

Beyond the Traditional: A New Paradigm for Pakistani Schools

By

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B.S. Architecture Studies
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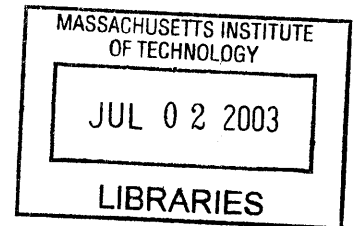
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Abstract

Pakistan's greatest resource is its children, but only a small percentage of them make it through primary school. Pakistan needs to improve its literacy rate if it hopes to transition from a developing to a developed country. However, the 2-room government schools found in most parts of the country do not offer any of the amenities of a modern educational institution and most are in a state of disrepair since the government is unable to meet the cost of maintenance. Lack of educational resources and dreary physical conditions are some of the main contributors to the low enrollment and high dropout rates.

Presented in the thesis is a proposal for improving teaching and learning conditions of the 2-room government schools, taking into consideration both the limited resources of the government and the poverty of the communities the schools are located in. The thesis is based upon a government school in Manghopir, Karachi that is run by the community. It proposes a framework that makes the school a "socially responsive school," which better serves the educational, psychological and physical needs of the children and makes the community a part of the school. A "socially responsive school" has been approached through three components: architecture, education and community linkages. The architectural component seeks to increase the utility of the 2-room school by creating a framework that supports a sustainable program for maintaining and improving the school facilities and its environment and provides spaces that can serve the multiple needs of the children and which foster positive interactions with the community. The educational component is an approach that supplements, but does not replace the official curriculum. It introduces the children to scientific concepts outside the classroom and makes learning fun for them. The community component defines different levels of relationship at which "community participation" in the school can occur. These relationships are more sensitive to the limitations of a poor community and allow the community and the school to choose the degree of interaction between the two.

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Without all of you, this thesis would never have been completed.

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Abstract

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Table of Contents

Chapter 1:	Making a Case for Change	7
1.1	Public School Today	
1.2	Literacy in Pakistan	
1.3	The Need	
Chapter 2:	Towards a Socially Responsive School	12
2.1	The Site	
2.2	Manghopir	
2.3	Selection of School	
2.4	From Ilm Primary School-I to Ilm Primary School-II	
2.5	Ilm Primary School-II	
2.6	Ilm Primary School as a Socially Responsive School	
Chapter 3:	Architectural Response	20
3.1	The Teachers and Children	
3.2	Programmatic Flexibility	
3.2.1	Revenue Generation	
3.2.2	Community Linkage	
3.2.3	Distance	
3.3	Enabling Spatial Configurations and Physical Facilities	
3.3.1	The Classroom	
3.3.2	The Verandah	
3.3.3	The Blackboard	
3.3.4	Pin-up Space	
3.3.5	Storage Space	
3.3.6	Daytime Lighting	
3.3.7	Ventilation	
3.3.8	The Lavatory	
3.3.9	Solar Panels or Wind Turbines	
3.4	Opportunity for Intervention	
Chapter 4:	Educational Response: 'Active Learning'	40
4.1	Classroom Education and the Child	
4.2	'Active Learning'	
4.3	'Active Learning' and the Teachers of Manghopir	
4.4	Adapting 'Active Learning' to Manghopir	
4.5	Child and Play	
4.6	Child, Play and 'Active Learning'	
4.7	Applying the Child-Play Concept to Ilm Primary School-II	
4.7.1	'Outward-Looking' Walls	
4.7.2	'Tree House'	
4.7.3	Water Pool	
4.8	Benefits of Child Play and "Active Learning"	

Beyond the Traditional: A New Paradigm for Pakistani Schools

Chapter 5:	Community Linkages	53
5.1	Ilm Primary School's Need for Community Participation	
5.2	Ilm Primary School and the Community	
5.3	Teachers and Community	
5.4	Community Participation and Education	
5.5	Community and Ilm Primary School II: a symbiotic relationship	
5.6	Provider (School) – Consumer (Community)	
5.7	Provider (School) – Beneficiary (Community)	
5.8	Beneficiary (School) – Provider (Community)	
5.9		
Chapter 6:	The Way Forward	64
6.1	A New Beginning	
6.2	Levels of Interventions for a Socially Responsive School	
Bibliography		i

1.1 Public Schools Today

The existence of a state-operated educational system in Pakistan is visible through the physical manifestation of the mustard-yellow, 2-roomed school in most villages (Fig.1). These simple school units symbolize the government’s commitment to bringing education to its people. A typical school like this consists of two (20’ x 16’) classrooms with a 6’ wide verandah in front and a lavatory block¹, set on a small plot of land protected by a boundary wall (Fig.2). The benefits of the 2-room school unit include fast construction, low-cost and easy replication. The plan is sufficiently customizable and can be expanded in a modular fashion, depending on the enrollment figures. Hence, larger schools are simply a multiple of the basic unit.

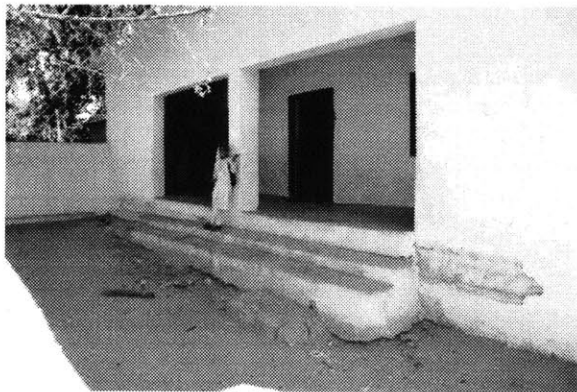


Fig.1 A typical 2-room school

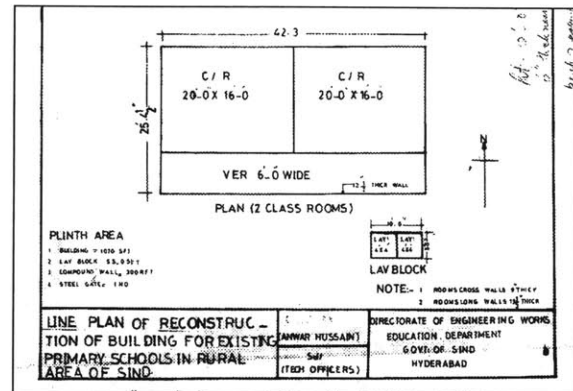


Fig.2 Generic Plan for 2-room school

The prolific construction of the 2-roomed school was spurred by the government’s commitment to universal primary education made soon after independence; the first proposed deadline was set for 1975². However, this goal is yet to be realized. The latest target year set by the Ministry of Education is 2014, to be achieved through the implementation of the ‘Education Sector Reform (ESR): Action Plan 2001-04’³.

The challenge of meeting universal primary education on a meager educational budget may have been the main reason that the 2-roomed school unit did not evolve into a more customized educational facility with children’s reading room, computer labs, etc. The unit not only met the financial constraints, it was also

¹ Planning and Monitoring Cell. *Scheme for Construction /Reconstruction of Building (2-Room) for Existing Primary Schools in Rural Areas of Sindh District* Badin Government of Sindh Education Department-Planning and Monitoring Cell. Karachi, 1989.

² Curle, Adam.1966. *Planning for Education in Pakistan: A Personal Case Study* by Adam Curle. Cambridge: Harvard University Press, 46.

³ Government of Pakistan. Ministry of Education. *Education Sector Reforms: Action Plan 2001-2004*. Islamabad, 2002, 25.

appropriate to the climatic conditions and social norms of the society; the provision of a verandah was a logical response to the hot climate experienced in most regions of Pakistan, and a compound wall addressed the social context that dictated provision for privacy and security of students especially girls.



Fig.3 Crumbling ceiling in a government school



Fig.4 Government Urdu Boy's Primary School-Tappo. At the primary level, the school may be officially designated as boy's school, but in reality are often co-educational.

While the 2-room schools do remarkably well with regards to economy, they would rank dismally if judged on the kind of spaces provided. There are no aesthetic qualities associated with them, nor are there any provisions to create an environment that speaks of an educational institution. In addition to these limitations, the government has not been able to keep up with the maintenance of these schools. Consequently, many of the government schools are in a dilapidated condition, lacking basic facilities like electricity, functioning lavatories and running water (Fig.3). It has been established that providing a physically comfortable educational environment in schools greatly enhances the quality of learning for the children. The government's perspective of what constitutes an adequate school seems to be the provision of a basic shelter under which classes can be taught (Fig.4). These 2-room schools fulfil the basic requirement but do not go beyond that- and perhaps were not meant to go beyond them.

1.2 Literacy in Pakistan

Prior to British colonial rule over the subcontinent, "the Muslims had had their own well organized system based on a strong substratum of Islamic teaching. Teaching began in *maktabs* (schools for basic literacy). These schools were often co-educational and many were located in mosques. From the *maktab* a child could proceed to a *madrasa* (school for Islamic theology and sciences) for cultural and professional education, or to a guild for artisan or craft training"⁴.

⁴ Curle, Adam. 1966. *Planning for Education in Pakistan: a personal case study by Adam Curle*. Cambridge: Harvard University Press, 48.

Historically, the Muslim rulers were the patrons of a few of these, but the majority of these *maktabs* and *madrasas* were financed by a *waqf*⁵ (endowment) system, which was usually setup by the community or through the generosity of a prominent social figure. When the new British system of state-run education was imposed under colonial rule, the Muslims rejected it because it did not address the religious educational needs of their community. The Muslim system of education suffered severely due the British policies, and many *madrasas* were forced into closure. According to Adam Curle, “the educational systems, of what is now Pakistan, tended to be less developed than those of other parts of the subcontinent”⁶ primarily due to this reason.

Pakistan came into existence on 14th August 1947, based on the Islamic ideals. The Government of Pakistan inherited the existing network of the British education system and as a modern state it took on the responsibility of primary education; the *First Five-Year Plan* (1955-1960) laid the foundation of universal primary education⁷. While the *madrasa* system of religious education still survived at that time, albeit in a much diminished form, it did not become part of the government’s educational system. The *Second Five-Year Plan* (1960-1965) aimed at reaching universal primary education by 1975, but despite the commitment, the budget declined in the allocation for education, which dropped from 6.2 to 4 percent⁸ of the Gross Domestic Product (GDP) (this figure dropped further in subsequent years).

The prevalent poor physical condition of government schools had existed even during the early years of independence when education had been one of the top priorities of the country. According to Curle’s evaluation, “teaching is rigid and old-fashioned; there is a serious shortage of textbooks, and those available are of miserable quality; there is no equipment; there are few playgrounds”⁹. Student dropout rate was high due to a combination of poor economic, social and physical conditions. Class I had the highest dropout rate; “due to overcrowding and because younger children were less able to withstand boredom, discomfort, and harshness than older ones”¹⁰.

Today, Pakistan is in the process of implementing its *Ninth Five-Year Plan* (1998-2003) with literacy and enrolment rates ranking amongst the lowest in the world. 8.2 million children are out of school, of which 5.9 million are girls. Only 3 percent of rural twelve-year-old girls continue in school compared to 18

⁵ A system of endowment usually attached to public institutions.

⁶ Curle, Adam. 1966. *Planning for Education in Pakistan: a personal case study by Adam Curle*. Cambridge: Harvard University Press, 49.

⁷ Ibid, 52.

⁸ Ibid, 56.

⁹ Ibid, 107.

¹⁰ Ibid, 170.

percent of boys¹¹. The dropout rate in 1997 was 60 percent for boys and 64 percent for girls at the primary school level¹². Economic factors still remain the main reason for the high dropout rate, according to the *Education For All, The Year 2000-Assessment, Pakistan Country Report*. However, the “poor condition of school buildings, the unattractive/unfamiliar environment of the school, over-crowded classes, and inadequate provision of physical facilities”¹³ are equally important factors.

The goal of *Education Policy 1998-2010* is to “increase the literacy rate from 39 percent in 1998 to 70 percent by the year 2010”¹⁴. Under this policy, the government plans the “establishment of 45,000 new primary schools, with the minimum norm being the two-room primary schools”¹⁵. Though the budget allocation for education has increased from 2.2 percent of GNP to 4 percent (2003), according to the *Human Development in South Asia 1998 Report*, 70 per cent schools in Pakistan still have no toilets, 68 percent have no drinking water, 92 percent have no playgrounds, 60 percent have no boundary walls and 16 percent are without a building¹⁶.

The government’s push for universal primary education is now being reciprocated by parents who are consciously deciding to send their children to school in the hope that education will ensure their entry into higher-paying jobs. The responsibility of improving conditions of existing schools and establishing an additional 45,000 schools is a daunting task. The fear is that the current trend of poor school conditions will persist and be magnified to a larger scale, and the teachers and children would be forced to continue attending schools that are barely adequate¹⁷ but not appropriate for their needs. It is a debate of quantity vs. quality. If the government hopes to successfully contain dropout rate, it needs to seriously address the issue of poor physical environment that the children are forced to study in.

While global trends in school structures and their educational needs are changing, with *Information and Communication Technologies (ICT)* predicted to transform the classroom, government schools are still

¹¹ Asian Human Rights Commission, Vol. 04 No. 44, “Pakistan’s Literacy and Enrollment Rates the Lowest” 04 November 2002, <<http://www.rghr.net/mainfile.php/0444/401/>> (11 May 2003).

¹² Population, Socio-economic and Development Profile of Pakistan, Section 3: Education, “Education Policy 1998-2010” <<http://www.pap.org.pk/population/sec3.4.htm>> (19 May 2003).

¹³ Muhammad Saleem, UNESCO, “Education For All: The Year 2000-Assessment Pakistan Country Report” October 1999, http://www2.unesco.org/wef/countryreports/pakistan/rapport_2_0.html (11 May 2003).

¹⁴ Population, Socio-economic and Development Profile of Pakistan, Section 3: Education, “Education Policy 1998-2010” <<http://www.pap.org.pk/population/sec3.4.htm>> (19 May 2003).

¹⁵ Muhammad Saleem, UNESCO, “Education For All: The Year 2000-Assessment Pakistan Country Report” October 1999, http://www2.unesco.org/wef/countryreports/pakistan/rapport_2_0.html (11 May 2003).

¹⁶ Human Development Foundation, “Adopt a Public School in Pakistan,” *YesPakistan.com*, 17 June 2002, <<https://www.yespakistan.com/forpakistan/adoptapublicschool.asp>> (11 May 2003).

¹⁷ The classroom provides adequate shelter against the sun, rain and wind. Basic provisions are desks, chairs and a blackboard, an electrical outlet and a lavatory.

struggling and failing to provide the basics. Local participation, decentralization, and the introduction of private funding are three factors that seem to hold the most promise with regards to bringing about a change. While the middle-income group can afford to send their children to private schools, the government schools are the only option for providing education to the low-income segments of society, in spite of the neglect and poor physical and educational standards.

1.3 The Need

Pakistan needs to improve the literacy rate of its population if it hopes to make the transition from a developing to a developed country; the country's greatest resource is its human capital. But the transition is dependent on the quality of this 'human capital'. In the face of limited financial resources, how can the government hope to score at the level of both quality and quantity, and simultaneously keep up with the technological advances being made around the world?

Given that the 2-room school will be the means of developing this human capital, the thesis tries to explore how it can be improvised to 1) provide a better physical environment that is more appropriate to the needs of both children and teacher, 2) contribute towards the educational development of the children, and 3) help meet some of the needs of the community it serves. The hope is that a 2-room school that is more socially responsive to the economic, social and cultural constraints will address the issue of educational quality and thereby reduce some of the pressure on the government. It proposes a framework around the school that introduces architectural, educational and communal components that would allow these schools to improve. Considering the limited financial and material resources under which these public 2-room schools function, the thesis aims to propose changes that can be incorporated for improving the utility of both the existing and future 2-room schools to be built.

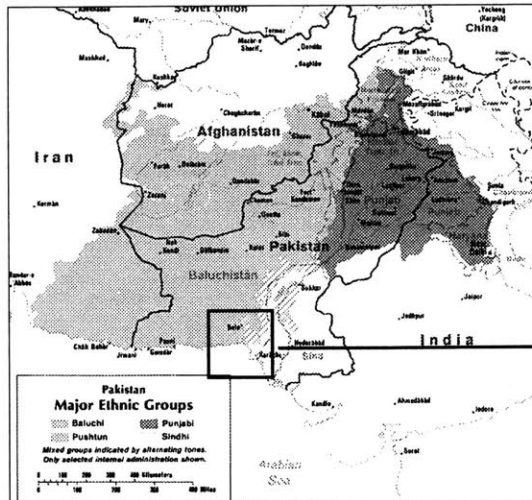


Fig.5 Map of Pakistan showing the four provinces and the major ethnic groups

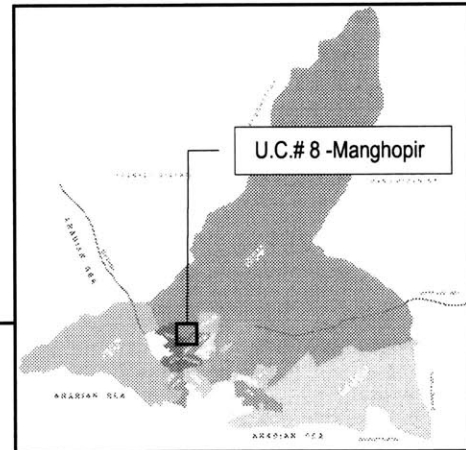


Fig.6 Map of Karachi showing the eighteen districts

2.1 The Site

Given that the 2-room school is a generic plan, I felt that an analysis based on a survey of a large sample size would not only be unfeasible given the time constraints, but would also be very superficial. I worked on the assumption that a thorough, hands-on observation of the conditions and usage patterns of one or two government schools should allow me to generalize my findings to a large extent. Initial criteria chosen in the selection of the school were: a typical 2-room government primary school located in a community with limited access to resources like education, employment opportunities, economic links and access to information. Contact with the Department of Education¹ for the *Sindh*² province led to the identification of the *Manghopir Township* located on the periphery of Karachi.

2.2 Manghopir

Located 10 miles north of Karachi, Manghopir is the last stop before the long drive to Balochistan³ (Fig.5 and 6). Under the *Devolution Plan City District Government* implemented in 2001, local governments in the form of Union Councils were elected to administer their localities. Manghopir was designated as

¹ Contact was made in June 2002.

² Sindh is one of the four provinces of Pakistan.

³ Balochistan is one of the four provinces of Pakistan.

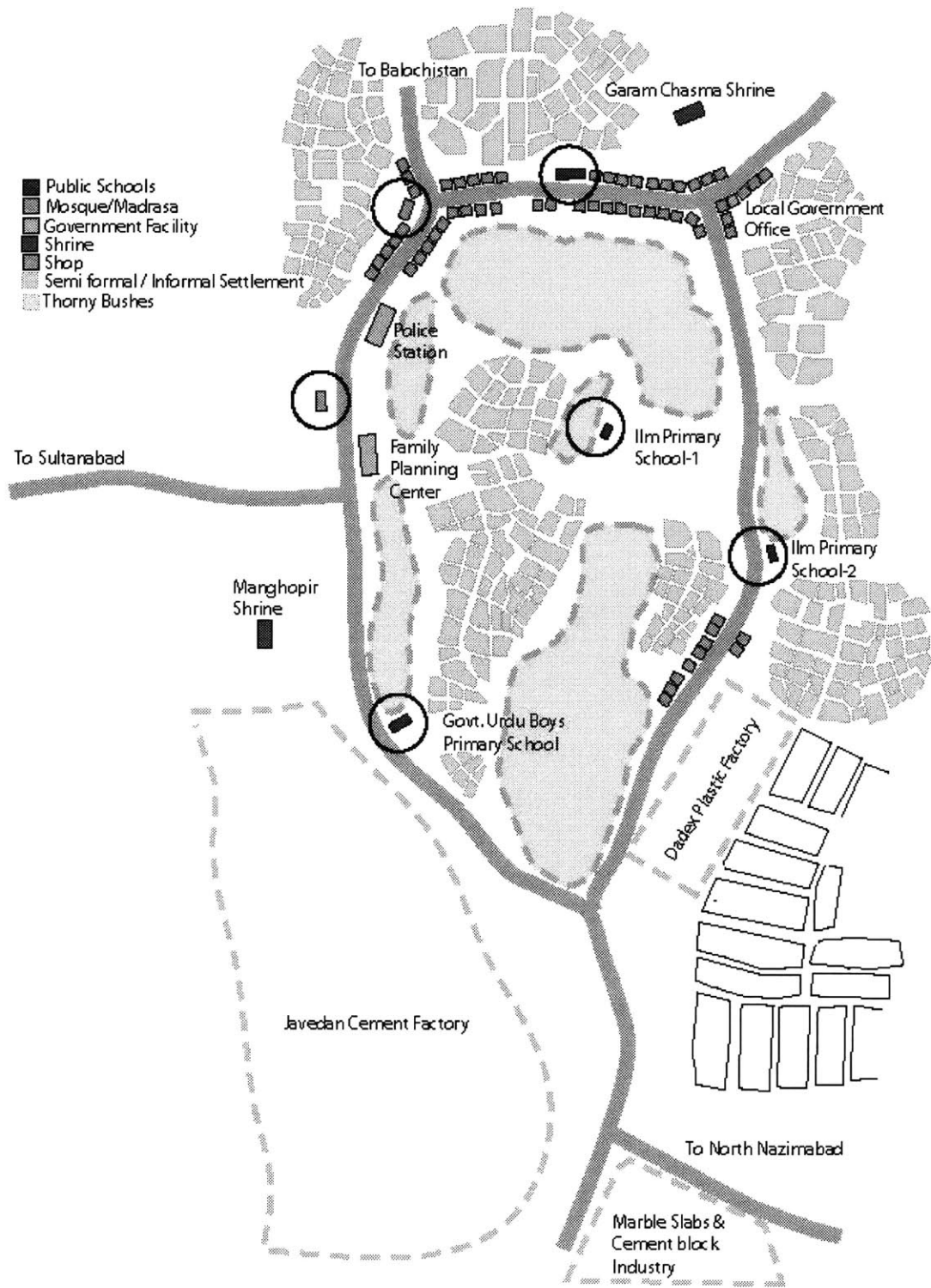


Fig.8 Class 1-111 of IIm Primary School-II

*Union Council (U.C.) # 8 of Gadap Town*⁴. The population of *Manghopir* according to the last census (1998) is 35,385⁵. It is divided into various localities, including the area originally known as *Manghopir*. My work was based in this area, bordered by *Garam Chasma* to the north and *Sultanabad*⁶ to the west, and accounts for about 3,000 to 5,000 of the total population of U.C. # 8 (Fig.7). It is served by two government primary schools (*Government Urdu Boys Primary School – Tappo Manghopir* and *Ilm Primary School-I*) and one community based school (*Ilm Primary School-II*).

Historically, and even today, *Manghopir* is a pilgrimage site for many, who come here to receive blessings at the two shrines, *Mangho Pir mazar*⁷ and *Garam Chashma mazar*⁸, and bathe in the healing waters of the hot springs located here. The population originally grew around these shrines but today most residents work as laborers in Karachi, while many are connected to the marble and cement industries located in *Manghopir*. The housing pattern consists of both formal and squatter settlements. According to a survey conducted by Samina Saleem⁹, majority of the people are illiterate, but are anxious to educate their children. The primary barrier, however, seemed to be the lack of government schools and the high cost of tuition in private schools- which most residents could not afford on a monthly salary of \$20-30.

⁴ On 14th August 2001 under the “*Devolution Plan City District Government*”, Karachi was divided into 18 Townships that were further subdivided into 178 *Union Councils*. Gadap is one of the 18 townships created as a result of the devolution.

⁵ Government of Pakistan, Karachi City Government, <<http://www.karachicity.gov.pk/qadaptown2>> (23 April 2003)

⁶ Sultanabad is a fairly recent land subdivision, laid out in late 1990s.

⁷ The shrine of Manghopir (*Mangho Pir ka mazar*) is situated on a rock in a hot spring oasis. According to Yasmeen Lari, (*The Duel City: Karachi During the Raj*, Karachi: Heritage Foundation: Oxford University Press, 1996) the hot spring oasis is a miracle attributed “to Lal Shahbaz Qalandar, the famous sufi saint buried at Sehwan, who apparently caused a hot spring to issue from the rock and a grove of date palms to spring up from the ground while visiting the holy hermit, Pir Mangho, in order to make the barren valley more livable” for the saint. According to Hamida Khuhro, (*Karachi: Megacity of Our Times*, Karachi: Oxford University Press, 1997) “its most well known feature is a crocodile pond where the oldest crocodile is reputed to be six hundred years old and is known as ‘Mor Sain’ or Mr. Peacock. Both Hindus and Muslims traditionally sacrifice goats at the shrine and feed them to the crocodiles, which are considered to have holy status.” The saint was also known to the British as ‘Muggur Peer’ or Alligator Saint while the Hindus worshiped the saint as Lala Jasraj.

⁸ The shrine at Garam Chashma (*Garam Chashma mazar*) is located on a hill, a mile west of the shrine of Manghopir. The hot springs that gushes forth at the base of the hill is popular with both pilgrims and locals who come here to bathe in the water in the belief that it cures all illnesses. There are separate bathing areas for men and women. The locals also use it as a public washing area for clothes.

⁹ Principal of Ilm Primary School-II. Samina Saleem is the principal of the Ilm School. She conducted a survey in 2001 of around 50 families in the Mango Pir area with the help of her students in an effort to document the needs of the people.



Fig.8 Class 1-III of Ilm Primary School (Ilm II)

2.3 Selection of School

The original intention was to visit one of the government primary schools in *Manghopir*. However, since I visited Pakistan during summer 2002, all government schools were closed for vacations. This initial setback however had a very fortunate consequence, since I had no option but to observe the workings of *Ilm Primary School-II (Ilm-II)* which was open for the summer and being run on a community basis under the tutelage of Samina Saleem, a 26-year old recent graduate of computer sciences (Fig.8).

Ilm-II proved to be an ideal substitute since it not only allowed me to observe the limitations of a 2-room school but also gave me the opportunity to understand the different nuances of “community participation”. ‘*Ilm*’ means knowledge in Urdu¹⁰ and was chosen by Samina, to symbolize the spread of knowledge by the school in *Manghopir*. Of the three government primary schools intended to serve the *Manghopir* locality, only *Government Urdu Boys Primary School-Tappo Manghopir* (Govt. School-Manghopir) was functioning while the others had been abandoned. The two abandoned schools had been built during the early 80s by the government. However, according to community members, the two schools never took off as the government program under which construction had begun was scrapped midway¹¹. Hence, amenities like electrical, water and sewage connections and furniture were never provided. Nor were any teachers assigned to either of the schools. Due to the remote location, one became the abode of drug addicts, while the other was taken over as the local office of a political party¹² (Fig.9).

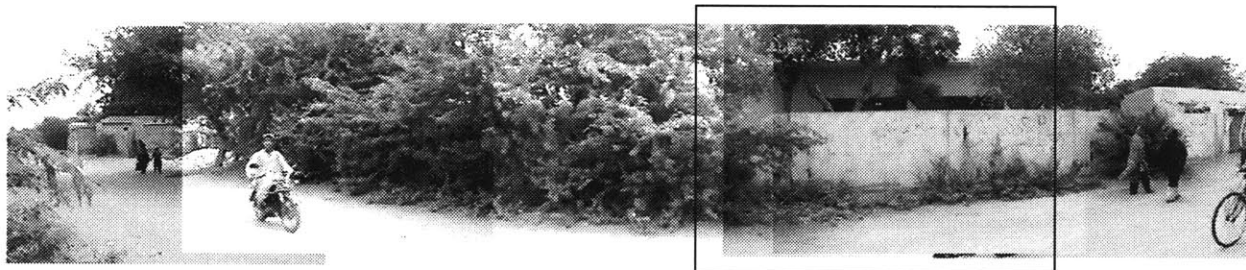


Fig.9 Ilm Primary School - II. Abandoned by the government, it had been taken over as the district headquarters for a political party.

¹⁰ Urdu is the national language of Pakistan.

¹¹ I was unable to ascertain which government program the two schools were built under, and why the program was scrapped.

¹² Major political parties often established local chapters that operated out of small offices embedded within communities. These local chapters usually comprise of youth who are very active and often communities are divided along party lines.

Samina belongs to a middle class family and came to *Manghopir* when the company her father worked for posted him to this area. Instead of staying at home like many other girls after graduation, Samina began teaching the children of the nearby squatter settlement. She established *Ilm Primary School-I* (Ilm-I) in 1998 in one of the two abandoned school buildings after successfully evicting the drug addicts with the help of community members. The school, *Ilm-I* was a success and served approximately two hundred students. According to the parents I interviewed, the two main reasons for sending their children to study with Samina were 1) the education was free and 2) they felt that the quality of education offered by her was much better than other government or private schools in the neighborhood.

When I contacted Samina in June 2002, *Ilm-I* had officially been reclaimed as a government-run school. She had relocated to the second 2-room school (which had earlier been taken over as a political party office), and there she re-established her school as *Ilm Primary School-II* (Ilm-II).

2.4 From Ilm Primary School-I to Ilm Primary School-II

The circumstances that forced Samina to move out of *Ilm-I* highlight the vulnerability of a community initiative that does not have the involvement of community leaders. While the community was glad to send their children to the school, there was no active participation on the part of the community in the school affairs. Samina was able to teach the children free of cost since there was neither rent nor utility bills to pay, and the teachers trained by Samina taught as volunteers. Samina covered the cost of school supplies like chalk, pencils, etc from her own pocket. However, there were many things lacking in the school and when Abdul Karim¹³, took an interest in the affairs of the school, Samina accepted the help as charity on his part towards the children.

However, Abdul Karim was only interested in using the school for personal benefit. He showcased the school as a community initiative in education to different NGOs, who gave him grants that were never passed along to the school. Had there been a strong community association active in the affairs of the school, Samina would not have hesitated in confronting Abdul Karim. Unfortunately ‘community participation’ amongst the poor tends to be passive; parents and other community members help the school in small ways, but are hesitant in join a more active capacity because of the responsibility such a commitment would entail.

¹³ The name has been changed here for the sake of anonymity. He belonged to another community but introduced himself as a well-connected individual, who had contacts in the government and non-government organization and could help Samina improve the condition of the school.

When Abdul Karim began to pressurize her into charging the students fees and giving the money to him for ‘bookkeeping’, Samina protested. She was forced to abandon the school because Abdul Karim threatened to have her arrested for encroachment on government property. Disillusioned and disappointed, Samina decided to quit teaching. The children’s mothers, however, rallied in front of her house for three consecutive days to convince her to resume teaching. The reasons why the parents did not intervene before, when Samina needed them most may be explained in terms of the socio-economic background of the parents. The parents could not afford to get involved in any legal battle, nor afford being accused of colluding in the appropriation of government property. Furthermore, the majority of the parents supporting the school were women; many were sending the children to school against their husband’s will.

2.5 Ilm Primary School-II



Fig.10 Ilm Primary School - II and its surroundings

Today, Samina is situated in *Ilm-II*. Most of the children who studied at *Ilm-I* came with her to *Ilm-II* after the parents realized that the government teacher sent to teach in *Ilm-I* was not as attentive towards the children as Samina’s teachers. *Ilm-II* offers education from *Montessori* to Class V and has 325 registered children for a 2-room school (Fig.10). The school is in session from 9 am to 12 pm after which there is a one-hour after-school English class for the older girls of the community.

Six volunteer teachers between the ages of 16 and 19 run the school. These teachers were the few girls in the community who had completed education till Class VIII. Samina was able to convince the families of these girls to allow them to teach children instead of wasting their time and education, by emphasizing the respectability of teaching as a community service. She promised a safe environment for the girls within the school boundaries and made sure that their teaching did not take precedence over housework. These girls, who otherwise would have never been allowed to leave their homes unaccompanied, now teach in the school under her care.

A testament to the good of work of Samina and her teachers are the two students from a village in *Balochistan*¹⁴. Both brother and sister stay with their uncle who is a resident of *Manghopir* because their parents feel that *Ilm Primary School-II* provides better education for their children than what is available in their own village. The fact that the parents of these children felt that the education being received here justified the separation indicated that *Ilm-II* was doing something right – something which called for further investigation.

My research methodology was based on observing the daily workings of the school. I focused on how the school was being used by the children and teachers, and tried to ascertain the kind of teacher-child relationship developed here. I visited the school four times a week over a period of 2 months and interviewed the children and the schoolteachers. I also visited a few families to observe the home environment of some of the children. At the end of summer when the regular government schools reopened for the fall semester, I was able to visit and interview the teachers at the *Government Urdu Boys Primary School – Tappo Manghopir* and the *Garam Chashma Girl's Secondary School*.

Official data from government agencies is limited. Though the *Department of Education* was very cooperative, there appeared to be a lack of coordination amongst its various sections. Hence, collecting the necessary data from them was not easy.

2.6 Ilm Primary School-II as a Socially Responsive School

Ilm-II and *Govt. School-Manghopir* are two schools that represent the basic units of the education system of the country; one is run on a community basis while the other is a government school. The strength of *Ilm-II* is that it has the ability to function without many of the bureaucratic restrictions that are faced by *Govt. School - Manghopir*. Paradoxically, it is the very lack of any links with the government network that is its biggest shortcoming.

Ilm-II is providing a valuable service in a community where the government has failed. While the quality of education may not be comparable to that of private schools, it is comparable to and may in fact be better than that of government schools. The parents are confident that their children are receiving the proper attention, and learning retention rate here is almost 90% despite the poor physical conditions of the school. In the success of *Ilm-II* lie many lessons for improving government 2-room schools. *Ilm-II* has succeeded in getting the children of *Manghopir* into a school and keeping them there. The next challenge is how to provide these children with an educational experience that goes beyond the bare minimum.

¹⁴ Balochistan is the adjoining province to Sindh.

A socially responsive school provides better for the educational, psychological and physical needs of the child. It also creates links with the community by responding to any particular needs. I have analyzed *Ilm-II*, as a socially responsible school, through three components: architectural, educational and communal. The architectural component seeks to increase the utility of the 2-room school by creating a framework that supports a sustainable program for building maintenance and incremental improvement of the school building and its environment, and provides spaces where interactions with the community can take place. The educational component is an approach that supplements, but does not replace, the official curriculum. It introduces the children to scientific concepts, while making learning 'fun'. The community component defines different levels of relationship at which 'community participation' in the school can occur. These relationships are more sensitive to the limitations of a poor community and allow the community and school to choose the degree of interaction between them. The subsequent chapters elaborate on these components that would make *Ilm-II* a more socially responsive school.

3.1 The Teachers and Children

“The school’s condition does not affect our teaching”- Abdul Aziz, Headmaster, Govt. Manghopir¹.



Fig. 11 The Headmaster's office – Govt. School-Manghopir

What Abdul Aziz, Headmaster of *Govt. Manghopir*, meant was that the abject condition of his school did not deter him or his colleagues from their mission of imparting education to the children, nor did it dampen their zeal. They continue to come everyday, despite the knowledge that today will be no different from any other day. The chalk for writing the lessons will run out, forcing them to switch lessons halfway. They may have to handle children from a different grade level if a teacher is absent that day. There may not be enough textbooks or pencils to share, which will force the class to fall behind in lessons. The temperature may be so high that they will not only have a hard time concentrating themselves but will also have to think of ways of distracting the children from the heat. They may have the smoke of the burning garbage coming into the classrooms if the prevailing wind is in their direction. These are the realities of what they come to everyday, after an hour and a half commute on crowded public transportation, which in itself is an ordeal.

¹ Aziz, Abdul. 2003. Headmaster of Government Urdu Boys Primary Tappo Manghopir. Interviewed by author. Writing, Karachi, 18 January.

"I don't know why I come. I just like to come." - Adnan, Ilm - II².



Fig.12 Lessons being taught on the veranda at Ilm-II

Adnan may not realize why he comes, but what he does understand is that he likes being one of the few boys in his neighborhood who can write. He also likes coming to school because they do many different activities like singing and sometimes drawing. He sits on the bare, dirty floor for three hours straight, crammed into a small classroom with fifty other students. It is always very noisy. His parents do not care whether he goes to school or not. He goes to school in the morning and washes dishes at the *Manghopir mazar* in the afternoon.

The perseverance of both the teachers and the children at *Ilm-II* and *Govt. School-Manghopir*, have demonstrated that ideal conditions and pristine building conditions are not essential to motivate the teachers or the children; what is essential is the desire to teach and the desire to learn. Physical conditions are secondary, as is proven everyday by the thousands of government teachers who continue to teach either under open skies or roofs that shower plaster from above. However, the lack of proper facilities and spaces clearly affects the delivery of the curriculum and restrains both teacher and student activities.

*"Good facilities are an 'enabler', they enable teachers to do so much more-and it's not just what they do, but how they're able to do it"*³.

² Adnan. 2002. A student of Ilm Primary School, Manghopir. Interviewed by author. Writing, Karachi, 23 June.

³ Fanning/Howey Associates, Inc. 1997. *Elementary Schools-Making a world of Difference*. Celina, Ohio: Fanning/Howey Associates, Inc, 56.



- Overcrowded
- Lack of ventilation
- Low lighting
- Lack of furniture

Fig.13 IIm Primary School-II (Class IV and V)



- No pin-up surface
- Isolated environment
- No Electricity

Fig.14 IIm Primary School-II (Class I to III)

If the classroom is small or badly ventilated, there is little the class teacher can do to remedy the situation. An imaginative teacher can try to optimize a poor school/classroom environment but there is a limit to what he/she can do.

It is an insult to the perseverance of these teachers and the children who come to school everyday, despite the hardships they face- to cite budget restraints and economic unfeasibility as the reasons for providing the bare minimum facilities, and then to assume that since these teachers have managed so far under the current 2-room school model, they should be able to continue doing so. These children constitute the building blocks of the society. Providing low quality educational environment will not only cause the teachers to function at below optimal ability, but will also prevent these children from reaching full potential.

A school building is not just about providing shelter and a clean environment. It is also about providing spaces and facilities that respond to the needs of the teachers and children, and enables them to achieve greater levels of learning. The Government, in recent years, has begun addressing the issue of having well-maintained, clean school facilities by making the newly formed local governments responsible for the maintenance and upkeep of the schools as they are in a better monitoring position. Old schools are being fixed and new schools are being built. Decentralization has also given the local governments the responsibility of constructing the schools. Hence, many of the new schools built under the local governments are better built than those previously built under the centralized government (through the *Ministry of Public Works*⁴). However, the architectural program of the schools built by the local government tend to be similar to the 2-roomed schools, only better maintained.

Many of Ilm-II's problems stem from financial constraints; the school has not had a fresh coat of paint since it was constructed in the early 80s, the lavatory is not connected to a sewage system and there is no electricity because they cannot afford it. The children sit on the floor because there are no chairs. Long benches were acquired from a nearby madrasa to serve as tables. There is no storage space for the teachers to keep any books or teaching aids. In addition, the children share their books because not all can afford them, and pencils are always in short supply. Many of the issues could be solved if the children were to be assessed a monthly fee, but the parents of most children attending the school cannot afford to pay even nominal amounts. This is the social context within which the school operates.

Hence, the **Architectural Response** that this thesis proposes for addressing the needs of *Ilm-II* is a two-pronged intervention: **Programmatic Flexibility and Enabling Spatial and Physical Configurations.**

⁴ Government of Pakistan, District government Khairpur, "Khairpur Low Cost Shelterless School Scheme".2001. Page 10.

3.2 Programmatic Flexibility

‘Programmatic Flexibility’ questions the practicality of restricting each public school from evolving according to its needs, and that of the community it serves. It argues that the sanctity of an educational institution is not violated, but is in fact enhanced, if allowed to evolve accordingly. It advocates a shift in viewing schools as spaces for accommodating exclusively educational functions.

While *Ilm-II* is not a government school and hence does not have the constraints of government policies, the conventional view of what constitutes a school still exists. The teachers of *Ilm-II* have never imagined the school as being anything more than a few classrooms where teaching takes place. Educational needs are rapidly changing along with teaching methodologies. At some point in the future, schools may not exist as a physical entity – they might simply be constituted of software download kiosks. Pakistani schools need to catch up with the rest of the world, and if lack of finances is the primary constraint, then this must be addressed immediately.

3.2.1 Revenue Generation

One of the processes that become possible, once the concept of ‘programmatic flexibility’ of the school is accepted, would be revenue generation. A revenue generating function may or may not be educational, but the end purpose of it is to facilitate educational activities taking place within *Ilm-II*. The notion of attaching a revenue-generating program to the school may be viewed as violating the sanctity of an institution meant for the purpose of education. A common fear to such an enterprise would be that revenue-generation might interfere with the main purpose of the school, which is to provide education. While the concern is valid, the reality remains that many of the problems faced by both *Ilm-II* and *Govt. School-Manghopir* are due to financial restraints. Revenue generation could be educational, while also contributing to alleviating financial problems.

Traditional educational institutions, like the *madrassa*, were supported through the *waqf* (endowment) system. While the system of endowments works very well, in the context of *Ilm-II*, administration of such a system would only be an additional headache for the teachers. In the context of rural areas, where majority of the people have not had much experience with formal institutions like banks, finding a group of people capable of administrating an endowment is hard. Hence, simple revenue generating schemes function best and often take the form of rented space. The government should change its paternalistic view of maintaining schools as financially dependant entities without any autonomy of their own. Government schools should be allowed to generate income with their own innovative ideas that are not only educational but also provide for some extent of financial self-sufficiency.

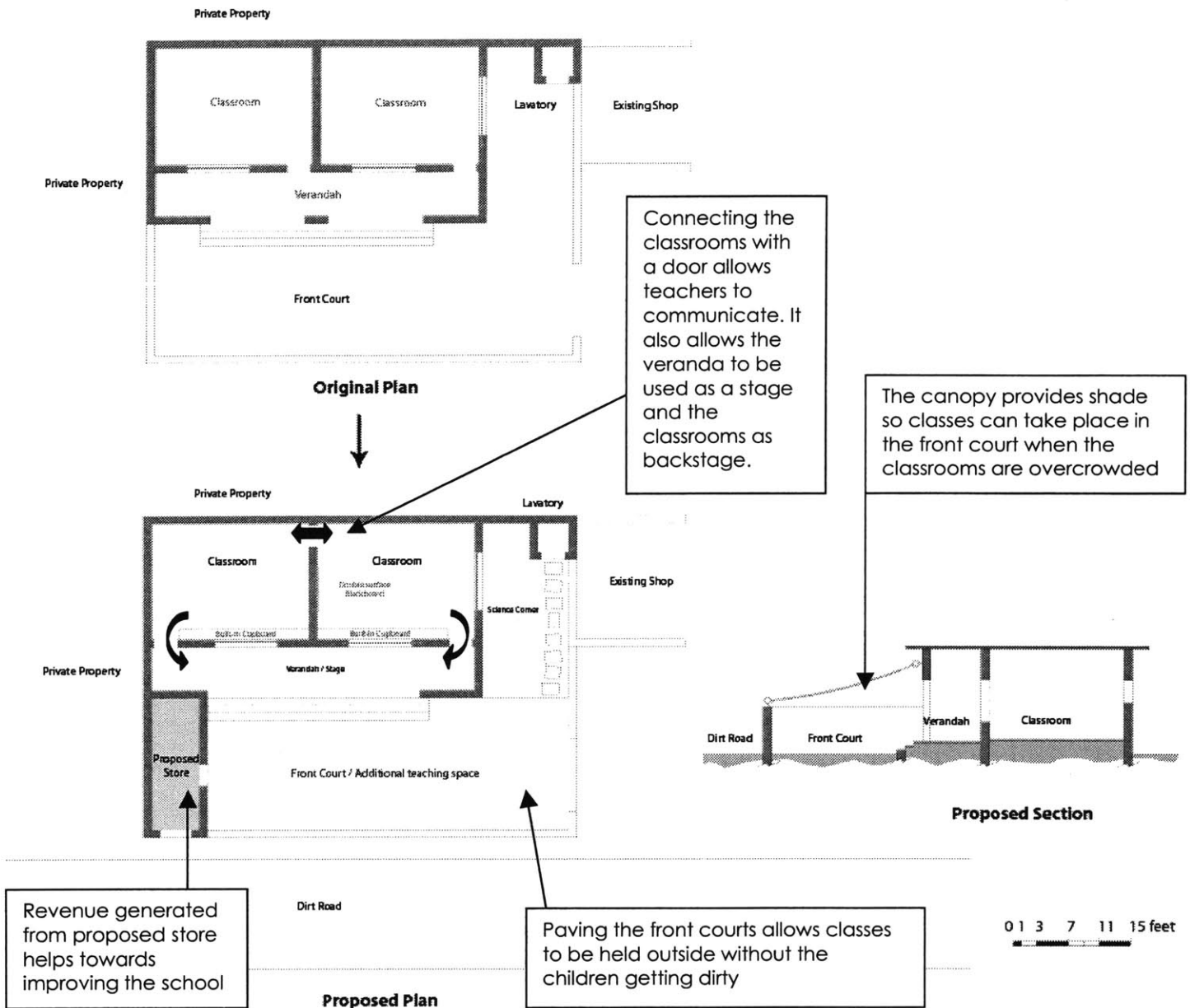


Fig. 15 Incremental improvement of Ilm Primary School-II

Fig. 15 shows the addition of a store in the frontcourt of *Ilm-II*. It opens out to the main road and does not interfere with the internal workings of the school. This space can be rented out and the revenue can be used to purchase textbooks and pencils for the children, or fulfill other needs. Having a steady source of income would change the outlook of the teachers. They would no longer have to make do with what they have; rather they could begin experimenting with new ideas. This rented space could also have an educational purpose if the storekeeper were to allow the children to act as ‘shopkeepers’ to gain hands-on

experience about basic business transactions through the mathematical applications of addition, subtraction and multiplication. If the storekeeper were a tailor then he/she could be an in-house teacher who could teach the children the basics of tailoring- a handy vocation for earning a livelihood.

One successful revenue-generating project conducted in Pakistan by the *Human Development Foundation of North America* donated a goat kid to each child (that cost Rs.100) and they were asked to rear it for a year. The goat was then sold during the peak period of *Eid-ul-Adha*, each fetching a price of approximately Rs 2,000⁵. The school was able to cover its expenses in this manner, but more important was the self-empowerment for the families involved- the ability to pay for their children's education.

Some of the problems that could be solved through **revenue generation** are:

Physical Environment

- Physical squalor “tells a child what we think she is worth”. Students in old, dilapidated buildings absorb the message that the community values neither education nor the students. On the other hand, students in well maintained buildings have a more positive attitude towards education because their surroundings “tells them the community values them as precious assets and desirable members of the community,” and their “behavior reflects this.”⁶
- *Ilm Primary School-II* is a bleak and depressing place. There is no color; the school was painted in the standard dull mustard color of government schools that has mostly flaked off. The rooms are stark, concrete interiors that have not been painted in years. The blackboard has patches where the plaster has flaked off while the windows barely hang on the hinges and are devoid of glass. Such an environment holds no stimulus for the child and as such their imaginations cannot take flight.
- Having iron grills on windows is a common practice and a necessity to prevent theft of the few precious tables within. However when compounded with the dreary environment of the school, it lends the classrooms a jail-like appearance. A toilet that does not function and a single water tap from which the faucet gets stolen periodically- all reflect the value given by the community to education.

⁵ Fakhir Ahmad, 'HDFNA Program Gathers Momentum,' *PakistanLink*, <http://www.pakistanlink.com/Community/2002/July/05/08.html> (11 May 2003).

⁶ Fanning/Howey Associates, Inc. 1997. *Elementary Schools-Making a world of Difference*. Celina, Ohio: Fanning/Howey Associates, Inc, 7.

- The foremost reason that could explain the lack of any initiative to fix the school is the scarcity of funds. Since *Ilm Primary School-II* is a community-based school, it does not receive a monthly budget from the government. The parents of the children attending are too poor to contribute towards its upkeep. The only reason why they continue sending their children to the school is because tuition is not charged. The teachers are volunteers from the community and do not have any income that they could draw upon to reinvest in their work surroundings. The teachers are also constricted by a lack of time and energy since the student-teacher ratio is usually very high and the teachers tends to be overwhelmed by the large number of students assigned to them.
- Small cosmetic changes can have an immediate affect on the children and the teachers. A study done by Carol S. Cash reviewed 47 schools in rural Virginia during the 1991-1992 school year and found that, "...students' achievement scores were higher in schools with better conditions.... Cosmetic building conditions appeared to impact student achievement and student behavior more than the structural building condition. Finally, varying climate control and graffiti conditions were factors which were positively related to student achievement scale scores"⁷.
- I found this to be true even for Manghopir. Just before I left in August, we were able to find a businessman who, impressed with the work that Samina was doing in the school, pledged to help improve the condition of the school. When I went to visit the school in January 2003, the school had been given a new coat of paint and new carpets had been donated for the classrooms (Fig.17). The teachers spoke about the positive affect the improvements had made on them. They simply felt better about coming every morning to a school with clean walls and an increased sense of pride in the improved condition of their school. The children's behavior too reflected a change. They were more careful about drawing graffiti or smearing the wall. Though the carpet would make the room warmer during the summer months, it was appreciated better than the previous bare floor (Fig.16). The children's clothes no longer got dirty by sitting on the bare floor and this in turn helped to improve their sense of hygiene.

⁷ Fanning/Howey Associates, Inc. 1997. *Elementary Schools-Making a world of Difference*. Celina, Ohio: Fanning/Howey Associates, Inc, 129.

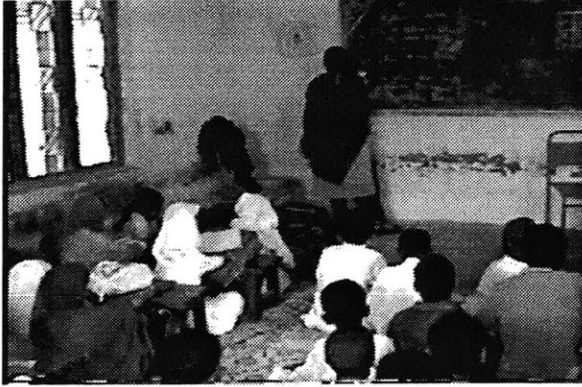


Fig.16 Classroom before it was painted and carpeted.



Fig.17 Classroom after it was painted and carpeted.

Electrification

- Even though the provision for electricity is a requirement, it is not very often that the connection can be provided, especially in rural villages where electrification has not taken place as yet. A survey⁸ carried by Sadaf Ajmal⁹ in Lahore found that “ventilation, lighting and temperature conditions inside the class”¹⁰ affected student attention and performance in class. The results showed that “thirty per cent of the boys said it did, compared to forty-five per cent of the girls.”
- Air conditioning is not an option in government schools. Temperatures during summers are as high as 45 degree Celsius and are regulated through ceiling fans. *Ilm-II* does not have fans, and even if it did, there is no electricity. The children have to simply bear the heat during summers because the school cannot afford the connection. One option was to get an illegal connection through the *kunda* (hook) system, which basically hooks a wire to any nearby high-tension electricity line and siphons off electricity. This is a very dangerous option and exposes the children to the possibility of electrocution, in addition to being illegal.
- Revenue generation would allow the school to get a legal electricity connection. Electricity would enable them to regulate the classroom temperature, allowing the children to concentrate on their lessons rather than the heat. Artificial lights also become an option. The children would no

⁸ The sample size consisted of 150 students (54 male and 94 female) from eight schools in Lahore.

⁹ Sadaf Ajmal teaches at the University of Education in Lahore.

¹⁰ Nusrat Begum and Sadaf Ajmal, “Social and Economic Effects on Classroom Learning,” *Dawn the Internet Edition*, 27 April 2003, <<http://www.dawn.com/weekly/education/education.htm>> (1 May 2003).

longer have to strain their eyes because of the insufficient day-lighting conditions of most 2-room schools.

- Teacher's aids like tape recorders with read-along lessons, or songs for children or slide projectors have become standard presentation visual aids for subjects like art history, geography etc. in schools in the developed countries. While equipment like slide projectors are too costly for the school to purchase, having electricity gives someone else the option to donate one to the school. In other words, a donated slide projector would be redundant if there is no electricity. Tape recorders are cheap and found in most houses. However, the limiting factor is electricity. During the *Pakistan Independence Day* celebrations, we were able to borrow a tape recorder but had to run an electrical connection from one of the neighbors. The use of computers that have become an indispensable research tool for children in the developed countries would not be possible without electricity.

3.2.2 Community Linkage

Another example of programmatic flexibility could be community linkage. The function of the school is traditionally kept separate from the community. Parent-teacher associations do not have a very strong history in *Manghopir*. Parents send their children to school but are unaware of the daily issues affecting the school. Their only contact is through a parent-teacher meeting, which rarely occurs at the end of the term. Creation of some kind of an immediate community benefit would deliberately create such a link that would force the community into a partnership. One such example could be allowing the community to pay for access to the school's computer. Such a linkage would be beneficial for both the community and the school.

3.2.3 Distance

Programmatic Flexibility is also influenced by the location of the school. Government schools are often criticized for their isolated site locations. Even in the case of *Manghopir* and *Garam Chasma*, the schools were originally built away from the main population (Fig.8). *Ilm-II* is built at the edge of the *Manghopir's* formal settlements, just before the isolated stretch of wild bramble that separates *Manghopir* from *Garam Chasma* (Fig.9). The *Garam Chashma Secondary School* is also built away from the main population in a desolate location surrounded by brambles. Both schools serve the children that come from the squatter settlements (Fig.8) rather than the original population they were intended for.

It almost seems that at the planning and construction stage, site selection is based on the predicted direction of growth of the community in 5 years. The most probable reason for isolated site selections would be the lack of cheap or available land within an existing community that usually tends to be densely populated. Hence it is easier to build beyond the community limits where not only is land cheap but there is more space available for future expansion if the capacity of the school rises.

I was unable to ascertain any fixed formal procedure that dictated the site selection process. However, interviews with the community and government officials led me to understand that often the government selects the site and builds the school while at other times the community is responsible for pinpointing the site and providing the land while the government provides the teacher and the school building.

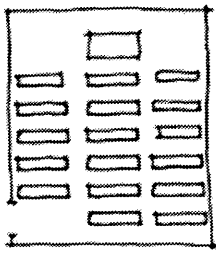
Regardless of who selects the site, the decision to locate schools outside the community forces the children to walk a mile or two everyday to attend school. This raises concerns of safety, and the great walking distance contributes to high absenteeism. Gender inequality is also increased, as parents are less willing to send girls to far-flung schools. Some of the children attending *Ilm-II* walk half an hour everyday to get to the school. Distance also affects the number of community linkages that can be formed. If the school were to be opened to the community for evening English classes that have small enrollment, the issue of security would be an issue if the school is located out side the safety zone of the community.

Distance also prevents the school from forming linkages with the community that is essential for any revenue generating function that may be attached to the school. One of the programmatic changes in the school calls for providing a 'community workshop' space where the community members can come at different times during the day to impart their knowledge to the children. For example, a gardener comes three times a week to teach the children about plant sciences. The greater the distance, the less likely he is to take out time to come teach the children. Hence, distance may make the programmatic change that called for a community workshop space redundant.

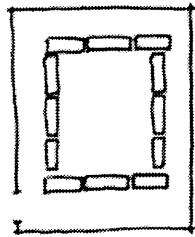
3.3 Enabling Spatial Configurations and Physical Facilities

'Enabling Spatial Configurations and Physical Facilities' increases the functionality of school spaces by making different activities possible through the provision of supporting elements.

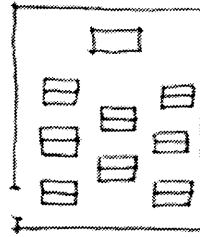
3.3.1 The Classroom



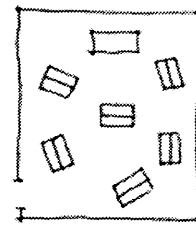
The rectangular classroom. Children are seated in rows and do not discuss problems. They are 'empty learners'



The square classroom. Children discuss problems, seated in a large group circle and are 'active learners'



The circular classroom. Children are seated in smaller discussion groups and are 'social learners'



The open classroom. Children are free to move around workstation set up in class and are 'stimulus seekers'

Fig.18 Different classroom layouts

Spatial configurations affect usage pattern and the kind of functions that can take place within. "The classrooms we envision for our children represent not only conceptions of spaces for learning but also our conceptions of the learner"¹¹. The classroom of the 2-roomed school is the standard straight-row, rectangular classroom that caters to what David Thomas would call, the 'empty learner' where the student is the passive recipient of knowledge and the teacher the focus of the room. Classrooms in many countries have evolved to enable students to become an 'active learner', 'social learner' or most recently the 'stimulus-seeking learner'¹² (Fig.18). This shows a gradual shift in the manner in which the teacher-student interactions are viewed. The square classroom creates the 'active learner' where the students are seated with the desks arranged in a large square. This format allows for the whole class to participate 'actively' in discussions as they face each other rather than the backs of the student in the front row. The circular classroom was the next step that broke down the large group format of the rectangular classroom to smaller and more intimate groups. Seated around small circular tables, the student would learn to interact socially with a small group of classmates and develop the skills necessary to work in groups, hence becoming a 'social learner'. In both the square and circular classroom the teacher is the source of knowledge as opposed to the open classroom, where the teacher is a facilitator in the quest for knowledge. The open classroom format has different educational workstations set up around the classroom and the students rotate between these workstations. These workstations act as the 'stimulus' that encourage the child to actively try and solve the given problem. Since the 'stimulus seeking learners' are absorbed with finding his/her own solution to the problem setup at the workstation, the teacher is able to give individual attention to those children who may be facing difficulty with their work.

¹¹ David, Thomas G. 1975. *Learning Environments*. Chicago: University of Chicago, 11.

¹² *Ibid*, 4-7.

Given the context of the limitations of a developing country, the rectangular classroom still remains the most feasible model. With a teacher-student ratio of 1:40, there is no space to accommodate the kind of seating arrangements required for the square, circular, or open classroom, nor is the curriculum geared to accommodate such teaching methods. Two interesting points that came across while speaking to the teachers at *Ilm Primary School-II* and *Government Urdu Boys Primary School – Tappo Manghopir*. First, the teachers' priority was to accommodate as many children into the classroom as possible rather than optimize the teacher-student ratio. They did not have the luxury to reduce the ratio because there are too many children in need of education and not enough teachers¹³. The other interesting point brought up was the facilitation of control that the rectangular classroom setting provided to the teachers. With such a large class size, control becomes an important issue. The teachers have a fixed curriculum that they need to cover during each class. Most of them practice the method of writing the day's lesson on the blackboard for the children to copy down. This is how they remember being taught in school and in the absence of a better alternative, they continue to teach their students in the same way. Their fear is that if they began to experiment with new methods, of which they themselves are unsure of, it would undermine their authority, which is an important tool for maintaining discipline amongst the 40+ children in the class.

The current set-up allows for one teacher to supervise each class. If a teacher needs to leave the classroom then a student is appointed to monitor the class. This is a convenient way of teaching a child the responsibility of being a monitor, but often the children are hard to control and the room would dissolve into chaos in the absence of the teacher. Having a link between the two classrooms however would not just allow for one teacher to monitor two classes if a teacher is absent, but also create opportunities for collaborations to take place between the two classrooms. The link between the two classrooms could simply be a movable partition or a door. The idea of interconnecting classrooms is also referred to as the 'semi-open' classroom concept. It allows teachers the possibility of cooperation between two different classes. A sliding wall partition between the classrooms when opened enabled the teachers to bring different classes together and "share resources and expertise."¹⁴ The rectangular classroom where children sit in a row with the teacher as their focus, becomes big enough to accommodate the open classroom concept with different educational workstations set up around the combined classrooms (Fig.15). The students become 'stimulus seeking learners', who actively 'seek' to learn from these workstations¹⁵.

¹³ Availability of teachers has been a problem in most government schools. If the school is located in a remote area, the government may assign a teacher on paper, but whether the teacher actually attends school is a different story. On other occasions, government bureaucracy creates unnecessary hurdles, which make it a frustrating experience for the principal of a school to request an additional teacher.

¹⁴ Fanning/Howey Associates, Inc. 1997. *Elementary Schools-Making a world of Difference*. Celina, Ohio: Fanning/Howey Associates, Inc, 56.

¹⁵ David, Thomas G. 1975. *Learning Environments*. Chicago: University of Chicago. 4,6,7

3.3.2 The Verandah

The verandah is a good climatic response to the hot weather experienced most of the year in Karachi. It shades the western portion of the classrooms from the sun and provides a cool outdoor area where classes can take place. At *Ilm Primary School-II*, Montessori/kindergarten and Grade I are taught in the verandah. By simply changing the placement of the entry to the classrooms, the verandah can serve the dual function of a stage (Fig.19). By reinforcing the side and removing the center support pillar, the veranda can function as a stage where the children can perform skits for their parents. In new 2-roomed schools, the width of the verandah should be increased to ten feet from the current width of six feet.



Fig.19 View of the performance of the children for Independence Day with the community. The Pakistani Flag serving as the stage backdrop is visible in the left corner. The community members participating with the performance are seen grouped together in the right corner of the picture.

Providing a large surface for performance is important. Every year, Samina organized small skits and songs to be performed by the children on 14th of August, the *Independence Day of Pakistan*. Such performances are not only fun, but fosters confidence within the children. Usually the children performed for themselves since there was not enough space to invite the parents. There was an open space next to the school, which was appropriated for this purpose. By spreading all the floor mats on the ground we formed the stage and the seating area. A large Pakistani flag marked the stage and formed the backdrop. Our hope was that by sharing the performance of the children for Independence Day with the community we could make them a part of our festivities. Though the event went smoothly, we realized that we could be taking a risk. Since the children were performing on the roadside, it may not have been taken too kindly by the community people since many of the children performing were girls. The only reason we were able to get away with it was because of the support of an influential community member.

3.3.3 The Blackboard

If the 2-roomed school was meant to serve Class I-V, then the most logical deduction would be that the classrooms are actually multi-grade classrooms. Teachers trained in single-grade pedagogy when assigned to 2-roomed schools are suddenly faced with more grades than rooms and simultaneous the responsibility of more than one grade. They lack formal training with regards to multi-grade teaching and usually do not have access to teaching/learning resources. *Govt. School-Manghopir* was able to separate the grades since they had 6 classrooms with one teacher for each room.

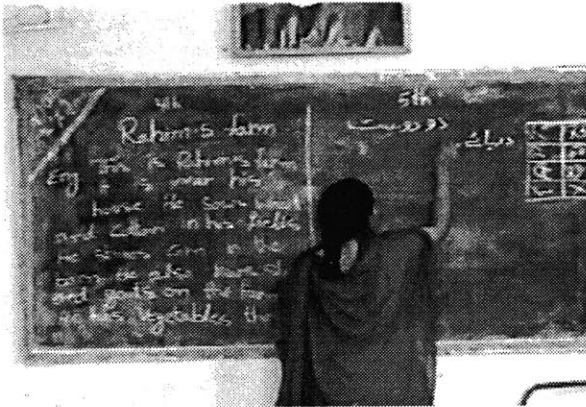


Fig. 20 The English lesson for Class IV is to the left and the Urdu lesson Class V is to the right

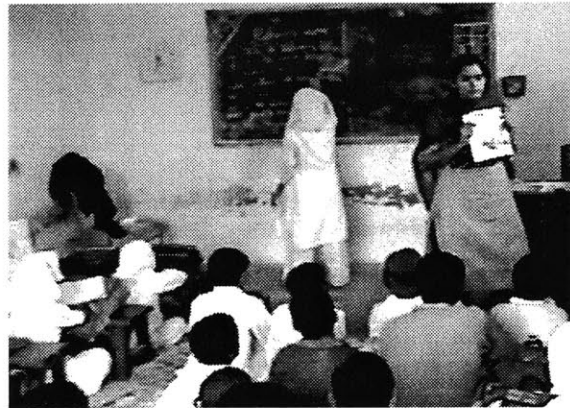


Fig.21 The teachers explain the day's lesson to Class V while a student dictates to the students of Class IV

However, *Ilm Primary School-II* had only two rooms. By drawing a line down the middle to divide the blackboard into two sections, the left side had the day's lessons written for Class IV, while the right side had the lesson for Class V (Fig.20). The classroom layout followed the same pattern, with class IV occupying the left side of the room and Class V, the right side (Fig.21). The same practice for Class II and III occurred in the next room. Montessori/kindergarten and Class I are taught in the verandah. Two blackboards are hung at the opposite ends of the verandah, one for the Montessori/kindergarten while the other for Class I. The only way of differentiating between the two sections is by looking at the direction the children are sitting in .

At the moment, the seating configuration is dictated by the placement of the blackboard. By providing blackboard surfaces on as many walls as possible, you suddenly give the teacher the freedom to change the seating configuration according to her needs. It also allows her to break the children into groups such that each group can be assigned to work around one blackboard.

3.3.4 Pin-up Space

Providing a few hooks can change the manner in which the teachers conduct classes. During my time there, I conducted a small exercise that encouraged the children to map their community. Children were given a small piece of paper on which I asked them to draw their homes. Then on a large, 5'x 8' sheet of paper, I asked the children to place their home in relation to the streets drawn on the map. The problem we realized was that the classrooms had no pin-up board. Trying to tape the large sheet to the walls was unsuccessful as the paint was cheap lime wash and so the tape would not stick. Ultimately, two teachers were forced to hold up the large sheet while the children stuck their drawings.



Fig.42 Picture charts (teaching aids) were hung high to avoid being torn, but prevented the teacher or students from reading what was written as they could not be read at that height.



Fig.33 Pin-up boards displaying the pictures of various school events.

Pin-up boards should be provided as part of the school. It allows the teacher to put student work on display and also to highlight a particular topic of discussion in class through graphic postings. This may not seem like a big issue but based on observations in the *Manghopir* schools, if such provisions are not made at the beginning, then it is unlikely that they will be done later. Providing pin-up boards later on entails a long trip to the city and money, both of which are scarce commodities in these schools.

3.3.5 Storage Space

One of the proposals under the *Education Sector Reform (ESR): Action Plan 2001-04* calls for the utilization of existing schools by introducing double shifts¹⁶. This has an impact on the level of ownership that the teacher would have towards the building. The freedom of use is directly affected by it. If the room is used on a rotational basis then there is competition for the pin-up and storage space, forcing teachers to

¹⁶ Government of Pakistan. Ministry of Education. *Education Sector Reforms: Action Plan 2001-2004*. Islamabad, 2002.

lug their stuff around. They don't have a room they can 'settle down' in and add their own personal character to. The teachers are hesitant to make the room theirs for fear of conflict with another teacher.

A single cabinet is all the storage provision that is made in these schools. One cabinet does not suffice and gets filled with the paper work very soon. To add to that, double shifts would demand more storage space, which an additional cabinet cannot meet. One of the observations of the *1977 Board of Educational Planning (BEP) Report*¹⁷ was that the classrooms were used mostly for storage of furniture, papers and other miscellaneous items. Theft is an issue and furniture a commodity that could be sold easily. All schools are locked because of fear of theft- a good cabinet could fetch as much as Rs. 3,000 in the market.

Fig.15 is a proposed layout of storage space that is built into one of the walls of the classroom. It increases the storage capacity and cannot be stolen and sold in the market. It also provides a working surface that is not as 'precious' as wood for messy experiments and can also double as a display table for the children's work. Ample storage spaces make many things possible for the teachers. It makes having a library for the children possible. *Ilm-II* does not have a reading period for the children because they have no place to keep the storybooks, nor the finances to risk buying new ones that may get stolen. Leaving them out in the open would mean immediate theft of the books.

3.3.6 Daytime lighting

Emphasizing daytime lighting in the design is the only way to provide better lighting condition in view of the prevalent energy crisis. The current 2-roomed design receives only reflected sunlight. The ambient light is dependant on how overcast the sky is and the distance of the school building from any neighboring object that would cast a shadow, i.e. trees or tall buildings.

The "essential character" of natural lighting and its "changing value throughout the teaching day" cannot be replicated by artificial light¹⁸ and is considered desirable because of the positive links to the happiness and well being of the teachers and pupils. Maximum use of natural light should be made during the day. However, climatic, economic and classroom behavioral factors need to be considered. Excessive glazing would create a green house effect, be costly, and distract the children from the lessons taking place within the classroom. Most of the glazing in windows of *Manghopir* schools have either been stolen or have long since been broken and not replaced.

¹⁷ Siddiqui, Kalam A. Ministry of Education, Bureau of Educational Planning, "*Design Considerations for Construction of Rural Primary Schools*". Islamabad, 1977, 13.

¹⁸ Department for Education and Employment, Architects and Building Branch, Building Bulletin 90, "*Lighting Design for Schools*," London: The Stationary Office, 1999, 1.

Skylights and clerestories in conjunction with a light shelf are a good alternative to windows. They form a portal to the sky and allow the child to observe the passage of the clouds above. The skylight and clerestory, however, have practical concerns. Skylights should not be completely glazed because that brings direct sunlight into the classroom, which makes it uncomfortable for the children that sit under the direct light, and also harmful if the child happens to look up directly at the sun by mistake. It also requires investments in blinds during the summer months.

3.3.7 Ventilation

The climate of *Sindh* is arid and hot for most part, with monsoons occurring during the month of August. The verandah is an effective design technique of shielding the classroom from direct sunlight and should be maintained. The building typology of the subcontinent is still very much open. HVAC¹⁹ systems are not prevalent and sealed buildings are not common in Pakistan. The classrooms are grouped together and linked by open corridors that allow for air circulation. The probability of the government providing electricity is very low, let alone air conditioning. Hence, the importance of using natural ventilation that is conducive to cooling cannot be underestimated, since even fans are not provided.

3.3.8 The Lavatory



Fig.24 The lavatory is not used because it is not connected to a sewage system

A non-functioning lavatory can have negative effects on the functioning of the school. *Ilm Primary School-II* has one lavatory that was never connected to the sewage system as it was abandoned by the government soon after construction (Fig.24). Since children cannot use it, they need to ask the teacher's permission to go home. Often the child would not come back to school. As a result, teachers have evolved an unwritten rule of not permitting children to go home to use the lavatory unless it is a real emergency. The children understand this rule and have stopped using it as an excuse to escape from school. A similar problem is faced in *Govt. School-Manghopir*. They had four lavatories but no water connection. According to the Principal of this school, an NGO had built three of these but did not make provisions for water. At the moment, they depend on the goodwill of a neighboring community member to provide a few buckets of water that are fetched by students to use as flush water.

¹⁹ HVAC-Heating, Cooling and Air Conditioning.

Though fixing the sewage pipe is compulsory, many of the school are left with no proper connection or disposal mechanism for the waste. The boys were able to urinate in the open within the school compounds, but the girls walk home²⁰. The area around the lavatory block in *ILM-II* stank of urine but the teachers were unable to prevent the boys from urinating during recess unless they physically patrolled the area. Pit latrines have been very successful in many upgradation projects and may be used as an alternative. It does not need to be hooked up to a main sewage system and is low-cost. Though limited in capacity, it would suffice if the use were not high. This method is recommended only in rural areas where sewage lines are not installed. Most urban peripheral areas still have sewage connections and introducing pit latrines may not be accepted socially, as it would not be considered modern.

3.3.9 Solar Panels or Wind Turbines

Exploring solar and wind power as alternatives are highly recommended, especially in remote areas where electrification is yet to take place. The technology has come a long way and has now become affordable. One drawback is the high cost of replacement parts and servicing. This can be addressed by providing proper training to some of the community members who work as electricians. The installation of these devices will not only provide the much needed electricity that makes the use of various teaching aids possible, but for the children, it is the practical manifestation of scientific concepts like solar energy, wind power, generation of electricity, and the visual symbol of the marvels of science and technology.

3.4 Opportunity for Intervention

The main thrust of government spending in the education department goes towards teacher training. Funds being allocated for school buildings follow the 2-room school format. For the government, the condition of the building is not the main factor that determines the quality of education provided, but the teacher and the curriculum. This is true, except the quality of educational experience and environment. A better environment contributes to the quality of education. Part of the solution for improving schools lies in the recent devolution (decentralization) plan that makes the Union Council responsible for the upkeep and construction of schools within their jurisdiction. The *District Government-Khairpur* was able to successfully implement a joint local government–community venture called *Khairpur Low Cost Shelterless School Scheme*. Under this scheme the local government covered the school cost while the community provided the labor²¹. Many new schools have been built, all following the format of the 2-room school. These schools are better maintained with whitewashed walls and proper desks.

²⁰ The homes of the students can range from just next door to more than a mile. Usually some neighbors allow the students to use their lavatory but there are times when this is not possible.

²¹ District government Khairpur “Khairpur Low Cost Shelterless School Scheme”.2001. 2

The recently improving picture of physical maintenance and upkeep is important. It is proof of the new government's understanding of the importance of the school environment. The commitment of the *District Government-Khairpur* to providing good facilities for the children is highly commendable. They have managed to build 35 schools from a budget that was meant to cover the construction of only 10 schools, through their innovative approach toward government-community partnership. According to one town official when asked to comment about the school built in his area, "the building which we have made with help of the people is far superior in quality than the previous work of contractors"²².

While the *District Government-Khairpur* is able to think outside the box, there are many other new local governments that have the right intentions but need development guidelines to help them get started. Rethinking the utility of the school building, through basic design considerations that can easily be incorporated into the architecture of the building, will greatly improve the teacher's ability to teach and create a more conducive environment within which learning can take place. The suggestions in the following chapter are meant for the local government and communities – to help them re-evaluate the kind of school structures they provide for the children.

²² District government Khairpur "Khairpur Low Cost Shelterless School Scheme".2001. 10

Educational Response: 'Active Learning'

4.1 Classroom Education and the Child

*"Perhaps the most important, broad-reaching, and vital instruction of all, however, takes place day after day, year in and year out, in elementary school classrooms. As children begin formal education for the first time in their lives, the world of the primary school classroom holds tremendous power and promise. In many ways, the classroom environment impacts what and how much young students learn in those early, critical years; and helps to shape their views of education, society, and what their own futures might hold."*¹

If this were true, then the government schools in Pakistan would probably rank very low in both the quality of the curriculum and the kind of classroom environment that is provided. Government schools have been criticized for not providing the quality of education needed to make the public school children capable of competing against students graduating from private schools. In the case of *Ilm-II* and Govt. *Manghopir*, the children were fortunate to have dedicated teachers. However, many government teachers are criticized as being ill trained and apathetic. The result is that these schools exhibit poor retention rates, with most children not matriculating. Even if they do, they are unable to compete with children taking the matriculation exam from private institutions.

The social need of the children of *Manghopir* is to become educated so that they could gain entry to better paying jobs than those of their parents, the majority of whom are daily wage earners². However, despite the efforts of the teachers, a poor educational base constricts their entry into the job market. The second aspect of making *Ilm-II* a more socially responsive school is educational reform, which seeks to introduce the concept of 'active learning' into the school grounds of *Ilm-II*.

4.2 'Active Learning'

'Active learning' is a concept that does not have a single fixed definition. According to Silberman, learning is active when students are encouraged to not just solve problems but to apply what they learn³. Active learning engages the student at a personal level and the assignments are based on knowledge they

¹ Fanning/Howey Associates, Inc. 1997. *Elementary Schools-Making a world of Difference*. Celina, Ohio: Fanning/Howey Associates, Inc, 54.

² A survey conducted by Samina revealed that most of the parents of the children attending school were laborers earning on average \$20-30 per month.

³ [http://trc.ucdavis.edu/trc/active/definiti.html#\(1\)](http://trc.ucdavis.edu/trc/active/definiti.html#(1))

already have or must acquire through research and/or discussions. According to Modell and Michael, an active learning environment is one where students are encouraged to create their own mental models and then test their validity⁴. There are many other definitions along similar lines, all advocating that the child is not just the recipient of knowledge but also the seeker of knowledge.

‘Active learning’ is rapidly being incorporated into the classroom around the world. Many of the activities that define ‘active learning’ are in a teacher-initiated format, i.e. a teacher initiates a class discussion about pollution and environmental concerns. In developed countries, teachers have the facility of materials like workbooks that give tips to the teacher on how to constructively steer such discussions –something the teachers of *Manghopir* lack.

4.3 ‘Active Learning’ and the Teachers of Manghopir

Teachers cannot incorporate ‘active learning’ methodologies into the curriculum without some training or access to appropriate teaching materials. Hence we find ‘active learning’ being mostly encouraged in the developed countries where teachers can easily avail of the latest training and support materials. In Pakistan, the teachers in government schools are appointed by the government, and earn around \$20-\$30 per month, of which a large percentage is spent on transportation as most do not live in the neighborhood. Sometimes, they are not paid in time due to bureaucratic hold-ups or are subjected to extortion by government officials. These teachers have very little incentive to change their teaching methods. They have been trained in the method of writing the lesson for the day on the blackboard and asking the children to copy and recite back the lesson. These teachers consider such a methodology as effective since it does not require additional teaching aids, and is well suited for managing large classroom populations (the teacher to student ratio tends to be 1:56 in areas like *Manghopir*⁵).

This does not mean that the teachers are unreceptive to fresh thoughts. It is to their credit that despite all the isolation and difficulties these teachers face, they are willing to learn new methods if constant support and follow-ups were provided. I found this to be true in *Govt. Manghopir*. According to one teacher, she got a chance to participate in a 3-day teachers’ workshop organized under the auspices of the World Bank in 2000⁶. She had highly positive comments about her experience and was grateful for the help in rethinking her teaching methodology.

⁴ University of California at Davis, *UC Davis Active Learning Network*, <[\(http://trc.ucdavis.edu/trc/active/definiti.html#\(1\)\)](http://trc.ucdavis.edu/trc/active/definiti.html#(1))> (14 May 2003).

⁵ ILM-II has six teachers overseeing three hundred and thirty-six students.

⁶ I was unable to determine which World Bank workshop the teacher attended.

She showed me an alphabet chart they had made at the workshop for the children. However, upon further questioning she revealed that she rarely used the chart, nor practiced any of the methodologies taught in the workshop. The reasons were simple: many of the methodologies required construction paper and other materials, which more often than not were extra expenses for the school. The children, too, could not afford to buy color pencils and markers.



Fig. 25. The Urdu Alphabet chart

I made a similar observation at *Ilm-II* while conducting a class exercise that required the children to map their communities. I had brought color pencils, paper, and a large sheet with me. Each child was asked to draw their homes and position them on the map drawn on large sheets.

The children immensely enjoyed the exercise; they drew their homes, trees, and clouds. The contents were not profound pieces of art, but the opportunity to draw in color did not come too often, and the children became completely engrossed in their work. When I asked the teachers, why they did not conduct more drawing classes, the answer was again connected to financial restraints. They could not afford the color pencils for the children, and drawing lessons meant the ‘waste’ of precious pages from the notebooks, which could otherwise contain Math or English lessons.

4.4 Adapting 'Active Learning' to *Manghopir*

The concept of 'active learning' seeks to create individuals who are proactive problem solvers. The expectation from children who go through an 'active learning' curriculum is that their knowledge base is much stronger because they have been equal participants in the learning process. These children are more motivated, self-confident, self-reliant and have a higher level of cognitive development. These are the qualities that the children of *Manghopir* seem to need in order to succeed in life.

The required underlying condition, unfortunately, is ease of access to information and knowledge. For children to have a constructive 'active' discussion, they need to have access to books from which to research. For the children of *Manghopir*, the teachers are the only source of information and knowledge.

Another initial barrier to 'active learning' is the risk factor for the teachers. The teachers may feel a "loss of control" from trying something new, "lack necessary skills, or be criticized for teaching in unorthodox ways"⁷. This could be overcome through careful, thoughtful planning which is not always a given in the context of developing countries.

4.5 Child and Play

Comparative studies have shown that "children from the more stimulating" environments "score more highly on tests of all kinds than children from deprived homes"⁸. The extent to which the adults around them care for the child, teach, play and pay attention, "as well as the variety of toys and play materials available to them", are the main factors that influence the cognitive development of the child⁹.

The children of *Ilm-II* seem to enjoy coming to school, and the main reason appears to be the high level of individual attention that the children receive from the teachers here. For many children, *Ilm-II* is a place where not only do they receive more attention than at home, but can also meet other children and play. The school is also a refuge for some; a welcoming place for children coming from troubled households.

Play is an important component of a stimulating environment. "It is through experiencing play that we answer the puzzle of our existence"¹⁰. A stimulating environment gives wings to a child's imagination which is a "suspension of reality," where he can experience the "loss of the 'real self'" and have the "temporary acceptance of an 'illusory self' or 'imagined self.' Through this form of make-believe," the

⁷University of Texas, *EDP 398T College Teaching Methodology*
<<http://www.utexas.edu/courses/svinicki/398T/Ten%20Benefits.htm>> (20 May 2003).

⁸ Millar, Susanna. 1968. *The Psychology of Play*. Baltimore: Penguin Books, Inc., 200.

⁹ Ibid.

¹⁰ Levy, Joseph. 1978. *Play Behavior*. New York: John Wiley & sons, Inc., 1.

child achieves “the freedom from the real world (e.g., rules, roles, expectations, etc.) to experience their inner egoless personality”¹¹. The ability to imagine becomes especially important for children of *Manghopir*, for whom the real world holds very little.

While a teacher’s attention is a stimulus, it is unreasonable to expect the teacher to be the sole provider. The physical environment of the school gains greater importance because it defines the space within which play is to take place. Exploration and play increases in stimulating environments, which are created through the kinds of facilities and aesthetics that are provided within the physical environment.

The aesthetics of *IIm-II* lack the kind of stimulating environment needed to prompt a child’s imagination or to promote play. It lacks even the basic jungle gyms. The children in *IIm-II* played games like hopscotch in the sand, climbed trees or took rides in the small merry-go-round parked outside the school, for Rs.2.

“Piaget’s notion of symbolic play as ‘assimilation’ of events in symbolic form probably sums up best, at present, the exploring, manipulating, repeating, varying, confirming and classifying of impressions, events and feelings which can be observed in children’s make-believe play. If so, make-believe play belongs with all those processes and structures which underlay the coding, storing, checking and recoding of information, and which appear to keep the human brain pretty constantly busy”¹².

The idea that a child’s cognitive skills can be developed through play has been established for some time now. Play fosters certain “habits of mind” – curiosity, persistence, imagination, communication, problem solving instincts – as well as skills to manipulate and understand the properties of the material world¹³. Encouraging such abilities can make the children of *Manghopir* competitive, as they would be less inhibited and willing to push beyond the boundaries, enabled by the faith in their problem solving abilities, which play fosters. For this to happen, the physical environment of *IIm-II* needs to become more dynamic, interactive and in essence belong to the children. It should be such that the children can manipulate their surroundings according to their interpretations, but more important is that the children themselves understand that they are at liberty to interpret their surroundings according to their wishes.

¹¹ Levy, Joseph. 1978. *Play Behavior*. New York: John Wiley & sons, Inc., 12.

¹² Millar, Susanna. 1968. *The Psychology of Play*. Baltimore: Penguin Books, Inc., 156.

¹³ Smithsonian National Museum of American History, *Lemelson Center for the Study of Invention and Innovation*, “Invention at Play Educator’s Manual,” Washington D.C., 2003.

4.6 Child, Play and 'Active Learning'

"Imagination is more important than knowledge. For while knowledge defines all we currently know and understand, imagination points to all we might yet discover and create." – Albert Einstein¹⁴.

The idea of teaching the child educational concepts through play is fairly recent in the field of education. The Lemelson Center and the Media Lab at the Massachusetts Institute of Technology are amongst the leaders in this field of research. In a recent exhibit, 'Inventions at Play' at the Boston Museum of Science¹⁵, parallels were drawn between the process of child's play and the process of discovery for inventors.

An inventor goes through the process of tinkering, experimenting and getting to know the tools and materials. It is their imagination, problem solving skills, and the understanding of symbolism, analogies and metaphors that allow them to derive solutions from everyday items: processes that came into play and enabled an inventor like James Watt to conceptualise a steam engine, from his observations of a simple tea kettle. Inventors are able to communicate and collaborate with others to solve complex problems and patterns because of their ability to draw stimulus from the people around them and because they are able to think outside the box¹⁶.

A child's play is similar to an inventor's process towards discovery. An active child is constantly involved in exploratory play where they try to understand the materials around them; pretend play allows them to assimilate daily use items into their imagination; social play with other children teaches the value of collaborations; while playing with patterns develops the child's cognitive skills for solving problems¹⁷.

The message of the exhibit was to illustrate to the teachers, ways that would retain a child's habit of tinkering, imagination, and problem solving. The exhibit pieces consisted of 'active learning' pieces with inbuilt scientific concepts, which could be subliminally assimilated by the children, while they simply enjoyed playing with the pieces. One good example is the 'rocky blocks' game, which involved balancing building blocks on a table with a semi-hemispherical base. The purpose was not just to have fun stacking

¹⁴ Smithsonian National Museum of American History, Lemelson Center for the Study of Invention and Innovation, *'Invention at Play Educator's Manual'*, Washington D.C., 2003.

¹⁵ The 'Inventions at Play' exhibit was the result of a collaborative effort between the Lemelson Center, MIT and the Museum of Minnesota. The exhibit ran at the Boston Museum of Science from February to April 2003.

¹⁶ Smithsonian National Museum of American History, Lemelson Center for the Study of Invention and Innovation, *'Invention at Play Educator's Manual'*, Washington D.C., 2003, 25.

¹⁷ Ibid.

the blocks as high as possible on a wobbling base, but to also allow the children to simultaneously absorb the concepts of balance and centre of gravity, while encouraging calculated risk-taking.

4.7 Applying the Child-Play Concept to IIm-II

“To invent, you need a good imagination and a pile of junk.” – Thomas Edison¹⁸.

Imagination allows the child to ‘substitute’ for objects that are not readily available. Hence a child can equally enjoy playing with a brick (that ‘substitutes’ for a toy car), just as much as a real toy car. “These generalized, covert actions, assimilated into the child’s know-how, literally stand for or symbolize the object, and form the basis of the child’s thinking even before the child can speak, according to Piaget”¹⁹. This means that the essence of child-play and ‘active learning’ could be extracted and implemented using the simplest of material. The only thing needed, is providing the different scientific and child development concepts.

The child-play concept could be applied to IIm-II in the form of ‘active learning’ installations. These installations embody basic scientific concepts and can be built out of simple materials that could be found locally. They can be constructed in teacher-children groups and by involving the community as well.

Scaling-up ‘active learning’ installations is relatively easy since it does not require too much bureaucracy at the government level. By forming a design group of educators and designers, ‘active learning’ installations can be printed as teacher guidebooks which explain the construction techniques and the concepts behind each installation.

¹⁸ Thomas Alva Edison (1847-1931), scientist, most famous for inventing the incandescent light bulb and phonograph.

¹⁹ Millar, Susanna. 1968. *The Psychology of Play*. Baltimore: Penguin Books, Inc., 137.

"Balancing the Blocks"

Building the "Balancing the Blocks" is easy. The materials needed are two large boards, a hemisphere and four pieces of elastic band.

The board could be of any material that does not bend like old signage boards, etc.

The hemisphere could be a bowl, an old helmet, etc.

Elastic bands could be the inner tube of an old tire, etc.

Construction Technique:

Place the hemisphere in the center of one of the boards. Make four holes in the board around it and mirror these holes in the overlaying board. Glue the flat side of the hemisphere to the second board and tie the two boards together with elastic bands.

Benefits:

This installation gives children an understanding of the concept of center of gravity, promotes collaboration and encourages calculated risk-taking.

This installation is easy and inexpensive to build since discarded items like old curry bowls can be used.

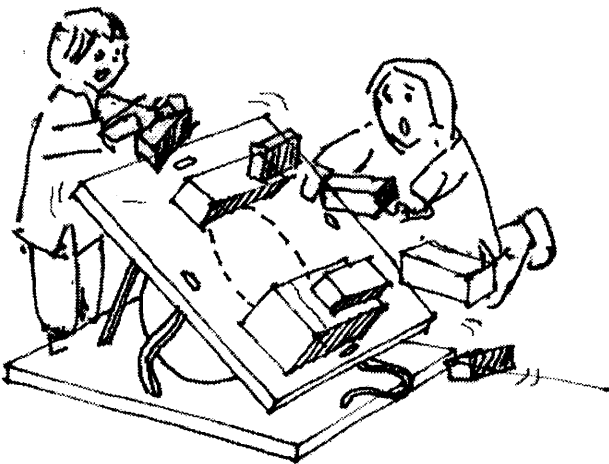
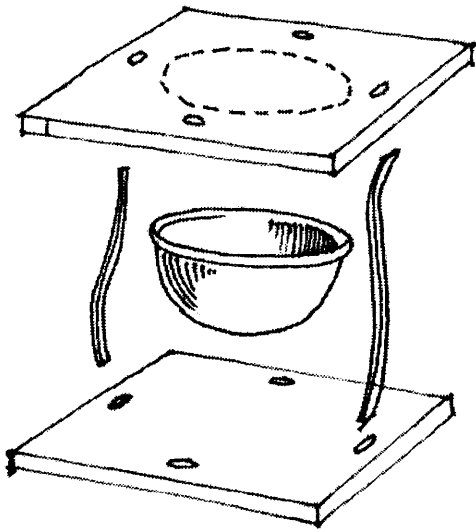
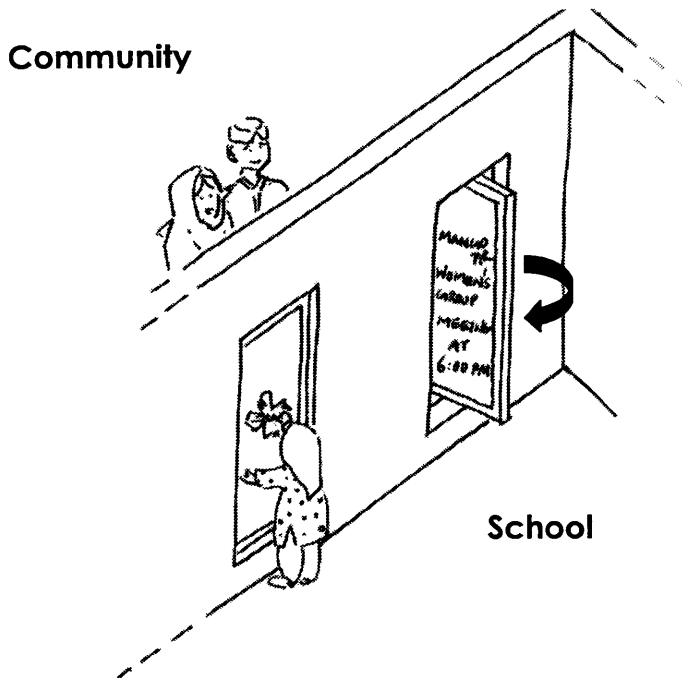


Fig. 26. An example of 'active learning' installation guidebook.

The following are some examples of 'active learning' installations:

4.7.1 'Outward-looking' walls



- Promotes interaction with the community outside the school.
- Continuously changing messages or work done by the children.
- Encourages the child to openly express himself.
- Challenges the child to think beyond the 8_x 11 frame.
- The child gains confidence about showing his work
- Safe since children do the work within the school premises

Fig. 27. The 'Outward-looking' wall in the Ilm school.

“Between the ages of five and seven most youngsters in our society achieve notable expressiveness in their drawings. Having mastered the basic steps of drawing and having learned to produce acceptable likenesses of common objects about them, they go on to produce works that are lively, organized and almost unfailingly pleasing to behold”²⁰. I found the children at *Ilm-II* a bit restrained in their expressiveness initially because for them, drawing was not a regular activity. However, once the initial inhibition was gone, most children produced beautiful drawings. There were only a few who were too afraid to draw because they did not know what they wanted to draw and were afraid that whatever they drew, would not look nice.

The 'outward-looking' wall hopes to make drawing an activity that could be done any day, anytime. (Fig.27) With a very simple design of revolving drawing panels that are built into the boundary wall, it provides a recyclable surface that is not 'precious' like paper. The children work within the safe environment of the frontcourt of the school and then flip the panels around to display their work to the

²⁰ Gardner, Howard. 1980. *Artful Scribbles: the significance of children's drawings*. New York: Basic Books, Inc., Publishers, 94.

community outside. This simple mechanism gives the community a window into how the children are developing their creative and artistic skills while at the same time, building confidence in the child to display his work to the world. It allows the child to think beyond the constraints of a standard page size of 8 x 11 inches and since the drawing panels are erasable, the display changes, depending on the frequency of use by the children.

4.7.2 'Tree house'



Fig. 28. A child's retreat.

The 'tree house' is a space set aside for a child to create an imaginary world of his own. Ideally the roof of *Ilm-II* could be converted into a 'tree house' with access/exits via a rope ladder and sliding poles. Proper stairs should also be provided for teachers to access the space above. Within the 'tree house' there is no prior compartmentalization of spaces and neither is it designed. The space is divided, interpreted and enclosed by the children using flattened cardboard boxes or discarded bed sheets or any other cheap surface. The expression of the space depends on the imagination of the child's mind, i.e. it can take the shape of a train, ship or even a spaceship.

It also provides 'quiet spaces' for children, where they can escape to and ponder over, rationalize and assimilate the different stimuli they receive throughout the day. Since most children come from large households, finding a 'quiet' place for them is often hard and the school can provide them with this need.

4.7.3 Water pool

A water pool can become a place for children to experiment with the properties of water. Children are usually fascinated by water and would enjoy trying to float different kinds of objects. “Playing with toys in the water and measuring (different volumes of water) introduce to the children concepts of floating, sinking and quantity”²¹ This kind of exploratory play will help the children grasp the ideas of buoyancy and what kinds of volumes and materials are best suited for floating. “Water play tends to be a group activity and requires enough space to accommodate”²² a large group of children. The water pool can be simply constructed by embedding a plastic tub in the ground of the frontcourt. The tub can be positioned under the water tap so as to collect any dripping water from the tap.

4.8 Benefits of Child Play and ‘Active Learning’

“Whenever one traces the origin of a skill or a practice that has played a crucial role in biological, sociological, psychological, and philosophical evolution of man, one usually discovers the origin to be play”²³. The benefit of child-play and ‘active learning’ is that while a child is enjoying himself, he is also actively learning important educational concepts and character traits.

This becomes very important in the social and economical context of any child coming from a similar background as Manghopir. The parents of many of the children are illiterate and may not value education highly. Hence, if the child does not enjoy the school environment, he is more likely to be absent and the parent would not be bothered. If playing is an attraction and the child enjoys coming to school, then he will be self-motivated to come.

Many of the ‘active learning’ installations involve character building; for example the ‘outward-looking’ wall built confidence and the ‘rocking block’ developed calculated risk-taking. “Sharing may come more easily to a child whose desire to play with others is strong”²⁴. Many of the installations require collaboration and playing in groups, which instill in the child the ability to cooperate and share. Such character traits will hold the children of *Manghopir* in good stead despite the shortcomings of a poor government school curriculum, when they are ready to compete and take their place in the world. Also, even though they may not necessarily understand the formal educational concepts behind the installations, they will however, appreciate the practical manifestations of these concepts. For example they may not

²¹ Sanoff, Henry. 1972. *Learning Environments for Children*. Raleigh: Henry Sanoff, 43.

²² Ibid, 43.

²³ Levy, Joseph. 1978. *Play Behavior*. New York: John Wiley & sons, Inc., 65.

²⁴ Millar, Susanna. 1968. *The Psychology of Play*. Baltimore: Penguin Books, Inc., 183.

understand the scientific reason behind buoyancy, but will know that a large, flat volume is more likely to float than a pin.

One of the biggest benefits of 'active learning' installations is that it does not challenge the position of the teacher. 'Active learning' is not meant to replace the curriculum and does not enter into the physical boundaries of the classroom. The teacher continues to fulfill the children's need for formal education within the classroom, while each child has the option to enhance his own education by playing with the 'active learning' installations outside the classroom.

'Active learning' installations can also help define the aesthetic language of the school. Since the installations are interactive, they are interpreted and reinterpreted by the children (Fig.29). An example would be of the school covered by drawings of dinosaurs on one day and flowers the next day. The images or patterns would be constantly changing. Since the children themselves draw the images, it fosters a sense of ownership that, through their work, extends to the school itself.

In summary, in a place like *Manghopir* where there are no playgrounds or children's library, the school should be a place that gives a child these facilities and allows him to escape the harsh realities of his impoverished surroundings. It should be inviting and stimulating. It should foster in a child a sense of responsibility and ownership in the school and be a symbol of hope for a better future. Above all, school should be fun. 'Active learning' installations aim to make the schools all of the above. The school would then come to symbolize the commitment of the teachers and the community towards the welfare and development of their children.

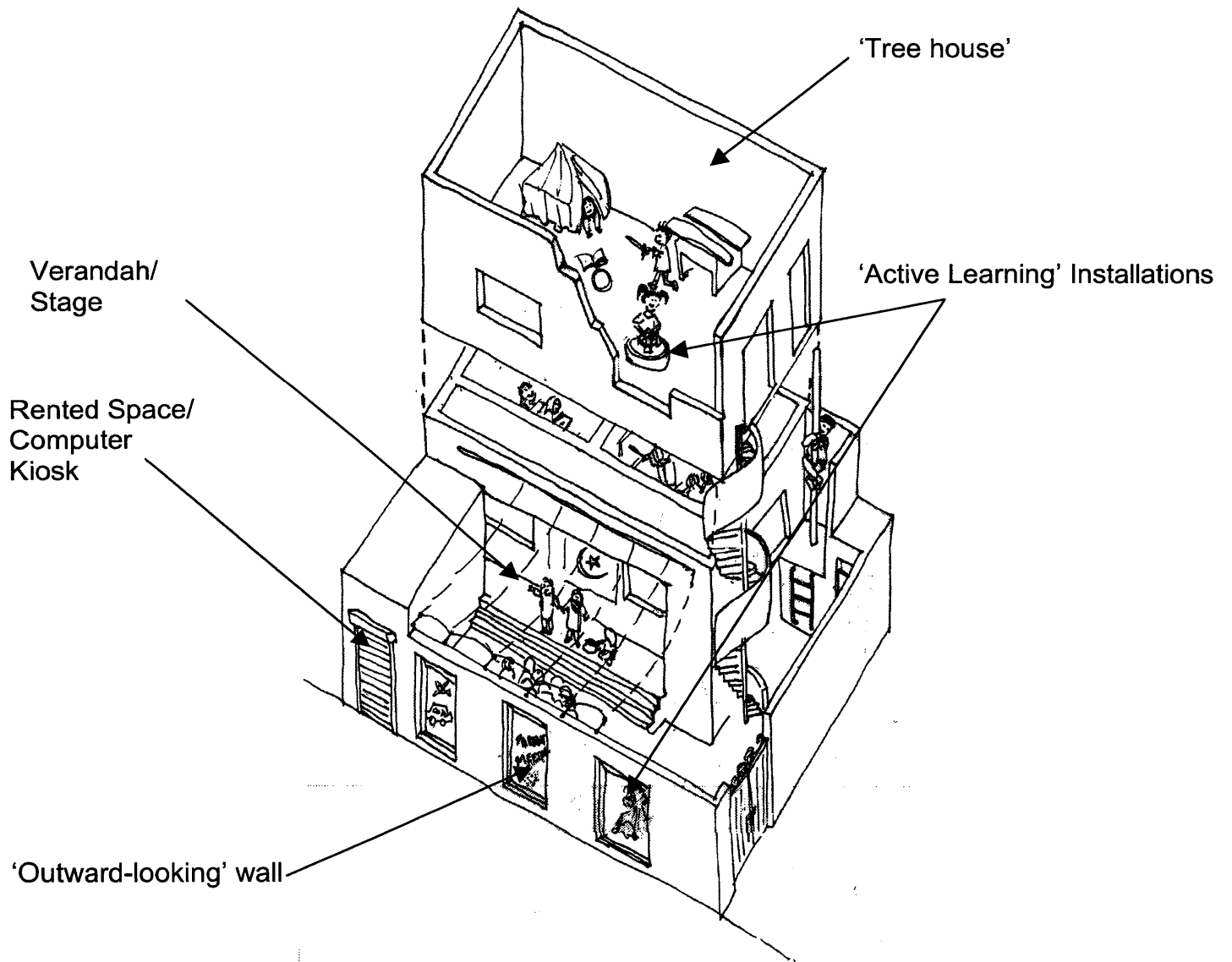


Fig. 29. *Ilm II* as a socially responsive school.

5.1 *Ilm-II's* Need for Community Participation

Of the many issues faced by *Ilm-II*, the absence of a fallback system for the school was one of the more critical issues that needed to be addressed. Under the current framework, the school continues to run only because of the strong leadership provided by Samina Saleem, the principal of *Ilm-II*. She has been running the school for the past three years and even though she would not like to abandon her own initiative, the fact remains that some day she would get married and would likely move on.

Realizing the repercussions of such an eventuality, Samina is currently training one of the volunteer teachers to take over the role of the Principal, when the time comes for Samina to leave. While discussing the problems faced by *Ilm-II* with Samina, I suggested community participation in the administrative affairs as a potential support system for the school. Though Samina agreed that the suggestion had potential, I got the feeling that she concurred because she did not want to offend me, rather than because she felt that the suggestion had any merit. Only on further questioning, did the complexities of community participation get highlighted.

5.2 *Ilm-II* and the Community

Samina holds *Ilm-II* together at the moment. She is the sole driving force that continues to motivate the teachers and children to attend school everyday. While strong leadership is *Ilm-II's* strength, it is also its biggest weakness. Though the idea of the community sharing her responsibility is enticing, Samina has learnt from past experience that involving the community could not only be a disappointment but a nightmare as well.

Ilm-II is in a unique situation because it had basically established itself by squatting on government property. Though the use of the facilities was gained through the support of some community leaders, Samina does not hold the title or the legal sanction to use the school. Despite the initial support from a few community leaders, the community as a whole has not provided Samina with much support. They are quite happy to have Samina provide the education for free, and since the school has managed so far, they have no incentive to help. Pledges are made by them very easily but when the time comes to deliver, the help is not always forthcoming. Such a propensity towards false promises results in an unbalanced relationship where the schools expects help, but when the time comes, is placed in an uncomfortable position where it has to beg for help. Such a situation had occurred earlier when Samina was forced to

leave *llm-I*¹. The community may have had valid reasons for being unable to help out then, but the fact remains that one man alone was able to force Samina out of the school because community support was not provided at the time when it was needed the most.

This is one of the main reasons for Samina's preference towards the school being re-designated as a government school. If left solely in the hands of the community, she fears that the community interest in running the school could not be sustained beyond a year and the school would eventually die out. Even though the government system is not ideal, for Samina it was simply the more reliable choice².

5.3 Teachers and Community

Another reason for the lack of enthusiasm in teachers about community participation was the amount of time and energy required to sustain such an activity. The teachers are already overwhelmed from handling so many children; for them, fostering community participation is a burden, especially if the community has a history of reneging on its promises. The teachers are also apprehensive about the kinds of community politics that might enter the school, should the community become involved. Reputations are very fragile in the society here. Rumors can be easily started and that threat is a matter of real concern, especially for women teachers. It leaves a teacher vulnerable to exploitation by a community member who might have more influence in the community.

Such a situation did occur with Shakran, a parent who used to volunteer to clean the school after classes ended. Samina and I were able to secure a monthly stipend for the teachers through the donations of a private businessman. The amount was limited, and Samina gave the teachers proportionately more than Shakran, which was only fair. However, Shakran felt otherwise. She began to spread rumors that Samina received more money than what she was paying the teachers and her. Shakran was confident that since the school depended on her to remain clean, her position was secure and she could indirectly pressurize Samina into paying her more. When the rumors reached Samina, she was forced to ask Shakran to leave. Though Samina was able to counter the rumors, had it been any other teacher, it could have been quite a devastating experience. Hence if given the choice, the teachers would prefer focusing solely on teaching, rather than risk exposure to community politics especially when the benefits of community involvement are not always proportionate to the risks.

¹ An account of the move from *llm-I* to *llm-II* is given in Chapter 2.

² Efforts to legalize their status have been futile so far due to governmental bureaucracy and lack of clear information about whom to approach and how. In my most recent visit in January, 2003, Samina had finally managed to obtain a letter of no objection which was pending processing in the Department of Education, Sindh.

Some of the main themes that came out of my discussions with the teachers about community participation were skepticism about sustained commitment on the part of the community, uneven expectations on both sides, and the uneven power relationship. Another interesting point was how money could change the dynamism of volunteerism within the school and the school's image within the community. Money creates expectations, which if not fulfilled can lead to dissatisfaction. Once the teachers began expecting pay, the months when the salary would not come through, the teachers would express dissatisfaction with their situation, which would result in a lack of motivation. Money also opened the school to attacks and criticism from people like Shakran, since the school was now getting paid for their 'noble' work. Despite the reluctance and skepticism on the part of the teachers of Ilm-II, I still felt that meaningful community participation could help strengthen the school's support network.

5.4 Community participation and Education

Community participation has, in recent years, been highly encouraged as a means of self-empowerment and capacity building for communities. The definition of 'participation' holds different connotations for different people. For activist groups, it means the people having significant decision-making control³ while for a development economist it means the equitable sharing of benefits⁴. Nonetheless, the broader objectives of community participation include: empowering the community such that it leads to more equitable sharing; building capacity so that the community is capable of administrative responsibilities, thereby making a project sustainable; incorporating direct input from the community thereby making a project more effective; and identifying and utilizing potential sources of free labor so as to bring costs down⁵.

Developing closer links between education and community has been a growing concern for institutions like UNESCO since 1963⁶. School projects with high levels of community participation have been highly publicized and implemented in many educational projects in developing countries. An example of a successful community project in Pakistan is the "Urban and Rural Fellowship School Experiment" tested in Balochistan. The project called for the creation of a "Village Education Committee (VEC) composed of rural parents and trained by an NGO." The VEC was "tasked with procuring a teaching facility and

³ Paul, Samuel. 1987. World Bank Discussion Papers, 6. *Community Participation in Development Projects: The World Bank experience*. Washington, D.C.: World Bank, 2.

⁴ Ibid, 2.

⁵ Ibid, 4, 7, 9.

⁶ Kennedy, Margrit I. 1979. *Building Community School: An Analysis of Experiences*. Paris: UNESCO, preface.

locating a qualified local woman who could serve as a teacher”⁷. The VEC was also charged with the task of investing the savings from the three-year subsidy (fellowship) that the government provided for each child attending school. While the urban areas did very well (enrollment rates were as high as 74% in neighborhoods which had access to government subsidies), the success rate for rural areas was low because they could not generate enough savings to make the school financially self-reliant. The main reasons for failure in the rural areas were low population density (small numbers of school-going children meant less subsidy), lack of experience in financial transactions (which lead to poor investment decisions), and the inability of the parents to meet the education cost, even after subsidy⁸.

Community participation is “not a costless process”⁹ nor does it inherently exist in every community. “It takes time, money and skills to organize and sustain participation. For communities of the poor, the short-term opportunity cost of organization and active participation can be quite high”¹⁰. Community participation needs to be nurtured over a long period of time, otherwise after the initial months, the momentum disappears and the school is again left to face its problems alone. Community participation, especially in the context of *Manghopir*, is a complex and time-consuming process that both the community and the teachers would need to go through. Organizing community participation in the form of a parents’ association, along with village leaders, is also a fragile process. Without an external facilitator, like a non-governmental organization, community participation would die out and all the efforts would be wasted.

In *Ilm-II*, the initiative did not come from the community. Samina and I organized a meeting with all the parents in July, 2003, where we proposed the creation of a parents’ association. We explained the need for the parents to take an active interest in the affairs of the school, if the school was to continue providing their children with a better quality of education. We had ensured high attendance amongst the fathers by asking one of the community leaders, Mr.Soomro, to request the men to attend. The mothers were asked, through the children, to attend. Since the society was conservative, the meeting was a segregated affair. It was interesting to note the differences in the responses of the two groups.

⁷ Peter F. Orazem, Peter F. 2000. *The Urban and Rural Fellowship School Experiments in Pakistan: Design, Evaluation, and Sustainability*. Girls’ Education Thematic Group and the Economics of Education (<http://www.worldbank.org/education/economicsec>) Thematic Group in the Education Department, Human Development Network, World Bank, 13.

⁸ Ibid.

⁹ Paul, Samuel. 1987. World Bank Discussion Papers, 6. *Community Participation in Development Projects: The World Bank experience*. Washington, D.C.: World Bank, 11.

¹⁰ Paul, Samuel. 1987. World Bank Discussion Papers, 6. *Community Participation in Development Projects: The World Bank experience*. Washington, D.C.: World Bank, 11.

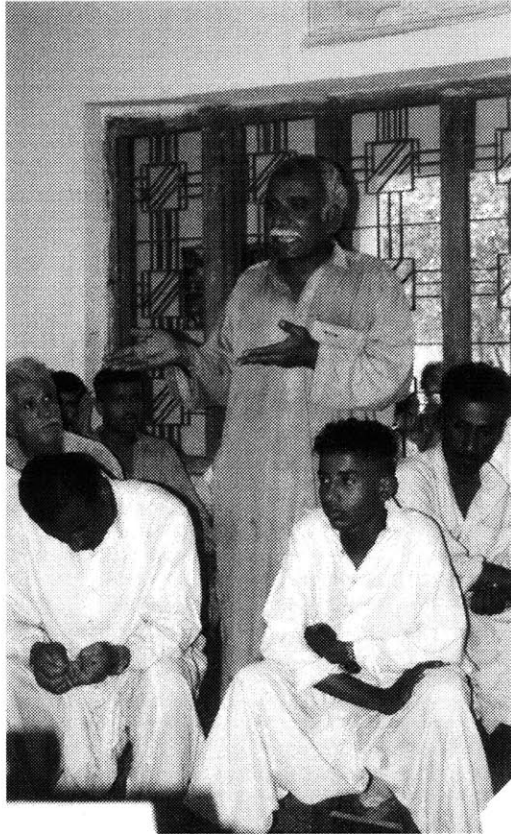


Fig. 30. Mr. Soomro addressing the parents.

Mr. Soomro, as the community leader was allowed to set the tone of the meeting. He praised the hard work of the teachers, and extolled the valuable service they were providing to the children of the community. He went on to give a fervent speech about how it was the duty of every father in the room to help improve the condition of the school (Fig.30).

All the men in the room agreed and pledged their cooperation by signing on a roster. While discussing the needs of the school, we tentatively suggested the possibility of working together to solve the financial problems of the school. One of the questions asked was if the community would be willing to help in the construction of a space that could be rented out. One of the fathers got up and said that there was no need for such elaborate measures and the teachers should simply charge the children a monthly fee.

An interesting observation from this fathers' meeting was that from the twenty-five men present, only two, who appeared to be prominent community members, said anything. Everyone signed the roster either because they were willing to help or did not want to appear as disagreeing with the community leader who had already promised participation¹¹. There was disagreement however, when we began discussing exactly how the fathers could help. The suggestion of one of the parents to charge a fee in order to solve the school's problems can either be interpreted as an issue of pride, with the notion that the school resorting to renting out space to educate the children was unacceptable, or an attempt at avoiding issues that would require participation beyond simply words¹².

¹¹ The *Manghopir* settlement is based on the *wadera* (landlord) system. These *waderas* are essentially land grabbers who consolidate large tracts of land and then rent them out to laborers. The majority of the fathers would not want to appear in disagreement with the 'community leader' who usually is also the *wadera*.

¹² In the meeting, the father who proposed this was willing to pay as much as Rs.30 as a monthly fee. However, Samina later informed me that he was the first to refuse when she had requested a nominal fee of Rs.5 a few months earlier.

The women's meeting was also very interesting. There was no pretence at being willing to help. We hardly managed to get three mothers to volunteer for the parents' association¹³. Most were either shy of taking such a position or did not want the additional responsibility of the school being added to their housework. The large attendance on the women's part was because some had the false notion that the reason for calling the meeting was to distribute *zakat*¹⁴ money (Fig.31).



Fig. 31. Women's meeting taking place in the front court.

Community participation is not a natural occurrence. It only happens when there are substantial benefits to be gained. Community participation often needs to be instigated through an external agency, preferably a non-governmental organization). In the case of *Manghopir*, I was temporarily the external agency. Community participation also needs to be nurtured and sustained over a long period of time. Setting up just the framework is not sufficient. When I left the school in August 2002, the parents had pledged to work together to improve the quality of the school. When I revisited the school in January 2003, I found out that after that initial meeting where the parents' association was formed, there had been no effort on the part of the association to work with the teachers. If it was to survive a future loss of leadership, *Ilm-II* needed an interdependency model that could make it self-sustainable.

The failure of *Ilm-II* to establish a working parents' association to help improve the school conditions for the children makes it even more important that *Ilm-II* develop community participation through other means. *Ilm-II* needs to try an alternate strategy that links the community's needs with the children's needs. Since the appeal for improving the educational quality is not a compelling enough reason for cooperation among the *Manghopir* community due to the severe financial concerns faced by the community (school closure is still a distant threat since Samina, till now, has managed to scrap together

¹³ The parents' association was to consist of three fathers and three mothers who would serve on a three-month rotational basis.

¹⁴ *Zakat* is an annual deduction calculated at 2.5% of consolidated wealth of a Muslim that is deducted by the government to be utilized for charity purposes.

some funding), *Ilm-II* needs to provide an immediate incentive that compels the community to support the school.

5.5 Community and Ilm-II: a symbiotic relationship

Under the architectural program for making *Ilm-II* a socially responsive school, programmatic flexibility allows the school to evolve according to its needs and those of the community around it. The school, acting as an interface, can lead to a situation where both the child and the community stand to benefit through collaborations over issues that have immediate and material results for both; there must be a give-and-take aspect that is inbuilt into the agreement of cooperation. If the relationship were to be symbiotic, no one side should feel that they have received the short end of the stick. Such an arrangement is easier to establish and requires less effort as compared to organizing community participation in the form of parents' associations and village leaders. The hope is that through such incentives, *Ilm-II* will build a culture of collaboration and cooperation that did not exist before in the community. Another advantage of such a relationship is that while they need each other, they still maintain their independence. The ability of the school to maintain its independence becomes important since "the elites among" the community, "tend to appropriate a disproportionate share"¹⁵ of the authority and may begin to abuse their role within the group representing the community. This is worrisome because the 'elite' community member can use the school as a pawn in community politics.

Community linkages are defined through three levels of participatory relationships. These participatory levels are more sensitive to the limitations of a poor community and allow the community and the school to choose the degree of interaction between the two.

5.6 Provider (School) – Consumer (Community)

Globalization has increased the need for connectivity and there is an increasing demand for providing rural communities with Internet access. The main barrier to communities in rural areas is the lack of qualified operators. *Manghopir* is no different; the residents need access to a larger market than that of their immediate vicinity. Computers can provide them such access and help them keep up with the new market trends without the need to go through a middleman. Providing *Ilm-II* with a computer changes the status of the school and the child within the community. The school is now the medium through which the community gains the much-needed connectivity to the world.

¹⁵ Peter F. Orazem, Peter F. 2000. *The Urban and Rural Fellowship School Experiments in Pakistan: Design, Evaluation, and Sustainability*. Girls' Education Thematic Group and the Economics of Education (<http://www.worldbank.org/education/economicsecd>) Thematic Group in the Education Department, Human Development Network, World Bank, 10.

In an interesting experiment conducted in South Africa named ‘Minimally Invasive Education Project’¹⁶, computer kiosks were set up in rural areas of South Africa without computer operators. The aim of the project was to assess whether the “rural South African children had the cognitive skills to understand



Fig. 32 South African child learns to operate a computer on her own

computers without any formal training”¹⁷ (Fig.32). The results of this experiment were very encouraging. Within two months, 60% of the township’s children had already taught each other basic functions, including the ability to drag icons, re-arrange windows and open applications¹⁸.

Children need to be familiar with the use of computers if they are to keep up with the technological revolution occurring around them. However, the cost of purchasing and maintaining a computer is prohibitive. By charging a small fee and opening up the facility of using the computer connection to the community, *Ilm-II* sets up an immediate give and take relationship between the school and community. The school (provider) needs the community to use their computer connection to offset the cost of maintaining the computers, while the community (consumer) needs the children to operate the computer for them.

By making the children of *Ilm-II* the computer operators, they become the provider of a valuable service that the community would otherwise not have. This forces the community to reevaluate their paternalistic viewpoint towards children. It forces them to acknowledge that the community need not always provide for the child; in fact the child can be an equal provider to the community. The community also sees the immediate result of educating their children, rather than having to wait years for them to graduate secondary school before becoming useful community members.

Once this interdependent relationship is set up, it is to the advantage of both the school and the community to make the partnership work. The hope is that in an environment where community participation did not exist, such partnerships would be the first step towards creating the environment and culture that would make permanent parents’ associations possible. The community and the school can

¹⁶ The project is run by the Council for Scientific and Industrial Research and is supported by the Department of Science and Technology of South Africa.

¹⁷ Rowan Philp, “Curiosity cures the knowledge gap,” *Sunday Times.co.za*, 19 Jan 2003, <<http://www.sundaytimes.co.za/2003/01/19/news/news05.asp>> (May 10, 2003).

¹⁸ Rowan Philp, “Curiosity cures the knowledge gap,” *Sunday Times.co.za*, 19 Jan 2003, <<http://www.sundaytimes.co.za/2003/01/19/news/news05.asp>> (May 10, 2003).

cooperate as long as the students come first and then the community. Community involvement can be healthy for the children. The risk, however, especially for a school that tries to help solve some of the problems of the community, is that these community problems gain priority over education and that can be detrimental.

5.7 Provider (School) – Beneficiary (Community)

Unlike the developed countries where the schools have facilities like an auditorium, a swimming pool and a library that they can share with the community, such facilities in most third-world countries are considered luxuries and are never invested in. Indeed they are a luxury if used solely for the purpose of the school. Further more, they would be underutilized and would not justify the cost. However, if community usage also occurs, then “the community and schools could work together in a more effective design effort and share some of the costs and operational functions of utilizing school facilities”¹⁹.

Schools in developed countries have found that “community use” of some of the school facilities and “involvement leads directly to stronger advocacy for local schools, including support for increased funding”²⁰. By tying in certain kinds of community usages with the school, the government sets up a framework for the community to actively maintain the school facilities, reducing some of the government’s responsibility.



Fig. 33 English Language class in the afternoon for young girls

IIm-II at the moment is being used only for educational purposes. The only community usage at the moment is for an after-school English class for girls (Fig.33). The school remains locked for the rest of the day. Providing safe storage will be essential if the school were to allow after school hours usage by the community. Once *IIm-II* (provider) has such provisions, then the community could begin to utilize it as a meeting place for women’s groups (beneficiary), etc. Since they are using the school, the women’s group might volunteer to contribute towards

the cost of fixing the lavatory. In this kind of relationship the school also stands to benefit, even if indirectly. While *IIm-II* has geographic and financial limitations that prevent it from having a large multi-

¹⁹ Fanning /Howey. 1995. *Community Use of Schools: Facility Design Perspectives*. Celina, Ohio: Fanning/Howey Associates, Inc, 22.

²⁰ Ibid. 21.

purpose room attached, the government should start thinking of making a large multi-purpose room a part of the standard 2-roomed school layout.

5.8 Beneficiary (School) – Provider (Community)

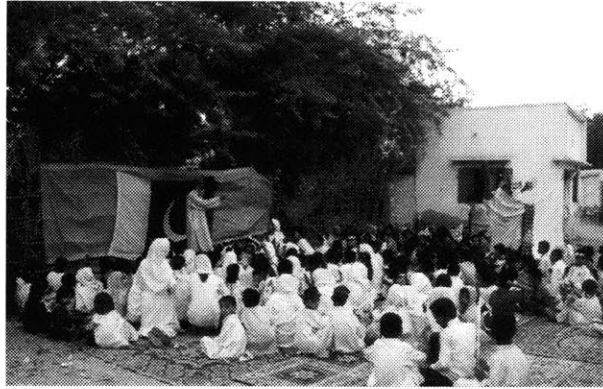


Fig. 34 Community members helping organize Independence Day of Pakistan

Partnerships with parents are often possible when financial contribution is not required of them. Since ‘active learning’ installation pieces are low-cost, easy-to-construct and use locally available materials, the community could become involved in the construction of these pieces. It allows the child and his parent the opportunity to bond while constructing the installation pieces. It also serves as a learning experience for the community members, as many of them have never attended school. Allowing parents to participate in this process will not only give them a chance to work with their children, but will also empower them with a sense of contribution towards their children’s education beyond their current passive role of simply sending them to school (Fig.34).

Issues to be aware of:

1. The primary purpose of the school- the first and foremost function of the school is to provide education. In schools such as those in *Manghopir*, the principal or teacher is the instructor and in many cases the administrator too. Community participation can be very time consuming for these teachers and can detract from their focus on teaching.
2. Shift in Administrative structure- the principal is the main administrator, followed by the teachers. Involving the community creates a shift in this administrative structure. Community

participation without some form of voting right means very little. However, one of the perils of community participation is that a few members of the community tend to be more vocal and influential. If the principal is weak, then these community members drive the agenda of the school and that could be detrimental to the primary purpose of the school, especially when money is involved. In the absence of a culture of transparency and accountability, these individuals could see the school as potential source of revenue for themselves, as seen in the case of *IIm-I*.

3. Location- distance divorces the school from the community and limits the potential functionality of the school, i.e. a community would not be able to use the school if it is located far away. Distance also does not allow community participation to take place. The notion of “out of sight, out of mind” comes into play quite strongly; since the school does not exist within the boundaries of the community, for parents the school becomes a distant entity where the children go to gain some education. This ‘visual absence’ allows the parents to affectively ignore their responsibility towards the school, and prevents the establishment of an affective parent-teacher association.

The different levels of community interactions are all meant to support the school, while simultaneously maintaining its independence. It is an approach worth trying out in a few select government schools like *IIm-II* or *Govt.Manghopir*, found on the periphery of large cities. Many community participation efforts fail because they try to push the responsibility of the school entirely onto a community that is already burdened. By offering different levels of community participation, both the community and the school have the freedom to choose how much of interdependence they would be comfortable with.

6.1 A New Beginning

In the absence of a better model for educating the children, these 2-room government schools continue to be the main defense against illiteracy. However, the current conditions affecting these schools (both physical and educational) do not make them conducive to learning for the children. Hence, they call into question the effectiveness of the education received. This thesis identifies three components to improving the conditions of the 2-room schools and making them more socially responsive to Pakistan's context.

6.2 Levels of Interventions for a Socially Responsive School**Architectural:**

Intervention at government levels is in fact a reversal of government involvement. By allowing the program of government schools to become flexible, the government is 'trusting' the school to innovate and make the right decisions with regards to its own needs.

Govt. School-Manghopir, if it chooses, should be allowed the ability to attach a revenue generating aspect within the larger framework of its educational functions. This will not only reduce some of the financial responsibility of the government but will also prevent the school's endless hassle and bureaucracy of requesting additional funds from them. *Govt. Manghopir* should also have the freedom to authorize the school to be used for community purposes.

Enabling spatial configurations and physical facilities are simple design interventions that at a government level would mean raising the minimum provisions for the 2-room schools. Making built-in storage spaces, skylights, multiple blackboard surfaces, etc. should become part of a standard design for the 2-room school built by the government because most of the communities that the government schools serve tend to be too poor to invest in improving the school facilities.

Enabling spatial configurations and physical facilities are not expensive design investments and give the community some basic ideas for improving the functionality of the school in their neighborhood. They could intervene by raising funds for improvement or by providing active labor input.

Educational

Intervention must be at the government level. 'active learning' installations are meant to have an educational concept behind them. The government should create an institute where educators and designers come together to create and test 'active learning' installations. Guidebooks that map out how to construct 'active learning' installations utilizing locally available materials can then be distributed as teaching support materials to the schools.

The teachers can either build these 'active learning' pieces with the help of the students, or if the teacher is comfortable working with the community, then their help could be solicited as well. Such collaborations for the benefit of the children would be valuable in strengthening the bond between the community and the school.

Community linkages

To assume that the community (parents) can be burdened with the responsibility of improving school conditions is to ignore the reality of the many constraints faced by the community (parents). Community participation is desirable but it needs to be nurtured through a third party like the government itself, or a non-government organization. In the absence of a third party, we need to allow for different levels at which community participation can occur.

In the case of the school as a point of computer access; the school becomes the provider and the community becomes the consumer. It is an interdependent relationship where both retain autonomy. The community is not burdened with the responsibility to ensure the survival of the school, but contributes through its rate of consumption of the product (computer connectivity) that the school offers. The government can intervene by providing the computer, which would allow the interdependent relationship between the school and community to occur.

School, as a space provider for community organizations like women's sewing associations; the school is a provider and the community, a beneficiary. However, the school eventually becomes an indirect beneficiary when the women's group begin to have a stake in improving the school facilities. For example, if the women using the school need to use the lavatory, it would be in their interest to contribute towards the repair of the lavatory.

In the example of the construction of 'active learning' installations, the community would evolve as the providers of valuable service, while the school becomes the beneficiary. Since helping to construct the pieces is voluntary, there is no pressure on the community to provide for the school on a permanent basis.

This thesis approaches the problem of dropout rates and retention rates of the 2-room government schools by looking at it through the kind of physical environment provided to the children, the variables that affect the education of the children, and the isolation faced by these 2-room government schools. While the programmatic changes require a shift in the perception of what a traditional school should consist of, and may be met with resistance, some of the enabling spatial and physical elements are very simple suggestions and would go a long way in improving the learning condition in the schools. The concept of an 'active learning' installation is a relatively new field of research and has not been used in the context of a developing country. If applied, it should be experimental and be evaluated by testing the performance of the children involved. Community participation, though highly desirable, needs a dedicated support system, provided either through the government or a non-governmental organization. In many rural areas, the active presence of both the government and a non-government organization is not always guaranteed. In such cases, setting up the level of community participation, as suggested, could be the best method of providing the suggested framework through which the community could form different levels of support networks around the school.

Ilm-II and *Govt. School-Manghopir* give a glimpse into the value and meaning of education for the marginalized people of *Manghopir*. For their children, education may be the only hope of breaking out of the poverty cycle. However, the inability of the government in providing quality education under the current set-up calls for an alternative approach. The lessons learnt at *Manghopir* hold relevance for other government schools as well. This thesis has been influenced by these lessons and has the potential of becoming a part of the larger solution to improve the government schools in Pakistan.

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Images

Unless otherwise specified, all images are the property of the author.

Fig. 2 was taken from the District Badin, Government of Sindh, Education Department, Planning and Monitoring Cell. 1989. *Scheme for Construction /Reconstruction of Building (2-Room) for Existing Primary Schools in Rural Areas of Sindh*. Karachi.

Fig. 5 & 6 were taken from the Government of Pakistan, Karachi City Government website, <<http://www.karachicity.gov.pk/gadaptown2>>.

In Fig. 26, the example of "Balancing the Blocks," the concept of a rocking base was taken from the "Inventions at Play" exhibit in Boston Museum of Science in February 2003 by Lemelson Center for the Study of Invention and Innovation, Smithsonian National Museum of American History.

Fig. 32 was from Rowan Philp's article, "Curiosity Cures the Knowledge Gap," Sunday Times.co.za, <<http://www.sundaytimes.co.za/2003/01/19/news/news05.asp>>.