wage earner. Accordingly, statistical result also supports the logic. However, in the advanced stage of primary grades and during the upper primary schooling, the enrolled children may be withdrawn for financial support of the family. The regression coefficient has the positive sign (1.476) which indicates that the presence of job opportunity for children will increase the likelihood of dropping out of school. The corresponding odds ratio is 4.374 representing that the problem of dropout of school will be four times more likely if there is job opportunity of children for which the households send their ward/s to work rather than to send their ward to school.

Household Dependency

Household dependency has been constructed as a ratio between the total number of siblings and old age members to total number of schooling age children [(siblings+old age)/ children] and introduced in the regression equation as a continuous covariate with the assumption that it will adversely affect the schooling behavior/decision. Statistical findings indicate that this non-financial burden shouldered by the schooling age children in a family is significant in predicting the probability of never enrolment while making it insignificant for the dropping out of school as such. The regression coefficient (2.179) and corresponding odds ratio (8.833) suggests that for each one unit of increase in household dependency ratio there will be an increase in the odds of never enrolment compared to all children enrolled in school by about nine times.

Summary and Policy Measures

This section brings the present Article to a logical conclusion while outlining certain policy prescriptions towards educational attainment. The study has attempted an investigative study to determine the factors affecting the variations in educational development in an educationally backward area of West Bengal. The study has been carried out at household level survey based data because some of the significant variables found affecting educational attainment is difficult to be captured within the policy frame at national or state level and even at a district level. Considering such typicality, policy prescription is made.

Female work participation rate although found to have some negative impact on literacy rate, remain insignificant in most of the blocks (at mouza level analysis based on secondary data) thereby opposing marginally, the secondary analysis. Even at household level survey based study, the variable shows its significant positive impact on female literacy rate on the ground that additional earning of the female members may raise the educational expense deployed for a girl child. Illiterate female workers are more commonly seen in the labour market and are occupationally depending on agricultural work. Thus the recent policy initiative under NREGS may be helpful for a better job opportunity for the females by giving more opportunity to the female workers in the study area.

Empirically, it is found that in comparison to MPCE, expenditure on education is a powerful factor especially in influencing girls' education. Thus, providing cash incentives to the households who are sending their children to school may be an attractive policy measure for households living below poverty line (BPL). This cash incentive should necessarily be over and above the existing incentives like Free Text Book Grant, Provision of Midday Meal and other similar programmes. Awareness programmes regarding the benefits of education for both the sexes in the targeted area may also have positive outcomes at Gram Panchayat level.

The impact of educational level of mothers is arising as a powerful factor. Formal education is hardly of any use for the mothers. Instead of formal education, enhancing the educational level of mother in informal ways may be effective. Especially, Total Literacy Campaign (TLC) is suggested in this district as because the success of the programme is quite satisfactory in other areas. More than 70 per cent of targeted learners (5.6 lakhs) were enrolled and among them around 66 per cent learners achieved the National Literacy Mission (NLM) norm since the inception of NLM programme in this district in 1998-99 (District Literacy Cell, Uttar Dinajpur) .

The implementation of the Child Labour Prohibition Act is to be strengthened in the blocks where child labour is evident along with low enrolment and high dropout rates.

On examining the probability of never enrolment and dropout it appears that household level socio-economic factors are less significant in explaining the enrolment/non-enrolment decision compared to the problem of school dropout by the children. This opens the scope of including supply related schooling facilities as additional variables in determining the enrolment decision of the households.

The present research, although supports some of the findings of similar earlier studies, adds some new directions too. In a nutshell, it raises some issues that have to be reconsidered, and provides suggestions in terms of policy measures that may be taken and finally opens the scope for further research in the related issues.

Reference

Aldrich, John H and Nelson Forest (1984): *Linear Probability, Logit and Probit Models.* Sage Publications, pp. 26, 1984

Bhatty, K. (1998): Educational Deprivation in India – A Survey of Field Investigation. *Economic and Political Weekly*, Vol. 33, No. 27, 28

Debi, Sailabala (2001): Inequality of Access to Elementary Education in Orissa – An Inter- and Intra-spatial Analysis *in* Vaidyanathan A. and P R Gopinathan Nair (eds.) *Elementary Education in Rural India: A Grassroots View.* Sage Publication, New Delhi.

Dreze, Jean and Amartya, Sen (2002): *India – Development and Participation.* Oxford University Press, New Delhi

Dholakia, Ravindra H. (2003): Regional Disparity in Economic and Human Development in India. *Economic and Political Weekly*, Vol. XXVIII No.39: 4166-72.

Duraisamy, Malathy (2001): Demand for and Access to Schooling in Tamil Nadu *in* Vaidyanathan A. and P R Gopinathan Nair (eds) *Elementary Education in Rural India: A Grassroots View.* Sage Publication, New Delhi.

Duraisamy, P. (2004): Gender, Intra-family Allocation of Resources and Child Schooling in Tamil Nadu, India. *Journal of Educational Planning and Administration,* Vol. XVIII, No.4: pp 489-506.

Harrell, F. (2001): *Regression Modeling Strategies.* New York: Springer.

Hazarika, G. (2001): The Sensitivity of Primary School Enrollment to the Costs of Post-Primary Schooling in Rural Pakistan: A Gender Perspective. *Education Economics,* 9(3), 237–24

Jejeebhoy, Shireen J (1993): Family Size, Outcomes for Children and Gender Disparities – Case for Rural Maharastra'. *Economic and Political Weekly*, August 28: 1811-21, 1995. *Women's Education, Autonomy and Reproductive Behavior: Experience from Development Countries* Oxford, Clarendon Press.

Krishnaji, N. (2001): Poverty, Gender and Schooling in Andhra Pradesh, in Vaidyanathan A. and P R Gopinathan Nair (eds) *Elementary Education in Rural India: A Grassroots View*, Sage Publication, New Delhi.

Lincove, J. Arnold (2009): Determinants of Schooling for Boys and Girls in Nigeria under a Policy of Free Primary Education. *Economics of Education Review*, Vol. 28, Issue 4, (August 2009) Pages 474-484 www.elsevier.com/locate/econedurev

Lloyd, C B. and Anastasia J G Brandon (1994): High Fertility and Schooling in Ghana – Sex Differences in Parental Contributions and Educational Outcomes. *Population Studies*, Vol. XLVIII: 293-306.

Majumdar Manabi (2001): Educational Opportunities in Rajasthan and Tamil Nadu – Despair and Hope *in* Vaidyanathan A. and P R Gopinathan Nair (eds) *Elementary Education in Rural India: A Grassroots View.* Sage Publication, New Delhi.

Hosmer, D.W. and Lemeshow, S. (1989): *Applied Logistic Regression.* New York: John Wiley & Sons. 307 p.

Mehrotra, Nidhi (1995): *Primary Education in Rural India – A Field Report.* Chicago: Department of Education, University of Chicago (mimeo) cited in Srivastava, 2001.

Mukhopadhyay, Asim (1994): Girl Child in three Indian States. *Economic and Political Weekly*, June 4, 1379-82

Nambissan, Geetha B and Mona Sedwal (2002): Education for All – The Situation of Dalit Children in India, in R Govinda (ed) *India Education Report* NIEPA, New Delhi.

Pandey, G D. (1990): Some Correlates of Literacy and Educational Attainment among Tribal Children in Rural Madhya Pradesh. *Demography India*, 19(2): 289-300.

Reddy, V R and R Nageswar Rao (2003): Primary Education: Progress and Constraints. *Economic and Political Weekly*, Vol. XXVIII No.12 & 13.

Sathar, Z. A., & Lloyd, C. B. (1994): Who Gets Primary Schooling in Pakistan: Inequalities Among and Within Families. *Pakistan Development Review*, 33(2), 103–34

Sengupta, Piyali and Jaba Guha (2002): Enrolment, Dropout and Grade Completion of Girl Child in West Bengal. *Economic and Political Weekly*, Vol. XXVII No. 17, 1621-37.

Sinha, Santha (2000): Child Labour and Education *in* Rekha Wazir (eds.) *The Gender Gap in Basic Education*, Sage Publication, New Delhi.

Thomas, Joseph A. (2000): Dynamics of Educational Development – A case Study of Selected Backward Villages in Kerala *in* Rekha Wazir (eds.) *The Gender Gap in Basic Education*, Sage Publication, New Delhi.

Vaid Divya (2004): Gender Inequality in Educational Transitions. *Economic and Political Weekly*, Vol. XXXIX, No. 35

Wazir, Rekha (2000): Profiling the Problem *in* Rekha Wazir (eds.) *The Gender Gap in Basic Education*, Sage Publication, New Delhi.

Weiner, Myron (1996): Child Labour in India – Putting Compulsory Primary Education on the Political Agenda. *Economic and Political Weekly*, Vol. 9: 3007-16.

World Bank (2002): *Pakistan Poverty Assessment; Poverty in Pakistan: Vulnerabilities, Social Gaps and Rural Dynamics*. Report No. 24296–PAK. Washington DC.

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Book Reviews

Cabral RICARDO (2009): The Development of Teacher Education in Portuguese Goa (1841-1961). Concept Publishing House, New Delhi. ISBN: 13-978-81-8069-643-5, Pages: 400, Price: ₹ 950.

The present publication is worthy of attention for more reasons than one. Very few teachers' colleges in India teach proper history of teacher education in this country other than that of British India. They are not even aware that there are several systems of teacher education in India existing cheek by jowl and all of them have a vibrant living history For example, India continues to have both Vedic schools or Sanskrit pathshalas and their teachers live and teach in a world as if nothing has changed for them in the past five thousand years. Similarly, we have Buddhist and the Jain schools and their teachers teaching in schools which also haven't changed much in many centuries. We still have schools in mosques and the madrasahs and their teachers teaching in the old, traditional manner. It is true that Hindus do not outnumber Muslims in these institutions anymore because what they teach is no longer relevant for others and also Muslims do not rule India anymore. But to say that they have lost total relevance is utterly untrue. At least for the Muslims their usefulness can not be denied. But if one tried to compare the Madarsahs of Adams' days wherein Hindus and Muslims both studied together then we may be disappointed but the fact remains that they do exist and offer education which thousands and thousands of Muslim boys find meaningful.

I have yet to find a textbook in India which under a single cover gives a holistic picture of the birth and progress of teacher education during the colonial and pre-colonial days. We seem to have forgotten that even during the heydays of British Empire India had pockets of French and Portuguese territories wherein they had a different teacher education programs and a very different system of education. I am not sure if there are many teacher educators in India who know about the contribution of the Danes to our teacher education. They were the first to introduce teacher training for primary classes in 1793. They were not major colonizers but they had their missionaries who trained teachers so that the native 'barbarians' could be given the light of Christianity. The Danes were the harbingers of the modern teacher training in India although India already had full blown Vedic teacher training and Madrasah education which served both Hindus and Muslims well. The Europeans brought a third system of teacher training out of whom the Danes could easily be regarded as harbinger of the modern European teacher training program who laid the foundation stone of teacher education system. The French and the Portuguese were the other two nations that gave India a teacher education system besides the British. This history is generally ignored. We must remember that all these systems continue to live and therefore should be taught as part of our teacher training history.

There are number of things we have ignored thus far. We ignore the distinction between the terms like Education and Training. We do not explain what these terms connote. Their origins are rarely discussed and so are the reasons why these terms came into circulation. We never distinguish between education and training and hardly ever discuss when and why they became synonyms. This is one of those areas of definitions which could resolve many a problem if only we knew this and discussed these two concepts. Of the other points that are ignored is the fact that education being an instrument of cultural preservation, training of teachers was never neglected. All religions took to training their priests for imparting new knowledge and preserving the old in their flocks. It is because of this reason that systems of education are developed and teachers accorded a place of honor. Depending on the nature of society the dissemination of knowledge is decided. While democratic societies are liberal in its provisions, the autocratic and priest-ridden societies are restrictive and highly regulated. Even to this day we have several systems of teacher education with varying degrees of popularity and clientele. These systems of education flourish either because the State supports it to increase efficiency or that education equips a person to earn one's livelihood. In other words the popularity of education is dependent on its usefulness. The surveys of Madarsah days carried out by Adam and supported and financed by William Bentick bring out one fact very prominently. Despite Muslim system of education being heavily biased in favor of Islam its popularity among the Hindus was equally strong when the British came. Although Madarsahs still run and thousands qualify from them but the Hindus have ceased to find them very welcome places.

Each government or the ruling elite offers an education that suits their taste but its popularity however depends on its ability to train its students in marketable skills. The basic principle underlying the popularity or otherwise of an education is highly correlated to one's livelihood and future prospects. Also it is necessary that we find out why we equate and find valid reasons to regard the face to face teacher training with its distant mode. I find it difficult to equate the two modes because there are no reasons to support the distant mode with the other mode. I would like the history of face to face mode being compared with its distant mode alongside valid reasons with given proof. The way these modes are getting equated and promoted is highly questionable. At least some proof howsoever concocted could be accepted if NCTE could advance some data to support its contentions.

To recount, India has had several neatly defined and packaged systems of teacher training. We deserve a proper history of teacher education and a proper researched book that shows the evolution of teacher education in India. The present book is the first publication and perhaps the only attempt to show how even during the British rule the Portuguese ran a parallel system of teacher education that could teach the Big Brother a word or two. We would like to have many more books that detail the proper history of teacher training/education in India in place of distorted or partially told History of Indian Teacher Education. I would like the NCTE to take up this task both for performing its duty and also for self guidance.

The present publication is a properly conducted research work. It is also the first publication which describes the development of teacher education in Portuguese and the British part of India. There are several books on Goanese education per se including teacher education but so far no one ever went deep into the points where the two systems stand apart from each other both in terms of depth and approach. While the Portuguese teacher education program was modeled on the French, which made Goanese teacher education

program an extension of the European system while the British were still trying to borrow a system that would be best suited to their business and economic acumen. This is one reason why the British borrowed 'monitorial' system or the Madras system, an old *pathsala* method wherein inexpensive, repetitive method was followed and a child teacher would do the job of an adult teacher. As one reads about the French way of teaching/training teachers' one learns different levels of teacher preparation and the way teachers differed in terms of their curriculum, scope and functions. The present book deals with teaching teachers of primary levels.

The present book tries to relate the history of Teacher Education in Goa firstly with the ancient Sanskrit teachers of Vedic days, the Buddhist and the Jain systems of later times and thereafter with the Madarsahs or Higher Education on the one hand of the Muslim period and Maktab or primary education on the other. This is the first book which details why Goa became the center of education modeled on the French or the European system. In this regard it gives reasons why the history of education in Europe is so very different from its British counterpart. It is in the bargain we now know the origin of the word Goa and the reason why it was occupied firstly during its Muslim rule and secondly from the Bhonsale's. Besides we also come to know that for a long while the European Portugal remained located in Brazil and it is from Brazil Portugal ruled over the tiny islands called Goapuri. This is one book which offers reasons why the French system was superior to the British and why the Britons rarely related their intellectual growth with the European development and why it remains so very different from that of the States. It is deeply related with American history and there are parts of USA where Darwin's laws of evolution are still taboo.

The author explains how and why the tiny European Goa grew into a center of European education and clarifies reasons why this part had its first University in 1511 under Afonso de Albuquerque and a vibrant center of Western higher education unlike the British part which never developed any Indian university like Oxford or Cambridge.

Reading this book one comes to know how Indian higher education evolved ever since the Rigvedic times down to modern times. In less than sixty pages of the book we learn more about the evolution of Indian history of Teacher Education than in Naik and Nurullah's book of more than 400 pages. That this book is proof enough of Indian scholarship it is also a proof of dedication and deep understanding of the content.

We all know that it is because of trade several European and middle eastern nations entered India from most ancient times and because of Indian liberality they could set up their business in different times and in different parts of India. The Portuguese set up their business in the western region of India during the Mughal days largely because the white slaves were particularly liked. Besides, they also had missionaries who tried to convince Indians of their religious superiority. What started as purely business contact resulted in protracted skirmishes and eventual capture of Indian territories for Christian missions. The Goanese territory was first colonized in stages. At first it got occupied in 1510 putting an end to Muslim rule under Adil Shahka Adil Khan and in 1555 a final treaty was formalized. The next time the rule was extended during the rule of the Bhonsales. Also, this is the only nation who had to shift their capital from Europe to another continent i.e. from Europe to Brazil in South America. "The purpose of undertaking the present research was" to trace the origin, growth and development of teacher education in Goa; and also, to discover and correlate factors responsible for the quality interventions with eventually improving Primary Education."

This book is essentially a storehouse of information and hence an invaluable reference material for further research. It gives details about primary education and maintains a distinction between training and educating teachers for primary and secondary education. This book is the history of teacher education between 1861 and 1961 and also shows the development and growth of subjects like Pedagogy, Politics, Sociology, Philosophy, Economics etc. during the same period at secondary level as an independent area. Importantly the research brings out points that eventually led to the improvement of the quality of teacher education at both levels. Since the Portuguese system was modeled on the French system all improvements in basic subjects are traceable to this reality. The British system was however never so lucky. This book presents a bird's eye view of the growth and development of teacher education at both primary and secondary levels in Europe. This means that all great thinkers of Europe starting with Rousseau, Pestalotzi, Maria Montessori, Pavlov, Sigmund Freud, Herbart etc are covered. While it is possible to write a good book on education without discussing British contributors to teacher education it would not be possible to do so without recounting the contributions of European thinkers and practitioners of education. In this context the present work is unparalleled.

For the first time ever the entire history of teacher education in India since the times of the Vedas has been presented. It will open the eyes of Indian professors of teacher education who confuse their students by suggesting that until the arrival of the British, India had no teacher education worth mentioning and had the British not come we would have remained uncultured and unread. They would also realize for a change that no society can preserve its acquired knowledge without the help of their teachers. It is immaterial how these teachers were prepared but a society without teachers is unimaginable. How teacher preparation in Goa was carried on is worth reading. This is one reason why this book should be read with reverence.

The present book offers a holistic history of teacher education in India both vertically and horizontally and that too in a historical perspective. I should like that a team of good historians are financially supported to produce a comprehensive history of teacher education in India which removes all the conceptual cobwebs from our minds and pinpoints why the new system has failed and why the older systems still continues to function so well without any state control or help.

Though an expensive book for a scholar to buy, for libraries, it should serve as reference material.

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Patrinos, H.A., Barrera-Osorio, F. and Guáqueta, J. (2009): The Role and Impact of Public-Private Partnerships in Education. The World Bank, Washington DC. ISBN: 978-0-8213-7866-3

In the 2009 World Bank publication, The Role and Impact of Public-Private Partnerships in Education, authors Patrinos, Barrera-Osorio, and Guáqueta provide a comprehensive and

detailed overview of the importance of public-private partnerships (PPPs) in both developed and developing educational contexts. Such partnerships are defined as contracts and agreements between a government and a private service provider for a given period of time and price, using established guidelines that determine the quality and quantity of the services supplied (Patrinos, et. al., p. 31, 2009). This book serves to explore the reasons for (and consequential results of) the current expansion of PPPs internationally (p. 15, 2009). In their well-informed summary, authors emphasize the positive role that partnerships play in building educational capacity in developing contexts as well as limiting the effects of high market failures and creating an equitable quality education in developed regions (p. 1, 2009).

Based on empirical evidence from several international models this book outlines four specific benefits that can result from well-designed and successfully executed PPPs: increased enrollment, improved educational outcomes, reduced inequality, and reduces costs (because the private sector often uses its own resources) (Patrinos, et. al., p. 64, 2009). Although authors provide documentation and data to support these outcomes, it has been argued that such outcomes can only occur when partnerships follow specific designs and models. The four designs most commonly used and discussed within this book are: vouchers, subsidies, private management and private finance initiatives for school construction.

Patrinos et. al. (2009) fully examines all factors of the four prominent partnership models that must be included in their design to create positive benefits of partnerships. The private management model for instance, allows for flexibility so that schools can easily manage supply and demand needs of the school. Flexibility in this model is also evident through budgetary freedom, staff hiring and firing, as well as daily school operation (such as length of school year). A strong emphasis on quality criteria and high standards are significant for success in the private management model, voucher systems, and subsidies. Contracts between private and public sectors often require that high outcomes in student performance are achieved for private organizations to maintain the partnership; PPPs that emphasize rigorous standards and high quality can increase higher education opportunities for students, and are thus the basis for many PPPs. Although student performance is the most common method of ensuring high quality through partnerships, vouchers also provide parents with the opportunity to choose which school they want their children to attend, thereby giving parents control over the quality of education their children receive. Parental choice also creates another key factor in the design of PPPs: competition. Because vouchers allow parents to choose the best opportunity for their child, schools begin to compete for students. Therefore, schools will need to increase quality available in order for schools to successfully attract students to their schools. The final element included in successful partnerships is that of risk-sharing and accountability where both private and public entities share responsibility for success of the partnership (i.e. school/student achievement) to increase efficiency and consequently improved quality. Although all partnerships have the element of risk sharing, this is most prevalent in private finance initiative contracts.

Although the authors provide detailed examples of partnerships and the elements of each model that lead to successful partnerships, the most important aspects of this book are the author's recommendations for government implementation that are included. Such recommendations encourage governments to allow private schools to set tuition and fee levels, to allow both not-for-profit and for-profit schools to operate, to provide an environment that encourages expansion of public-private partnerships, to promote foreign

direct investment in education, as well as several other recommendations that emphasize transparency, effective quality measures, and flexibility.

Among these suggestions are two controversial yet highly important recommendations that must be examined to understand the complexities of PPPs. The first is that the criteria and regulations used to establish partnerships must be clear, direct, and uncomplicated so that private partners are able to achieve the guidelines while still maintaining its cost effectiveness (p. 47). Patrinos, et. al. (2009) argue that while regulations must be limited so that the private sector is encouraged to enter into a partnership, they also state that such regulations must be: realistic and achievable, objective and measurable, available to all potential private school entrants, out-put focused, and consistent throughout all government departments (p. 48). Although they recognize that such regulations must be out-put based and designed to ensure quality, they note that criteria that are too complex often discourages the private sector from partnering with public agencies. While their suggested regulations will arguably make creation of partnerships easier and more successful, the purpose of rigorous stipulations must also be acknowledged. Governments typically use restrictions because they want to ensure that their populations have access to an education that provides students with skills needed in the labor market and to make certain that schools are qualified to teach the desired skills (Patrinos, et. al, p. 43-45, 2009). For this reason, governments often choose rigorous criteria so they can more easily monitor the services provided by the private sector. Patrinos, et. al (2009) argue that complex regulations often create less successful partnerships because the private partners lack the flexibility to determine appropriate resource allocations, introduce educational innovations, are unable to provide the regulations required by the government, or it is not financially beneficial for the private partner (p. 48). However, for governments with limited capacity, high corruption, or are new to partnerships (and thus do not yet see positive outcomes of partnerships) rigorous contracts with the private sector are often assumed to be the easiest way to maintain a quality education.

The second essential consideration Patrinos et. al. (2009) provides for building effective partnership contracts is that of capacity building. Book authors argue that governments with pre-existing capacity concerns often experience increased pressures on capacity when they begin to establish contracts with the private sector, as their roles shift from being service providers to service facilitators and contact managers (p. 55, 2009). Two recommendations are provided that will help to increase capacity: case studies and the development of departments within governmental agencies that solely work to oversee PPPs. Although aid from international agencies is included as a means to foster and invest in PPP relationships, authors do not discuss the role that international agencies can play in developing governmental capacity to successfully increase partnership contracts. Instead authors argue that designated governmental departments should use case studies located on well-maintained websites as models and recommendation of how to create successful partnerships. While this may be a possibility for some countries, for others with limited capacity to foster healthy relationships or to establish new PPP departments, aid and support from international agencies can serve as a necessary link in developing successful contracts with private service providers and should not be viewed as simply a possible investor in educational services or operations.

While authors argue that findings and conclusions are based on empirical evidence, several studies included, that examine subsidies, private management, and private finance

initiative are inconclusive, need further exploration, and/or are limited to one or two examples. Additionally, significant data from studies on voucher systems have been included and provide the strongest conclusions and evidence in support of PPPs. Specifically, data regarding vouchers showed that students often performed better by scoring higher on standardized tests. However, even when documenting these results Patrinos et. al. (2009) admit that results surrounding vouchers are often controversial based on the scope of the study, the method used to analyze the data (i.e. randomization, regression, discontinuity analysis, instrumental variables, Heckman correction models, difference in difference estimators, and propensity score matching), and endogeneity as a result of self-selection. For these reasons, Patrinos et. al (2009) admit the lack of decisive evidence, and emphasize that PPPs should not be ignored and encourage further studies on subsidies, private management of schools, and private finance initiatives (p. 65). In spite of this, the data provided throughout this book does not provide enough conclusive evidence to argue that PPPs are substantial mechanisms for improving enrollment, educational outcomes, reduced costs, and reduced inequality, and therefore should be viewed as a resource in understanding gaps and areas for future research in PPPs. The authors argue that more substantial research is necessary before such conclusions can be made, and therefore they included models and examples of successful evaluations as well as information regarding successes and failures of previous studies (p. 41, 2009).

Although this book provides a comprehensive review of the types and designs of PPPs, this work is clearly in favor of increasing the international use of partnerships. Because of this bias, the authors do not include many opposing viewpoints. While authors do acknowledge critiques of PPPs, Patrinos et. al. (2009) and suggest that the critiques are either not supported by strong evidence or can be curtailed by stronger and more efficient design models. As mentioned previously, research on PPPs and the various models of partnerships is still developing and therefore conclusive results in favor or against are limited. However, the critiques against PPPs are significant and should be examined since examples show that school choice can lead to social segregation, social inequalities will increase, limited increased academic achievement occurs, and government control over public service is often limited (p. 5). Such critiques are important to consider because they are contrary to the very arguments Partinos et. al. (p. 4) use to argue in favor of PPPs. Such conflicting critiques and data serve to show that research on PPPs is nascent and thus are not always recommended for governments to implement. For this reason governments should examine their own capacity to successfully implement partnerships, ensuring that they have the resources or the means to attain resources so as to avoid the potential negative consequences.

Perhaps the biggest obstacle to establishing successful PPPs is what this book discussed the least: the political climate surrounding such partnerships. Governments are often skeptical about entering into a partnership with the private sector because it is viewed as a loss of control over education, and due to a limited understanding of the positive benefits that can arise from such partnerships (p. 43, 2009). Patrinos et. al (2009) briefly address such views by arguing that positive results and continued governmental control can occur through well designed policies that are successfully implemented. However, due to limited governmental capacity combined with governmental and private sector corruption, and lack of sufficient evidence to fully support partnerships, governments can be discouraged from entering into agreements and contracts with the private sector. While authors provide

contract recommendation that aim to limit such concerns, for governments that are hesitant to enter into partnerships with the private sector such contract recommendations may not be enough to encourage increased partnering. For this reason, added attention to building government capacity as well as increased research regarding implementation on PPPs are necessary before partnerships can be expected to successfully expand.

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World Bank and the Republic of Yemen (2010): **Republic of Yemen Education Status Report: Challenges and Opportunities**, Washington D.C. Pages: 218.

Yemen is the poorest country in the MENA region. Its economy is largely dependent on oil and gas revenue, and some domestic production. However, it is estimated that Yemen's oil reserves will deplete in the next decade and that its water supplies will deplete in the next 20 years. Economic problems are due to several challenges including high fertility rates, scattered population, poor infrastructure, and excessive production and use of qat; a mild narcotic plant. In addition, Yemen is facing demographic pressure with nearly 70 per cent of the population being under the age of twenty five. Because of rural to urban migration, few large cities have a higher growth rate than rural areas. While education can be a powerful tool to speed up economic growth, and bring social mobility, the efforts of Yemeni government have thus far been largely unsuccessful in this regard.

In this collaboration between the Republic of Yemen and the World Bank, the book *Republic of Yemen Education Status Report: Challenges and Opportunities* takes a descriptive approach to report on Yemen's educational status. The purpose of the report is to assess the outcome of the education system and to document its challenges and strengths in order to help Yemen to better integrate in the regional and global economy. In the introduction, the authors explain their approach, emphasizing that this report is phase one of a two-phase process to implement a complete development plan for education in Yemen. Phase two is to develop a complete vision for the education sector. Thus, the book intends to provide a diagnostic summary of the education system while offering a menu of options to address the issues identified and to advance the system.

In chapter one, the authors provide the reader with a general background of Yemen's demographic, economic, and social context. Chapter two offers the background of Yemen's education system, and the key demand and supply-side constraints to enrollment and retention. Yemen's education sector faces many challenges: limited capacity, scattered population, constraints in the regulatory framework, high drop-out rate, lack of resources to build sufficient facilities, mismatch between education and job market, unequal distribution of resources among schools, and lack of teachers especially female teachers in rural areas. Education is managed by three ministries. The Ministry of Education manages the pre-basic, basic, and general secondary education; the Ministry of Technical Education and Vocational Training is responsible for the post-basic and post-secondary TEVT, and community colleges; and the Ministry of Higher Education and Scientific Research is in charge of

university education. In addition, the Ministries of Finance (MOF), Civil Service and Insurance (MOCSI), Local Administration (MOLA) are responsible for the budget and civil servants (teachers). The authors identify the two main problems of Yemen's education system as the general lack of supply of any education, and the lack of a quality within education.

Consequently, the quality of education is discussed in chapter three. Yemen suffers from a high rate of repetition where, for example, boys need fifteen years and girls need eighteen years to finish the nine-year compulsory educational programmes; a phenomenon that also reflects the ineffectiveness of the system. Yemen is wasting substantial resources on education without appropriate outputs. That is; output could be significantly increased with the same resources if the amount of repetition is reduced. The introduction of parallel programs in public universities has also contributed in further deteriorating the quality of education. The programs are run on a fee-paying basis, mostly in the afternoons, to accommodate Yemeni students who do not qualify to enter regular programs at public universities. Besides being less qualified, teaching quality and learning materials are even less accessible to these students. The weak link between education at all levels and job market as well as the low quality of graduates further exacerbate the problem. Yemen has taken the first step towards implementing a quality assessment, and quality assurance systems.

Although, expenditure in relation to total government expenditure and GDP has decreased from previous years, the public expenditure on education in Yemen in relation to GDP remains relatively high (chapter 4). Available evidence from other countries indicates that there is a positive relationship between the returns to education and the level of education. The authors claim that estimating the returns in education in Yemen is not feasible because of the informality and underemployment in the labor market. In Yemen, however, the impact of education on wages is a great disappointment. The year of education does not yield an increase in income. Besides primary education and university education, all other degrees lead to limited increase in wages. In general, an additional year of schooling increases wages on average of only 2.7 percent (chapter 5).

Chapter six, *governance and management,* is the most informative chapter of this report. It represents a broader view to the education sector in Yemen and offers clear recommendations for implementing effective policies. The chapter sets the case of the missing unified vision for education, training, and skills development. Corruption and miscommunications among the ministries involved in education are the main obstacles to reform education. Much more is required to reach universal education. Good governance is vital to improve the performance of Yemen's education sector. While a national reform is needed, the education sector could benefit from a greater involvement of nongovernmental stakeholders and the private sector. The policy matrix in the last chapter captures key issues which require actions on the short-term and long-term to address the flaw in the sector. The Policy Matrix is a useful tool as it includes relevant issues within and outside the education sector.

There are many strengths in this report. The book is a comprehensive document that discusses education in Yemen and describes the status of education K-16 including technical and teacher education. Given the limited level of development in Yemen and the limited data availability, the book represents a significant effort in providing a complete overview of the education in Yemen. The authors relied on other recent studies to provide the readers with a

complete diagnosis of Yemen's educational system and have also conducted some surveys in areas where research and data were missing or analyzed data from previous surveys to serve their purpose. Data in Yemen is generally scarce; therefore, this book is an important addition in the steps toward real evaluation of the system in order to be able to establish measures of reform. The report draws its strengths in that it features the contribution of the ministers of each of the three ministries responsible for education and the many officials in Yemen who are familiar with the local language and the local communities. The report is further strengthened by the input and analyses of experts from the World Bank who have extensive expertise in the education reform and field work.

Although the book is a valuable asset in identifying the challenges of education in Yemen, it also presents a number of problems to the reader. The binding of the book was poor; by the time I reached the second chapter, I was dealing with a pile of papers while the cover started to crack. The structure of the book is somewhat incoherent and lacks fluency in its use of bullet style reporting. Unfortunately, in many areas of the book, information is too general and does not help the reader to grasp the issues. Graphs and tables were sometimes misplaced in relation to the text. In addition, the report devotes little attention to higher education in general with no focus on graduate studies, or scientific research and the role of universities in the economy.

The limitations of data in Yemen resulted in limited analyses of quite a few topics in the book. While the authors do a credible job of identifying the problems in Yemeni education, some of these problems were not based on research-based evidence. Often, the authors referred to the term, "anecdotal evidence" to identify some of the issues discussed. The most important question here would be how useful this report can be given the lack of data on Yemen as reported in this book. The authors also give little attention in offering the reader with the methodology used in some of the research. For example, the authors emphasize the lack of female teachers as one of the main reasons for the low rate of female students' participation in education, particularly in rural areas. Through the book, they persuade the reader that providing qualified female teachers trained to teach multi-grades will reduce the gender gap, increase retention rates, and improve efficiency and the quality of education. In appendix D, they present the results of a study on the impact of female teachers on girls' enrollment. Without presetting the methodological approach, the study concludes that the presence of female teachers correlates with higher retention rates. The qualifications of female teachers, behavior and other variables were not taken into consideration. In a country like Yemen where 72 per cent of males and 33 per cent of females are consuming narcotic plants (qat) regularly, female teachers are less likely to be absent and would come to class more prepared than their male counterpart.

Some of the suggested policies do not possess the vision to solve the real problems in Yemen. The report suggests, although acknowledging that small schools are inefficient, that Yemen could provide more small schools for grades 1-6 closer to individual communities, but for grades 7–12 schools may possibly be located a little farther from the communities (pp. 104 and 171). This recommendation ignores what the book has identified as possible solutions or limitations. First, retention rate is higher in schools with grades 1-9 in comparison to schools with only grades 1-6 (p. 43). Second, families are conservative and such recommendation will almost definitely lead to widening the gender gap. Third, reasons for dropout are predominantly demand-driven in both urban and rural cases (p. 41) but the recommendation suggests that they are supply-driven. In addition, walking long distance to

reach schools is often unsafe. Families are also discouraged to send their children, particularly girls, to primary schools because there is no potential of continuing education due to the lack of secondary schools in rural areas. The authors' recommendations seem not only to over-generalize the reality of education in Yemen but also to offer a panacea to a complex cluster of issues.

Unfortunately the book fails to offer its main purpose, which is providing a solid diagnosis of the education system. The purpose of the diagnosis is to examine a problem in detail, to identify the source of the problem and to prepare the collected information to decide how to implement possible solutions. But this report focuses more on the symptoms rather than identifying the causes of the problem. There is a need for more analytical work and research before an integrated vision for the education sector can be well developed. Before venturing along the wrong path, evidence-based research and rigorous data gathering should replace all the anecdotal evidence. Any further studies on Yemen's education should also include literacy adult education to provide education opportunities to those who were deprived of education. Literacy adult education should particularly target married women who missed the opportunity due to the early marriage practice.

Yemeni children are among the poorest in the world. Those children who make it to school are confronted with a system ill suited to their needs. There are not enough chairs, books, pencils, or teachers, let alone modern teaching materials. Those who make it to higher education are confronted with a stagnant job market, which is unable to offer them the appropriate opportunities while their degrees are mostly unsuitable to the few spots available. Today, Yemen is facing a new challenge with political instability and risk of civil war; there is a fear that restoring stability and achieving any growth is threatened with an array of serious political as well as development challenges.

Despite these weaknesses, the book provides an important contribution to the education sector in Yemen and offers important analyses, observations, and evidence surrounding the role of education and the possibility of political, economic, and social transformation.

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Emanuela di GROPELLO, Aurelien KRUSE, and Prateek TANDON (2011): Skills for the Labor Market in Indonesia: Trends in Demand, Gaps, and Supply. Washington DC: The World Bank. ISBN: 978-0-8213-8614-9. Pages: 260.

The book reviewed is "*Skills for The Labor Market in Indonesia*" Trends in Demand, Gaps, and Supply, by Emanuela di Gropello, with Aurelien Kruse and Prateek Tandon. The authors mainly discussed about the comprehensive look at the demand and supply of skills in Indonesia, starting from how skills have changed, how they will continue to evolve, until how the education and training sectors can be improved to be more responsive and relevant to the needs of the labor market and the economy as a whole. The authors highlighted the gap that occurred in the market where one of the factors which contributed to the gap is the quality and relevance of education and training in Indonesia.

The authors organized this book into two parts. Part one discusses demand for skills and skill gaps in Indonesia which consists of trends in the demand for skills in Indonesia, drivers in the demand for skills in Indonesia, and skill mismatch. Part two discussed about an overview of the Indonesian skill development system. This consists of the ability to produce a skilled labor force through an overview of the Indonesian formal education sector and training the unskilled and updating the skills of the labor force with an overview of the informal education and training system and on the job training. The aim of the book is to improve the responsiveness of education and training to the needs of the labor market and economy to enhance skills for productivity and employability.

The authors formulated indicators and used data sources in demand for skills, drivers of demand for skills as well as skill mismatches. Data was collected not only from labor force and firm surveys but also from educational attainment, occupation type, and functional skills. Detailed information is provided to portray the latest trends in demand for skills. According to employers' survey, demand for sustainability of skilled workers depends on the educational levels. This shows that employers will be able to measure the quality of graduates from different educational levels and thus will be able to match it with the vacant position that is offered. Beyond educational attainment, the authors also described actual skills that employers look for which are not only acquired through education but also through other media such as on-the-job exposure. This shows that both theoretical knowledge as well as practical knowledge is equally important.

Furthermore, the drive in the demand for skills occurred due to the recent trends in openness and economic structure in Indonesia. This results in compositional changes within industries through a reallocation of labor and capital toward plants with higher efficiency or quality. It can be concluded that the compositional changes within industries as a result of trade openness lead into higher demand for skilled labor. Positive relationship exists between competitive business environment, technology, the role of computers, changes in work organization and demand for skills, focusing on product innovation or higher-quality standards. This is surely related with educational attainment of the workers itself.

The book pointed out the skill gap that has emerged in Indonesia's labor market. Through the employers' perception it can be concluded that one of the reasons of the difficulties in matching skills to jobs is because of the distinction between quantity and quality of training supplied. This results in difficulties for the employers to match their needs with the available skills. Employers will be able to assess the quality of newly hired graduates through the educational attainment. The higher the educational level, the better the quality is. However, the need for training and retraining is a must for newly hired graduates to boost skills required.

Focusing on the secondary and tertiary education as an effort to address the skill gap is part of the issue in this book. Moreover, the existence of informal education as well as training system and on the job training might become a solution in minimizing the gap. It can be concluded that formal secondary and tertiary education including technical and vocational education and training are the key subsectors that shape the skill set of the workers. Informal education, on the job training and other lifelong learning providers could also contribute to skill development by improving labor outcomes and counteracting the obsolescence of existing education and training programs.

From the above explanation, the authors suggested five general skill-related priorities for Indonesia should be highlighted. Those are improve skill measurement to get a fuller

understanding of skill needs and gaps, address the unsatisfactory quality and relevance of formal education, set up multiple pathways for skill development, develop an integrated approach to tackle skill development for youth, and tackle labor-market constraints that affect the skill-matching process. The authors also pointed out priorities for each educational level, mainly for secondary and tertiary education, as well as for informal education and training and also firm training. The priorities for secondary and tertiary education lie on maintaining a balanced curriculum with the need for more practical knowledge to be included and to generally adapt to labor-market needs. These include a better design and implement specific components of the curriculum, especially in secondary vocational schools. Having better links with the industry is also one of the priorities that need to be considered. This will minimize the gap of demand skill in a labor market.

This book gives fruitful information about skills for the labor market in Indonesia along with the demand, supply, as well as the gap that exists. Data collected from the surveys shows detailed information on the existing condition, comprehensively. A variety of aspects is used to describe the existence of a possible mismatch between demand and supply. The book also documents the possibility that the education and training sector contributes to this mismatch. This includes the role of formal and informal education, as well as training system and on the job training.

However, since the book is focusing on education system in Indonesia and how it is related with skills for the labor market, it does not explain in a more detailed way about how the education system in Indonesia works. The book focuses more on gap of demand of skill that exists without analyzing the government efforts in the last ten years in improving and redesigning national education system in the country. The policy agenda stated in the Five Years Development Plan (Repelita), starting from Repelita I (1969) to VI and Strategic Planning 2005 to 2009, has developed mainly on three main strategies which are the expansion of an equalization educational opportunity, the improvement of education quality, relevancy and competing ability, as well as governance, accountability, and public image. This results in the increasing number of Gross Enrollment Ratio at lower secondary level from 16.87 per cent in 1968 to 98.11 per cent in 2009/2010. The same happened at upper secondary level and higher education level, from 8.58 per cent and 1.70 per cent in 1968 to 69.605 per cent and 18.36 per cent in 2009/2010, respectively. The government policy to raise educational budget up to 20 per cent from national budget is also very crucial in terms of improving national education system. Efforts have been made to improve educational quality such as curriculum development including the planning of subject matters that is conducive to early development of science and technology, quality improvement and welfare of teachers and other educational manpower, and provision of adequate facilities. Among other factors influenced educational quality, which are facilities and equipment, curriculum, teaching-learning process and evaluation system, teacher can be considered the most determinative factor for quality improvement in education. That explains the reform the government made in education system by setting minimum qualification for teachers to meet the professional requirements for teaching. Based on Act of the Republic of Indonesia on Teachers and Lecturers, Number 14, Year 2005, a teacher has to have an academic qualification, which can be posed by being graduated from university as bachelor degree or diploma 4 degree for teacher and master degree for lecturers which is suited with subject matters he/she teaches, and teacher competencies as a learning agent. A teacher also has to have a professional competence consisting of pedagogical competence, personal

competence, professional competence as well as social competence. To ensure that a teacher has satisfied a professional standard, teacher has to follow a test for certification. By having the certificates, teachers have the right for professional allowance which equals the main allowance of a teacher and this is to improve teacher prosperity. These are things that the book doesn't cover.

I do agree with the priority suggested by the authors on better design and implementation of specific components of the curriculum in secondary vocational schools, since it is also one of the government education development programs in guiding secondary education. The government prioritizes the development of a production unit and professional testing system, as well as the increase of the practice hours in learning teaching process to produce better graduates that can fulfill standards acceptable to the employment provided.

In terms of the importance of having links with industry, I agree with the authors. The university and industry should work together for the benefit of education, mainly on the learning process which is oriented towards industry as the industry is more knowledgeable about industrial practices and what the student should learn. The cooperation should be based on the assumption that the school is not the most competent party in evaluating educational success. It should take into consideration that the role of professional association is also important to assess the capacity and expertise of students. The government's policy also elaborates the curriculum development in corporation with educational program where dialogue between educational practitioners or higher education organizers and the industry and business people should be held continuously to guarantee mutual benefits. However, from the essence of education, it is not easy to implement link and match with the industry since the education process takes a longer time than skills needed in the industry which change rapidly. The goal of education is to produce graduates ready to work and to adjust themselves to the changing demand of industry, not to acquire certain skills needed in industry. This is because the goal of education is broader than preparing graduates with certain skills only.

The book uses informal education as out of school education. Nevertheless, based on the Act of Indonesia, Number 20, Year 2003 on National Education System, Chapter IV, Article 13, Verse 1, education system in Indonesia consists of formal education, non formal education and informal education. Therefore, it is very important to differentiate between non formal and informal education, in term of terminology. Non formal education is education which is organized outside schooling system throughout teaching and learning activities which are flexible in term of the time and period spent, the age of learners, the contents of lessons, the way lessons are organized and the assessment of achievement. Informal education is education in the family that preserves religious belief and cultural values including moral standards. It gives members of the family life skills and attitudes that shape the local society, the nation and the state's identity. Both, non formal and informal education support the achievement of the nine year basic education compulsory program and are aimed at developing learners' potentials with emphasis on the acquisition of knowledge and functional skills while developing personality and professional attitudes.

In conclusion, I find this book informative and comprehensive providing detailed information about the skills demanded in the labor market in Indonesia and analyzing the issue not only from the demand side, but also from the supply side. One of the strengths of this book is how it portrays the gap that exists in the labor market in Indonesia. Nonetheless,

there are still some missing points that should be covered in the book. The government efforts in the last ten years in terms of national education reforms, difficulties in implementing link and match, and the terminology of non-formal and informal education, are some critical points which will make this book even more informative and comprehensive.

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Sarangapani PADMA, M. (2003): Constructing School Knowledge – An Ethnography of Learning in an Indian Village. New Delhi: Sage Publications, ISBN: 07619-9671-0, Pages: 308, Price ₹ 725 (Hardbound)

The book under review is an attempt to re-enter the familiar ground of Government schools and to reconstruct the common knowledge about not only about the schools but also about the process of schooling over there. As the title of the book suggests, the book is primarily concerned with constructing common school knowledge of two kinds: one is the common facts of the Government schools, the internal structure of authority, the interrelation ships of pupils and teachers, their pedagogic practice and discourse etc., the other common knowledge is what is included and taught in the school curriculum and what should be the object of learning and pedagogic activity.

The book is focused on the specific as well as general issues about the knowledge that children are expected to learn and that teachers are expected to teach. As an ethnographical researcher, the author has classified the present book in three main parts in the course of field work: first part is devoted to being a researcher at school, the second part is as an observer of village life and final part is associated with the interactions with the children, both from the perspective of observer and investigator. Book is written in the narrative style which provides a feel of the personalities of the subjects of the study.

The whole book is divided into ten chapters based on the author's experiences, interviews, conversations held with the students and teachers of three schools named Kasimpur Government Boys Model Primary School (KBMS), Little Angels Public School (LAPS) and the Government Girls Primary School (GGPS) located in Kasimpur village which is not a real name of the village. Style of writing and episode wise description of the book presents a live picture of all the incidents as if we are also a part of all the experiences which the author has.

In chapter two, the author presents a detailed description of socio-economic scenario of the village which helps the reader to understand the living standard and psychological thinking of the residents and students of the village. Demographically, Kasimpur village is located on the Northern fringe of Delhi having a census population of almost 10,000. Like any other Indian traditional village, Kasimpur is also a village where different castes lived in different areas. Upper castes live in the main village whereas the *Dalits* (lower caste) live in outer areas of the village in narrow houses. Both the family and the society are male-dominated. Women are regarded inferior to men incapable of supervising their own

behaviour or family matters. Even though child rearing is left mainly to the mother or older sisters but the father is the ultimate and absolute authority in all other matters of upbringing. Besides this, urbanisation came in the village with the ease of commuting new markets for village produce and opportunities for non-traditional employment which made employment diversification possible. The break-up of joint family and their transformation into nuclear family is also a sign of urbanisation which is now acceptable by all the villagers.

In chapter 3, the main issue which is discussed is Why Schooling *(padhai)* is important? Conversations with the children reveals the fact that they all believe that *padhai* [Schooling] is necessary for opening new employment opportunities for steady and secured job instead of manual and agricultural work. They all want to become a *bada admi.* [respectable, rich man] For achieving this aim, they all admit the fact that the longer one who stays in the school, the more information (*jankari*) he would be able to get and this *jankari* would enable them to engage in social interactions, impress and pass the test for becoming *bada admi.* Along with this, children feel that equipped with literacy, English and information, they would be able to exercise more control over social environment and be able to take the advantage of opportunities. In schools, it also appears that students feel that school is only for *padhai* not for playing or entertainment.

Chapter 4 explores that all the students favour the teacher's authority over their activities during the school hours. They say that their mischievous behaviour should be disciplined by the teacher. They all want to be an *Adarsh Vidyarthi* (Model Student) who observes all *achchhi baten* (performs all moral and assigned duties) in his daily life. Teacher uses promotes the idea of *Adarsh vidyarthi* by using different techniques like delivering speech on the biographies of leaders, telling folk tales, presenting a list of personality traits etc. In the author's observation there are three qualities which an *Adarsh Vidyarthi* should have. These are: Personal Hygiene, General Aspects of Good Character and Specific aspects identifiable with the school or students. Describing the role of the teacher, Padma observes that a teacher enjoys the authoritative status both in subject-matter and pedagogic activities in the school as well as in the class. He is considered as absolute power or the primary actor who decides what will or will not be done, who will do that etc. In his absence, the Student Monitor uses the advantage of this authority privilege. Both the powers inspire fear among the children in the class. Students are not given any chance for consultation and discussion in any way about their studies, methodologies adopted by the teachers in the class as their information or *jankari* is considered worthless or only violation of discipline.

Besides this, in chapter 5, teacher and taught relationship is divided thoroughly into four categories which are: Adult-Child, Parent-Offspring, Guru-Shishya and Patron-Protégé.

Chapter 6 and 7 are based on the teaching and learning procedures adopted by the teachers and learners in Government schools. A teacher performs only three pedagogic activities: teaching new lessons, answering questions and revision during the whole year. Process of learning starts with the perception of giving common right answers to all the questions asked from the prescribed books and guides. Students can not add any information of their own. Memorisation is the base of all type of learning. There is a long conversation on the difference of rote learning and memorisation. Recitation and quizzing methods are generally adopted by the teachers in making the students recall whatever they have memorised. Children try to memorise even the entire textbook. They feel this is a fool proof way of preparing for the examinations. In short, knowledge is considered a physical object that can be moved from one place to another like from the book to the brain from

where it could be later moved onto an examination answer book or spoken during a conversation or interview.

In the next two chapters, the focus of the author is on the received knowledge and the social context of knowledge construction. Students acquire knowledge from mainly text books, verbal testimonies of the experts, old persons of the society or the people whose speech has authenticity and the personal expertise which provides a knowledge claim. Along with all these sources, students remain careful not to come into conflict with the teacher's wordings in the classroom.

Chapter 9 is divided into two areas: one is about the science experiments and scientists while the second one is about examining the relationship between the school knowledge and everyday knowledge. In students' perception these experiments have no authentic epistemic function (actual information of knowledge) as they do not take even the pedagogic function of experiments and activities very seriously. They feel that these experiments are only for entertainment and the scientists are employed by the Government to invent useful things.

In the final part of this chapter the author tries to examine, is there any type of inter-relation between the school knowledge and everyday knowledge? It seems that with very few exceptions, children do not correlate school and out-of–school knowledge. School knowledge seems to have only passive effect on the brains of the children by memorisation which is perhaps irrelevant to the real world. In case of Kasimpur Village School, there is a lot of knowledge which could be related to the children's experiences in their real life. Schools must create an environment where this interrelationship is realised. For this, the school must encourage the qualities of openness of mind and concern for meaning and truth.

A brief note on theoretical field work is included in Appendix A and a detailed account of the fieldwork can be found in Appendix B. Glossary is also added in the last pages which gives the meaning of Hindi and Sanskrit words employed in the main text and also some technical terms particular to the Indian context.

On the whole the book under review is a very valuable book not only for the research scholars but also for the teachers, administrators, educational planners and teacher educators also as it presents a real scenario of Government Primary school and its functioning. However this book proves successful in providing the answers of several typical questions as role of teacher and learner, their inter-relationship, their epistemic functions as well as the interrelationship between school knowledge and everyday knowledge.

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Alison WOLF and Sandra MCNALLY *eds.* (2011): ***Education and Economic Performance.*** *The International Library of Critical Writings in Economics No. 256.* An Elgar Reference Collection, Cheltenham, UK: Edward Elgar. Pages: 640, (Hardbound), ISBN: 978-1-84844-577-2 Price: £215.00.

Economics of education has grown remarkably and expanded both in breadth and width ever since its inception in 1960. Starting from the debates on investment versus

consumption nature of education, on the measurement of benefits of education, and the residual theory, economics of education, today has become so rich and diverse that it is difficult to define and identify clearly and rigidly its scope and focus. Methodological sophistications are also many and they are very significant.

The present 640-page volume, produced in the series of the International Library of Critical Writings in Economics series accordingly covers a wide spectrum of economic aspects relating to education that includes familiar, not so familiar and new ones and thus gives a glimpse of the vastly and diversely grown area of economics of education, of its very growth overtime and of some likely directions of growth in the near future. There are, in all, as many as twenty for articles in the volume, authored by more than forty well-known researchers in the field. Some of the authors included in this volume are Edward Denison, Mark Blaug, Barry Chiswick, Robert Barro, Jacob Mincer, Alan Krueger Lant Pritchett, John Knight, and Alison Wolf.

The economic value of education is best reflected in labour markets, hence an analysis of the relationship between education and labour market performance of the graduates is important. The present book is concerned with this. The articles, in addition to an excellent introduction by the editors, are organised in three major parts: (1) Education and Economic Growth – subdivided into early classics and overviews, (2) Types of Education and (3) Innovation, Education and Growth. The first section starts with Edward Denison's pioneering research study, "Measuring the Contribution of Education (and the Residual) to Economic Growth..."; and then we have the classical writings of Mark Blaug, Barry Chsiwick and Robert Barro. From Denison (1964) to Barro (1994), in a sense, it has been a long history of theory of economic growth and also history of economics of education – how it evolved and grew from residual theory to endogenous theory of growth.

The second section of the first part also has four more classics – overviews of human capital theory, which include papers by Jacob Mincer, Alan Kruger, Alison Wolf and Lant Pritchett. While the first two emphasise the significance of human capital in growth, the latter two question this. While Alison Wolf argues that the present theories are too simplistic, Pritchett marshals much evidence to argue that there is no association between human capital and growth of output per worker. In fact, many other contributors of the volume also highlight the difficulty of reaching firm and stable conclusions on the effects on education on productivity, growth and distribution of income, though most emphasise the critical role of human capital investments in economic growth.

The seven papers in Part II are organised under three sub-heads: Years versus Qualifications, Elite versus Non-Elite institutions, and General versus Vocational; and they attempt at addressing a variety of related issues: what is the relative importance of signaling, do the estimates of rates of return to formal education capture the actual labour market rewards for skills, differential returns to graduates coming from different quality institutions and returns to vocational and general education. Some societies focused on providing more vocational skill-oriented education and less general education and some the opposite. In an interesting paper Dirk Krueger and Krishna Kumar provide evidence on this to explain the gap in growth between Europe and the US: low growth in European countries that invested more in vocational education compared to the high growth in the USA during the 1980s. Some kind of contrasting evidence is provided by Ofer Malamud and Christian Pop-Eleches on Romania.

Economic growth is also critically helped by innovations and the revolution in technology. The eight papers in Section III discuss the relationships between education, innovation and economic growth. Technical change itself required different kinds of skills, and the technical change itself is 'skill-biased', in the sense that the technical changes are of the kind that high-skilled workers receive better returns than less skilled workforce. Human capital is important not only in modern economies, but also in primitive economies, as a study on Bolivia by Ricardo Godoy, Dean Karlan, Shanti Rabindran and Tomas Huanca shows. The contribution of education and skills can be higher in modern economies, due to externalities associated with education. Nevertheless investment in human capital pays rich dividends even in primitive economies. Externality effects of education also received a good amount of attention of the contributors of the volume. The several studies also stress the need for further studies on various aspects.

On the whole, the book under review is a rich selection with overviews, macro level and cross country investigations and micro level case studies, with in-depth, scholarly theoretical and analytical contributions to various economic aspects of education – how education influences the performance of the individuals in the labour market. The theoretical, methodological and empirical insights the various contributors provide are valuable and researchers would find the book immensely useful.

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Books Received

Alderman, Harold (2011): *No Small Matter: The Impact of Poverty, Shocks, and Human Capital Investments in Early Childhood Development*, The World Bank, Washington D.C., pp.183, ISBN: 978-0-8213-8677-4.

Aziz, Abdul and Hanagodimath, Shiddalingaswami (2010): *Implementation of D.M. Nanjundappa Committee Recommendations for Redressal of Regional Imbalance*, CMDR, Dharwad, pp.23.

Baxter, Pamela and Bethke, Lynne ((2009): *Alternative Education Filling the Gap in Emergency and Post-Conflict Situations*, IIEP, Paris, pp. 195, ISBN: 978-92-803-1332-1.

Bundy, Donald (2011): *Rethinking School Health: A Key Component of Education for All*, The World Bank, Washington D.C., pp.299, ISBN: 978-0-8213-7907-3.

Debi, Sailabala (2010): *Loan Financing to Higher Education: Experiences of Bank Financing in a Less Developed Region*, CMDR, Dharwad, pp.32, ISBN: 978-81-921094-3-5.

Deshpande, R.S.; Raju, K.V.; Jharwal, S.M.; and Rajasekhar, D. (2011): *Development Windows: Essays in honour of Professor V.M. Rao*, Academic Foundation, New Delhi, pp.589, Rs.1295/-, ISBN: 978-81-7188-808-5.

De, Anuradha; Khera, Reetika; Samson, Meera and Kumar, Shiva A.K. (2011): *A Report on Elementary Education in India: Probe Revisited*, Oxford University Press, New Delhi, pp.116, Price Rs.345/-, ISBN: 0-19-807157-4.

Dickson, Janet R.; Hughes, Barry B; Irfan, Mohammod T. (2010): *Advancing Global Education Patterns of Potential Human Progress (Volume-2)*, Oxford University Press, New Delhi, pp.333, Rs.995/- ISBN: 0-19-806421-7.

Dill, David D. (2009): *The Research Mission of the University Policy Reforms and Institutional Response*, Sense Publishers, Rotterdam/Boston/Taipei, pp. 216, ISBN: 978-94-6091-011-1.

Exim Bank Export-Import Bank of India (2011): *Openness and Growth of the Indian Economy: An Empirical Analysis*, pp. 99.

Gertler, Paul J.; Martinez Sebastian; Premand, Patrick; Rawlings, B. Laura and Vermeersch, Christel, M.J. (2011): *Impact Evaluation in Practice*, pp.244, ISBN: 978-0-8213-8541-8.

Govinda, R. (2011): *Who Goes to School? Exploring Exclusion in Indian Education*, Oxford University Press, New Delhi, pp.419, Rs.795/-, ISBN: 0-19-807076-4.

Guo, Zhenyi and Lamb, Stephen (2010): *International Comparisons of China's Technical and Vocational Education and Training System*, Springer, Dordrecht Heidelberg London New York, pp.198, ISBN: 978-90-481-8742-3.

Kundu, Amitabh and Varghese, K. (2010): *Regional Inequality and 'Inclusive Growth' in India under Globalization – Identification of Lagging States for Strategic Intervention*, Institute for Human Development, New Delhi, pp. 35.

Kumar, A.K. Shiva and Rustagi, Preet (2010): *Elementary Education in India – Progress, Setbacks and Challenges*, Institute for Human Development, New Delhi, pp. 40.

Madras Institute of Development Studies (2010): *Remembering Professor Adiseshiah, Malcolm S.* Chennai, pp. 200.

Martin, Robert E. (2011): *The College Cost Disease Higher Cost and Lower Quality*, Edward Elgar, Cheltenham, UK, Northampton, MA, USA, pp.198, ISBN: 978-1-84980-616-9.

Nadkarni, M.V. and Deshpande, R.S. (2011): *Social Science Research in India – Institutions and Structure*, Academic Foundation, New Delhi, pp. 350, ISBN: 978-81-7188-844-3.

Nair, V. Karthikeyan (2011): *Documentary History of Higher Education in Kerala*, The Kerala State Higher Education Council, Thiruvananthapuram, pp. 477.

Naudeau, Sophie; Kataoka, Naoko; Valerio, Alexandria; Neuman, Michelle J; and Elder, Leslie Kennedy (2011): Investing *in Young Children – An Early Childhood Development Guide for Policy Dialogue and Project Preparation*, The World Bank, pp. 294, $30.00, ISBN: 978-0-8213-8526-5

Paulson, Julia (2011): *Education, Conflict and Development*, Symposium Books, UK, pp.240, US$ 48.00, ISBN: 978-1-873927-46-5.

Porta, Emilio; Arcia, Gustavo; Macdonald, Kevin; Radyaki, Sergiy; and Lokshin, Michael (2011): *Assessing Sector Performance and Inequality in Education*, The World Bank, Washington, D.C., pp. 192, $29.95, ISBN: 978-0-8213-8458-9.

Prabhakar, Jai C.S. (2010): *Socio-Cultural Dimensions of Development in North Karnataka*, CMDR, Dharwad, pp.17.

Puttaswamaiah, S. (2010): *Financing Higher Education – A Study of Educational Loans*, CMDR, Dharwad, pp. 19, ISBN: 978-81-921094-8-0.

Rani, Geetha P. (2010): *An International Perspective on the Methods and Practices of Student Loans – Its Implications for India*, Centre for Multi-Disciplinary Development Research, Dharwad, pp. 22, ISBN: 978-81-921094-0-4.

Sastri, M.N. (2011): *World Demographic Trends*, Sathyam Offset Imprints, Visakhapatnam, pp. 168.

Shiddalingaswami, H. & Raghavendra, V.K. (2010): *Regional Disparities in Karnataka – A District Level Analysis of Growth and Development*, CMDR, Dharwad, pp. 21, ISBN: 978-81-921094-7-3.

Singh, Jaspal (2011): *Instruments of Social Research*, Rawat Publications, Jaipur, New Delhi, Bangalore, Hyderabad, Guwahati, pp. 312, Rs.775/-, ISBN: 978-81-316-0429-8.

The Kerala State Higher Education Council (2011): *Report on Examination Reforms*, Thiruvananthapuram, pp. 83.

The Kerala State Higher Education Council (2011): *Report on the State Policy on Higher Education*, Thiruvananthapuram, pp. 22.

The World Bank (2011): Reducing *Inequality for Shared Growth in China – Strategy and Policy Options for Guangdong Province*, pp. 356, ISBN: 978-0-8213-8484-8.

Welch, Anthony (2011): *Higher Education in Southeast Asia – Blurring Borders, Changing Balance*, Routledge Taylor & Francis Group, London and New York, pp. 195, $85.00, ISBN: 978-0-415-43501-7.

White, Barbara Harriss and Prakash, Aseem (2010): *Social Discrimination in India – A Case for Economic Citizenship*, Institute for Human Development, New Delhi, pp. 36.

Wildavsky, Ben (2010): *The Great Brain Race: How Global Universities Are Reshaping the World*, Princeton University Press, New Jersey, pp. 240, Price: U.S.$26.95, ISBN: 978-0-691-14689-8.

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