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The UN Millennium Development Education Goal: How Much Have India and China Achieved?

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Introduction and Background Information:

Poverty is defined as the deprivation of necessary resources such as food, shelter, clothing, and water. It also includes the lack of opportunities for education and employment. In addition, the World Bank defines extreme poverty as living on less than $1 a day, and currently, about half of the world's population lives on less than $2 a day. Many of these people suffering from poverty live in developing nations such as Sub-Saharan Africa, East and South Asia, and Latin America. Due to the high number of people in these developing nations that live in poverty, research in development economics has grown.

Development economics is a field of economics that analyzes aspects of the development process such as poverty in low-income countries. Using models of development economics, one can understand why poverty exists, what causes it, and how to eliminate it. It seeks to explain and understand why disparities exist among countries and how economics can help find a solution. Development economics exists because of a key tenet of economics which says that resources are scarce; and economics attempts to explain the efficient allocation of those resources. Development economics focuses on fostering stable and sustainable economic growth, and structural change at both the domestic and international levels.

In 2000, world leaders adopted the UN Millennium Declaration, essentially, a global partnership to reduce extreme poverty by 2015. This was an important step in providing aid to developing countries because it created the world's first time-bound and quantified targets for addressing extreme poverty.[1]

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[1] *Millennium Development Goals (MDGs).* United Nations Development Programme. Web. 23 Sept. 2009.

The UN Millennium Declaration created eight international development goals. These goals are to eradicate extreme hunger and poverty, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria, and other diseases, ensure environmental sustainability, and lastly, develop a global partnership for development. Although all of these goals are essential to improving the standard of living of the populations in developing countries, the goal to achieve universal primary education is of particular importance because providing young children with access to elementary and secondary education is essential to creating a sustainable and growing economy.[2]

The fact that together, India and China comprise close to two fifths of the world's population illustrates how important developments, such as increases in economic growth, in these countries can be to the rest of the developing world. Rao, Cheng, and Narain highlight the fact that "India and China, which are the world's only population 'billionaires,' together, contain 45 percent of the world's primary school aged children."[3] India and China are two countries that are interesting to study in their governmental strategies regarding implementation of these MDGs, especially that of achieving universal primary education. Additionally, India and China are two of the world's oldest cultures and two of the world's largest developing countries. Through analysis, we can more accurately attempt to determine what features should be implemented in other

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[2] *Millennium Development Goals (MDGs).* United Nations Development Programme. Web. 23 Sept. 2009.

[3] Rao, Nirmala, Kai-Ming Cheng, and Kirti Narain, "Primary Schooling in China and India: Understanding How Socio-Contextual Factors Moderate the Role of the State," *International Review of Education, Vol. 49, No. 1-2, 2003, pg.155.*

developing countries. In addition, it is important to understand the changes and improvements in India and China, as they may have effects on the U.S. and Europe.

Since the late 1940s, both China and India have undergone dramatic social and industrial transformations. [4]Despite the differences in political and organizational structures, many of the conditions under which both China and India began to improve their educational systems were similar, and yet have led to very different outcomes. China has not only greatly improved their primary and secondary education enrollment, but also has surpassed India in that goal. India has achieved some success in higher education, but China is soon to exceed that goal as well. Overall, China has achieved a much larger degree of success in achieving the targets of improving educational standards.

In the past 50 years, both countries have made progress in improving primary school enrollment rates. In India, there was an increase from 19.3 million students in 1951 to 109 million primary school aged children in 1997. From 1949 to 1997, China went from having about 24 million students and 346,800 primary schools to 132 million students and 628,800 primary schools. In 1997, the net enrollment ratios for primary education for China and India were 99 percent and 71 percent, respectively.[5] However, some have questioned the validity of this data, arguing that many of China's indicators over-represent the participation of girls.

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[4] For example, from the 1940s to the 1970s, China underwent many agrarian transformations specifically redistributive land reforms and collectivization.

[5] Rao 155.

In this paper, I will first provide a history of the educational systems in both India and China to highlight the similarities and differences in their school infrastructures. Then I will look at several factors that have contributed to the current state of schooling in both countries. Through these comparative analyses, I will illustrate the relevance and importance of looking at India and China to provide us with information on how to achieve the education goal in other developing countries. Based on key education indicators, such as literacy rates and school enrollment rates, I will evaluate the progress of both countries. In addition, I will look at the extent of various disparities in terms of access to education in the two countries. After determining how much the countries have achieved, I will discuss some predictions that further demonstrate the importance of India and China in the international achievement of these UN Millennium Development goals. In particular, the predictions about economic growth for India and China illustrate the immense potential that these countries have to become two of the most powerful nations in the world within the next few decades.

History of Educational Systems:

In order to assess the progress that has been made in these countries, we would like to determine things such as the availability and cost of education for all levels, the types of programs that have been successful, and the potential long-term effects of these changes (for these specific countries and others). Certain indicators are useful in answering these questions. The United Nations Millennium Development Goals have defined certain indicators and targets for each goal. Specifically, the education indicators

are net enrollment ratio[6] in primary education, proportion of pupils starting grade 1 who reach the last year of primary, and the literacy rate of 15-24 year olds (both men and women).[7]

In order to understand what policies have been implemented to achieve these educational targets and to be able to compare their educational progress, it is useful to look at the history of their educational systems. We will first focus on the similarities in achieving a modern educational system. First, national leaders of both countries have argued that education is an integral part of their nation's economic development. Both countries have had leaders who have focused on developing educational systems that are oriented towards modernization. Secondly, both countries have had an elitist tradition in education. Lastly, both countries adopted educational programs heavily focused on science and technology, particularly in higher education. In fact, in 2004, together China and India awarded 463,000 bachelor's degrees in engineering, computer science, and information technology. This is more than triple the number of U.S. graduates. Despite the fact that India and China seem to value education so highly, around the 1960s, things began to change.[8]

For China, the Great Cultural Revolution (1966-1976) brought with it many unexpected changes to the educational system. Before the revolution, in the 1940s and 1950s, The People's Republic of China modeled their educational system on that of the Soviet Union. As a result, the number of higher learning institutions as well as the

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[6] The NER indicates the number of children who are enrolled in primary school in the relevant age group for primary education, divided by the total population of the primary school age group.

[7] Goldman, Charles A., Krishna B. Kumar, and Ying Liu, "Education and the Asian Surge: A Comparison of the Education Systems in India and China," RAND Center for Asia Pacific Policy, 2008.

[8] Goldman 3.

number of college students increased dramatically; primary education was flourishing. Then in the late 1950s, when China cut its ties with the Soviet Union, it changed its model to a two-tiered system focusing on a balance between a traditional, Confucian style and a modern, Western-style education.[9]

In August of 1966, the Great Cultural Revolution took hold in China and changed its education infrastructure. Launched by Mao Zedong, the Revolution was developed in response to many criticisms that the new two-tiered educational system was only serving the interests of the elite at the expense of the masses. It disrupted the progress being made in secondary and higher education while actually expanding access to primary education. Primary education decreased from six to four or five years, while secondary education decreased from six years to three.[10]

After the death of Mao Zedong in 1976, many educational policies shifted back to those of the early 1960s. At the primary level, many schools had closed, leaving many rural areas without school and declining enrollment rates. At the secondary level, schools were stratified into different levels, each with a varying intensity. Finally, at the higher education level, national college entrance exams were restored in 1977. In 1985, a compulsory nine-year education policy was instituted. In 1995, the Education Law of the People's Republic of China was passed. It was intended to improve both lower education (with the intended goal of producing skilled laborers) and higher education. Currently, the structure of schools and education in China encompasses primary education, secondary education (two levels), vocational high schools, tertiary education (both four

[9] Goldman 4-5.

[10] Goldman 5.

year and two year colleges), and graduate schools (both masters and doctoral). In recent years, China has started to adopt doctoral programs similar to that of the United States.[11]

Unlike China, India's educational system has experienced relative stability. After gaining independence in 1947, India's first leader, Jawaharlal Nehru emphasized the importance of an educational system that focused on scientific and technical knowledge. From the early days of its independence, India has concentrated on higher and secondary education rather than primary education. Higher and secondary education continually received large funds allowing such high-quality institutions as the Indian Institutes of Technology to emerge.[12]

Although it was in 1986 that India's government took some steps to focus more on primary education, many had begun to notice the imbalance in the 1960s. In 1966, the Kothari Commission, whose goal was to develop a coherent policy of national education, concluded that the purpose of education was to construct a self-sufficient and modern nation. In order to achieve this, the government provided free and compulsory education for children up to the age of fourteen. However, still only science and technology education was emphasized. Then in 1986, with the reign of a new leader, Rajiv Gandhi, came a new National Education Policy (NEP).[13]

The National Education Policy allowed India's government to realize that their lack of emphasis on primary education was detrimental to the country as a whole. Its objective was to help education be viewed as a basic component of the survival of

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[11] Goldman 5.

[12] Goldman 7.

[13] Goldman 7.

individuals as well as nations. It was designed to tackle the challenges associated with improving access, quality, and delivery of education in the face of emerging technology and developing economies. This policy also increased funds for disadvantaged groups to access to education. Since then, several other initiatives have been implemented. Operation Blackboard (1987-1988) aimed to improve the resources available in primary schools. The Restructuring and Reorganizing of Teacher Education (1987) was intended to improve the knowledge and competence of teachers. The Minimum Level of Learning (1991) developed minimum achievement standards. The District Primary Education Program (1993) worked in a more general manner to improve effectiveness in teaching methods. The National Program for Nutritional Support to Primary Education (1995) aimed at reducing the cost of educating children while providing incentives; it offered a free daily cooked meal to children in primary school. The Movement to Educate All (2000) shares the same main goal of the MDGs; it aims to achieve universal primary education by 2010. The Fundamental Right (2001) made the provision of free and compulsory education for children ages six to fourteen a basic right.[14]

India's Department of Education has implemented the "Education for All" Program to supplement many of the existing schemes. Two main programs, also part of the NEP, include the Sarva Shiksha Abhiyan (SSA) and the Midday Meal Programme (MDM). The SSA and MDM programs complement each other; the SSA program aims to achieve universal primary education by 2010, while the MDM program supports it by enhancing attendance in school and improving their nutritional status.[15]

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[14] Goldman 8.

[15] *Annual Report 2008-2009.* Government of India Department of Higher Education. Web. 15 Oct. 2009.

The District Primary Education Program (DPEP) is aimed at girls, working children, urban deprived children, and disabled children. The Jan Shikshan Sansthan (JSS) is a multifaceted adult education program aimed at improving vocational skills. The National Council for Educational Research and Training (NCERT) focuses on aspects of education including the development of textbooks, workbooks, teacher guides, supplementary materials, vocational skills, and education technology for the educationally disadvantaged. Specifically for Scheduled Castes (SCs) and Scheduled Tribes (STs), the National Institute of Educational Planning and Administration (NEIPA) was created to aid in educational development. Weaker, poorer sections of society, those with mental or educational disabilities, girls, and those in rural areas have been harder to reach. The government has enacted the Educationally Backward Minorities (EBM) program to help give those sections of society special attention.[16]

All of these programs contributed to the current structure of schooling in India. Although the total number of years of primary and secondary schooling is the same in India and China (nine years of compulsory education), the breakdown differs. Primary education is grades 1-5, upper primary education is grades 6-8, lower secondary education is grades 9-10, and lastly upper secondary education is grades 11-12. Generally, there are ten years of general education, and then two years of preuniversity followed by three years of university. Tertiary level education can be three years (for many bachelor's degrees including teacher training and nursing), four years (for engineering, agriculture, and dentistry) or even up to five and half years (for medicine).[17]

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[16] *Annual Report 2008-2009.* Government of India Department of Higher Education. Web. 15 Oct. 2009.

[17] Goldman 8.

Accounting for the Divergence between India and China:

There exists a large difference in the current states of primary schooling in India and China. By 2000, school enrollment indicators such as literacy rates and net primary enrollment rates (ratio of the number of children of official school age who are enrolled in primary school to the total population of children of official school age) revealed that China had outperformed India. In "Primary Schooling in India and China: Understanding How Socio-contextual Factors Moderate the Role of the State," Rao, Cheng, and Narain argue that many socio-contextual factors, such as the linkages between educational, economic, and social policies, cultural belief systems related to education, classroom teaching and learning, teacher characteristics, and the physical conditions of schools, can help to explain why this difference between what were originally similar circumstances in the two countries occurred.[18]

First, this analysis allows us to look at the link between state policy and primary schooling from a historical perspective. Second, because of the vast amount of diversity and disparities in economic resources, an analysis of success strategies in both countries is very beneficial for other developing countries with such heterogeneous communities. Both countries have the majority of their population residing rural areas, leading to very large regional imbalances. In China, most geographic disparities exist between coastal and interior populations, while in India, between northern and southern states. By examining India and China, we see what strategies are working in different types of regions.[19]

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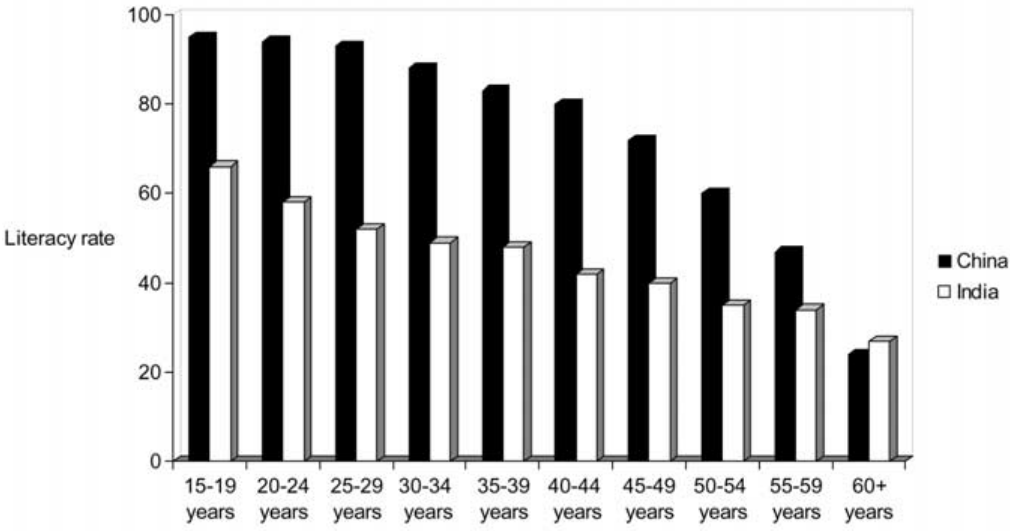
[18] Rao 153.

[19] Rao 155.

One of the major indicators of educational progress in both countries is literacy rate. Literacy rates in India increased from 18 percent in 1951 to 65 percent in 2001. Even more progress occurred in China as literacy rates jumped from 20 percent in the 1950s to 82 percent in 1997.[20] From Figure 1 below, it seems that in both countries, literacy rates increase much more significantly for younger age groups, suggesting that children are benefiting from primary education.

Figure 1: Literacy Rates in China and India in 1990-1991



Dreze, J. and Loh, J. (1995). Literacy in India and China. *Economic and Political Weekly*, November 11.
PROBE (1999). *Public Report on Basic Education in India* (p. 92). New Delhi: Oxford University Press.

The graphs below, from the World Bank, further indicate the progress being made in each country with respect to literacy rates.

[20] Rao 156.

Figure 2

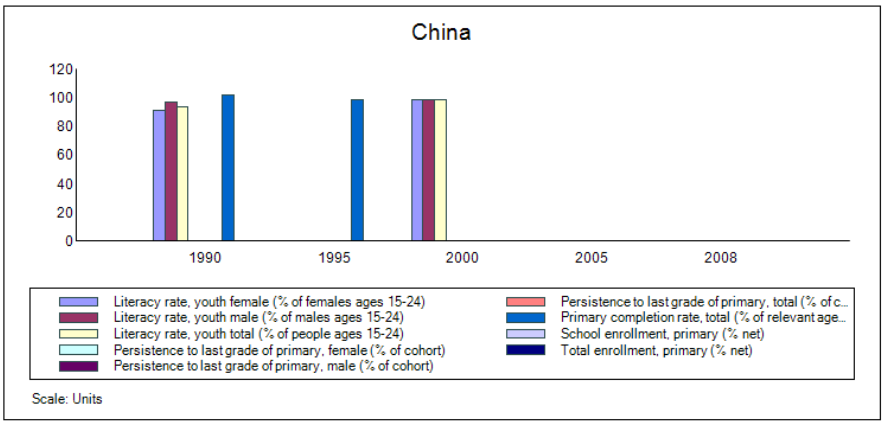
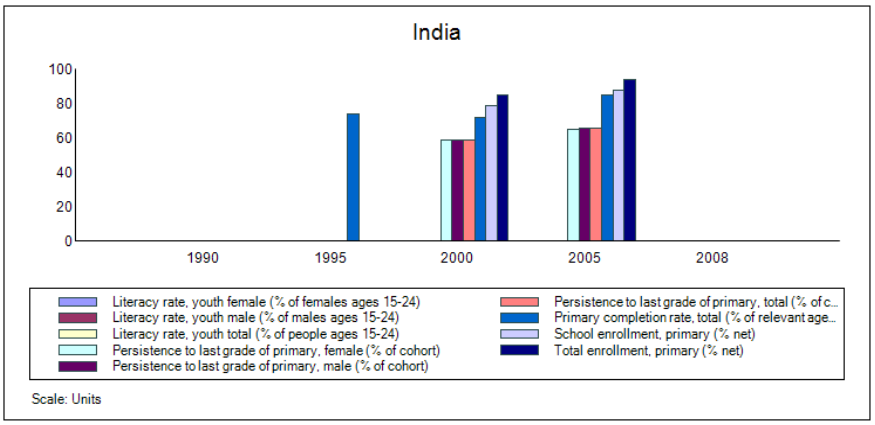


Figure 3



The first major reason for the contemporary differences in primary schooling is the nature and role of the state. As mentioned already, both countries underwent political transitions, around the same time. The People's Republic of China was created in 1949 and India achieved independence from British rule in 1947. Before these transitions, in the 1940s, both countries had low levels of GNP and life expectancy, while illiteracy and infant mortality rates were high. The political transitions changed China into a socialist state and India into a liberal democracy. The nature of China's new socialist government

allowed for easier policy implementation. The lack of will to fully implement policies made it more difficult to achieve the same goals in India.

China's success can be attributed to several factors. First, after the creation of the new government in 1949, China had a very centralized political system that had a good balance with a decentralized structure that met the economic and social needs of the population. It is believed that the needs of primary and secondary education are best met under local government. China decentralized the governance of their schools in 1970 before India and seems to have greatly benefited from it. After decentralization, China was able to effectively combat poverty, malnourishment, and illiteracy. Village and local townships were given control over primary education systems while other local governments were given control of the secondary levels. Acharya, Baru, and Nambissan (2001) also credit decentralization as one of the main reasons for China's success in improving and maintaining their educational system. On the other hand, India's attempts at decentralization at the primary level have been much slower. They did not extend beyond political and administrative areas. Second, in the 1950s, China was able to break the relationship between landlessness and poverty. Third, China has always given high priority to primary education. India only realized that it was necessary to focus on primary education in the 1980s. Lastly, the influence of the Communist Party facilitated better policy creation and implementation. In China, primary schools were preparing "successors for communism"[21] and so it can be argued that primary schools in China were used in a better way to achieve national development goals than in India.[22]

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[21] Rao 161.

[22] Rao 160-161.

In India, attempts to achieve universal primary education were centered on establishing more schools. However, by the late 1950s, it was clear that opening more schools did not result in higher enrollment or retention rates. A shift that focused more on children from SCs, STs, and rural areas was needed. In the late 1980s, the government started emphasizing more on the educationally backward districts rather than the educationally backward states. Additionally, the government emphasized participative planning. India has enacted other strategies to universalize primary education, which include increasing the supply of schooling, building schools closer to residences, and participatory school mapping. Dreze and Sen (1995) attribute the failure of many of these policies to the fact that they target "elusive goals without charting a workable strategy to achieve them or allocating the necessary resources."[23] In contrast, most educational policies in China have been very attentive to current conditions.

The connection among educational, economic, and social policies has also contributed to China's success. In China, educational policy has been changed according to government priorities. Many claim that the universalization of primary education leads to a decrease in child labor. Chinese parents can be prosecuted by the state if their children do not attend school. Any law prohibiting child labor in India is very weak and not effectively enforced.

The prevalence of the caste system in India is yet another reason why they have lagged behind in universalizing primary education. Social inequality is widespread in India. Because of the idea that education is not important to those in lower castes, lower

[23] Rao 161.

castes are not motivated to achieve any level of education. Incentives such as free books and uniforms are given to SCs and STs. Interestingly, a study by Weiner concludes that "low school enrollments and literacy levels are more due to shared beliefs about social order than they are to India's economic situation"[24]. Thus, the idea that the lower castes do not deserve education is so engrained into the minds of the middle class that it has hindered progress in universalizing primary education.

In addition to the lower castes, girls are also disadvantaged in terms of education. In both countries, the financial burden of sending children is so high that many girls drop out since there is a preference for sons. Rural parents in India want their daughters to get married and view education as an obstacle to that goal. They would rather save their money to be able to afford a better and larger dowry. Thus, the pervasiveness of the dowry system and beliefs about the education of girls has contributed to the differences between India and China in terms of primary school enrollment rates.[25]

Another area that is affected by the cultural beliefs in both countries is views about instruction in educational practice. Both countries have emphasized "'examination-oriented book-education' and rote learning." (169) The teacher has been viewed as more of a "transmitter of knowledge rather than a facilitator of learning." Many argue that part of China's success lies in their ability to prioritize effective teaching methods over cultural beliefs. Chinese education reforms have focused on making the classes more participatory and have discussions that actively engage the students.

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[24] Rao 167-168.

[25] Rao 168-169.

Carron and Ta Ngoc compared teaching and learning in India and China based on case studies conducted by Cheng (1996) and Govinda and Varghese (1993). The studies were conducted in five locations in Zhejiang, China and five in Madhya Pradesh, India. It was observed that Chinese teachers are responsible for a smaller number of lessons per week when compared to Indian teachers. All Chinese teachers prepared detailed lesson plans while only 50 percent of Indian teachers did. However, Indian teachers had much more non-teaching responsibility and many had to teach for more periods. Additionally, China places more importance on teacher professional development than India. Thus, Indian teachers received much less support for continued professional development.[26]

Lastly, teacher absenteeism is a major problem in India. Economists from Harvard University and the World Bank analyze the factors, incentives, and results related to teacher absenteeism in India in "Teacher Absence in India: A Snapshot." The study consisted of a series of unannounced visits to a nationally representative sample of government primary schools in India, although it did include a few rural private schools in villages. More specifically, the study consisted of 3700 schools, represented by 20 states and about 98% of the population. There are several factors that have been shown to influence rates of teacher absenteeism, namely, daily incentives, rate of school inspections, level of infrastructure, and distance to paved roads. On the other hand, factors such as salary or level of education do not tend to have a strong effect on the rate of teacher absences. The table above summarizes absence rates for various states in India.

[26] Rao 170-171.

Absence rates varied from 15% in Maharashtra to 42% in Jharkhand; not surprisingly, with higher rates of teacher absenteeism in the poorer states.[27]

Table 1: Teacher absence in public schools by state

State	Absence (%)	State	Absence (%)
Maharashtra	14.6	West Bengal	24.7
Gujarat	17.0	Andhra Pradesh	25.3
Madhya Pradesh	17.6	Uttar Pradesh	26.3
Kerala	21.2	Chhatisgarh	30.6
Himachal Pradesh	21.2	Uttaranchal	32.8
Tamil Nadu	21.3	Assam	33.8
Haryana	21.7	Punjab	34.4
Karnataka	21.7	Bihar	37.8
Orissa	23.4	Jharkhand	41.9
Rajasthan	23.7	***Weighted Average***	***24.8***

The fact that India has the second-highest average absence rate (25%) among the eight countries studied in Table 2 below is one of the main reasons that India is lagging behind in achieving the goal of universal primary education.

Table 2: Teacher Absence Rates by Country

	Teacher absence (%)
Peru	11
Ecuador	14
Papua New Guinea	15
Bangladesh	16
Zambia	17
Indonesia	19
India	**25**
Uganda	27

Source: Chaudhury, Hammer, Kremer, Muralidharan, and Rogers (2004) for most countries; Habyarimana and others (2004) for Zambia; World Bank (2004) for Papua New Guinea.

In addition to having such a high absence rate, only about 45 percent of teachers in India were actively involved in teaching when they were inspected.[28]

[27] Kremer, Michael, Nazmul Chaudhury, F. Halsey Rogers, Karthik Muralidharan, and Jeffrey Hammer, "Teacher Absence in India: A Snapshot," 2003, pg. 1.

[28] Kremer 2.

In order to understand why such a high rate exists, it is important to realize what needs to be changed so that this rate decreases. First, it was found that higher teacher salaries do not seem to reduce teacher absence. In India, teacher salaries increase with education, experience, and rank. Although college educated teachers, older teachers, and head teachers are more likely to be absent than regular teachers, there is no significant difference in absence between these two groups. In addition, teacher absenteeism is much higher in poorer states, which actually have relatively high teacher salaries. One reason for this relation could be that teachers do not fear being fired for absence. The problem with this seems to be monitoring; "only 1 head teacher in nearly 3000 public schools reported ever dismissing a teacher for repeated absence."[29] This illustrates that most teachers apparently feel almost none, if any, repercussions for being absent from school.

Physical infrastructure is a factor that largely impacts teacher absence rates, better infrastructure leads to a decrease in absence rates. Other working conditions that may affect absence rates include the location of the school and the actual teaching conditions. Motivation to come to work may be less for teachers hired to teach in remote schools.[30]

During this study, schools were inspected without notice. Not surprisingly, schools that had been inspected in the past three months were more likely to have a decreased rate of teacher absences. In addition, schools with PTAs that have had

[29] Kremer 5.

[30] Kremer 6.

meetings or events in the past three months also have lower rates of teacher absence.[31] Therefore, the rate of inspection, along with other factors stated earlier, seem to suggest that more effective monitoring would have a large impact on decreasing teacher absence rates. Several regressions that were run during the study do support this finding but do not provide much direction about how to implement policies that can correct this.

Tables 3 and 4 below illustrate the relationship between absence rates and type of school and type of teacher.

Table 3: Absence by Type of School

	Public schools	Non-formal schools	Private aided schools	Private schools
Weighted teacher absence	24.8%	28.0%	20.1%	22.8%
Rate of teaching activity	44.8%	42.9%	58.8%	48.5%
Number of observations	34525	393	3371	9098

Table 4: Absence rates by Type of Teacher (Public Schools Only)

	Head	Deputy head	Permanent/ regular	Contract/ informal
Absence rate	30.2%	22.2%	23.1%	24.0%
Number of observations	7177	1979	23333	2037

Overall, public school teachers are more likely to be absent, but not my much. However, when comparing public school teachers to private school teachers in the same village, the difference is much more significant. This could be due to the fact that private schools are often located in villages with especially high absence rates in public schools. Some argue that private schools come up in areas in which government schools are performing poorly while others claim that it is due to the arrival of private schools that leads to higher rates of teacher absence. The entry of private schools into these areas takes students away the

[31] Kremer 8.

current public schools; decreasing the pressure on teachers from government schools to attend.[32]

The last thing to note is how these rates of teacher absence affect student performance. These studies indicate that "a 10% increase in teacher absence is associated with a 1.8% lower student attendance."[33] In addition, these figures may actually be underestimated since measurement error tends to skew the coefficients downward. Therefore, teacher absenteeism is a problem that goes beyond consequences for teachers but one that greatly impacts students and their performance in school.

Table 5 below summarizes the absence rates by various factors.

Table 5: Absence rates by various individuals and school-level characteristics (in percent; public schools only)

Category	Yes	No
Rich state (96-97 per capita income > $275)?	21.7	28.0
Female?	21.9	27.2
Older than 40 years?	27.1	21.4
Completed bachelors degree?	21.7	24.2
School has a toilet for teachers?	21.6	27.1
School has electricity connection?	19.2	28.2
Commute < 30 minutes?	21.4	25.2
Rural school?	25.2	22.9
Headteacher is absent?	22.2	18.5
School inspected in the past 3 months?	21.0	27.0
Belongs to this town/village?	21.6	23.3
PTA has met in the past 3 months?	21.0	26.5

Notes: The weighted average absence across these categories will often be lower than the total absence rate, because of missing individual-level correlates on teachers who were repeatedly absent. All differences are significant at the 5 percent level.

The results of this study have shown that one in four government primary school teachers in India are absent on any given day and that only one in two is actually teaching. Thus, a large proportion of the education budget in India seems to be wasted. As long as teachers are not punished for being absent, they have no incentive to keep up

[32] Kremer 8-9.

[33] Kremer 9.

their attendance rates. In contrast, those factors that influence the daily costs and benefits of attending school seem to have a large affect on teacher motivation to attend school. Better physical infrastructure and more effective monitoring have more significant effects on the costs of teacher absence. The results of the study suggest strongly that India should explore potential reforms to improve the education it is offering to their students. They can range from improving school infrastructure, increasing the frequency of inspections, or even increasing the number of private schools.

We have looked at several socio-contextual factors to help explain why the current state of primary education in India is lagging behind that of China's. Differences in attempts at decentralization, cultural beliefs about education, teacher absentee rates, and the relationships between economic, social, and educational policy have led China to be more successful in improving the net primary school enrollment rate.

Thus we can start to see how the differences in the development of the educational systems in India and China beginning in the 1940s have contributed to the current state of schooling programs. In Table 6 below, Goldman summarizes the history of education in both countries since the 1940s.

Table 6: China and India: Education Profiles

Period	China	India
Late 1940s to mid-1960s	Priority given to higher education Primary education first increased and then decreased	Priority given to higher education Primary education neglected and developed slowly
Mid-1960s to late 1970s	Higher education halted Primary education expanded rapidly	Continued emphasis on higher education Continued negligence of primary education
Early 1980s to early 2000s	Higher education rebuilt and expanded Vocational secondary schools increased and then declined in importance Continued development of primary education	Shift in government priority from higher education to primary education

After understanding the development of China's and Indian's educational systems, we can look to actual data to assess the strengths and weaknesses of their current programs. This will also allow us make recommendations for other countries and for the future.

Analysis I (Indicators of Educational Progress):

In order to properly assess educational strengths and weaknesses in each country, it is important to consider both access and quality. As established by the MDG targets, indicators of educational success in terms of access include gross enrollment ratios (the number of students enrolled in primary, secondary and tertiary levels of education, of all ages, regardless of gender, as a percentage of the population of official school age for the three levels), literacy rates, years of education attained, and the percentage of the adult population that is educated.

China has already reached the education targets; in fact they have surpassed them. By the end of 2007, gross enrollment in primary education in China exceeded 100 percent.[34] Particularly, it reached its peak in 1990 at 120 percent and has been declining towards 100 percent since then. The net primary enrollment rate is 95 percent for China.[35]

The success of China in achieving this goal is due in large part to their sustained and rapid economic growth since 1978, the policy of opening up their economy to the world, increased levels of income for the population, and the establishment of the

[34] For many developing countries, many students start a level of education several years later than the theoretical age. Thus, it is possible for the gross enrollment ratio to exceed 100 percent. At the tertiary level, the population used is the five year age group beyond the secondary school-leaving age.

[35] Goldman 12-13.

socialist market economy. In addition to these economic elements of China's success, the government's development strategy has been vital in ensuring progress. China's development strategy includes expanding domestic demand, improving economic structure, maintaining the protection of environmental resources as a basic state policy, continuing the balanced development of rural and urban areas, and lastly, persisting in the strategy of development that is heavily rooted in technology and education.

In 1985, secondary primary enrollment rates for China and India were about 40 percent but increasing dramatically only in China. India's net enrollment rates have been around 82 percent. Additionally, India's gross primary enrollment rates have yet to peak. In the early 2000s, there was evidence to show that India's primary enrollment rates were gradually converging to China's. The figures below compare China and India's gross primary, secondary, and tertiary enrollment rates.

Figure 4

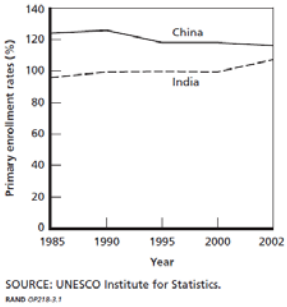


Figure 5

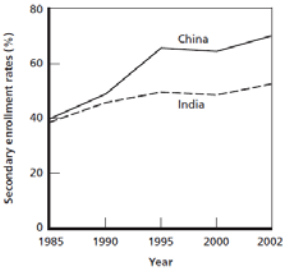
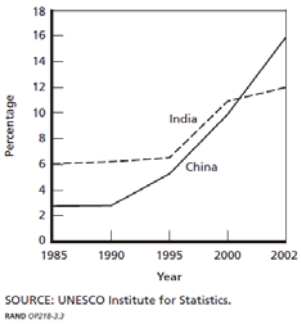


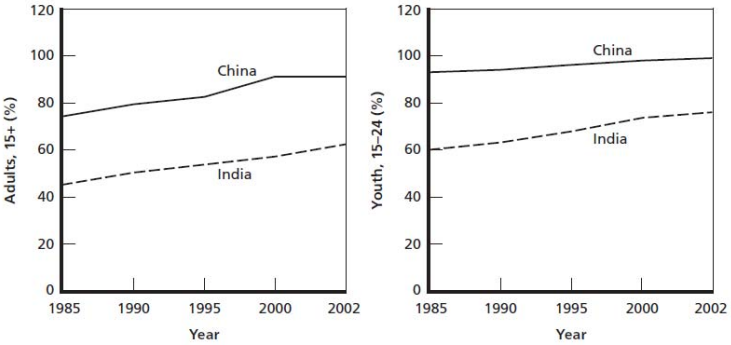
Figure 6



With respect to literacy rates, again China is surpassing India. For adults (15 and over) and children (ages 15-24), the gap has remained the same since 1985. In 2000, the overall literacy rate in China was 91 percent compared to 61 percent in India. The graphs below show India and China's literacy rate from 1985 to 2002 for adults and youth.[36]

[36] Goldman 14.

Figure 7 Figure 8



SOURCE: UNESCO Institute for Statistics.
RAND OP218-3.2

Another indicator, average years of schooling, can be used to measure the strength of an educational system. In 2001, the average years of schooling in people ages 15 and older was 6.35 years in China and only 5.06 in India. Furthermore, in China, 18 percent of the same population had no education, 33.9 percent had primary education, 45.3 percent had secondary education, and 2.8 percent had college education. On the other hand, in India, 43.9 percent had no education, 28.3 percent had primary education, 23.8 percent had secondary education, and 4.1 percent had college education.[37] From this we can see that India was lagging behind in primary education but succeeding in providing college education. After seeing data such as this, one may question whether there are factors other than governmental programs that are contributing to these gaps. One issue could be that China's labor force is largely in services and manufacturing while India's is mainly agricultural. Despite this, India needs to give more priority to primary and secondary education.

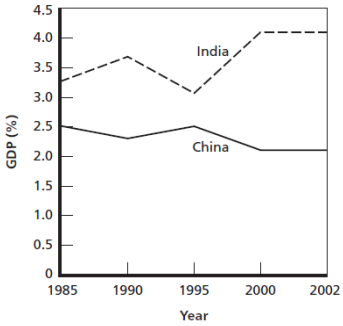
The difficulty for India lies in finding a way to increase funding and support for primary and secondary education while not risking their advantage over other countries in tertiary education. Since India's independence in 1947, there has been a 16-fold increase

[37] Goldman 14.

in the number of universities and a 20-fold increase in the number of colleges. Total enrollment in India's 320 universities and 15,000 colleges exceeds 9.4 million. In the 1980s, the World Bank emphasized how important and necessary it was for India to give greater attention to lower education. In 1985, 2.8 percent of the adult population had received postsecondary education in India while only 1.2 percent in China. Thus the difficulty for China is the reverse of India's. Interestingly enough, by the early 2000s, both trends had reversed and India's gross tertiary primary enrollment rate was suffering while China's was increasing.[38]

It is clear that India and China face different obstacles to achieving improvements in education. Something to consider is the difference in provision of that education in both countries. Public education expenditure has been higher in the past two decades for India than for China. The graph below illustrates the percentage of public education expenditure for both countries.

Figure 9: Public Education Expenditure (percent of GDP)



SOURCE: UNESCO Institute for Statistics.
RAND OP218-3.4

In China, education is becoming increasingly more dependent on tuition rather than the public treasury. Only 55.8 percent of education expenditures in China are from public

[38] Goldman 14.

sources compared with 96.2 in India. In China, 44.2 percent of education expenditures are from private sources compared with 3.8 percent in India.[39] Why is there such a high level of private funding for education in China?

One explanation could be that the central government gave up the responsibility of providing compulsory education (grades 1-9) to the local governments. To finance this, local governments have increased school fees. Another reason could be that tuition has become a great source of revenue in tertiary education. In 1990, tuition was close to zero. In 1998, it had increased to $890. Thus governments increased tuition in response to discovering its profitability. Lastly, several public universities operate financially independent schools to provide adult education. This serves as a way to receive additional income for those universities.

In India, the nongovernmental organizations manage 51 percent of secondary schools and 58 percent of higher secondary schools.[40] Thus, increased private provision of education in India can be advantageous if private institutions are more effective. This situation would most likely be more responsive to changes in the labor market. However, the high burden on public funding can pose problems.

A related issue is that of relevance of education. Although both countries' focus on technical education seems warranted, it is important that all education imparted to students in these countries is relevant to their economies. Since both India and China have very diversified economies, focusing on technical education alone is not enough. The educational systems in both countries should offer educational alternatives relevant

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[39] Goldman 21-22.

[40] Goldman 22.

to the different occupations that the countries' economies demand. A favorable consequence of this that it allows students the opportunity to self-select into the classes that are compatible with their interests, skills, and incomes. One way to promote this is to offer vocational or skill-based classes.[41] A large percentage of the population in both countries is part of the labor market; such vocational education will be highly beneficial to that sector of the population. In addition, training programs that consist of both vocational and academic courses have been implemented in both countries in order to create more well-rounded students who are capable of fulfilling a larger variety of employment opportunities.

The dropout and repetition rates are important indicators of the quality of education since they measure the likelihood of successful completion. Although there is not a wide availability of data for these rates, they are of interest because enacting compulsory school laws will have no effect if the quality of education is poor. Many argue that if the quality of education is improved, parents will be more willing to allow their children to attend school. Often times in developing countries, children are perceived as productive assets; parents benefit from a larger number of children because that means they have more help. This leads to parents intentionally preventing their children from attending school in order to have them help with household duties. However, if parents can begin to see the improved benefits of sending their children to school, then their attitudes regarding school are more likely to change.

As an indicator of the quality of education, the dropout rate is still high in India. Even if India can enroll 100 percent of their students in primary education, the current

[41] Goldman 25.

dropout rate predicts that only 83 percent of those students will reach the fifth grade. However, the dropout rate for boys in primary education has decreased from around 60 percent in 1960 to around 38 percent in 1998. In China, the dropout rate is 15 percent for primary education, considerably lower than India's. In 2002, India's repetition rate was 4.8 percent compared with China's .3 percent.[42] Table 7 below shows the gross and net enrollment ratios for both countries, as well as other indicators related to primary school efficiency.

Table 7

	China			India		
	Female	Male	Total	Female	Male	Total
Gross Enrolment Ratio (GER)[1]	122	123	123	81.5	98.5	90.3
Net Enrolment Ratio (NER)[2]	98.9	99.0	98.9	64	77.7	71.1
Primary school dropout rate	0.92	1.09	1.01	25.6	26	25.8
Repetition rate[3]	1.2	1.1	1.2	–	–	5–8
Years taken to complete Primary 5[4]	–	–	–	8 years	7.2 years	7.5 years

1 The GER is the number of children who are enrolled in primary education, regardless of age, divided by the population of the age group that corresponds to primary schooling (6–11 years).
2 The NER indicates the number of children who are enrolled in primary school in the relevant age group for primary education, divided by the total population of the primary school age group.
3 Low repetition rates may be due to the policy of automatic promotion in some provinces.
4 In India, 19 states and Union territories have a 5-year cycle for primary education while the other 13 have a 6-year cycle. In China, primary education typically has a 6-year cycle.

Other indicators of the quality of education include teacher training, education, and credentials. However, these are a bit more difficult to measure. The percentage of teachers with the qualifications required by the state in China increased from 80.7 percent in 1991 to 94.6 percent in 1998. In addition, China's 21:1 student-to-teacher ratio was much more impressive than India's 42:1.[43] China seems to experience a higher overall quality of education because of their higher quality of teachers, lower student-to-teacher

[42] Goldman 24.

[43] Goldman 24.

ratio, and better monitoring of school attendance and other indicators. The table below summarizes the values for several key indicators in both countries.

Table 8

Category	Indicator	China	India
Access	Net primary enrollment (2002–2003)	95%	82%
	Gross secondary enrollment (2002–2003)	70%	53%
	Gross tertiary enrollment (2002–2003)	16%	12%
	Adult (15+) literacy rate (2000–2001)	Total: 91% Male: 95% Female: 87%	Total: 61% Male: 73% Female: 48%
Resources	Public education expenditure (% of GDP, 2000–2001)	2.1%	4.1%
	Public + private expenditure per pupil in 1999 PPP $ (1999)	Primary: 372 Secondary: 833	Primary: 303 Secondary: 295
Quality	Grade 5 survival rate (2001–2002)	99%	84%
	Primary pupil–teacher ratio (2002–2003)	Primary: 21	Primary: 41

SOURCE: All data are from UNESCO's Education Statistics or World Education Indicators.

Another concern with both countries is the fact that increasing literacy rates for adults is not sufficient. Both countries face the task of actively involving its adult populations in the job of modernizing their country's economy. Adult education is lacking in both countries. There are nearly 90 million illiterate adults in China alone. There are close to 260 million illiterate people ages 7 and up in India.[44] Efforts such as literacy campaigns and volunteer programs have been made. However, a stricter, more coherent government policy is needed. Unfortunately, the percentage of GDP allocated to adult education in India actually decreased from .05 percent to .01 percent from 1990-1991 to 2000-2001.[45] Both countries need to focus on effective ways to provide adult education, including literacy and job training.

Analysis II (Disparities in Access to Education):

Several categories of disparities exist with respect to access of education in both countries. They include gender, age, income, and geography. For China, the net primary enrollment rate is actually slightly higher for females than for males. Recently, the

[44] Goldman 16.

[45] Goldman 17.

disparity has been reducing which in turn has contributed to a reduction in the gap in literacy rates. Specifically for China, the "One Child Policy" has helped to reduce the gender gap. With only one child allowed in each household, most families became more concerned with providing education for their child regardless of gender. In addition, China's communist government favored many policies that promoted gender equality.[46]

On the other hand, due to the lack of such egalitarian policies, India's gender gap is still considerable. The net female enrollment is lower than the net male enrollment. Additionally, there exists a disparity in gross secondary enrollment rates: 47 percent for women versus 58 percent for men. With respect to literacy rates, although literacy was growing faster for females, a large gap still persists. The literacy rate for men is 73 percent compared to only 48 percent for women.[47] Noticing several important impacts of female literacy on the economy, India has taken steps not only to improve enrollment rate for young girls but also to provide adult literacy training. It has been observed that increased female literacy can decrease fertility, decrease infant mortality, and increase children's education.

The paper, "Fertility, Education, and Development" by Jean Dreze and Mamta Murthi, discusses the importance of women's education in explaining fertility differences not only across countries but also across regions. After examining the determinants of fertility levels using panel data in India from 1981 to 1991, the authors have found that the level of education for a female plays a very large role in her fertility rate.

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[46] Goldman 18.

[47] Goldman 18.

It mentions several reasons why increased female education can be expected to reduce the desired family size. First, since education raises the opportunity cost of women's time, it can make more opportunities available, many of which may conflict with the responsibilities associated with raising children. Second, the education of women may reduce their dependence of male children for support in old age or social recognition, especially in a country such as India, in which there is marked son preference. Third, higher educated women may have higher aspirations for their children which in turn may reduce the expectations for them in terms of labor services. Fourth, educated women may be more receptive to modern social norms, such as family planning movements. Lastly, more educated women will have more knowledge of and access to contraception, increasing their bargaining power within the family and allowing them to achieve the desired number of children. This last reason is important because increased levels of female education were found to be correlated with increased use of contraception. Thus this paper illustrates an important effect that increasing female education could have on fertility rates and in turn children's education.[48]

Age is also a factor contributing to the disparities in education in both countries. Both countries have large populations of uneducated people, many of whom are older. As the educational systems improve, increasing numbers of younger people are receiving better educations and in turn better jobs, thus making it even more difficult for older people in the population to secure jobs. Although this problem has been acknowledged in both countries, little has been done to improve the status of adult education in either country.

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[48] Dreze, Jean and Mamta Murthi,"Fertility, Education and Development: Further Evidence from India," *CDE Delhi School of Economics CHE, King's College*, pg. 5.

Not surprisingly, income is another factor that has resulted in large disparities in access to education. In both countries, there exists a high degree of correlation between income and enrollment rates. Regions in both countries with lower enrollment rates are poorer than those regions with higher enrollment rates. Even more striking seems to be the disparities in income within a single region. Although China's overall inequality is lower than that of India's, China's inequality is higher in rural than in urban areas. This is one aspect in which government intervention is strongly needed. The Chinese government needs to continue allocating a substantial amount of funds to the education budget for rural areas. In addition, although China has established a huge and complete education statistics system, they need help in improving the methods for defining and calculating education indicators. In both countries, but especially in India, a region that is too poor to provide adequate educational facilities can only improve with government assistance. Thus it is necessary to consider whether government intervention in the form of subsidies is the best way to increase enrollment.

Geography is a major factor in education disparities. In China, it seems that the eastern, more economically developed regions have done better in providing adequate education. In seven provinces in the east, there is a 100 percent coverage ratio for nine year compulsory schooling compared with 65-85 percent in seven central provinces.[49] Other indicators such as the primary enrollment rate, the lower secondary enrollment rate, and literacy rates are much lower in central and western provinces than in eastern provinces. Furthermore indicators such as dropout rates and transition rates are lower in the east.

[49] Goldman 18.

In India, a significant gap between urban and rural literacy rates is still considerable although it has decreased from 1991 to 2001. In 1991, the rural literacy rate was 44.7 percent and the urban rate was 73.1 percent. In 2001, the rural rate was 59.2 percent and the urban rate was 80.1 percent.[50] Low literacy is a problem in states such as Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh, and Jharkhand. Specifically in India, a root of the problem lies in the difference in states' spending on education. Although education is both a state and central government responsibility, in practice, most education is mainly state funded. Thus, education budgeting has proven to be an obstacle in both countries.

For both countries, the competency level of teachers, quality of teaching facilities, and the application of interactive teaching methods all tend to be lower in rural environments. Compared with India, China is relatively homogeneous which has allowed its educational disparities due to ethnic differences to be lower. India's society is organized into castes, which vary depending on social status, income, access to education, and several other similar factors. Some of the lowest castes include the SCs and STs whose literacy rates fall well below the national averages. These castes have made necessary the program of reservations, in which the central government "reserves" spots in its own colleges and firms for people in these castes. However, these programs cannot be completely effective until access to primary education is guaranteed. Thus, India's challenge seems to be greater than China's, not only do they need to address a larger gap in urban and rural education but also a better method of reaching disadvantaged groups so that they are able to benefit from the reservation programs.

[50] Goldman 19.

Furthermore, similar steps need to be taken to correct the dearth of special services that exist for migrant children and children with disabilities.

The effects of India's heterogeneity is also discussed in the paper, "Crouching Tiger, Lumbering Elephant: A China-India Comparison." In this paper, Bardhan looks specifically at a society's ability to resolve collective action problems and to politically manage conflicts. Interestingly, he notices that China has performed better in resolving collective action problems while India has performed better in politically managing conflicts.[51] Bardhan believes that one of India's most serious problems is that of collective action; which he argues is "necessary in formulating cohesive developmental goals."[52] He claims that this problem is due to the heterogeneous nature of India's society; no one group is powerful enough to take over the state. On the other hand, China has been able to make hard decisions and stick to them. China is more homogeneous which allows coordinated action to be more effective. In other words, the different types of political regimes in either country have contributed to the current state of government.

Analysis III (Problems Specific to India):

At this point, one can see that, unfortunately, India has not achieved success on such a large scale as China. Although the Indian government has enacted an "Education for All" plan based on the belief that elementary education is the foundation of the educational system, their programs have only been partially successful. Part of the reason as to why India has been unable to achieve a one hundred percent success rate is due to the fact that the analysis has been done at a highly aggregate level. This does not

[51] Bardhan, Pranab, "Crouching Tiger, Lumbering Elephant: A China-India Comparison," pg. 4.

[52] Bardhan 4.

produce useful results in such a large and heterogeneous country as India. Currently available data does not allow for identification of the specific villages that account for most of the infant deaths, underweight children, and out of school children. This is so because most of the surveys are not large or representative enough at the village level. However, this data does allow for identification at the regional level. Southern Rajasthan and Southwestern Madhya Pradesh are two of India's regions that are lacking the most in MDG indicators. There is currently no system for monitoring progress towards attainment of the goals at the sub-national level.[53]

Specifically, some of the poorest states in India (Uttar Pradesh, Bihar, Rajasthan, Orissa, and Madhya Pradesh) have experienced the most difficulty in achieving the educational MDG goal. It is reasonable to infer that India's attainment of the MDGs will depend largely on the performance of these states. Thus, it is essential to concentrate on the indicators in these poorly performing regions. In particular, the Indian government has executed several sectoral interventions that seem to have had positive effects on elementary education. There have been an increased number of primary schools for children aged six through eleven and an increase in school density. There has been a reduction in the student-teacher ratio. It is important to note that although these interventions have been successful for the most part, one intervention alone will not help. Drastically reducing hunger/poverty in these poor states is still quite plausible with such interventions because they are very responsive to economic growth. The following

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[53] *Ministry of Human Resource Development (MHRD)*. Government of India. Web. 14 Oct. 2009.

graphs show the predicted effects of various interventions on net primary enrollment rates and primary completion rates in many poor states in India.

Figure 10

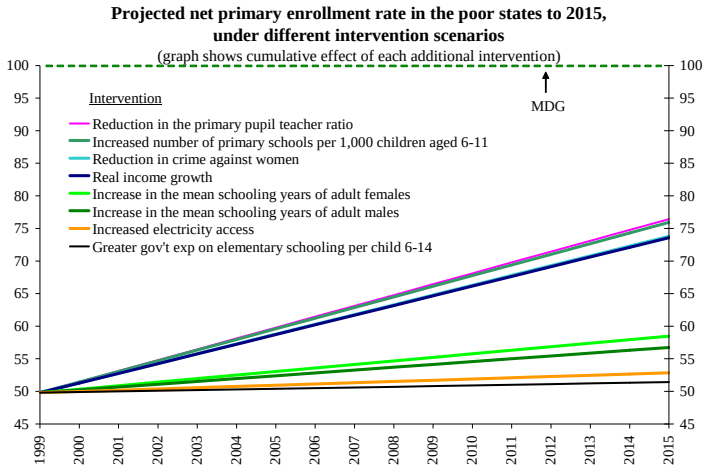
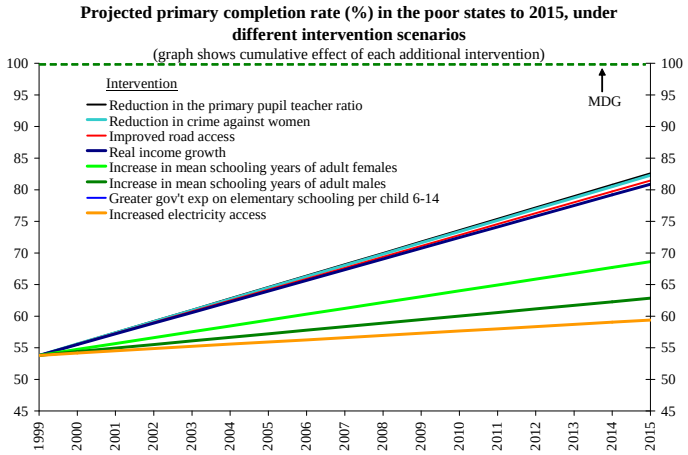


Figure 11



These next two graphs show, for various interventions, the projected percentage of children aged 6-11 attending school in the poor states and the projected male-female difference in school attendance rate of children aged 6-18 in the poor states to 2015.

Figure 12

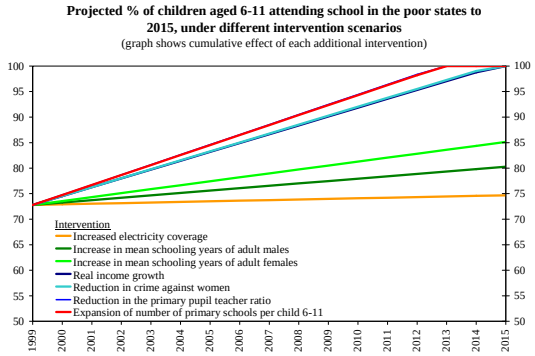
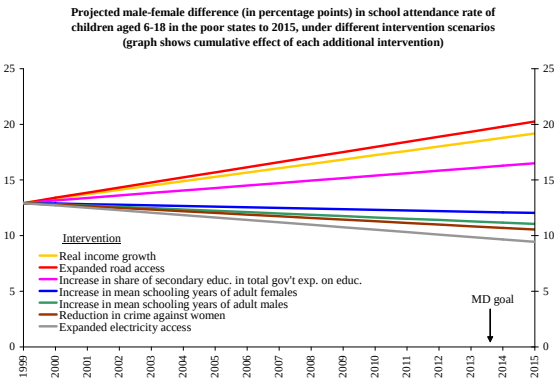
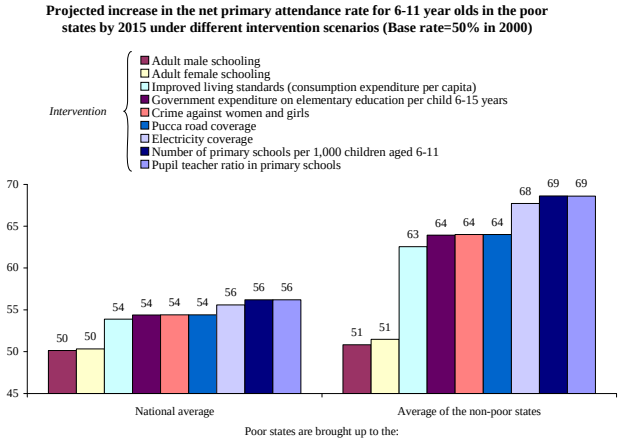


Figure 13



This last graph shows different interventions and their predicted effects on net primary attendance rates for 6-11 year olds in the poor states by 2015.

Figure 14



Some general interventions include improving infrastructure (water, sanitation, electricity, and road access), expansion of female schooling, and scaling up of public spending in social sectors. Although a crucial step in the right direction, implementing these strategies is not enough. Unfortunately, even if the theoretical aspects of policies can be understood, there may still exist more tangible obstacles, such as physical infrastructure. Both India and China suffer from inadequate educational input in terms of infrastructure. Although this may seem to be a minor problem when compared to the obstacles encountered while establishing curricula and ways to access it, it is easy to

understand why schools that lack even the most basic amenities will be unable to meet the enrollment and completion goals. Systematically monitoring the outcomes of these interventions and evaluating their impact on public programs is just as important.

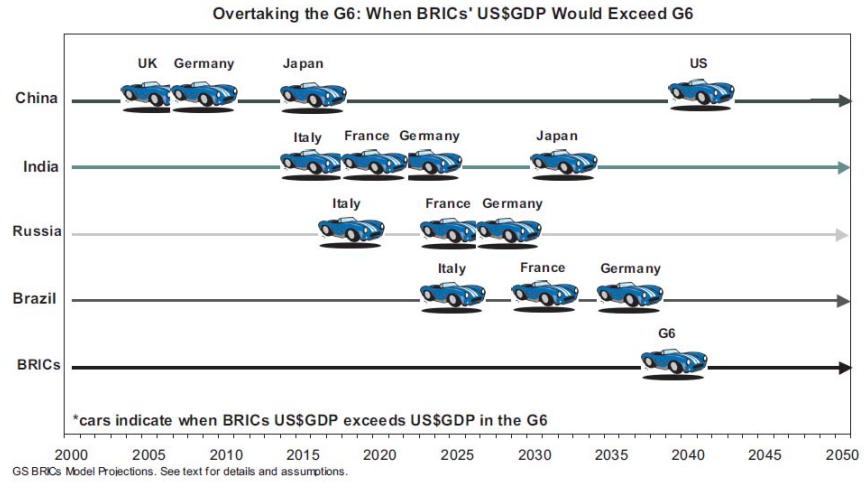
Analysis IV (Future Predictions):

As the world economy is continually changing due to the effect of advances in technology which not only increase the amount of knowledge but also improve the efficiency in which we can access it, education is becoming more important. Since the quality of knowledge offered in institutions has improved, education has become a critical dimension in one nation's competitive edge over another. The focus on India and China stems from the fact that their achievement of the MDGs, particularly achieving universal primary education, will have an effect on both developing and developed countries around the world.

The Global Economics Paper No:99, titled "Dreaming with BRICs: The Path to 2050, discusses the role of the BRICs (Brazil, Russia, India, and China) in the ever-changing world economy. By examining GDP growth, income per capita, and currency movements, the paper predicts the future of the economies of the BRICs until 2050. The results of the predictions indicate that there is a very strong possibility that the countries in the BRICs could replace many countries currently on the list of the world's top ten largest economies. The BRICs can overtake the G6 by means of higher real growth and the appreciation of their currencies. Currently, the G6, composed of France, Germany, Italy, Japan, United States, and United Kingdom, hold positions in the top ten

economies of the world. The graph below illustrates the impact that the BRICs could have on the world economy by 2050.[54]

Figure 15



1 Any decision to limit the sample of countries is to some extent arbitrary. In focusing on the G6 (rather than the G7 or a broader grouping), we decided to limit our focus to those developed economies with GDP currently over US$1 trillion. This means that Canada and and some of the other larger developed economies are not included. Adding these economies to the analysis would not materially change the conclusions.

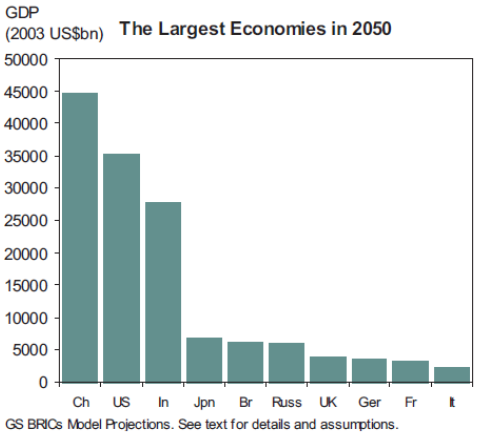
The main assumption for these predictions to be accurate is that the BRICs "maintain policies and develop institutions that are supportive of growth."[55] It is also important to note that the paper claims that education is one of the core factors for growth, along with macroeconomic stability, institutional capacity, and openness to trade. These conditions will help to ensure that the BRICs remain on a steady growth track. Although these predictions are optimistic, if true, the effects of them would be highly significant because the increase in growth in the BRICs could decrease the growth and economic activity in developed countries. In addition, higher growth in the BRICs could lead to higher returns and increased demand for capital. Furthermore, if these predictions are true, then by 2050, three out of the four largest economies will be in Asia. One may

[54] Wilson, Dominic and Roopa Purushothaman, "Global Economics Paper No:99, Dreaming with BRICs: The Path to 2050," pg. 2.

[55] Wilson 2.

expect this to result in many shifts toward the Asian region that will no doubt have affects on all of the world's top economies. The following graph shows what the list of top ten economies would look like, assuming that these predictions hold true.[56]

Figure 16



The paper cites three main reasons as to why their forecasts are plausible. First, these predictions for GDP growth in the BRICs for the next ten years are compatible with the International Money Fund's assumptions. Second, in comparison to what some of these countries have already achieved in the past, these assumptions are underestimating the potential of these countries. Furthermore, applying this same methodology ("modeling capital stock growth as a function of the starting level of a capital and investment and technical progress as a catch-up process on the US")[57] to data from 50 years ago yields results that are very close to the current conditions. Lastly, using a different econometric model, namely the Levine and Renelt model, produces very similar results. The following graph shows how the BRICs' GDP will grow in relation to that of the G6.

[56] Wilson 10,12.

[57] Wilson 10,12.

Figure 17

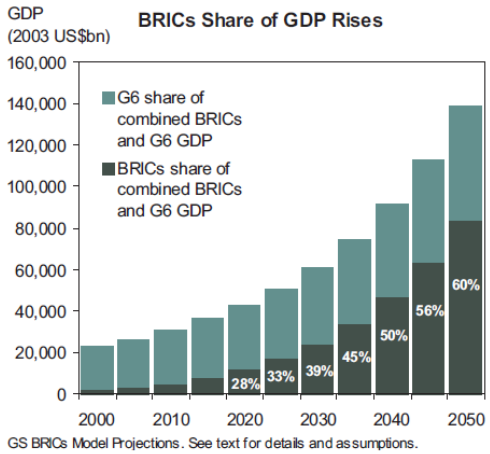


Table 9

BRICs Real GDP Growth: 5-Year Period Averages				
%	Brazil	China	India	Russia
2000-2005	2.7	8.0	5.3	5.9
2005-2010	4.2	7.2	6.1	4.8
2010-2015	4.1	5.9	5.9	3.8
2015-2020	3.8	5.0	5.7	3.4
2020-2025	3.7	4.6	5.7	3.4
2025-2030	3.8	4.1	5.9	3.5
2030-2035	3.9	3.9	6.1	3.1
2035-2040	3.8	3.9	6.0	2.6
2040-2045	3.6	3.5	5.6	2.2
2045-2050	3.4	2.9	5.2	1.9

GS BRICs Model Projections. See text for details and assumptions.

In less than forty years, the BRICs economies could be larger than the G6 (in terms of US dollars). Growth for the BRICs will probably slow down after the first 30 years, except for India which may experience growth rates above 3 percent by 2050. Clearly, India has a very high potential to show the fastest growth over the next 30 years. India's economy could be larger than Japan's by 2032 and even America's by 2041. Even more impressively, China could overtake Japan by 2015 and America by 2039.[58] What conditions allow countries to have such high growth potentials? One source is that developing economies have less capital per worker than developed economies. This leads to higher returns on capital. The second source is that developing countries may be able to use technologies that have already been created in developed countries.[59]

The paper makes predictions for the BRICs as a whole as well as for each country individually. For China, it is expected that their GDP growth rate will fall to 5 percent in 2020 and continue to about 3.5 percent in the mid 2040s. With a large labor force, high investment rates, and steady convergence, China could be the largest

[58] Wilson 3.

[59] Wilson 6.

economy by 2041. On the other hand, India's growth rate is not expected to slow down but rather remain around 5 percent throughout the next 30 years. This would allow India "to raise its US dollar income per capita in 2050 to 35 times current levels."[60] The graphs below show the potential that China and India have with respect to becoming two of the world's largest economies by 2050.

Figure 18

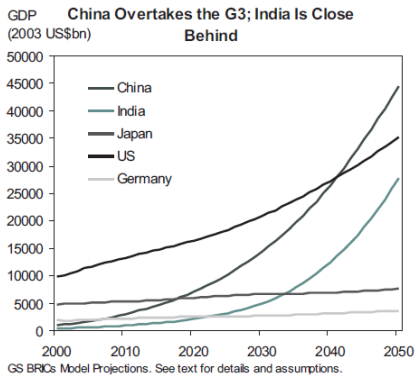
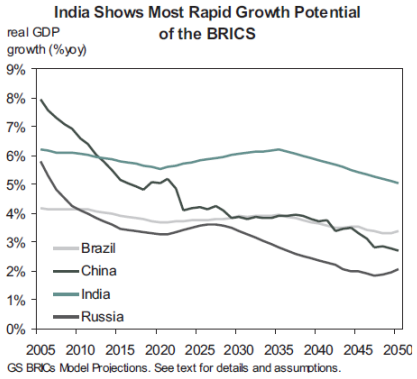


Figure 19



It is clear from these observations that detailed and thorough analyses of the policies (both educational and other) in these countries is necessary because of their potential and significant on the world economy over the next few decades.

Conclusions and Recommendations:

Education in any developing country is a vital component of national economic progress and success. Understanding how education relates to employment opportunities is the focus of UNESCO's and APEID's paper titled "Content of General Education in Relation to Occupational Training." The Asia and Pacific Programme of Educational Innovation for Development (APEID) works to improve job prospects. The paper discusses five national studies completed between 1984 and 1986 that examined the "different training and re-training programmes for teaching personnel involved in the

[60] Wilson 10.

implementation of curriculum changes to incorporate the development of employable skills with the context of general education."[61] The main goal of each study was to determine whether students leaving general education schooling were able to meet the requirements of different occupational training programs.

The studies reveal that many developing countries, including India (specifically Tamil Nadu) and China, implemented programs that balanced vocational training with academic coursework. The paper writes that each country's plans for general education "reflect each country's aspirations to produce well-rounded individuals equipped with knowledge in the traditional disciplines, proper human and social attitudes as well as general vocational skills."[62] The programs have succeeded, for the most part, in providing work education in addition to work oriented training for both the young and the adult population. Specifically for China, "the emphasis on the vocational and technical courses in general education will contribute to the fulfillment of the task of training 8 million skilled personnel."[63] A common goal for both countries is the pursuit of "higher levels of industrialization as agriculture, which is the main occupation area at present, starts to provide less jobs for people."[64] These vocational training programs have been implemented in order to attend to the changing economic conditions in both countries. Thus, this paper emphasizes that the focus on education is necessary in these countries because of the influence of education on students' opportunities to gain meaningful employment.

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[61] UNESCO, "Content of General Education in Relation to Occupational Training," pg. ii.

[62] UNESCO 14.

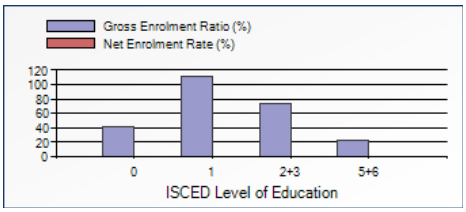
[63] UNESCO 36.

[64] UNESCO 48.

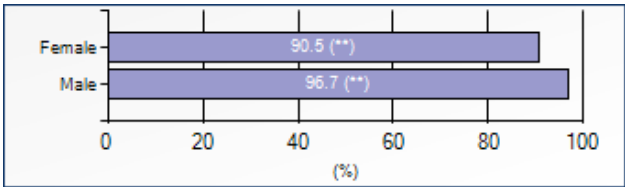
China has made many achievements in improving basic educational attainment. Although India is lagging behind, they have made some strides in recent years. Both countries need to focus on educating their adult populations as well as providing education comparable to those in the developed countries. The main areas in which the two countries differ widely are access to education (enrollment rates), resources (funding), and quality (teacher training, student-to-teacher ratio). The figures below provide a summary for the progress that has been made in both India and China based on key indicators such as the gross enrollment ratio, net enrollment ratio, and the literacy rate.

CHINA:

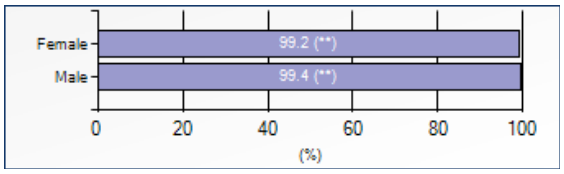
Participation in Education (2007)



Literacy Rates: 15 Years and Older (2008)



Literacy Rates: 15-24 Years Old (2008)

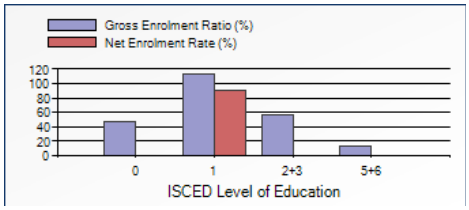


Education Indicators

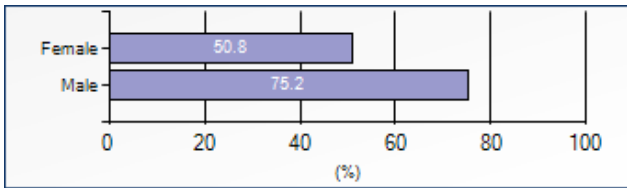
Pupil / teacher ratio (primary)		18
Percentage of repeaters, primary (%)		-
Primary to secondary transition rate (%)		...
Public expenditure on education :		
as % of GDP	(1999)	1.9
as % of total government expenditure	(1999)	13.0

INDIA:

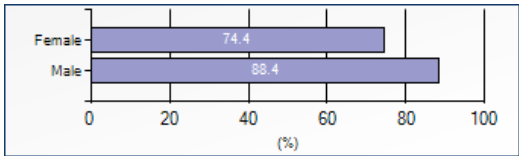
Participation in Education (2007)



Literacy Rates: 15 Years and Older (2008)



Literacy Rates:15-24 Years Old (2008)



Education Indicators

Pupil / teacher ratio (primary)	(**,2004)	40
Percentage of repeaters, primary (%)		3
Primary to secondary transition rate (%)	(2006)	85
Public expenditure on education :		
as % of GDP	(2006)	3.2
as % of total government expenditure	(2003)	10.7

Although China spends less of their GDP on education than India, their higher degree of success in helping their population achieve a basic education indicates that they are allocating their funds more efficiently. Furthermore, China has many other strengths, including their nearly 100 percent enrollment rate, reduction in gender gap after focusing on the importance of female education and literacy, and decentralization in school governance, which have all increased the quality of education and decreased the dropout and repetition rates.

China's main challenge lies with educating the adult population and increasing the adult literacy rate. China has nearly 90 million adult illiterates that must be integrated into the economy. Although they have achieved a high level of success, China still needs to improve their secondary enrollment rates as well as the financing options they offer to those pursuing higher education. Despite these obstacles, China's success in recent years is very promising. It has the opportunity to improve its education even further and compete with other nations who have developed educational systems.

Although India decentralized their governments later than China, they are now beginning to see the positive effects of that action. In addition, India's change of focus from tertiary education (namely, information technology and biotechnology) to primary and secondary education has dramatically increased both enrollment levels. India's emphasis on such technical education has allowed it to become a knowledge-driven economy. One major asset that India has is its large prevalence of private education. It allows India the opportunity to enact many more educational reforms.

After analyzing the various factors that have contributed to and that continue to impact the current structure of schooling and education in India and China, the importance of achieving the UN Millennium Development Goals is clear. Both India and China have immense potential to overtake several developed countries, namely Japan and the United States, over the next few decades. The performance of India and China with respect to the education MDG will have effects not only for the inhabitants of those countries, but also for the entire world.

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