

## Costing out Educational Needs for Khyber Pakhtunkhwa

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### Abstract

*This study was undertaken for costing out education needs for Khyber Pakhtunkhwa based on location, gender, district and grade. The sample consisted of 778 schools, including 364 females and 414 males. The study used descriptive statistics for analysis. It was found that rural students get slightly less pocket money than urban students. The cost of average monthly stationery, uniform cost, teacher cost and total cost for urban student was higher than for rural students. District Haripur was found to be the most successful school district. It was further found that better results need good financing. The study also confirmed that the girl student cost is less than a boy student. It was also concluded that the pocket money on average increases with grade. There was no significant difference of stationery cost across grades while grade one and grade four students' cost on uniform was slightly higher than other grades.*

### Key Words

Costing Out, Primary School, Rural Schools, Urban Schools, T-Statistics, Regression Analysis

### Introduction

Pakistan's constitution states in article 25-A that it is the responsibility of the state to provide free quality education to its people aged from 3 to 16 in most cases. Pakistan over the years did not perform well in the education sector. The main cause of unsatisfactory performance by Pakistan is due to low levels of investment. There has been very marginal increase on education spending. Also there is a skewed approach. Governments have focused on higher education, and hence upper income groups are more benefited by education subsidies. In most of the cases, primary education is neglected. They cannot reap subsidized education with a good quality. Because of such issues, our literacy rate is among the lowest in the World as well as of the countries who has comparatively similar set of resources (Memon, 2007).

As there is a need for other means in order to avail education, like schools, teachers, books and other related material, the need for such is a pre-requisite. Every activity is cost oriented. The effectiveness of education is heavily dependent on the quantity and quality of all necessary things without which education process may end at nowhere. Planning is the most effective and far reaching way for better and desired results. And planning is coupled with costing for every program and activity being planned. The education planning in Pakistan is not needs-based in true sense. It is just a division of resources; every year some percentage (which is very low) of budget is allocated to education which is then divided in different heads. So, education is not given resources as per its needs. When a sector's needs are not addressed, how can it be expected to flourish? Mostly public investments levels are termed meager for development in education sector (Memon, 2007). Over the years the percentage of GNP contribution has remained low. It was only 2 percent in 1984-85 which has been slightly increased. That is why the call "taleem ko 4 do" emerged. This is only one aspect. The cost of education on the basis of area, gender, location and situations are necessary for effectiveness and success.

### Literature Review

The review of literature focuses primarily on the allocation of funds through formula allocation technique to schools directly. Comparative work done on implication for school funding formula contains very little literature related to its impartiality and effectiveness. (Bischoff, 2009; Levacic, 2008b).

The conventional mathematical formula for funding schools contains variables (number of students) to which a fix amount of cash is attached in order to establish school budgets but is not

a final approach. This conventional approach has been used since early the 1960s and 1970s, but such approaches were used majorly for money allocation for specific schools in an area. But later on in midst of 1990s, countries like UK, Netherland and New Zealand extended the approaches used for school funding system. After that, the formula funding approach method has been used in various forms and expanded to other countries in Europe i.e., Netherlands, Finland and Hungary (Levacic, 2008b) and in developing nations as well i.e., Sri Lanka (World Bank, 2005).

*Illahi (1986) has stated that the primary level of education in Pakistan has been the most neglected. Khan (1992) has stressed on the importance of primary education for the sake of higher education. According to him, if we want to succeed in higher education, we need to improve primary education. Shah (2003) mentioned in his study that the monetary allocation for primary education was not enough. Naveed (2012) quoted Tahir (2009) that the policies regarding primary education in KP focus on access.*

*In 2002, the New Jersey Department of Education Department utilized two approaches, the Successful School Districts (SSD) approach, and Professional Judgment Panels (PJP). Duncombo, Lukemeyer and Yengor(2003); Reschoveski and Imazeki (2003); Gronberg et a., (2004) preferred cost function methodology which is based on the practices of states schools in the disbursement of funds and in achieving various achievement levels in order to know the cost related to these levels.*

*Hanushek (2006) termed studies of “costing out” as political instead of scientific. The procedure does not result into a very valid cost estimate because of the approach used for it. He claimed that different outcome standards coexist and it has multiplied. Rebell (2006) stressed the need for considering costs and program effectiveness together while costing out.*

Levacic (2008) termed Formula funding mathematical consisting of variables (number of students in each class, school location, poverty etc) each variable has its cash amount. According to Caldwell et al (1999), the formula funding is “an agreed set of criteria for allocating resources to schools which are impartially applied to each school”.

Baker (2012) found that the per student cost per has a positive relation with their results which is supported by other studies as well (Levacic *et. al.*, 2000; Downes *et.al.*, 2009; James *et.a.*, 2011; Nicoletti& Rabe 2012; Gibbons & McNally 2013). The allocation methods in UK are constitutional (Adnett *et. a.l.*, 2002) while it gives more weightage to Dutch students in Netherland (Ritzen *et. a.l.* 1997) backed by Coleman *et. al.*, (2012) work. The works of Hanushek (1986, 1989, 1994, 1996a, 1997, 2006) also confirms no consistency between resources and results while Verstegan & King (1998) view favors positive effect of resources.

## Research Methodology

According to Khyber Pakhtunkhwa official education website 71 percent of the schools are run by KP government. There are 17 percent non-government schools and 12 percent madrassa schools. The highest percentage is comprised of primary schools (81%) followed by middle schools which are 10 percent. High and higher secondary schools are 8 and 2 percent respectively. The primary level bet fits the study as it has maximum number of schools and most of the resources needed there.

## Sampling Technique

### Stratification

The study applied stratification process in the first step. There were four strata and four districts were selected randomly from them.

The following formula was used for sampling (Mwakaje, 2013) followed by proportional allocation methodology (Chaudhry, 2008).

$$n = \frac{N}{1 + Ne^2} \dots\dots\dots (1)$$

Where

n = Sample size, N= Population and e = error margin (5%).

$$n_i = \frac{N_i}{N} n \dots\dots\dots (2)$$

Where

n = The sample size from every district  
N = Population

$N_i$  = Number of schools in each district.

$n_i$  = Number of schools to be selected from each district.

**Table 1.** Final Districts Sample

District Name	Urban schools (boys)	Urban schools (girls)	Rural schools (boys)	Rural schools (girls)
Karak	7	10	68	72
Shangla	0	0	68	37
Mardan	64	47	116	126
Haripur	17	12	85	76
Sample	88	69	337	311

**Research Model**

School funding includes basic student numbers and grade level, needs-based, curriculum or educational programme based and school characteristics variables. In its most simple form percentage comparisons are effective for deciding allocations. The calculations are done as follows.

**Results and Discussions**

**Costs based on Location**

Table 2 shows the cost statistics of urban and rural schools. The table shows that average pocket money of a rural pupil was 1634 rupees per month. The standard deviation is high which shows that there were variations in the amount of pocket money. There were a no (0) pocket money as well as high as 9000 a month. The average pocket money of an urban student was slight high than rural student. The standard deviation for urban pocket money was less than rural and hence we can say that there are comparatively less variation in urban counts of pocket money than rural. There was 164 rupee cost of monthly stationary for a rural student than 197 for an urban student. There was less variation in rural count than urban. So cost of stationary in urban schooling is higher than rural. The maximum amount for monthly stationary cost was 833 and minimum 8 while in urban statistics, maximum was 667 and minimum 17. The average uniform cost for rural pupil was 185 with a high of 417 rupees per month. For urban student the cost was 214 with similar maximum as rural and a minimum of 24 rupees. Rural students has minimum 0 cost of uniform which shows that some students are unable to get new uniform each year and in some cases receive it from people. There were calculation of teachers cost as per the data collected and average salary. The rural average cost of teachers was 117050 rupees per month with a standard deviation of 79447; minimum count was 12800 and maximum 600000 rupees per month. For urban schools, an average of 124750 rupees per month teacher cost with a standard deviation of 46432. The variation for urban schools was lesser than rural schools. Adding up these costs, total cost for rural school is 121880 rupees per month and for an urban school a total of 130070 rupees is arrived. There was more variation in the cost for rural school than urban. We can say that urban calculation is more reliable.

**Table 2.** Costs Statistics of Rural and Urban Schools

Location	Monthly Pocket Money	Stationary Cost Monthly	Uniform Monthly Cost	Teachers Cost	Total Cost
Rural	N	621	621	621	621
	Mean	1634	164	185	117050
	Std. Deviation	2198	86	86	79447
	Minimum	.00	8.33	.00	12800
	Maximum	9000	833	417	600000
Urban	N	157	157	157	157
	Mean	1658	197	214	124750
	Std. Deviation	2063	130	76	46432
	Minimum	300	17	42	12500
	Maximum	9000	667	417	300000

### District Wise Statistics

Table 3 shows district wise cost statistics of students in all the four sampled districts. Table shows that the average monthly pocket money for district Shangla is 837 rupees, for Haripur, it was 4225 rupees, for Karak, it was 833 and for Mardan, it was 780 rupees a month respectively. So the minimum amount of pocket money received by students was in Mardan district followed by Karak and Shangla. Haripur district' students were given highest monthly pocket money amounting to 4225 rupees a month but due to high standard deviation, the variation in pocket money is expected to be high. The standard deviation for Shangla and Mardan is low suggesting that the value is representing most of the data. As far as stationary cost is concerned district Shangla averaged as 148 rupees per month, Haripur 205, Karak 163 and Mardan district per student stationary cost per month amounted to 161 rupees per month. The standard deviation values for all the four districts are low which suggest that the same cost accrue to most of the students in concerned districts. Similarly these values are also very close to each other which suggest that there are not many variations in stationary costs across districts. The mean value for uniform cost was 200 rupees for district Shangla. For district Mardan it was 190 rupees, 99 rupees for district Karak and 240 rupees for district Mardan. The minimum uniform cost for district Karak was 0 that is why there is a lowest mean value. The other three districts spent almost similar average amounts on uniforms. The per student teacher cost in district Shangla was 51529 rupees per month. For district Haripur it was 176380 rupees, for Karak it was 134870 and 100277 rupees per month rupees was per student cost in Mardan district respectively. The total per student cost in Shangla district was 53507 rupees per month, for Haripur it was 185340, district Karak had 53507 rupees and district Mardan had 104444 rupees student cost respectively.

**Table 3.** District Wise Statistics

District		Monthly pocket money	Stationary cost monthly	Uniform monthly cost	Teachers cost	Total cost
shangla	N	102	102	102	102	102
	Mean	836.8	147.7	200	51529	53507
	Std. Deviation	404	53	60.6	27531	27617
	Minimum	300	33	83	12800	13700
	Maximum	3000	291.6	375	128000	129000
Haripur	N	190	190	190	190	190
	Mean	4224.5	205.6	161.2	176380	185340
	Std. Deviation	3058.5	129.6	106.4	108883	109575
	Minimum	300	8	83	12500	14300
	Maximum	9000	833	416.7	600000	609000
Karak	N	138	138	138	138	138
	Mean	838	163	99.3	134870	138340
	Std. Deviation	1026	89.7	63.	51529	53507
	Minimum	.00	33	.00	27532	27617
	Maximum	9000	500	416.7	12800	13700
Mardan	N	348	348	348	348	348
	Mean	780.2	160.9	240	100277.8	104444
	Std. Deviation	383	84.6	28.2	34214.8	34572
	Minimum	150	16.7	100	13500	20442
	Maximum	1500	416.7	251	192000	199718

Table 4 shows the best district among all four districts based on student's percentage results. It is clear that district Haripur is the best among all four districts. The minimum percentage a student had in Haripur was 60, which is highest among sampled districts. The average marks were almost 78 which is highest among four districts. The data had minimum variation for district Haripur which shows that it is the consistent data and hence data can be relied upon satisfactorily. Hence district Haripur is the best district based on student outcomes.

**Table 4.** Comparison of District based on Students Results

District		N	Minimum	Maximum	Mean	Std. Deviation
Shangla	Result Percentage	102	47.00	95.00	70.6569	11.24215
Haripur	Result Percentage	190	60.00	92.00	77.5526	8.62474
Karak	Result Percentage	138	37.00	100.00	67.4928	11.85080
Mardan	Result Percentage	348	50.00	90.00	72.2126	9.05638

a. No statistics are computed for one or more split files because there are no valid cases.

### Gender Based Cost Statistics

Table 5 shows the cost associated to students based on their genders. It shows that for a female student the average pocket money per month is 967 rupees while for a male student it was 2230 rupees a month. There is a great difference in the amounts of pocket money which shows how our society treats a male and a female student. Though the variations in the male statistics are more than female students, it is an accepted fact that male students get more attention than female. In case of stationary, the monthly cost for a female student is 156 rupees and for male student it is 183 rupees per month respectively. There was 184 rupees monthly amount for a female student and for male student it was 196 rupees. The teacher average cost for a female student was 100990 while the male student has an average of 134100 costs on teacher. The total cost for a female student was 105240 and male student has a cost of 139620 rupees per month respectively.

**Table 5.** Gender Wise Statistics

Student Gender		Monthly pocket Money	Stationary cost monthly	Uniform monthly cost	Teachers cost	Total cost
<b>Female</b>	N	364	364	364	364	364
	Mean	966.7582	155.9547	184.4075	100990	105240
	Std. Deviation	1130.85669	89.43754	90.43592	5.16206E4	5.23222E4
	Minimum	.00	16.67	.00	12500.00	1.43E4
	Maximum	9000.00	833.33	416.67	510000.00	5.12E5
<b>Male</b>	N	414	414	414	414	414
	Mean	2230.0725	183.2206	196.2419	134100	139620
	Std. Deviation	2644.02936	102.32545	78.31931	86321	8.8128
	Minimum	300.00	8.33	8.33	12800	1.3700
	Maximum	9000.00	666.67	416.67	600000	6.09000

### Student Cost by Grade

Table 6 is about grade wise cost of students. It shows that the cost of pocket money per month on the average for first grade student is 801, for second grade it is 823, for third grade 1515 rupees, for fourth grade 932 rupees and for fifth grade it amounted to 2416 rupees per month respectively. So pocket money increases with grade. As far as stationary cost is concerned, first grade student cost 157 rupees a month, second grader 168 rupees, third grade 159 rupee, fourth grade 158, and fifth grade cost of stationary was 184 rupees per month. There is no big difference in cost for most of the grades except fifth grade which is a bit high. The uniform monthly cost for first grade student is 232 rupees, for second grader it is 209 rupees, for third grade student cost is 187 rupees, fourth grade cost is 201 and 172 rupee cost per month was for fifth grade student. It is evident that first grade student is having less cost than other grade students. A first grade student has teacher cost of 88254 rupees per month; second grade has average cost of 101260 rupees, for third grade student it was 96253 rupees a month, fourth grade student has cost of 111430. For fifth grade student the monthly cost of teaching is 144540 rupees. These statistics show that the cost of teaching increases with increase in grade.

**Table 6.** Grade Wise Statistics

Grade	Monthly pocket money	Stationary cost monthly	Uniform monthly cost	Teachers cost	Total cost	
	N	61	61	61	61	
1	Mean	801.6393	157.0355	232.2896	88253.7705	9.1044E4
	Std. Deviation	1190.86688	97.81035	56.76335	3.58978E4	36340
	Minimum	.00	41.67	.00	12800.00	1.37E4
	Maximum	9000.00	416.67	416.67	174000.00	1.80E5
	N	117	117	117	117	
2	Mean	823.0769	167.9274	209.3504	101260	1.0456E5
	Std. Deviation	446.37131	41.68098	73.11915	3.98278E4	4.04866E4
	Minimum	.00	33.33	83.33	13500.00	2.04E4
	Maximum	3000.00	333.33	375.00	180000.00	1.87E5
	N	158	158	158	158	
3	Mean	1515.1899	159.7574	187.4230	96253	1.0209E5
	Std. Deviation	1976.54808	122.42898	74.47179	5.47214E4	5.62765E4
	Minimum	300.00	8.33	83.33	21000.00	2.20E4
	Maximum	6000.00	666.67	333.33	510000.00	5.12E5
	N	124	124	124	124	
4	Mean	932.6613	157.6613	201.6855	111430	1.1524E5
	Std. Deviation	861.69724	55.41578	101.11550	4.98061E4	5.08231E4
	Minimum	.00	41.67	41.67	21000.00	2.29E4
	Maximum	3000.00	500.00	416.67	200000.00	2.08E5
	N	317	317	317	317	
5	Mean	2416.0883	183.8144	172.8433	144540	1.5043E5
	Std. Deviation	2765.71342	108.67808	85.56054	9.45323E4	9.61460E4
	Minimum	.00	41.67	.00	12500.00	1.43E4
	Maximum	9000.00	833.33	416.67	600000.00	6.09E5

### Conclusions

This research arrived at various conclusions. It is concluded that half of the students studying in government schools at primary level are belonging to lower middle class. There is no fee charged from any student. The study asserted that there is a slight difference between rural and urban counts. Rural student on the average gets slightly less pocket money than urban students. The cost of average monthly stationary cost, uniform cost, teacher cost and total cost for urban student is higher than rural student. According to district wise statistics, the parents in district Haripur use to give higher pocket money to their child followed by Karak, Shangla. Students in district Mardan got lowest pocket money among the four sampled districts but their parents use to spend higher amounts on their uniform in comparison to other three districts. The parents in district Karak were spending lowest amount on their child uniform. District Shangla had the lowest total average cost while district Haripur had highest total cost. District Haripur is the best district based on students outcome. And hence we conclude that district Haripur can be termed as the successful school district. It can also be asserted that better results needs good financing. The study also

confirmed that the girl student cost is less than a boy student. It is also concluded that the pocket money on average increases with grade.

### **Recommendations**

The study put forwards the following recommendations. The policy makers must keep these points in mind while devising policies for primary education.

1. The number of teachers in a rural school should be increased at par with urban schools.
2. Every school must have at least one administrative personnel.
3. Salaries of teachers across locations must be increased for their satisfaction.
4. Male and female students must be dealt equally.

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