

Working paper



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Teacher and School Administrator Incentives for Improved Education Delivery in Khyber Pakhtunkhwa Province, Pakistan



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Teacher and School Administrator Incentives for Improved Education Delivery in Khyber Pakhtunkhwa Province, Pakistan

**A Report prepared for the Elementary and Secondary Education Department,
Government of Khyber Pakhtunkhwa, Pakistan**

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Acronyms and abbreviations

A2E	Attendance to Enrollment
ADEO	Assistant District Education Officer
ASDEO	Assistant Sub Divisional Education Officer
ASER	Annual Status of Education Report
AT	Arabic Teacher
BPS	Basic Pay Scale
CC	Connecting Classroom
CDPR	Center for Development Policy Research
CEI	Comprehensive Efficiency Index
CREB	Center for Research in Economics and Business
CT	Certified Teacher
DCTE	Directorate of Curriculum and Teacher Education
DDEO	Deputy District Education Officer
DEO	District Education Officer
DFAT	Department of Foreign Affairs and Trade
DFID	Department For International Development
DIL	Developments in Literacy
DM	Drawing Master
E&SED	Elementary & Secondary Education Department
ECCE	Early Childhood Care and Education
EEF	Elementary Education Foundation
EEP	Elementary Education Programme
ESDG	Education Service Delivery Grant
ESP	Education Sector Plan
FR	Fundamental Rules
GIZ	Development Agency of Government of Germany
GoKP	Government of Khyber Pakhtunkhwa
HP	High Performing
IDEAS	Institute of Economic and Development Alternatives
IMU	International Monitoring Unit
IRC	International Rescue Committee
IGC	International Growth Center
KP	Khyber Pakhtunkhwa
LEAPS	Learning and Educational Achievement in Pakistan Schools
LP	Low Performing
LUMS	Lahore University of Management Sciences
MCMC	Mid-Career Management Course
MICS	Multiple Indicator Cluster Survey
MOU	Memorandum Of Understanding
NER	Net Enrollment Rate
NIM	National Institute of Management
NMC	National Management College
NTS	National Testing Service
PER	Performance Evaluation Report
PET	Physical Education Teacher
PITE	Provincial Institute of Teacher Education
PRP	Pakistan Reading Project
PSB	Provincial Selection Board

PSP	Probability Proportional to Size
PST	Primary School Teacher
PTC	Parents Teachers Council
SDEO	Sub divisional Education Officer
SMC	Senior Management Course
SR	Supplementary Rules
SRSP	Sarhad Rural Support Programme
TT	Theology Teacher
USAID	United States Agency for International Development

Summary of the Study

Administrative and budgetary changes in recent years in Pakistan have devolved education to the provinces. In this devolved setting, the government of Khyber Pakhtunkhwa (KP) province is striving to improve the quality and delivery of its education system. Many challenges need to be addressed: Only 63% of 4-9 year olds were enrolled in school in 2012-13, with female enrollment at an even lower 56%. Almost 60% of middle school age children do not attend school. Moreover, barely 40% of Grade 5 children could perform basic second grade level tests in reading and mathematics. The mean level of teacher absenteeism rate is high at 16%, 21% and 17% for primary, middle, high schools respectively.

To address these problems and improve education delivery, the KP government has launched an Education Sector Program under which a five year KP Education Support Programme (KESP) was set up in 2011 to help the government achieve its goals. Within the KESP, an Independent Monitoring Unit (IMU)¹ has been established to collect data on key school-level indicators for 28,580 KP schools on a monthly basis. The objective is to monitor strengths and weaknesses in the schooling system to design evidence-based interventions for improving education outcomes. This has created the opportunity for KP education policy makers to engage with policy researchers in designing effective interventions.

The current study is being undertaken in response to KP Education Department's request to help identify incentives for teachers and administrative staff to make them more effective in delivering high quality education. The government would like to improve teacher effort and link it to better teaching and learning in schools. Specifically, the government is interested in research that explains why some schools perform better than others and what lessons can be learned from successes and failures in the existing system to improve education outcomes. Furthermore, the department of education would like to use the IMU data in designing interventions that engender performance transparency and strengthen incentives for teachers to come to schools more regularly and teach more effectively. Thus, research that uses IMU data to explain school performance would be helpful in familiarizing government with that data set and thus facilitate interventions.

The education department employs 55% of the civil servants in the Khyber Pakhtunkhwa government. With about 180,000 employees overall, teachers make up at least three quarters of the Elementary and Secondary Education department employment. Improving the performance of this large section of the civil service will help improve overall governance in the province.

The study responds to the following questions put to the research team by Secretary Education, Government of KP:

¹ The Independent Monitoring Unit (IMU) was set up as a three-year project under KESP and monthly school level data collection started in March 2014.

- What is the international and national experience in teacher incentives that improve school education outcomes?
- What are the incentives for better school performance in the current rule structure of KP education system rules for teachers and staff and how can these be strengthened?
- There is high variation in school performance in KP; How do we measure this variation given the data we collect and what can low performing schools learn from the high performing ones?
- How can the IMU data be used by researchers and the education department to evaluate KP education outcomes and design interventions to improve school performance?

I: Lessons from national and international experience in designing teacher incentives

The report draws on four meta studies of the international education literature: Murnane and Ganimian (2014), that reviews 115 impact evaluations in 33 low and middle-income countries; Glewwe et al (2011) that focuses on 43 high quality studies out of 9000 published between 1990 and 2010; McEwan (2014), that does a meta-analysis of 77 random experiments focusing on improving learning in primary school in developing countries, and Pritchett (2013) that reviews several papers utilizing rigorous data analysis. The lessons drawn from the studies are:

Overall lessons:

- Incentives have the most impact in low performing settings
- Modest financial incentives can be as effective as larger financial incentives
- Effective supervision by school officials and the community are crucial in the success of financial or non-financial incentives
- Changing classroom practices and improving teacher skills are needed to move beyond basic learning levels
- Behavioral changes, such as setting deadlines for producing results and recognition by peers and community can also have a positive impact on teacher performance
- Exams and assessments of students and teachers associated with high stakes penalties and rewards are prone to manipulation and short-term results

Incentives to lower teacher absence:

- Group and individual bonus schemes for teachers and schools are beneficial

- Offering principals a bonus for better teacher attendance had no impact without independent monitoring
- Combined monitoring by head teachers and parents lowered teacher absence

Incentives to improve teacher performance:

- In private/public partnerships, penalty/sanctions are likely to have a greater impact than rewards, highlighting the importance of schools creating internal incentive systems to avail of external rewards.
- Aligning rewards effectively to student learning is more important than the size of the monetary incentive
- Students scored higher on the exams linked to teacher reward and not on unlinked exams, suggesting that there will be a tendency for teachers to focus narrowly on preparing students for tests or exams linked to particular measures of student achievement.

Incentives to improve classroom practices:

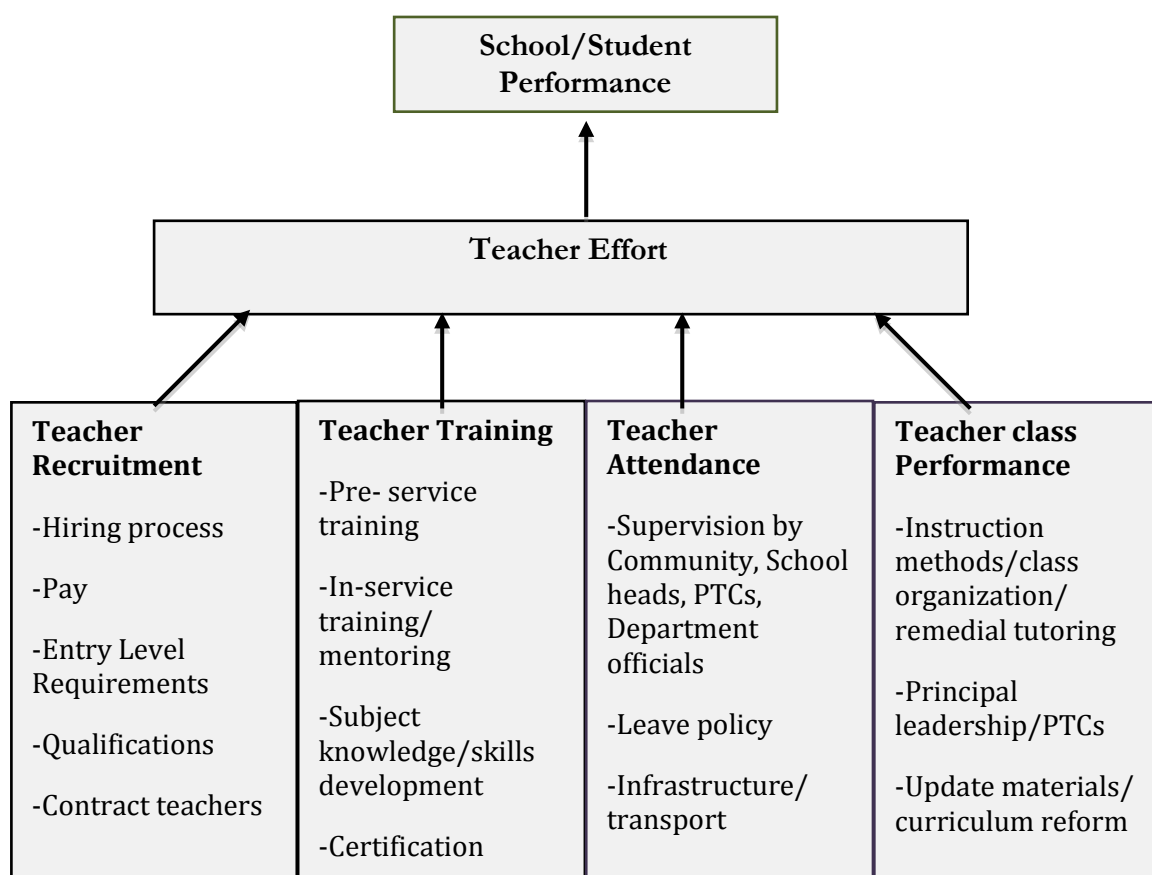
- Regrouping students by level instead of age or grade and providing them with tutoring/remedial learning improved student performance
- A positive regard for students, better classroom organization and instructional effort had a high impact on learning

An analytical framework for improving education outcomes

Based on the education literature, the study develops a conceptual framework for guiding the analysis of factors influencing greater teacher effort that leads to improved student learning. Four stages of teacher inputs that influence teacher effort and the quality of educational outcomes are considered: teacher recruitment policies, teacher training, teacher attendance, and teacher performance in class. Incentives for administrators are assessed in terms of their impact on improved teacher effort.

Incentives can influence teacher effort in four aspects of their careers: recruitment, training, attendance and classroom practices (Figure 1). The framework is consistent with the major conclusion of the literature, which is that policies that increase teacher attendance and teacher skills and subject knowledge would improve student learning (Glewwe, 2011; Murnane and Ganimian, 2014).

Figure 1: A framework for identifying incentives for teachers and administrators



This framework is used in assessing both the incentive structure implicit in the current teacher service rules of KP as well as school performance based on evidence collected in the recent IMU survey.

II: KP civil service rules and policies affecting teacher incentives

The report collated and reviewed the large number of KP civil service rules and policies for the elementary and secondary education department. This was done in order to assess how the existing legislative structure and rules create positive or negative incentives for teachers and education administrators during various stages of their career. Using the framework of Figure 1, incentives are mapped against the outcomes of lower teacher absence and improved learning standards. This assessment is further enriched via focus group discussions with teachers and district education administrators to assess the extent to which the rules are implemented and what their impact is. This helps in grounding the analysis of the evidence collected by IMU in the rules under which teachers and education administrators work and is vital for designing policy recommendations to strengthen incentives.

The main finding is that the civil service rules for KP teachers and administrators contain a host of incentives to improve teacher performance and student learning but are currently not aligned directly to these objectives. *Promotion and up-gradation policies, performance evaluation reviews and transfer policies are not linked to teachers' attendance rates or student learning.* Clearer criteria for measuring teacher performance on the basis of student learning also need to be developed. The literature shows that infrastructure by itself has little impact and data analysis in this study (discussed ahead) also shows that adding classrooms will have less impact than making sure teachers are present. Rules and policies need to pay more attention to what is happening inside the rooms being built i.e. whether teachers are present, if they have the right skills and subject knowledge to teach students and whether student learning is of acceptable standards.

III: Statistical analysis of school performance

A key contribution of this report is to demonstrate how large-scale administrative micro-data in KP can be used to assess school performance in KP and its determinants as identified in the literature on international experience and the analytical framework of Figure 1.

Ideally school performance should be measured in terms of learning achievements, but this data is not available for all KP schools and the only learning data available is through the Annual Status of Education Report (ASER). However data on student attendance-to-enrollment collected by IMU is used to link IMU data to the ASER 2013 learning data since this measure is highly correlated with learning test scores in the ASER dataset. Schools are thus deemed to be high performing if they can motivate a high proportion of students to turn up for classes. The IMU survey also collected information on several other school characteristics (such as teachers, infrastructure, school size, staff absenteeism rates, school gender and level, community participation) that allow an examination of incentives and other school features that affect student attendance (school performance).

Using IMU data, a simple statistical model is constructed and estimated to explain variations in attendance to enrollment rates between schools. Unsurprisingly, reduction in absenteeism of teaching and non-teaching staff, presence of parent teacher councils and school-level infrastructure are associated with significant positive gains in attendance to enrollment rates. *More importantly, ensuring that teachers show up at school regularly has as much of an impact on attendance-to-enrollment rate as investing in one new facility for the school.* Thus incentives in KP education service rules that motivate teachers to turn up to teach, will help improve education outcomes in KP, provided they are implemented effectively. Data analysis also shows a positive impact of active school councils.

The statistical model estimated using IMU data on schools allows going a step further: it shows high variation in school performance, i.e. some schools are more successful at motivating students to turn up for classes compared to others. The statistical estimates show, furthermore, high variation of school performance even within districts. Data on within district variation in school performance is useful for policy because it identifies the schools that require special attention in order to raise district-wise education outcomes. However, any firm

recommendations regarding interventions that exploit this within district variation require information about factors not available in the IMU data. To that end, focus group discussions were conducted with selected representatives from KP districts to understand the dynamics of performance in these schools.

IV: Teacher and administrator focus group discussions

Focus group discussions helped extend the findings of the statistical analysis to identify, along with the discussion of the service rules, a comprehensive set of incentives for improving education outcomes in KP.

Two Focus group discussions were conducted in Peshawar in November 2014: First, with officials from district administration representing tehsils with low and high performing schools. Second, with teachers and principals representing low and high performing boys and girls primary, secondary, and higher secondary schools. With the assistance of the Additional Secretary of Education, eleven participants representing six tiers of district administration staff were invited for the first focus group discussion. For the second focus group discussion, teachers and heads of schools from low and high performing schools in Peshawar (an average district in terms of school performance) were interviewed because of logistical difficulties in accessing teachers from more remote districts.

The focus group discussions resulted in context specific reasons for varying school performance:

- School heads need to have greater management and leadership skills in order to deliver better learning results; schools with effective principles and headmasters performed better than those with ineffective heads/principals.
- In districts with a greater proportion of high performing schools, district administrators hold monthly meetings and publicly recognize dedicated teachers based on attendance and school results which helps motivate teachers; district officials have enough autonomy to launch such initiatives if they have the right leadership skills.
- Regular visits by the Independent Monitoring Unit were improving teacher attendance (except political appointees) even though the visits were for collecting school data and not for school supervision;
- Schools visits to monitor teachers by district administrators such as ASDEO's and the DDEO's were also effective but tended to be irregular and not clearly assigned.
- The importance of parent teacher councils was corroborated in focus group discussions; high performing schools had more active parent teacher councils (PTCs) than low performing schools that helped in making improvements in schools.

- Teacher leave not availed was not compensated for, or recognized, thus encouraging teachers to use up all their allowed leave
- Mentoring and teacher training to improve subject knowledge and for mastery over the curriculum at various stages of a teachers' career is critical to motivate them to improve school learning outcomes; districts with school heads and administrators who facilitates this have a higher proportion of better performing schools compared to others.

Other factors (and incentives) identified in the focus group discussions to improve school performance include:

- Learning in regular exchange among managers, teachers and principals from low and high performing schools within districts, even within tehsils; the education department should organize workshops for the exchange of experience in school performance.
- Civil service grades and associated pay scales in the teaching and management cadre along with postings and transfers are powerful incentives; these are currently weakly tied to regular teacher attendance and school results.
- Performance Evaluation Review (PER) can be a powerful incentive for improving performance; it is currently a formality and the norm is for supervisors to award neutral rankings that won't block promotions; a revival of the PER system tied to teacher attendance, subject knowledge and student learning would make teachers more effective.
- Lack of awareness of many of the service rules and regulations governing teachers and administrators; many rules may be redundant so that for effectiveness, rules have to be simplified and discussed with teachers and education administrators.
- Despite the legislation that calls for disciplining truancy, cases of suspension or dismissal of teachers due to excessive absence are rare; the rules that call for disciplining truancy should be enforced; accumulation or other forms of compensation of un-availed casual leave should be allowed.
- Wide-spread cheating incidents in the matriculation board exam at the end of secondary school sets a weak precedent for learning, because students, teachers and parents are led to believe that real learning and knowledge of subjects is not rewarded at the end of the 10 years of schooling.

V: Recommended interventions for strengthening teacher and administrator incentives

Based on the analysis of literature, available data on KP schools and focus group discussions with teachers and education administrators, the short and medium-term recommendations are as follows:

Short-Term

Lower Teacher Absence Rates

- Increase teacher and school staff monitoring by administrators, principals and community
- Recognition awards for regular teachers
- Monetary and non-monetary group and individual incentives
- Small compensation for sanctioned leave not availed
- Performance Evaluations Reports (PERs) to assign a high negative weight to absence
- Include low absence in favorable decisions related to teacher transfers, promotions and up gradations

Fill Vacant Teacher Posts

A high priority given to filling teacher vacancies on a needs-based approach to balance teacher loads and ease the pressure of multi-grade teaching.

Develop Performance Measures in IMU database for Teachers, Students and Schools

- School level performance based on teacher and student attendance student class records, dropouts, promotions and exam results.
- A module on student learning and performance could be included in the current IMU survey
- Third party evaluation of student results would provide checks on the government system and prevent manipulation of scores and rankings if high stakes are attached to the results

Focus on Least Performing Areas and Schools

The impact of carefully planned and executed incentives is expected to be greater in educationally backward areas compared to areas that are performing relatively better. Current investments in missing school facilities and infrastructure development have to be combined with greater teacher presence and other positive interventions to improve student competence. Identification of low performing areas and schools can be carried out using the data analysis in the study.

- Introduce initiatives in learning along with infrastructure improvements: The government has taken a major initiative in improving school infrastructure through initiatives such as the expansion of primary schools from 2 to 6 rooms, the Tameer-e-school program, and rebuilding earthquake affected areas. As the data analysis and literature have shown, merely improving buildings has little impact on education and specific measures to improve teacher attendance and student learning have to be introduced.

- There are more boys than girls' schools, and primary school performance lags more than middle and secondary schools, and priority could be given to girls' and primary schools.
- Schools still not rehabilitated after the 2005 earthquake can also receive priority attention

Education department officials and researchers can design interventions based on these recommendations that can be tested for their impact.²

Medium Term

Teacher Assessments

By introducing overall assessments of teachers in subjects taught, at various points in their service, a minimum performance threshold can be set. There may be a lot of variation in teacher capability and teacher assessments would present a way to authorize retraining or removal of incompetent teachers. Based on testing and evaluation of teachers, warnings would be given to low performers, and there can be clear consequences of repeatedly low performing teachers. The assessments can be incorporated into the regular KP legislative structure of PERS/CEI/and other evaluation and monitoring mechanisms.

Develop Teachers' Career Structure

- Define teachers' goals at various stages in their career, and align performance evaluations and incentives to identified career goals.
- Institute teacher re-certification during career path to test skills and demonstrate subject knowledge.
- Design incentives and compensation framework, promotions and up gradations to re-enforce performance based career progression.

Align Teacher Performance to School Level Progress

- Introduce School Development Plans where teacher incentives and monitoring are linked to an individual school's measures of progress according to it's own base level. A monthly school report that includes learning and performance measures based on these indicators can be included in the IMU survey.
- Principals should be made responsible for devising and implementing the School Plan. The KP Delegation of Powers under the Financial Rules & the Powers of Re-Appropriation Rules, 2001 is currently ineffective because budgets for principals are limited. This rule could be used to allow greater autonomy to principals to meet specific school needs such as remedial sessions or hiring assistant teachers.

² A proposed experiment to assess the impact of a potential intervention is outlined in Annex 6.

- Establish a system of rewards for teachers and students based more than one assessment and also linked to third party monitoring and validation of results. Assessments based on student exam scores only can lead to narrow focus on ‘teaching to the test’ or manipulation of results.

Support Teachers via Training and Skills Development

- Pre-service and in-service training and mentoring, professional development, distance learning, use of technology, peer workshops in subject knowledge and teaching skills can be aligned to teaching tasks and teacher career goals.
- Train teachers in remedial learning. Students’ low learning levels have to be addressed directly by organizing remedial workshops or classes. The high variation in ages within grades and large class sizes including “katchi” or pre-school age students in first grade makes instruction at the relevant level difficult. Remedial classes could be arranged during school, after school and during summer vacation depending on the particular needs and circumstances of the area and school.

Introduce Student Assessments in Grades 5 and 8

Currently the widespread perception of cheating in the matriculation examination sets a negative precedent for learning in the earlier grades.³ By introducing assessments in grades 5 and 8, there will be pressure to bring students up to a certain standard in early grades. The assessments should not be high stakes and not the only way to gauge student competence.

Change Classroom Practices regarding Discipline, Attitude and, Content

Longer-term structural changes in the classroom are needed to raise the level of learning and student skills. Several issues of mastery of subjects, discipline, teacher and student behavior and attitudes have to be addressed simultaneously. To make these changes, officials in the government department and educators can borrow from other countries’ experience (e.g., Pratham in India, and the CLASS experiment in Ecuador). Examples of best practices can also be found within the KP education system as evidenced from the FGDs.

Strengthen Parent Teacher Councils

More effort is required to make PTCS effective and functional. This is an opportunity for principals and teachers to learn about demand side issues that could be addressed such as costs of transport or uniforms and other issues parents might have.

³ The matriculation certificate is an important qualification for further studies and for applying t jobs. Teachers and students will have the incentive to work hard if they feel that their efforts will be rewarded fairly at the time of exams and assessments. Greater pressure is needed on the matriculation board and associated services to ensure that there is no cheating and that the degrees are valid.

Chapter 1 Introduction and Report Objectives

Administrative and budgetary changes in recent years in Pakistan have devolved education delivery to the provincial level. In this devolved setting, the government of Khyber Pakhtunkhwa (KP) province is striving to improve the quality and delivery of its education system. Many challenges need to be addressed: Only 63% of 4 to 9 year olds were enrolled in school in 2012-13, with 56% female enrollment. Net enrollments for middle school were barely 40%, indicating that the majority of children in the middle school age group have either dropped out or never attended school. The mean level of teacher absenteeism rate is high at 16%, 21%, 17% and 16% for primary, middle, high and higher secondary schools respectively. To address these problems, the KP government has launched an Education Sector Program, under which a five year KP Education Support Program (KESP)⁴ has been established to meet education goals. An Independent Monitoring Unit (IMU)⁵ has also been set up to collect data on key school-level indicators on a monthly basis. The objective is to monitor strengths and weaknesses in the schooling system to design evidence-based interventions for improving education outcomes.

The current study is being undertaken in response to KP Education Department's request to help identify incentives for teachers and administrative staff to make them more effective in delivering high quality education. The government would like to improve teacher effort and link it to better teaching and learning in schools. Specifically, the government is interested in research that explains why some schools perform better than others and what lessons can be learned from successes and failures in the existing system to improve education outcomes. Furthermore, the department of education would like to use the IMU data in designing interventions that engender performance transparency and strengthen incentives for teachers to come to schools more regularly and teach more effectively. Thus, research that uses IMU data to explain school performance would be helpful in familiarizing government with that data set and thus facilitate interventions.

The study responds to the following questions put to the research team by Secretary Education, Government of KP:

- What is the international and national experience in improving school education outcomes?
- What are the incentives for better school performance in the current rule structure of KP education system and how can these be strengthened?

⁴ The Khyber Pakhtunkhwa Education Support Program (KESP) is a five-year plan started in 2011 by DFID Pakistan to help the government achieve its objectives under the Education Sector Plan.

⁵ The Independent Monitoring Unit (IMU) was set up as a three-year project under KESP and data collection started in March 2014. Up to 600 male and female monitors have been hired to visit every school in the province once a month to report school statistics such as teacher attendance, student enrollment and attendance, school facilities, distribution of textbooks, female student stipends. To avoid collusion between school and district staff and the monitors, the same monitors are not sent back to the same schools and districts. To avoid tampering with the data, monitors are required to submit data via tablets to the government as soon as it has been collected.

- How can researchers and the education department use IMU data to evaluate KP education outcomes and design interventions to improve school performance?
- There is high variation in school performance in KP; how do we measure this variation with the given data and what can low performing schools learn from the high performing ones?

To respond to these questions, the report is structured as follows: Chapter 2 presents a review of KP relevant literature on recent interventions to improve performance and discusses what works and how. The section concludes with a framework for assessing performance drawing upon the review of literature. Chapter 3 summarizes KP education sector rules that govern the education sector and identifies those that can act as powerful incentives to improve performance. Section 4 assesses school performance in KP guided by the framework of Chapter 2 and utilizing IMU data. Chapter 5 presents an analysis of focus group discussions with representative KP teachers and administrators to seek explanations of variation in school performance going beyond the IMU data and identifying incentives that could potentially improve education performance. Finally, Chapter 6 presents conclusions based on international experience and KP specific data to draw out potential interventions that need to be implemented and evaluated rigorously to improve KP education performance on a sustained basis.

Chapter 2 Learning from Others - Lessons from National and International Studies on Teacher Incentives

Research studies provide valuable guidelines on interventions aimed at improving student learning. Four recent reviews of literature on educational outcomes highlight key findings on interventions aimed at teachers. Murnane and Ganimian (2014) reviewed 115 impact evaluations in 33 low and middle-income countries. The authors conclude that well designed incentives are effective in many situations when education standards are very low. But to raise learning beyond basic levels, improving teachers' knowledge and equipping them with skills to impart a better standard of education holds the key to getting results from incentives aimed at teachers.⁶

In another review of studies in education and economics published between 1990 and 2010, Glewwe et al (2011), focusing on 43 high quality studies out of 9000 studies reviewed, concluded that low teacher absence and teachers' subject knowledge were among the few variables that mattered in improving students' learning skills and retention in school.

A third review consists of a meta-analysis of 77 random experiments focusing on improving learning in primary school in developing countries (McEwan, 2014), and gives important insights into teaching methods and classroom practices that have been tried and tested in various countries. Interventions with a positive impact were: Instructional technology, teacher training, smaller or ability grouping within classes, performance related incentives for students and teachers and contract or volunteer teachers. Moreover, the author finds that instructional technology had a positive impact when paired with teacher training. They also found that the impact of contract and volunteer teachers occurred mostly in combination with training and reduced class size.

Another study based on a review of several papers with rigorous data analysis (Pritchett, 2013) concludes that the main reason why increased investments in education has not improved student learning is the inflexibility of top-down systems. Based on experiments in India and other developing countries, Pritchett recommends more control by parents and local communities in deciding and delivering what is best for their children, and suggests that low cost innovations such as contract teachers and remedial and tutoring initiatives may work better than costly investments in infrastructure and teacher training.

Guided by the summary above, the review below focuses on rigorous evaluations of interventions tried in Pakistan and other relevant developing countries to look at: (i) interventions, monetary and non-monetary, aimed at lowering teacher absence (considered to be a critical factor in improving school outcomes), (ii) incentives aimed at improving student learning through better teacher training, and (iii) interventions aimed to improve teacher performance with a link to classroom practices and student learning.

⁶ For instance Brazil made rapid progress in education from 1990 to 2014 beyond basic levels due to sustained commitment to education on federal and local levels and special attention to teacher quality and low-income families (Bruns and Luque, 2014).

2.1 Incentives Addressed at Reducing Teacher Absence

(a) Effective Monitoring and Supervision

Monitoring teacher results is a crucial part of verifying the impact of interventions aimed at improving teacher attendance, whether monetary or non-monetary rewards or sanctions are offered.

Positive impact of school inspections on teacher attendance in India: A study based on nationally representative data in India (Muralidharan et al, 2014) found that monitoring of schools had one of the strongest impacts on teacher attendance compared to other school inputs. Even without offering financial rewards, more frequent inspections of schools by education officials was a more cost effective way to ensure teacher attendance as compared to hiring more teachers.

Combined reporting by school heads and community members in Uganda: Mobile phones were used in a locally managed scheme to report teacher presence in schools by school heads, parents and community members. Combined monitoring by teachers and parents was the most cost-effective way to improve teacher attendance (Cilliers et al, 2014).

(b) Monetary Rewards for Regular Attendance

Bonus for principals only was not effective: In Kenya, a top down monitoring scheme (Kremer & Chen, 2001) where principals were given a bonus for better teacher attendance had no impact on teacher absenteeism even though the principals took the bonus. This points to the importance of making bonus schemes conditional on independent checking of teacher attendance.

2.2 Incentives for Recruiting High Quality Teachers

Recruiting teachers in remote areas with difficult terrains and politically volatile areas remains a challenge in KP province, especially for female teachers. Although interventions to encourage teacher recruitment in rural and difficult areas have been tried (e.g., reduced requirements on qualifications, bonuses, subsidized/free housing), clear results are not available on how effective such policies have been. McEwan (1999) emphasizes the importance of developing monetary and non-monetary incentives in country specific contexts to capture the differing circumstances in which teachers have to make trade-offs between financial advantages and work conditions.

(a) Merit-Based Hiring

A study analyzing teacher recruitment and retention policies in Punjab used in-depth analysis of documents and published data to draw inferences about important barriers to effective teaching in the province (Bari et al, 2013). Political interference in teacher recruitment was one of the major problems in recruiting teachers on merit.

(b) Hiring on Contract and Setting Probation Periods

Several countries, including Pakistan have experimented with hiring non-tenured teachers to cut budgetary costs, expand the teaching force in the face of increased enrollments and to try and improve accountability by setting more stringent employment terms compared to civil service recruits.

Muralidharan et al (2013) conducted a two-year experiment to assess the impact of contract teachers in Andhra Pradesh, India. They found that students in schools that had an extra contract teacher performed significantly better in math and language tests than those without an extra contract teacher. Contract teachers were also less absent than regular civil service teachers.

2.3 Incentives Addressed at Linking Teacher Performance to Student Learning

Several countries have tried policies that rewarded teachers for bringing about better academic results, however not many of these policies have been rigorously evaluated. Creating incentives for teachers to teach effectively have to be realistically designed to achieve outcomes teachers are capable of delivering, otherwise there is a tendency for strategic behavior that does not lead to improved learning results (Murnane, 2014).

(a) Pay for Performance and Merit Pay

Studies show that the size of financial rewards is not as important as how closely the rewards are aligned to actual impact on student learning.

Rewarding teachers for higher student scores in Punjab, Pakistan: An evaluation of Foundation Assisted schools under a private public partnership program in the Punjab (Barrera-Osorio and Raju, 2010) showed that the penalty of withdrawing subsidies to non-performing schools had a greater impact on improving learning results than the reward of teacher and school bonus for higher student scores. This indicates the importance of schools creating their own sets of internal incentive systems to avail of external rewards.

Rewards for teachers based on student scores in India: An experiment with teacher merit pay in India (Muralidharan & Sundararaman, 2011) found that both school level and teacher level pay incentives increased student scores in the first year, but teacher level incentives had a stronger effect in subsequent years, implying teachers may be focusing instruction more towards test taking. The size of the reward in the experiment was modest, compared to the gains in learning, pointing to an important finding that the amount of the financial reward is only one factor in the design of a successful policy intervention.

Rewarding teachers for higher student exam scores in Kenya: Students scored higher on exams linked to teacher reward but not on other unlinked exams, and bonuses did not reduce dropout rates (Glewwe, Ilias & Kremer, 2010). Merit pay programs tied to student performance might encourage strategic behavior by teachers and administrators to manipulate test results and to teach a narrow curriculum focused on test preparation. Not attaching high stakes to tests and providing guidance to teachers and personnel implementing the programs can prevent gaming the system.

Pay linked to performance in private schools in Pakistan: The LEAPS study (Andrabi et al, 2007) conducted in Punjab, shows that better paid teachers are associated with higher student scores in low-fee private schools. These results show the marked difference in the way teachers are rewarded in government vs. private schools- ineffective teachers are not likely to be dismissed, and pay is related to years of service and not to performance in the former. Other studies for Pakistan also indicate that government teacher pay scales are not linked with teachers' own cognitive skills and pupil achievement while in private schools monetary incentives are compatible with teacher effectiveness (Khan, 2002; Aslam and Kingdon, 2011).

Tournament incentives for teachers: In Chile, entire school teams were rewarded for student learning and other indicators of progress (Rau and Contreras, 2011). One of the largest incentive programs for teachers, a bonus is allocated at the school level based on student scores on national tests. School tournaments/competitions are held within districts, and homogenous schools compete on the basis of their average performance. Monetary rewards are distributed equally among all teachers in winning schools. This system encourages cooperative behavior among teachers within the same schools.

(b) Interventions may be more Effective at the School rather than at the Sub-District and District Levels

In Madagascar a large-scale experiment tested interventions designed to make school management more effective. At key points along the process of public education delivery, personnel were asked to give feedback on their assigned tasks. Using report cards to gauge results, intensive interventions at the school level were revealed to be most effective. Teachers were more likely to make lesson plans and discuss them with their directors and student attendance was higher. Targeting only district and sub-district personnel and relying on them to initiate implementation of programs had little impact (Lassibille, 2010). In a survey of public and private primary schools in Punjab, the most variation in student learning is found between schools, irrespective of students' household income and district level outcomes (Andrabi et al, 2007). This implies that there are lessons to be learned from studying intra-district school management and teaching processes to understand why some schools may be performing better than others.

(c) Transfer and Deputation

In a study on teacher retention in Punjab (Bari et al, 2013) the lack of a clear teacher transfer policy had a negative impact on teacher effectiveness. A high number of litigation cases connected to postings, promotions and leave also reflected on the inefficiency of the system.

2.4 Changing Classroom Practices/Improved Teacher Skills and Training

Research shows that the capacity to move beyond a basic quality of education depends on greater investment in teachers' skills and better classroom practices. In India, the lack of mastery of basic subjects in the early primary grades is documented based on learning data where children do not advance in their understanding of basic arithmetic for up to three years (Pritchett, 2013). Various types of complementary training may consist of residential training, special workshops to introduce policy or curriculum changes, in-service training or mentoring based on specific needs of the school.

(a) Remedial Tutoring and Regrouping Students by Competence rather than Age and Grade for Subject Mastery

Government schools in Bihar, India, aided by an NGO, experimented with regrouping students by level instead of age or grade. Teaching methods focused on students' mastery of basic skills, and resulted in improved learning levels (Spivak, 2013). According to Pritchett and Beatty (2012), three studies including evidence from Punjab, Pakistan; Andhra Pradesh, India, and three African countries Tanzania, Uganda and Kenya, show that student ability in math and language is up to 3-4 years behind the level at which the curriculum is being taught. Teachers in government schools are under pressure to complete lesson plans and prescribed syllabuses. Children often do not understand basic concepts even by middle school because basic concepts were not covered thoroughly. The authors suggest early remediation initiatives such as those developed by the NGO *Pratham* in India, using in school, as well as out of school and summer programs using community volunteers. Training was provided to the volunteers by the NGO.

(b) Changes in classroom practices

A study on Ecuador found that the variation in classroom performance irrespective of student background characteristics depended on teacher practices in the classroom. The authors found changes in teaching methods that focused on 1) a positive regard for students, 2) better classroom discipline and organization and 3) instructional effort, to have a positive impact on student learning (Araujo, 2014).

2.5 Other Incentives

Recent research is assessing the impact of non-financial or small financial incentives. It is seen that timing of incentives such as cash transfers when fees are due, and setting deadlines and recognition by peers can have powerful effects (Glennerster and Kremer, 2011). In Lao PDR, salary delay reduces teacher effort while monitoring by a PTA, principals authority to dismiss teachers and autonomy in preparing lessons improves teacher effort. (Dang and King, 2013).

2.6 Overall Lessons from the Literature can be summarized as Follows:

- Incentives have the most impact in low performing settings
- Modest financial incentives can be as effective as larger financial incentives
- Effective supervision by school officials and the community are crucial in the success of financial or non-financial incentives
- Changing classroom practices and improving teacher skills are needed to move beyond basic learning levels
- Behavioral changes, such as avoiding teacher salary delays, setting deadlines for producing results and recognition by peers and community can also have a positive impact on teacher performance
- Low stakes testing may have more sustained learning results since financial rewards for teachers tied to testing may be subject to manipulation

Incentives to Lower Teacher Absence

- Group and individual bonus schemes for teachers and schools are beneficial
- Giving principals a bonus for better teacher attendance had no impact without independent monitoring
- Combined monitoring by head teachers and parents using mobile phones lowered teacher absence

Incentives for Improved Teacher Performance

- In private/public partnerships, penalty/sanctions are likely to have a greater impact than reward, highlighting the importance of schools creating internal incentive systems to avail of external rewards.
- Students scored higher on the exams linked to teacher reward and not on unlinked exams, suggesting that there will be a tendency for teachers to focus narrowly on preparing students for tests or exams linked to particular measures of student achievement.
- Support for teachers in the form of mentoring or in-service training to is likely to improve subject knowledge
- School and teacher bonus increase student scores initially, but teacher incentives have a stronger effect in subsequent years, implying greater focus on test taking

Changes in Classroom Practices to Improve Learning

- Regrouping students by level instead of age or grade and providing them with tutoring improved learning
- A positive regard for students, better classroom organization and instructional effort had a high impact on learning

2.7 A Framework for Improving Education Outcomes

Based on the education literature, a conceptual framework is developed to guide the analysis in this study focusing on factors influencing greater teacher effort that leads to improved student learning. Four stages of teacher inputs that influence teacher effort and the quality of educational outcomes are considered: teacher recruitment policies, teacher training, teacher attendance, and teacher performance in class. Incentives for administrators are assessed in terms of their impact on improved teacher effort.

Figure 2.1: A Framework for Identifying Incentives for Teachers and Administrators

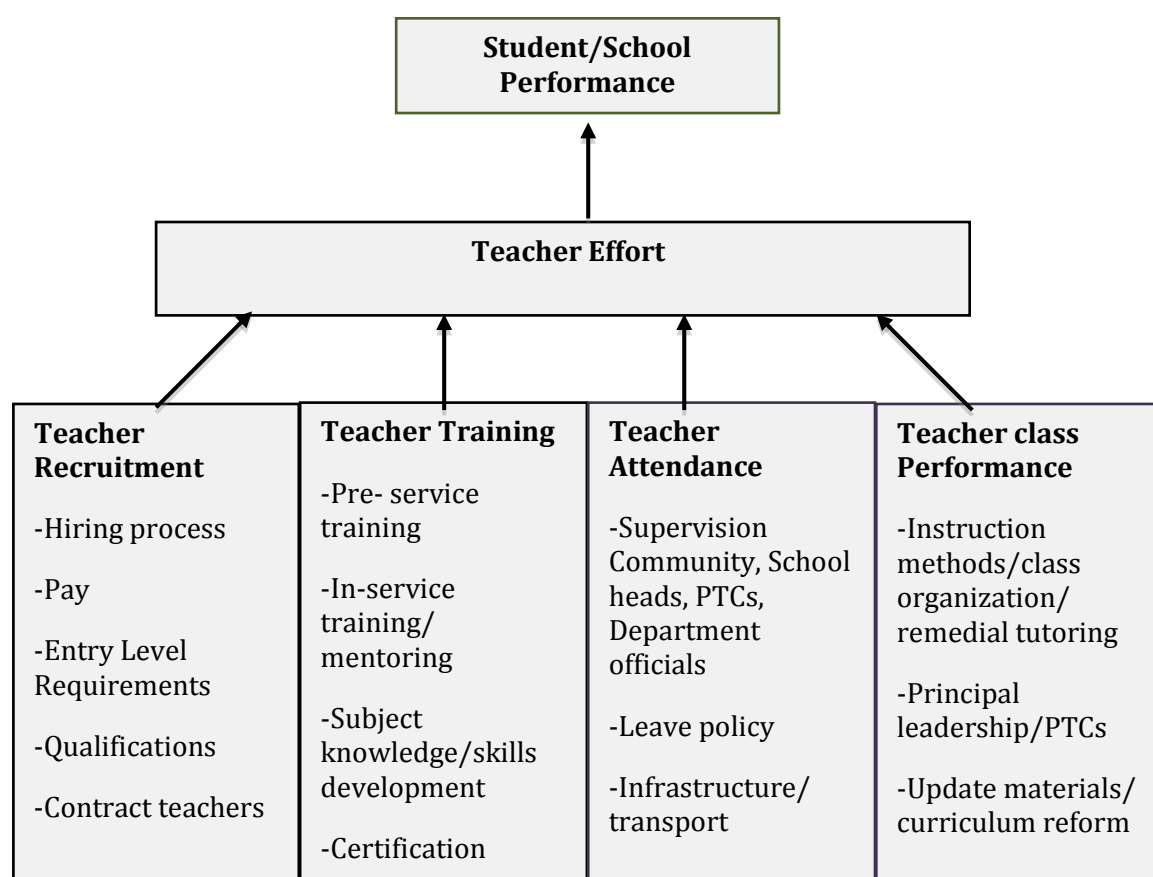


Figure 2.1 presents a framework to show how incentives can influence teacher effort in four important aspects of their careers. The framework is consistent with the big conclusion of the literature, which is that policies that increase teacher attendance and teacher subject knowledge would improve student learning (Glewwe, 2011; Murnane and Ganimian, 2014).

This framework will be used in assessing both the incentive structure implicit in the current teacher service rules of KP as well as school performance based on evidence collected in recent survey.

Chapter 3 KP Civil Service Rules and Policies affecting Teacher Incentives

This chapter discusses KP civil service rules and policies in the elementary and secondary education department. It will be seen how the existing legislative structure rules create positive or negative incentives for teachers and education administrators during various stages of their career. Using the framework of Figure 2.1, incentives will be mapped against the outcomes of lower teacher absence and improved learning standards. The analysis will be used in Chapter 5 that presents focus group discussions with teachers and district education administrators to assess the extent to which the rules are implemented and their impact.

Primary and secondary school teachers are hired and promoted within a system of grades and associated Basic Pay Scales (BPS) under the 1973 Civil Servants Act. Over 70% of teachers in KP are primary school teachers. The typical teacher post is a grade 12 PST (Primary School Teacher), required to teach some or all the subjects in the curriculum (Urdu, English, Islamiyat, Mathematics, General Studies, General Science, Social Studies, Physical Education) in classes 1-5. Teachers for grades 6-10 are known as Certified Teachers (CT), hired at grade 15 and for teaching specific or multiple subjects depending on the grade being taught. Other post-primary teachers hired at grade 15 are specifically for art, religion and physical training.⁷

3.1 Rules affecting Teacher Incentives

Table 3.1 gives an overview of the Civil Service rules (1973) and its subordinate legislation (i.e. Acts, Sub-rules, notifications) related to teachers and school management and how they might influence teacher incentives.

Table 3.1: Legislation affecting Teachers and Administrators⁸

Act/ Rule/ Policy (1)	Section / Article / Rule Sub-rule / Policy Directive / Notification (2)	Objective (3)	Incentives linked to teacher attendance and performance (4)
1	KP Civil Servants Act 1973 (Overarching legislation containing subordinate legislation given below)	Rules for appointment, promotion and transfer	Recruitments mostly merit-based National Testing Service exam required. Transfers, promotions and retirement based more on years of service and qualifications than evaluation. Probation period of two years for fresh recruit, one year for transfer or promotion, but no clear performance criteria for making permanent.

⁷ Details of teacher requirements for specific posts are given in Annex 3

⁸ Rules are described in detail in Annex 2.2.

	Act/ Rule/ Policy (1)	Section / Article / Rule Sub-rule / Policy Directive / Notification (2)	Objective (3)	Incentives linked to teacher attendance and performance (4)
2	Posting & Transfer (Statutory Provision)	10(4)	Transfer can be requested after two years in one location- one year and six months if the area is “unattractive”	Transfers and postings are not conditional on performance. Low incentives for teachers to stay in “unattractive areas”
3	KP Civil Servants Promotion Policy 2009	Policy Directive 2009	Linking training with promotion but teachers exempt	Training not required for teachers to get promoted. Promotions based on educational qualification and years in service.
4	Deputation Policy	Policy Directive July 1978	Deputation to other departments	Teachers and administrators can move to other departments to improve their careers. Currently no incentives given to keep competent staff in education
5	The KP Government Servants (Conduct) Rules 1987	Statutory Provision regarding conduct (Section 15. Civil Servant Act 1973)	Regulation of conduct of civil servants by prescribed rules	Rule useful for preventing involvement of teachers and administrators in politics and fraudulent activities
6	The KP Government Servants (Efficiency & Discipline Rules) 2011	Notification (dated 16/9/2011)	Rules related to maintaining efficiency & discipline among civil servants	Teacher attendance can be influenced by this rule since it contains penalty of suspension/dismissal for willful absence. Immediate action cannot be taken and proper inquiry by competent authority required
7	Performance Evaluation Report (PER)	Policy Instructions	Instructions about writing PERs of the civil servants	Performance of teachers and staff can be assessed under this rule. Used in selection for training, transfers and promotion. Not based on clear criteria or review of performance tied to consequences. Inherent contradiction in policy of countersignatures possible by officers of lower grades grade 18 reporting officer assessing the performance of a grade 18, 19 & 20

	Act/ Rule/ Policy (1)	Section / Article / Rule Sub-rule / Policy Directive / Notification (2)	Objective (3)	Incentives linked to teacher attendance and performance (4)
				Principal
8	The KP Delegation of Powers under the Financial Rules & the Powers of Re- Appropriation Rules, 2001	Notification (dated 16/10/20 01)	Rules about using financial resources for official purposes	School level spending at the discretion of the principal. However budgets presently limited for principals' use
9	Fundamental Rules & Supplementary Rules (regulated under the purview of Civil Service Act 1973)	F.R 71 for leave on medical certificate & rule V (2) of Appendix 3 of the F.R and S.R volume II for casual leaves	Rules regarding casual leaves, medical leaves etc	Teacher attendance can be influenced by this policy. 25 casual leave days are allowed, but no reward if leave not used, negative incentive for teacher attendance
10	The KP regulatory Act, 2011	3(1)	Appointment, posting and transfer of primary school teachers	The policy could improve teacher attendance. Allows teachers to stay in local union council positive incentive for using local teachers, but creates some inflexibility to bring in new teachers
11	Teacher up gradation, 2012, Govt. KP ESE	Notification (dated 11/07/2012)	Grant of incentives for higher pay scale to different categories of teachers in E&SED	Overall increase in pay scales may be a positive incentive to attract better candidates into the teaching profession. Good for teacher morale generally, but performance of existing teachers not necessarily improved unless pay increases are tied to performance
12	Parent Teaching Council	Notification in 2007	To improve the quality of education	Not tied to teacher attendance and student performance but the involvement of parents and community likely to bring improvement
13	Corporeal Punishment	The School Management Code 2010	Instructions about corporeal punishments in	Positive impact on student attendance and learning likely, and need to instill better disciplining methods

	Act/ Rule/ Policy (1)	Section / Article / Rule Sub-rule / Policy Directive / Notification (2)	Objective (3)	Incentives linked to teacher attendance and performance (4)
		(p.31)	schools	
14	Misrepresentation of Age	The School Management Code 2010 (p.32)	Rule regarding the accurate registration of student's age in school	Rigidity in student age requirements can prevent focus on learning, need to address problem of overage children, also leads to litigation problems
15	Rationalization Policy	Executive Order (dated 01/04/2014)	Need-based adjustment of teachers posted in primary schools at a ratio of 1 teacher to 40 students	A positive incentive to control class size and move surplus teachers to areas of teacher shortage. Policy intended to avoid political interference with transfers needs to stay transparent in implementation
16	Notification regarding method of recruitment of School Management Cadre	3(2) of the NWFP Civil Servants (Appointment, Promotion & Transfer) Rules, 1989/revised 2012	Separation of Management Cadre from Teaching Cadre	Not clearly tied to performance. Managers may be of lower grades than principals and this could cause inconsistency in service and promotion structures
17	KP Civil Servants Appointment, Promotion & Transfer) Rules, 1989)	Notification 24/07/2014	Details about the initial recruitment for the posts of SS (BPS-17), DPE (BPS-17) and SST (BPS-16)	Promotion for certain primary and secondary posts based on "seniority cum fitness." The objective is to give promotion opportunities to primary teachers promoted. "Fitness" based on PERs

3.2 Rules and Policies related to Teacher Recruitment and Promotion

Teacher recruitment has undergone changes in recent years. All teachers are now required to take an 18-month course leading to a Diploma in Education rather than pre-service training specifically for primary and secondary teachers. Moreover, the requirement of new civil service entrants having to pass the National Testing (NTS) exam has made teacher recruitment more merit based and less prone to political interference during the hiring process.

Up gradation and promotion policies: The policy of up gradation of pay scales introduced in 2012 would help to attract talented people into the teaching profession. This policy also allowed for promotions of primary teachers to secondary posts, but these were based on higher educational qualifications and clearance by the Provincial Selection Board (PSB), and not on any other teacher or school performance results.

Hiring on a contract basis: There is currently provision for hiring teachers on a contract basis. However there could be legal issues if these teachers are regularized and clearer policies for short term hiring have to be devised.

3.3 Training Requirements Support for Teachers

Other than the coursework during the required Education Diploma before entering the profession, teachers do not have to undergo in-service training required for other civil servants to obtain promotion according to the 2009 Promotion Policy Directive. The Provincial Institute of Teacher Education (PITE) is being re-structured to meet training needs of teachers. Other forms of in-service training and support are currently not built into teachers' career structure, and a "cluster approach" for teacher mentoring and principal training is being considered for high school teachers.

3.4 Rules related to Monitoring Teacher Attendance and Performance

Once teachers have been recruited, there is little provision in the current rules for monitoring their performance especially in relation to attendance and quality of instruction and learning in the classroom.

The Performance Evaluation Review (PER): is used in decisions about promotions and transfers for all civil servants. There are some inconsistencies in how the law is implemented since the countersigning officer for the evaluation can be junior in rank to the officer being reported on, implying that the rule may be more of a formality than a genuine employee assessment. Positive incentives such as promotions and transfers are based on Performance Evaluation Reviews and it is not clear whether teacher and staff attendance is one of the conditions included in assessing performance.

KP Efficiency and Discipline Rules: This rule contains one of the most direct sanctions for teacher absence. If the rule is implemented as stated, teachers can be temporarily suspended and even dismissed for excessive absence.

Leave Policies: Currently teachers and administrators are not compensated for and cannot accumulate any of the annual 25 casual leaves that are not used up. Therefore there is currently an incentive for teachers to take all their casual leaves even if they do not need to take days off.

Parent Teacher Councils (PTCs): The provision of PTCs is expected to have a positive impact as the link between schools and the community is an important channel for monitoring by the

community and also for bringing in parents' demands and inputs into making schools and students perform better. Spending by the PTC is specific to the needs of particular schools.

3.5 Current Policy and Reform Framework

The provincial government, with the help of donor funding is taking several initiatives to improve education. The focus is on increased enrollments, improved school infrastructure, better monitoring and transparency of school data, a focus on girls' enrollment and increase in female supervisory staff.

Establishment of Independent Monitoring Unit (IMU): About 600 data monitors are recruited through NTS to collect data from more than 28000 government schools once a month using smart phone technology.

Approval for establishment of 6-room primary schools: The department has revised its policy to establish new primary school with 6 rooms and upgrade the existing 2 room primary schools with construction of additional classrooms.

Launch of Tameer-e-School Program: A new initiative invites interested organizations to support improvements to the infrastructure and facilities of government schools in the province.

Provision of Missing Facilities and construction of earthquake-affected Schools: Funds have been allocated for provision of missing facilities in schools; reconstruction of 760 schools badly affected by 2005 earthquake.

Girls Stipends Program: An initiative for promotion of girl's education in secondary girls' schools has been launched in seven low net enrolment rate (NER) districts (Hangu, Peshawar, Bannu, Lakki, D.I Khan, Shangla, Nowshera). Around 60000 girls will receive PKR 400 per month in these districts. Moreover, three thousand female students have been awarded scholarships for promotion of girls' education in Torghar and Kohistan.

Hard Area Allowance for Lady Education Supervisor: An allowance comprising up to 50% of their basic pay was given during 2013-14 to all lady supervisors as an additional allowance in seven districts (Kohistan, Battagram, Tor Ghar, Dir Lower, Dir Upper, Shangla and Tank) considered to be "hard areas."

Donor funded programs: The majority of government reform programs are funded by UK government aid and priority areas are instilling transparency and accountability in the education system, developing a gender focus in education delivery, empower PTCs, reduce dropouts and improve transition rates. The GIZ reform initiative funded by the German government is developing training modules to strengthen leadership capacities of school managers and heads at the cluster level. The Pakistan Reading Project is a recently launched USAID program funded by the United States government. The objective is to improve reading skills of teachers and students in primary schools.

3.6 Conclusion

The current civil service rules for KP teachers and administrators contain a host of incentives to improve teacher performance and student learning but are currently not aligned directly to these objectives. Promotion and up gradation policies, Performance Evaluation Reviews and transfer policies are not linked to teachers' attendance rates or student learning. Clearer criterion for measuring teacher performance on the basis of student learning also needs to be developed. The literature shows that infrastructure by itself has little impact and data analysis in this study also shows that adding rooms will have less impact than making sure teachers are present. Rules and policies need to pay more attention to what is happening inside the rooms being built, whether teachers are present, if they have the right skills and subject knowledge to teach students and whether students are learning at acceptable standards.

The literature suggests promising results of investing in low performing areas. Currently the seven districts Kohistan, Battagram, Tor Ghar, Dir Lower, Dir Upper, Shangla and Tank have been identified as "hard areas" for female education supervisors to receive special allowances to visit and inspect schools. Moreover, the girls stipend program for secondary students has been launched in seven districts with low enrollments (Hangu, Peshawar, Bannu, Lakki, D.I Khan, Shangla, Nowshera). Girls have also been awarded scholarships in Torghar and Kohistan. In focusing on low performing areas, interventions can be combined with existing programs on girls scholarship stipend and the "hard area" allowance for female education supervisor. However, follow up and monitoring of implementation is essential to make sure the interventions are having the intended effect.

Chapter 4 Analysis of School Performance

This chapter describes the data sources, empirical framework and the set of assumptions used to answer the question: why some government schools perform substantially better/worse than other schools in KP? Using the analytical framework of Section 2 an empirical model is developed to explain variation in school performance as a function of observed school-level characteristics several of which capture incentives that affect performance.

Ideally school performance should be measured in terms of learning achievements. However, data on learning achievements is not available for all KP schools but data on student attendance-to-enrollment is, and is highly correlated with learning test scores. The survey that collected data on student attendance also collected information on several other school characteristics that allow an examination of incentives and other school features that affect student attendance (school performance).

Section 4.1 discusses and elaborates on the data issues and then section 4.2 presents the statistical evidence on school performance and its determinants. Section 4.3 concludes pointing out that the statistical model does not explain all of the large variation in school performance because of data limitations, and that focus group discussions (presented in Section 5) are needed to supplement the findings of the statistical analysis.

4.1 Data

To motivate and develop the empirical framework we use data from multiple sources. The data on student achievement for KP comes from nationally representative sample of the Annual Status of Education Report (ASER), 2013. The survey gathers household level information on learning levels of school age children (ages 5-16) stratified by gender, school type and location. In addition to the learning outcomes data the study uses census-level monthly monitoring data, which has been instated in the province since March, 2014, through the Independent Monitoring Unit (IMU) to collect data on key education indicators for all 28,580 public schools in the province. The population level monthly school census data is more reliable and provides information on key education outcomes like teacher and student attendance not captured in the annual school census conducted by KP Education Department.⁹

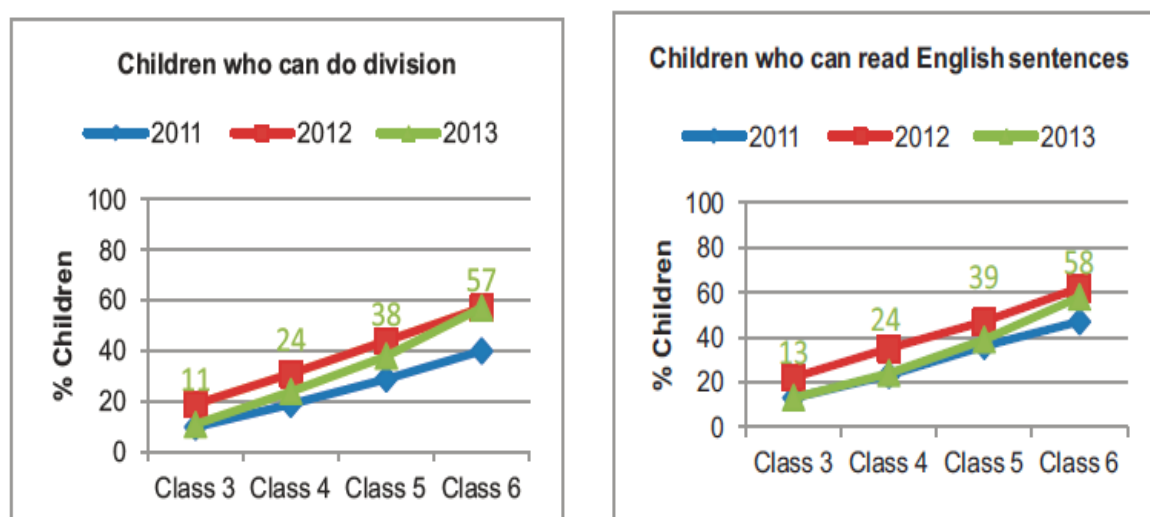
The total population frame for ASER national survey consists of 138 rural districts. Stratified two-stage sample design is used for the ASER survey in rural districts. The primary sampling units (villages) are selected using probability proportional to size (PPS) method using 1998

⁹ We examined other provincial and national sample-based surveys like Pakistan Living Standards and Measurement Survey and Multiple Indicators Cluster Survey (MICS) which provides district-representative information on school participation rates but cannot be linked to school-level databases. The school-level monthly monitoring data is considered most suitable to develop an empirical framework for explaining variations in school performance, which in turn allows us to identify best and worst performing schools in KP.

population census. Total of 4382 blocks were surveyed. In each sampled village (PSU) 20 households are randomly surveyed by systematic sampling technique. All children ages 5-16 are tested in basic numeracy, reading and language competencies (Pashto, Urdu and English). In addition, the survey collects detailed information on schooling of children ages 3-16, household demographics and socio-economic characteristics. In each block, one school is selected for survey and facility-level characteristics, enrollments, attendance and dropout rates are collected at the school level.

ASER (2013) was conducted in 25 rural districts of Khyber Pakhtunkhwa. This covered 14,705 households in 741 villages throughout the province. A total of 735 government schools were surveyed in rural KP. 39,923 children (5-16) were tested for language and mathematics competencies. Learning levels in KP as is the case with other provinces are alarmingly low. Only 39% of Grade 5 children could read sentences in English (Grade 2 competency). Likewise only 38% of Grade 5 children could do simple division in 2013 tests (Figure 4.1). These low-learning levels mask huge variations in learning levels between districts and even within districts.

Figure 4.1: Low levels of learning assessment at grade 2 competence in KP (ASER 2013)



Source: ASER report 2013

Although ASER data gives a fairly good representation of learning outcomes in KP, the small number of school-level observations with tests conducted at the household level limits its applicability for population-level analysis of school-performance in the province. Systematic sampling procedures introduced to assist volunteers to sample households and schools in the field are prone to errors and are known to lead to biased inference. More importantly, the sample size of 741 schools with 30 clusters in each district is relatively small for population-level inference on school performance. Furthermore, we cannot even check robustness of our results as there is no way to link data on schools with tests conducted at the household level.

To address the gap in learning data and to use the analytical framework of Figure 2.1 in the previous section to explain school performance more broadly, we make use of monthly monitoring data, collected by Independent Monitoring Unit (IMU), that reports information on key education indicators on 28,580 government schools in KP. Instituted in the province since March 2014, over 96% of schools in KP are being regularly visited by independent monitors on monthly basis allowing the district and provincial education authorities to take corrective actions to address issues confronting the education sector. On average one monitor visits 3-4 schools in a working day. The district monitoring officer posted in each district makes random visits to schools and validates the data gathered by monitoring officers. Monitors are also rotated from one location to another to avoid possibility of collusion with the teachers. These quality assurance measures put in place by KP government lend credibility to the monthly monitoring data collected by IMU. The survey instrument captures data on key education indicators including facilities, teacher placement and attendance, student enrollment and attendance, timely delivery of stipends and textbooks, and allocations and expenditures by parent-teacher associations.

Ideally we would like to link school-level factors in monthly-census data in KP with data on learning outcomes to identify factors that explain heterogeneity in learning outcomes (school performance) in the province. The only source of learning scores is the ASER (2013) data, which is gathered at the household level. However, information on learning outcomes at the household level cannot be linked with school-level data gathered by IMU. There is no school-level identifier in ASER data that could be used for linking the two data sets. We look for an indicator in IMU data that could potentially be used as a proxy for learning scores. Education literature suggests that more time students spend in classes the better they are likely to perform on tests. The IMU data provides information on student attendance and enrollment rates, which can be used to construct proportion of students present on the day of visit. We deduce that higher the attendance-to-enrollment rates on a typical day, more time they spend in classes leading to relatively higher test scores.

We look at bivariate correlations between test-scores (ASER data) and attendance-to-enrollment rates (IMU data) aggregated at district level to check validity of this claim. There is indeed a high correlation in ASER data between the learning outcomes at the district level and students showing up at school as captured by attendance to enrollment ratio. We compute the average reading score¹⁰ of all students tested in a district and attendance-to-enrollment ratio averaged at the district level. We find that on average districts with high reading score also have higher levels of attendance-to-enrollment ratio as depicted in the correlation table below.

¹⁰ Reading Score is highly correlated (upwards of 95%) with arithmetic and language scores. The results are the same using those scores.

Table 4.1: Simple Correlation--Reading Score and Attendance/Enrollment

	Reading Score	Attendance to Enrollment
Reading Score*	1	0.5847
Attendance to Enrollment Ratio	0.5847	1

*similar patterns hold for arithmetic and English competencies.

This motivates the choice of our outcome variable to identify and analyze variation in school performance in KP. School-level information in IMU data allows us to construct a number of covariates to explain variation in performance between schools in KP. Standard caveats of omitted variables on student background and community level characteristics should be considered in interpreting the results. The variable on frequency of parent-teacher interaction in some ways captures community's involvement in and parental aptitude towards education.

The statistical model developed in the next section allows us to explain variation in school performance within tehsils. Further, we are interested in identifying and examining the qualitative characteristics of schools that significantly over/under perform on conditional attendance-to-enrollment rates predicted by the model. We use conditional distribution of residuals predicted by the statistical model to identify these outliers, as ones with attendance-to-enrollment rates one standard deviation above or below the value predicted by the statistical model. We conduct focus-group interviews to identify qualitative characteristics at the school-level (not captured by the model), which are likely to explain the deviant performance of these schools on outcome variable. Next section provides detailed description of the empirical framework to motivate our analysis.

4.2 The Evidence on School Performance

Empirical Framework

The empirical strategy is based on a standard reduced-form education production function guided by the framework presented in Figure 2.1

Student learning outcomes

$$= f(\text{Teacher effort}; \text{Student presence}; \text{School infrastructure and inputs}; \text{Family characteristics}) + \varepsilon$$

From the student-level education production function we deduce school-level performance equation of the form:

$$SPR_{jg} = B'x_{jg} + \eta_g + \varepsilon_{jg}, j=1\dots, S; g=1\dots, G. \text{ ---- (1)}$$

where SPR_{jg} denotes the student presence rate in school j in tehsil g ; x_{jg} is a vector of conventional school characteristics constructed using IMU data such as school level, gender type, number of students, teachers, non-teaching staff, parent-teacher interactions and availability of basic infrastructure facilities; β is the associated parameter to be estimated; η_g is a vector of tehsil-level fixed effects and ε_{jg} is the stochastic error term. Partial associations are derived by estimating OLS school-level regression by mainly exploiting variations in school characteristics and student presence rates across schools within tehsils.

The estimation of this model is likely to suffer from omitted variable bias due to data limitations. For instance, household and community characteristics are not included because of lack of information. The included covariates represent a partial set of factors at school level and proxy for other factors. That said, the geographic fixed effects, introduced at the tehsil level, address concerns on unobserved socio-economic characteristics, institutional and cultural endowments specific to particular tehsils. The estimated coefficients also suffer from selection bias (endogeneity) if households send their children to schools with high student attendance rates or they choose schools on observed covariates. The endogeneity issues cannot be addressed given limitations of available data.

The predicted residuals from the estimated model are used to identify schools with that have attendance-to-enrollment rates one standard deviation above/below the one predicted by our model. Schools are classified as High and Low performing ones, and share of these schools is used to order districts in three gradations—best, medium and worst performance. Qualitative characteristics of these schools are identified and carefully examined through focus group discussions with school and community representatives from a sample of schools picked from these categories.

Descriptive Statistics

The monthly data used for this study comes from May 2014 round of data collection in KP. Total of 26,823 schools were surveyed in this round. 79.5% of these are primary schools with a total enrollment of 2.5 million, 9.9% are middle/elementary schools with a total enrollment of 0.21 million, and 10.4% are secondary and high secondary schools.

There were few schools in which total sanctioned posts of non-teaching staff is less than the total non-teaching staff physically present i.e. negative absent rate of non-teaching staff. In order to avoid any anomaly in our analysis, these schools have been dropped (29 schools, distributed over different districts). Moreover, there were few schools in different districts of KP, in which total students enrolled were less than 10. To avoid biased results for school performance these outliers were dropped (162 schools). This gives us a total working sample of 21,324 schools. The definitions of all the variables constructed from IMU data are reported in Annex 3.1. Table 4.2 presents summary statistics from IMU data for school-level indicators by schooling levels.

Table 4.2: Descriptive Statistics

Definitions	Primary	Middle/Secondary
	Mean (Std. Dev)	Mean (Std. Dev)
Attendance to enrollment	75.99 (16.44)	81.51 (13.40)
Student Teacher Ratio	41.51 (23.53)	22.09 (14.19)
Index Infrastructure	3.37 (1.35)	3.99 (1.17)
School Size	150.92 (133.83)	251.14 (260.20)
Girls School	0.38 (0.48)	0.37 (0.48)
Parent Teacher Meetings	0.27 (0.45)	0.27 (0.44)
Nonteaching Staff Absent Rate	20.80 (40.22)	19.40 (25.25)
Total Registered Status Sanctioned	3.88 (2.81)	12.12 (8.09)
Teacher Absent Rate	16.19 (23.18)	18.42 (17.88)

In both primary and middle/secondary schools student attendance rates average at 76% and 81.5% respectively. There is huge variation in student attendance rates with values ranging from 1.5% to 100% for primary schools and 4.8% to 100% for secondary schools. Schools in KP are predominantly primary level (80%) and boys only (60%). There is large variation in school size as well with mean enrollment on average falling around 170 students but ranges from 10 to 2,848 students. The mean number of teachers falls between 4 to 5 for primary schools and 9-10 for middle/secondary school, yielding student teacher ratio of 37:1 for primary and 23:1 for middle/secondary schools. Teacher absenteeism rate, like other provinces is also high at 16.2% for primary schools and 18.4% for middle/secondary schools. Similar rates of absenteeism hold for non-teaching staff across levels. A typical school in KP has 4 basic facilities out of 5 as captured by the infrastructure index both at the primary and secondary levels.

The middle/secondary schools have higher enrollments with a larger number of sanctioned teaching posts when compared with primary schools. Other than expected differences in school size, the school performance indicators as reported in Table 4.2 are quite similar across school levels in the province. Therefore, in the rest of the section, and statistical analysis we report combined results across primary and secondary schools.

Results and Discussion

Figure 4.3 plots conditional residuals at the tehsil-level (for Abbottabad, Allai, Alpurai and Babozai Swat as an example) the simple OLS regression of equation (1). There are two main findings. First, the residual-plots show large unexplained variation between schools within tehsil, after controlling for standard school-level covariates and geographic fixed effects (tehsils). Sample probability density plots of conditional residuals indicate that majority of tehsils have flat distributions with heavy tails. The implication is straightforward—school performance as captured by attendance-enrollment rate ranges from half to double the fitted valued for worst and best performing schools in a given tehsil respectively. Second finding is rather a mechanical one where residuals, as expected are largely normally distributed for most of the tehsils, implying that the statistical model is well specified.

Figure 4.3: Distribution of Residuals

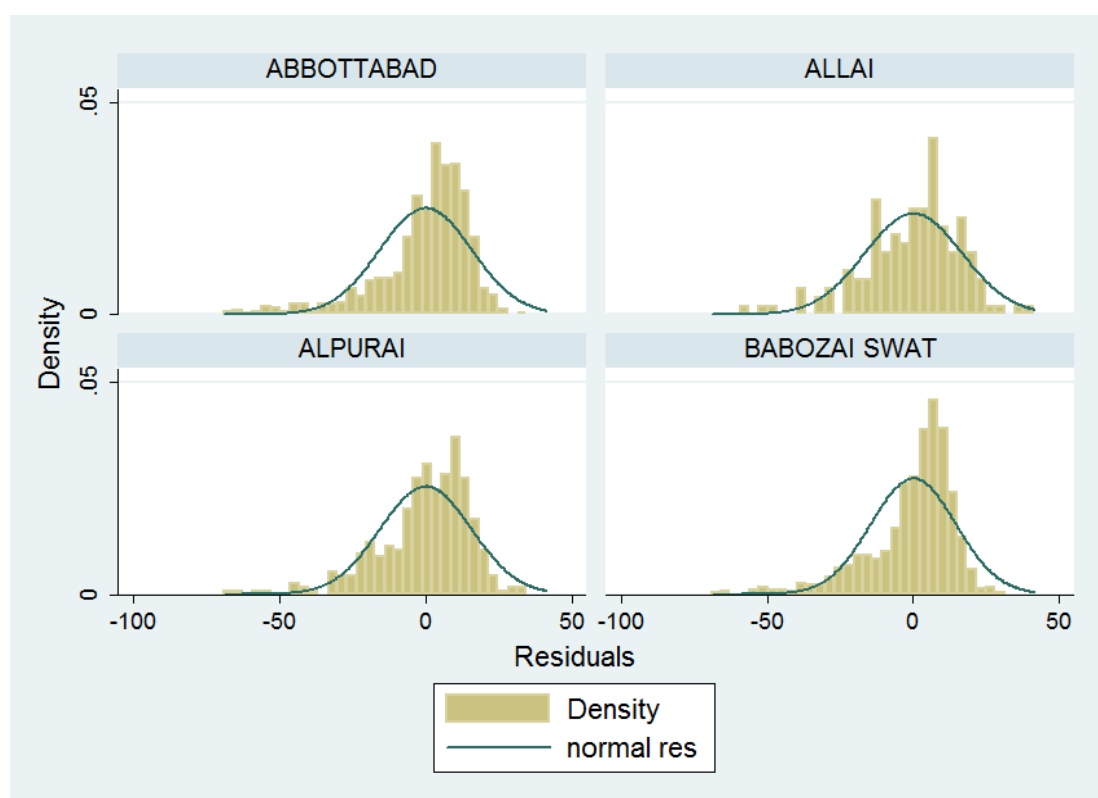


Table 4.3 reports the regression results from the model. The first column reports the summary statistics for all the covariates, second column reports the coefficients without any geographic fixed, and final column, which is our preferred specification, reports the coefficients with tehsil fixed effects. This statistical model explains more than 20% of the variation in attendance-to-enrollment ratio across schools as compared to only 8% without geographic fixed effects. Primary schools have lower attendance-to-enrollment (A2E) rates compared to middle/secondary schools. Likewise, girls-only schools tend to have lower A2E rates compared to boys-only schools. Schools with more frequent parent-teacher interactions have higher A2E rates. The impact of these school-level attributes is largely consistent when we look at overall variation in school performance (across tehsils) or just look at schools within a given tehsil (geographic fixed effects). Adding more teachers to schools have little impact on A2E rate and the effect becomes statistically insignificant in the preferred regression.

Table 4.3: School Performance Regression Estimation Results

Covariate	(1) Mean	(2) A2E	(3) A2E
Infrastructure Index	3.5 (1.34)	1.505*** (0.0838)	0.914*** (0.169)
School Size	17137.72 (17241.93)	0.000130*** (1.08e-05)	7.77e-05*** (2.32e-05)
School Level	0.79 (0.40)	-5.483*** (0.364)	-4.630*** (0.563)
Girls only School	0.37 (0.48)	-2.549*** (0.222)	-3.306*** (0.656)
Parent Teacher Meetings	0.27 (0.44)	1.440*** (0.239)	1.507*** (0.269)
NTS absenteeism rate	20.5 (37.6)	-0.0149*** (0.00282)	-0.0212*** (0.00395)
Teachers (sanctioned posts)	5.56 (5.53)	-0.250*** (0.0403)	-0.0684 (0.0574)
Teacher absenteeism rate	16.64 (22.2)	-0.0843*** (0.00483)	-0.0631*** (0.00718)
Observations	-	21,324	21,324
R-squared	-	0.078	0.214

Covariate	(1) Mean	(2) A2E	(3) A2E
Fixed Effects	-	No	Yes

Note: Column 1 reports covariate means; standard deviations are reported in parentheses. Columns 2-3 report parameter estimates; *standard errors* are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

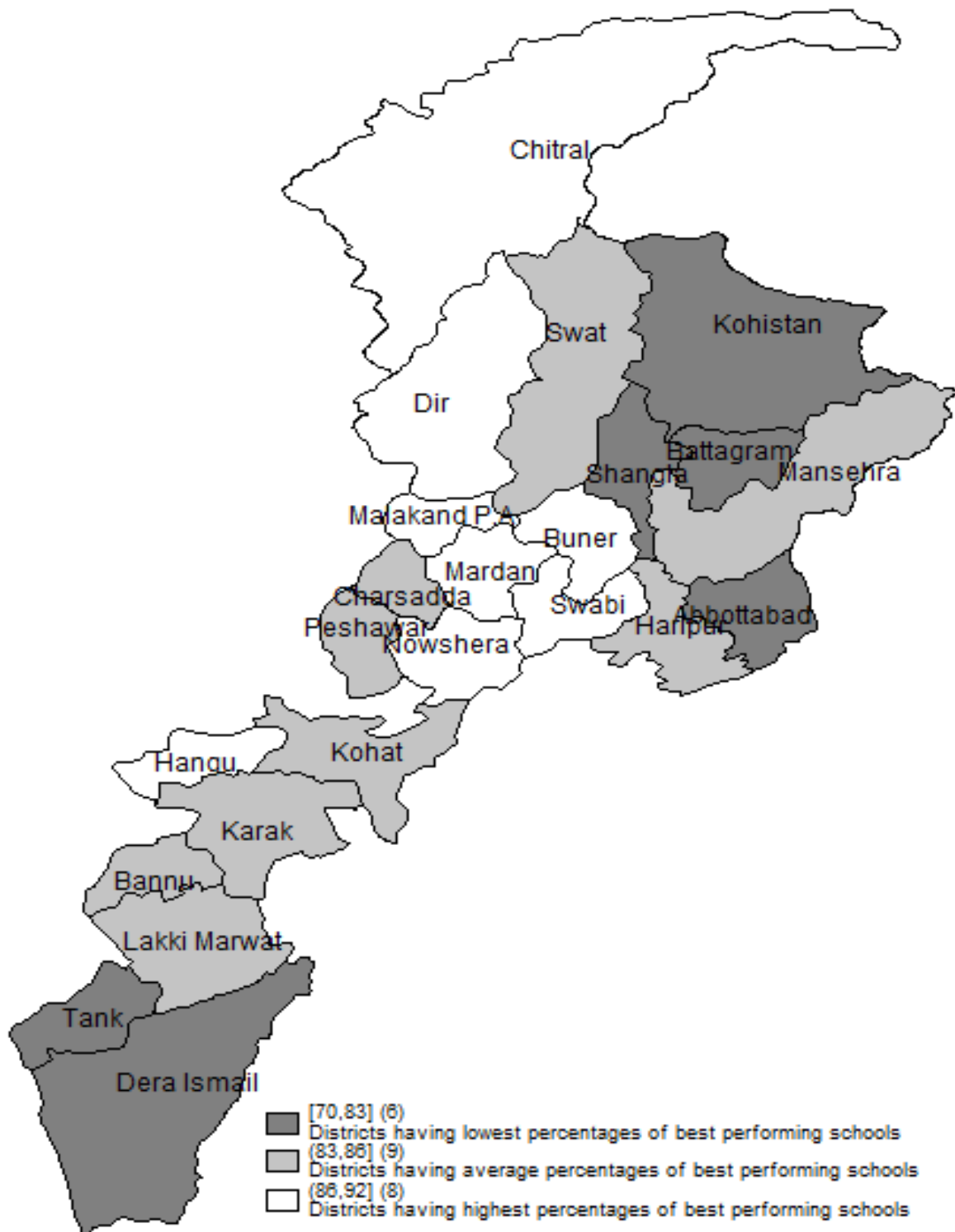
One percent increase in teacher absenteeism rate on average is associated with a 0.08% decrease in A2E rate. This means that in a typical school where there is one teacher who stays absent for 4 days a month, just getting him to show up to school for one additional day, is expected to improve the A2E rate by 0.4 percentage points. Lower magnitude positive effects on A2E rates hold also for improving presence of non-teaching staff. As indicated earlier in the descriptive statistics a typical school in KP has 3-4 basic facilities so the returns to investments on school-level infrastructure to improve A2E rates are limited. In fact, installing an additional basic facility in a school is expected to have only 0.9 percentage point increase in A2E rates equivalent to improving teachers' presence by two additional days in a typical one-teacher school.

The signs and the coefficients of all covariates in the model are as expected and consistent with the literature. The analysis is repeated with couple of other rounds of monthly data to check the stability and robustness of the coefficients. The results are largely similar and therefore not reported for brevity. Having established the stability and robustness of the statistical model we now use the model to predict distribution of conditional residuals. Given huge variation in school performance within and across tehsils we want use our model to identify best and worst performing schools. Since residuals are normally distributed, 67% of schools within a tehsil will lie within one standard deviation of fitted values predicted by the model. Schools with residuals greater than one standard deviation are considered outliers since conditional values of A2E rates are atypical. These schools are characterized as high and low performing ones to take a closer look at a sample of these schools to study dimensions (not captured by statistical model) through focus group interview that might explain deviant performance of these schools.

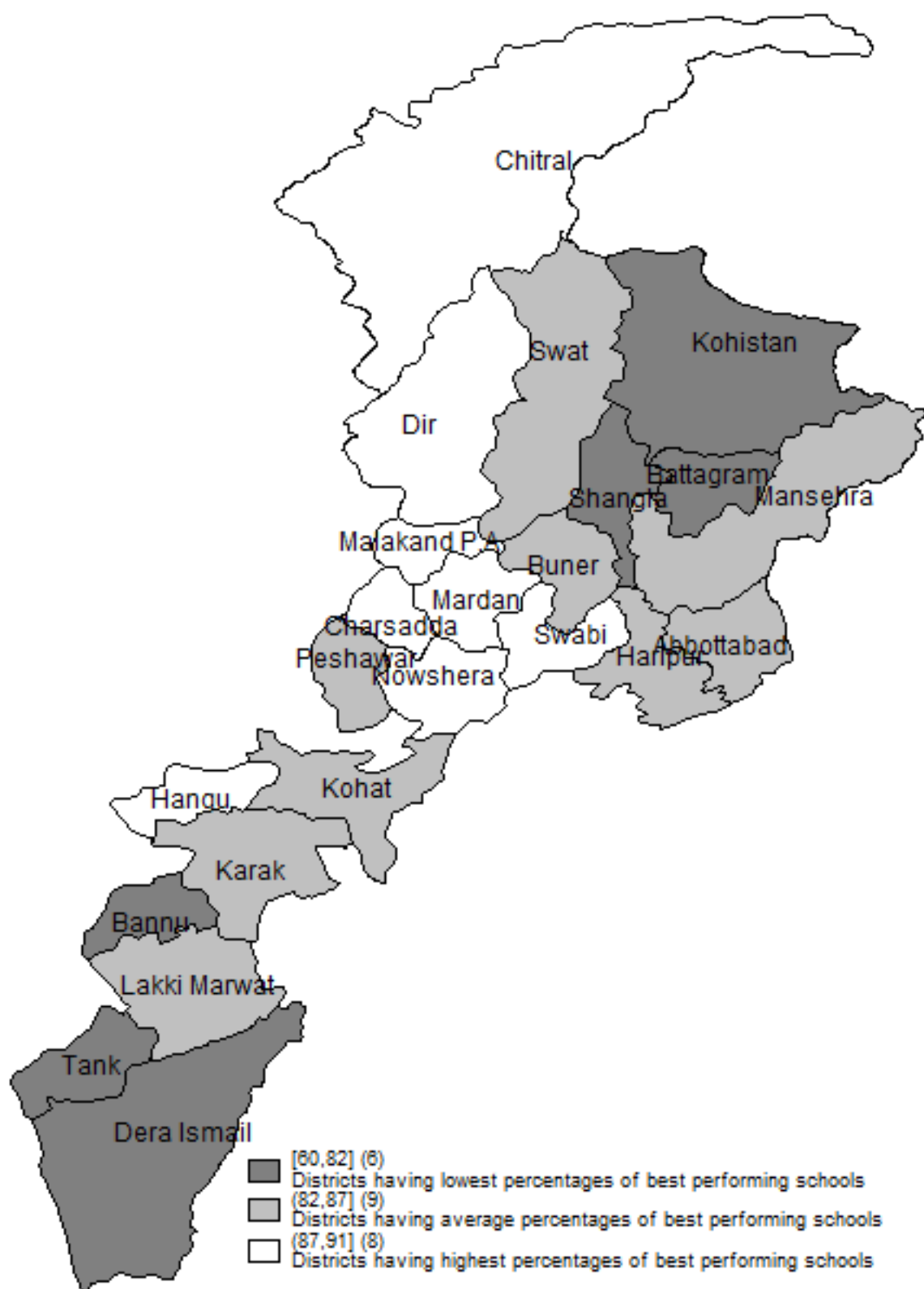
To compare school performance within and across tehsils, overall distribution of residuals predicted by the statistical model is used. Schools having residuals larger than 85th percentile are categorized as High Performing (HP) schools, and those having residuals less than 15th percentile are clubbed together as Low Performing (LP) schools. There is such a large variation in A2E rates across tehsils that in some instances no schools within a tehsil fall in the HP or LP category. A2E rates for such tehsils predicted by the model are much higher or much lower than a typical tehsil in KP. This categorization thus allows us to capture the extent of relative under/over performance of tehsils on A2E rates. For instance Tehsils with a share of LP schools exceeding 15% are relatively worst performing tehsils and vice versa for HP schools. The categorization also allows us to identify tehsils with both high shares of HP and LP schools implying huge variations in school performance within tehsils. The level of this analysis is elevated to identify best, average and worst performing districts in KP by looking the shares of HP and LP schools within each district.

The maps below (Best performing districts of KP in Primary and Middle/ Secondary Schools) show gradation of districts from those with concentration of high performing schools (18%-33%), close to median share of high performing schools (14-18%), and smaller shares of high-performing schools (0-14%). The gradation levels are arbitrarily determined to have an equal number of districts in each category. And then this is repeated for middle/secondary schools.

Variation in Primary School Performance by District in KPK



Variation in Middle/Secondary School Performance by District in KPK



Of the five districts chosen for FGD's, two (Kohistan and Shangla) are clear low performers, both in terms of general perception as well as the statistical approach taken here. Similarly, for

the high performers, Mardan is a clear representative district. For Buner (selected due to high variation in school performance such as low performing tehsil Gagra) and Kohat (selected as high performing district), the general perception is at odds with the empirical evidence. The empirical estimates (see map) show Buner to be high performing with respect to primary schools but mid-performing with respect to middle schools. Furthermore, the estimates show Kohat to be mid-performing in both primary and middle schools. None-the-less, representatives from Buner and Kohat were invited to the FGD's to get their perspective on what matters for school performance allowing perceptions to guide the selection in their case.

4.3 Conclusion

A key contribution of the analysis presented in this chapter is to use large-scale, administrative micro-data in KP to add to the evidence on correlates of school performance in KP. School performance is constructed from administrative data (A2E rate), a measure that comes out to be highly correlated with sample-based test scores in ASER (2013). Observed school-level characteristics such as teachers, infrastructure, school size, staff absenteeism rates, school gender and level are standard explanatory variables drawn on in the literature to explain variability in school performance. Using IMU data we construct these variables and estimate the simple statistical model to explain variations in attendance to enrollment rates between schools. Unsurprisingly, reduction in absenteeism of teaching and non-teaching staff and school-level infrastructure are associated with significant positive gains in attendance to enrollment rates. More importantly, ensuring that teachers show up at school regularly has as much of an impact on attendance-to-enrollment rate as investing in one new facility for the school. Primary and girls schools have lower attendance to enrollments ratios.

This statistical model is then used to identify schools that perform substantially better/worse on attendance-to-enrollment rates compared to ones predicted by the model. This allows identification of schools at the extremity of the distribution whose performance is not captured by the specified model. These schools are characterized as high and low performing schools to determine district-wide ranking in terms of the proportion of such schools in the district. Focus group discussions were held with select representatives from these districts to understand the dynamics of performance in these schools. The next section takes a closer look at these patterns in relation to the findings from the focus group discussions.

Chapter 5 Teacher and Administrator Focus Group Discussions (FDGs)

In Chapter 4, the statistical model measured school performance in terms of student attendance expressed as a function of teaching and non-teaching staff present, quality of school infrastructure and active parent teacher associations. Focus group discussions presented in this chapter extend the findings of Chapter 4 to identify, along with service rules discussed in Chapter 3, a comprehensive set of incentives for improving education outcomes in KP.

The education department employs 55% of the civil servants in the government of KP. With about 180,000 employees overall, teachers make up at least three quarters of the Elementary and Secondary Education department employment. Improving the performance of this large section of the civil service will help improve overall governance in the province.

5.1 Methodology

Two Focus Group Discussions (FGDs) were conducted:¹¹ First, with officials from district administration representing tehsils with high and low performing schools. Second, with teachers and principals representing high and low performing boys and girls primary, secondary, and higher secondary schools in Peshawar. Using the IMU data the following districts were identified: Shangla, Buner, Kohistan, Kohat and Mardan for focus group discussions. Since there is high variation in school performance within districts, participants' perceptions were also used in informing the selection. With the assistance of the Additional Secretary of Education, eleven participants representing six tiers of district administration staff were invited for the first focus group discussion, and teachers and heads of schools from Peshawar for the second focus group discussion.

For the second focus group discussion, 6 schools were selected using IMU data to represent male and female primary, elementary and secondary school heads and teachers from low and high performing schools in Peshawar district. Five participants from these schools were able to attend.

Participants of both focus groups were asked open-ended questions on why some schools perform better than others. Topics explored included teacher recruitment, training, attendance and performance that influenced teacher and student performance. Probes followed these questions on any uncovered topics pre-identified in our questionnaire (for questionnaire, see annexure 4).

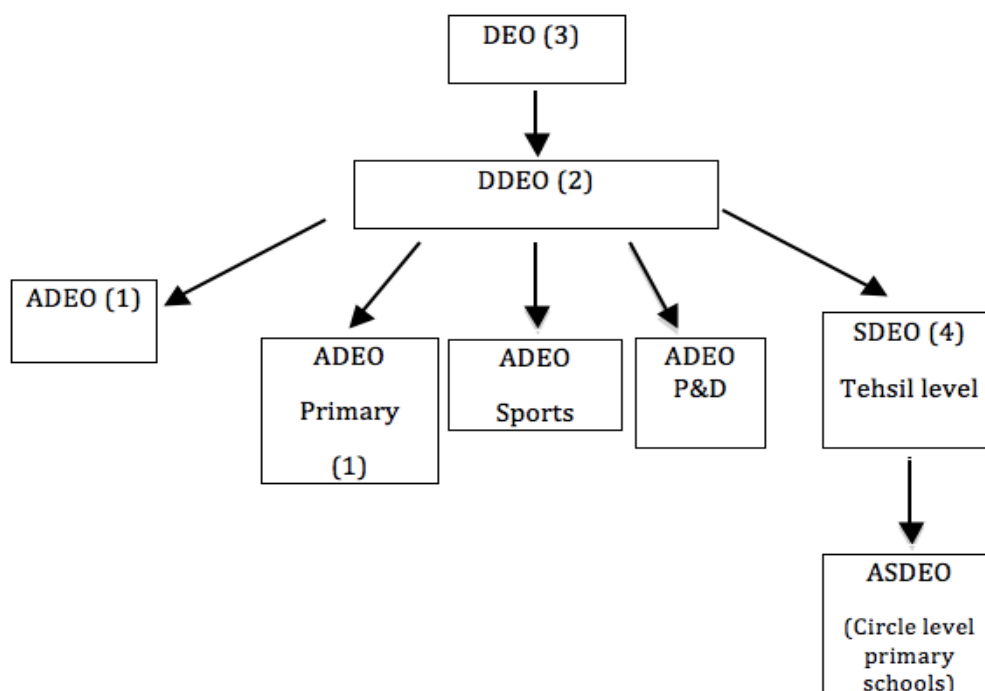
5.1.1 Participants

The first focus group discussion was conducted with 4 female and 7 male district and sub-district administrators. As shown in Figure 5.1, eleven participants included 1 Sub-divisional Education Officer (SDEO), 4 District Education Officers, (DEOs), 1 Additional District Education Officer

¹¹ Annex 3.2 provides detail on the methodology used to select participants.

(ADEO), 2 Deputy District Education Officer (DDEO), and 1 Assistant District Officer (ADEO).

Figure 5.1: Focus group 1: Participants from District Administration



The District Education Officer (DEO) reports to the Director Elementary and Secondary education department and is the main district level representative. The Deputy District education Officer (DDEO) is responsible for managing the budget for the EDO office and the middle schools in the province, and also performs various record keeping and supervisory roles. The Assistant District Education Officer (ADEO) primary/secondary, assists the DDEO and Recruitment team in appointments, transfers, promotions and leave of teachers and staff, including identifying vacant posts, and arranging tests and interviews and ensuring transparency in recruitment process. The Sub Divisional Education Officer (SDEO) reports through the DDEO to the EDO office. He or she is the principal officer at the tehsil level and manages the circle offices under the ASDEO. The Assistant Sub Divisional Education Officer (ASEDO) reports to the SDEO, and is responsible for supervision at the school level.

As stated earlier, the second focus group had five participants representing teachers and principals from male and female primary, secondary, and secondary schools in Peshawar.

5.1.2 Topics Explored

The Focus Group Discussions identified reasons for low and high performance in schools and the legislative rules and incentives for teachers and administrators that resulted in better teacher attendance and student learning. The participants were asked about the impact of current teacher

recruitment mechanisms on student learning. They were also asked to give their opinion on the reforms implemented in KP to influence teachers' incentives and how these reforms had impacted student learning. The participants discussed monitoring mechanisms that have been in place for the past few years and also the new monitoring mechanisms that have been installed and their impact on teacher performance and attendance. They were asked to provide clarity on the role of administrative staff and surveillance staff and how the prevalent hierarchy influences teacher performance. Participants also discussed links between student performance and teacher recruitment, posting, and promotion.

The second focus group in particular explored the leadership role of principals in school management and performance. Teachers and principals were asked for their views on performance factors that should result in promotions and the current policy of rewarding teachers mainly on qualifications. Teacher performance assessment practices were discussed. The participants identified the incentives for better teacher performance and attendance. School academic structures were discussed including student assessment, student promotion, lesson plans, and effective classroom practices. The questionnaire to guide the discussions for both FGDs is attached in Appendix 4.

5.2 Findings

Two days of focus group discussions gave significant insights into current incentives for teachers and administrators prevalent in the KP school system.

Focus group discussions allowed administrators representing high and low performing schools to compare different situations in their *tehsils* and districts. According to the participants, several initiatives needed to work together for positive change to take place. For one District Education Officer (DEO) a combination of three things made a school successful: “tight” supervision, motivated teachers, and teachers who were knowledgeable about their subject. Respondents frequently expressed frustration regarding inductions, postings and other favors granted to teachers and staff on the basis of political affiliation. An Assistant District Education Officer (ADEO) mentioned that “the hand of politicians had to be off the teachers” in order to get good educational performance results.

It was also mentioned that many schools affected by the 2005 earthquake still need to be properly rehabilitated, especially in districts Kohistan and Shangla.

In-depth interviews with officials from one district perceived to be high performing (Kohat) and one low performing (Kohistan) district highlighted different reasons for success and failure, some that could be generalized to other areas and implemented elsewhere and others that were specific to the local situation or context. A comparison of the two districts is given in Figure 5.3 below:

Figure 5.3: Factors Influencing High and Low Performing Schools

<i>Kohat (high performing)</i>	<i>Kohistan (low performing)</i>
<ul style="list-style-type: none"> • Important leadership role and personal initiative by DDEO. She holds monthly meetings, conducts tests and organizes competitions among schools. • The DDO has built a supervision team and instilled a system to acknowledge highly performing teachers and give them public recognition in meetings. • She has visited private schools to learn from the ones doing well. • She has prevented political interference in teacher placements by personally talking to elected representatives 	<ul style="list-style-type: none"> • Difficult to find educated teachers locally. Eighty percent of locally hired teachers have low qualifications and are mostly middle school graduates • Seasonal migration of students due to weather conditions is a reason for 40 percent of schools remaining closed most of the time • “Malik” tribal system dominates and local administrators fear giving low performance assessment to teachers to prevent hostilities • Understaffed administration • Girls’ stipend has had a positive impact on attendance.

Figure 5.3 shows how the initiative of a dynamic administrator in Kohat results in comparatively high student achievement. While in Kohistan, lack of educated teachers, seasonal migration of students due to physical terrain and weather conditions, and the inability of schools to manage these circumstances are responsible for low student achievement.

5.2.1 Teacher Recruitment, Promotion, Training and Transfers

(a) Entry Level Requirements

The requirement of National Testing Service (NTS) exams for hiring new teachers was considered to be a positive feature of the system and was deemed important in promoting merit-based recruitment.¹² However, there are inconsistencies in hiring rules for some teacher posts. For the positions of PST, CT, DM, Qari, Geology Teacher, Arabic Teacher, there are no standardized tests on the lines of NTS. The participants also stated that for temporary and contract-based posts, the lack of NTS prerequisite leaves potential for political interference.

To make the NTS requirement more effective in assessing the standards of incoming

¹² The KP Civil Servants Act, 1973 (*KP. Act No. XVIII of 1973*) requires applicants to take the National Testing Service (NTS) exam for entry into the teaching profession.

professional staff, it was suggested that more support be provided in preparation for the exam.

Given the teacher shortage especially for primary teachers and problems with filling sanctioned posts, the discussions highlighted the need for more flexibility and experimentation with lowering qualification requirements and paying teachers less for short contracts.

Offering high salaries did not necessarily attract better teachers or ensure high performance, the consensus was that despite being paid 20,000- 35000 PKR per month, on average, primary teachers in public schools under performed compared to private school teachers, indicating that monetary incentives would have to be combined with other incentives and monitoring mechanisms.

(b) The Need to Align Promotion to Performance

As per NWFP Civil Services Promotion Policy, 2009, the Comprehensive Efficiency Index (CEI) is used to assess the performance of civil servants and is a pre requisite for promotion. Another performance measure, the Performance Evaluation Review (PER) applicable to all civil servants is also meant to determine eligibility for promotion. In practice however, these measures are not used as real assessment tools, and currently promotion is based on educational qualifications, exam results and years in service. The evaluation system for promotions needs to be re-assessed for using efficiency measures tied to teacher attendance and better student performance. Mandatory training or assessment for promotion is not applicable to civil servants including teachers. As a result those teachers who may have been inducted based on political affiliations would also be able to get promotions without refining their skills.

Problems also arise when officers evaluating school principals are from a lower grade than the principals in the management cadre; such discrepancies need to be addressed in implementing CEI evaluation system.

(c) Posting and Transfers

The current Deputation Policy gives the provision to apply for deputation after three years of service. Section 10 of the KP Civil Servants Act 1973 states that every civil servant is liable to serve anywhere in the province. According to Section 10(4) of this provision, tenure of posting transfer should be two years for settled areas and one and a half years for unattractive areas.

“Unattractive areas” and “hard districts” need to be defined more clearly. The participants felt that better teachers tended to leave less developed areas and that clearer incentives are needed to motivate them to teach in schools situated in areas with difficult terrain or politically volatile situations.

(d) Training

Questions were asked about the types of training available through the Provincial Institute of Teachers Education (PITE), and the Department of Education, and if it was effectively meeting the needs of teachers and administrators. The discussions revealed that despite the government’s efforts, not enough attention was being paid to support specific needs of teachers to improve their skills. In Kohistan, for example, teachers are mostly local hires and 80 percent

are middle school graduates. Respondents felt that such teachers and others faced with changing curriculum requirements needed more training, possibly through on-going “refresher courses” to improve their teaching capacity. Problems also occur when teachers initially hired for art or drawing, move on to teach other subjects after promotion. The Education Department currently does not facilitate this transition by providing subject knowledge training.

5.2.2 Teacher Attendance

(a) Attendance and leave rules

Although the KP Government Servants (Efficiency and Discipline) Rules, 2011, requires the removal of a civil servant in case of willful absence, participants commented that teachers who take excessive leave use political influence to get exonerated from suspension or dismissal. Focus group participants recommended that teachers with regular attendance records should be rewarded and recognized.¹³

(b) Supervision and Monitoring by Principals

Officials from Mardan pointed out that the lack of leadership by head teachers and principals lowered school performance. Principals’ role was considered to be central in school management and teacher supervision, and some participants mentioned the need for leadership training for school heads. In the case of “hard districts” considered to be difficult to work in due to harsh physical terrain and security issues, it was suggested that special incentives were needed to attract and retain high performing principals.

(c) Supervision by Parent Teacher Councils

Parent Teacher Councils (PTC) were established under the 2010 Education Management Code. PTCs were required to be comprised of parents of students enrolled in the school, a member of the local community, a school principal and a member of the union council. To ensure proper appropriation of funds and encourage parents to send their children to school, it was recommended that important and trusted members of the community be encouraged to join the PTC.

In the FGDs some officials and principals quoted examples of how the PTCs had been effective in deciding how to spend funds appropriated to the school. On the other hand, in most areas PTC committees were not actively engaged. The officials from Buner felt that the lack of awareness about the importance of education and low education levels among parents prevented them from taking more interest in participating in PTCs.

(d) Monitoring by District and Sub-District Officials and the IMU

¹³ This would be in line with the results of a study currently being conducted in Punjab, Pakistan by Ganimian et al. (2012) that shows that teachers that were being incentivized were absent less frequently. In the study teachers seemed to be substituting away from tasks unrelated to teaching and spending more time in the classroom.

The impact of Independent Monitoring Unit (IMU) was felt to be largely positive. IMU monitors are given motorbikes and vans and are required to visit each school once a month. The monitors only record school data and do not supervise school staff or interact with them, but by merely showing up regularly they have had a positive impact on teacher attendance. From within the education department, Sub-divisional officers at the *tehsil* level are also supposed to make regular visits to schools but due to transport problems and insufficient numbers of inspectors compared to the number of schools to be visited, such visits are infrequent. ASDEOs monitor schools at the circle level and are supposed to report back to the *tehsil* level. In some areas, as reported by the officials from Kohistan, tribal systems can make it difficult (due to potential and existing tribal rivalries and altercations) for local administrators to correctly report teachers' performance or attendance.

Participants felt that the IMU monitors have had an impact in improving attendance and that an extended, more supportive role of the current IMU team or a similar monitoring mechanism needs to be provided. Managerial training to teachers and Head teachers would also improve teacher attendance.

5.2.3 Teacher performance

(a) Use of Performance Evaluation Reports (PERs)

Performance Evaluation Reports (PERs) are used to assist in decisions regarding teachers' promotion, transfers and training selection. Instructions for PERs suggest that the report should be initiated by the next higher officer and countersigned by an officer higher than the reporting officer (Manual of Civil Services Rules, 2013). The participants felt that existing PERs meant for all civil servants were too general, and a revised version was needed for teachers. The PERs were not taken seriously and usually a "good" rating was given across the board (out of five rankings-outstanding, very good, good, average and below average) that basically makes promotions possible, and avoids controversy and retaliation. ASDEOs are supposed to evaluate primary school head teachers. But problems often arise when inspectors belong to a lower grade than heads of schools.

Also, many reports have been found without being countersigned by the senior of the reporting officer, a procedure that can cause further delay and constitutes a negative incentive for teachers or administrators whose future then depends on the response of his reporting officer.

(b) Rationalization Policy/Student to Teacher Ratio

Under the Rationalization Policy introduced in 2014 surplus teachers would be transferred and posted in schools as per the ratio 1:40 in primary schools and 1 Class Teacher: 1.5 sections in Middle/ High/ Secondary schools. Head Teachers are allowed to make another section when class strength exceeds 1.5 times the ratio defined in the policy so for primary schools; another section can be made once a class has 60 students.

Participants suggested that low performing schools had over worked teachers due to unfilled sanctioned posts (a shortage of at least 500 teachers was estimated in district Buner alone). In one middle school there was a student teacher ratio of 160:1 in Grade 6 while three sanctioned posts remained vacant. The participants informed that in some cases three classes were being held per room. The high variations in student teacher ratios from the data analysis were also brought up in the FGDs. Participants stated that teacher transfers on the basis of political favors upsets the balance, and transfers under the rationalization policy had to be transparent in order to get the support of teachers.

(c) The Need to Fill Vacant Teacher Posts

Participants felt that filling vacant teaching posts in schools would give a signal that the government is responsive to the needs of the school and provide teachers and students the motivation to come to school. Manageable workload is likely to reduce teacher absenteeism and in turn, improve quality of learning at school.

(d) Time Spent on Activities other than Teaching

The participants highlighted that teachers were called upon for other activities and spent a significant amount of their time at school not teaching. For example teachers are presently being used for the polio campaign (1 to 2 campaigns per month). While some of the teachers thought it was an important role since they knew most of the parents in the community and were considered trustworthy and credible for this job; others felt it took time away from their main role as teachers. If teachers are called upon for other tasks, it should not encroach into the time allocated for schoolwork and student instruction.

(e) Student Learning and Classroom Practices

Participants agreed that a major problem in the education system that affects student learning was the large scale cheating that takes place in Matric board exams (at the end of secondary school and grade 10), as this sets a weak precedent for the quality of education and the teaching effort in lower grades. Moreover, despite the low minimum marks required to pass exams, only half of the students actually passed. The rest were promoted regardless, particularly in low performing areas. It was noted that in areas where primary school results are good, the middle and high schools also tend to be of a higher standard. Parents have started voicing concern about the standards of teaching since students' real competence gets tested during admissions exams for professional colleges such as pre-medical or the National Testing Service (NTS) exam required for entry into many of the government services.

5.3 Summing Up

In Section 4, standard school level variables using IMU data (including infrastructure facilities, teacher placement and attendance, student teacher ratios, timely delivery of stipends and textbooks, and allocations and expenditures by parent-teacher associations) accounted for more than 20% of the variation in attendance to enrollment ratios. Residual plots showed large

unexplained variation between schools. FGDs presented in this section were used to corroborate and clarify results of the statistical model in Section 4 and to also go beyond the model to explore variation in school performance not being captured by available school level data.

It was learnt that local circumstances are important in shaping educational outcomes whether it is leadership by department officials or the effect of external factors such as weather, terrain or security problems. Participants also gave their reactions to rules and legislation applicable to the education department employees given in Section 3.1. The main findings can be summed up as follows:

- Managers, teachers and principals from low performing schools, tehsils and districts can learn from the experience of high performing tehsils to introduce changes adapted to their specific areas. For the productive exchange of ideas, the education department can organize workshops among teachers and administrative staff representing areas with high and low performing schools.
- The current system allows for positive interventions by individually motivated district managers. Holding monthly meetings and publicly recognizing dedicated teachers based on attendance and school results can be used to motivate teachers. Important lessons can be learned from local initiatives, and this example also shows that district officials have enough autonomy to make positive changes if they have the right leadership skills.
- The main job incentive for teachers and administrators is civil service grades and associated pay scales in the teaching and management cadre and the associated incentives with postings and transfers. However promotions, postings and transfers and salary are weakly tied to teacher performance and are not conditional on regular teacher attendance and school performance results.
- Of the two performance indicators currently part of the civil service rules- the Performance Evaluation Review (PER) and the Composite Efficiency Index (CEI), the latter is not applicable to teachers but the PER evaluation is used for promotions and transfers. Currently the PER is treated as a formality and the norm is for supervisors to award neutral rankings that won't block promotions. These were not "real" evaluations of teacher effort. A revival of the existing evaluation systems tied to teacher attendance, subject knowledge and student learning results would make teacher more effective.
- Teachers in general are not aware of many of the rules and regulations governing teachers and administrators currently in place. This implies that many rules serve as formalities and their implementation may be partial or ineffective. Therefore rules have to be re-interpreted and simplified as they apply to teachers and education administrators specifically.
- Increased monitoring and supervision had a positive effect on teacher attendance except for teachers who had been hired or transferred through political influence. Regular visits by the Independent Monitoring Unit were improving teacher attendance, even though the visits were merely for collecting school data. The current system requires district managers to perform a supervisory role, but their school visits are irregular. Assigning the responsibility of monitoring and assessing teachers to specific administrators such as the ASDEO and the DDEO may be more effective.

- Currently there are no consequences- either sanctions or rewards, attached to lower or higher teacher absence. Despite the presence of legislation that called for disciplining truancy, cases of suspension or dismissal of teachers due to excessive absence were rare. Casual leave policies encouraged teachers to take all 25 casual leaves in the year since there was no compensation or accumulation of leave not availed.
- School heads need to have greater management and leadership skills in order to deliver better learning results. Results from the data analysis and FGDs also indicated that simply adding infrastructure or teachers to schools does not have an impact.
- For student learning to improve, widespread cheating incidents in the matriculation board exam at the end of secondary school sets a weak precedent for learning, because students, teachers and parents believe that real learning and knowledge of subjects is not rewarded at the end of the 10 years of schooling.
- Corroborating the findings of statistical analysis in section 4.2, the importance of parent teacher councils was established in focus group discussions; in areas where Parent Teacher Councils (PTCs) were more active, these were able to make improvements in schools. More information is needed on reasons why some PTCs are more active and effective than others.
- There has to be better support at various stages of a teacher's career in order to motivate them to improve school learning outcomes. Particularly important is in-service mentoring and teacher training to improve subject knowledge and for changes in curriculum.

In conclusion, focus group discussions resulted in context specific reasons for varying school performance. Legislation aligned to improved incentives coupled with stronger leadership and autonomy at the school level would help to improve student and teacher outcomes.

Section 6 Recommendations for Designing Interventions

Based on the data analysis, focus group discussion, and literature review, short and medium-term recommendations are as follows:¹⁴

6.1 Recommended Interventions for the Short-Term

Lower Teacher Absence Rates

Data analysis suggests a strong impact of lowered teacher absence on student performance. This problem of high staff absenteeism could be addressed immediately. A goal could be set to reduce the absence rate of teaching and non-teaching staff to half of the current rate of 16-18% within a given time frame with continued efforts to lower teacher absence. The following interventions can be designed to reduce teacher absence.

- Increase teacher and school staff monitoring by administrators, principals and community
- Recognition awards for regular teachers
- Monetary and non-monetary group and individual incentives
- Small compensation for sanctioned leave not availed
- Performance Evaluations Reports should give a high negative weight to absence
- Include lack of absence in favorable decisions related to teacher transfers, promotions and up gradations

Consequences for high absence would include low evaluation ratings, negative implications for promotions, transfers and up gradations. These measures could be introduced incrementally through a system of warnings, followed by suspensions and dismissals in cases of persistent absence.

Fill Vacant Teacher Posts

Overcrowding in schools and classes was considered a major problem, and the data showed a wide variation in student teacher ratios. A high priority should be given to filling teacher vacancies on a needs-based approach to balance teacher loads and ease the pressure of multi-grade teaching.

Develop Performance Measures for Teachers, Students and Schools

In this study a proxy for student learning was developed linking ASER data to school level data collected by the government. Since the IMU is now collecting monthly data for every school in KP, consistent measures of student and teacher performance need to be developed for use by schools and government officials to measure progress.

- School level performance can be based on student class records, dropouts, promotions and exam test scores.

¹⁴ A proposed experiment to assess the impact of a potential intervention is outlined in Annex 5.

- Teacher evaluations can be based on a number of criterion including assessments of subject knowledge, cognitive tests, classroom observations, principal's evaluation, feedback from parents and student test scores and class results. These can be incorporated in the PER for a more meaningful ranking and assessment of teachers.
- Third party evaluation of student results would provide checks on the government system and prevent manipulation of scores and rankings if high stakes are attached to the results
- IMU survey could have a module on learning and performance measures

Focus on Least Performing Areas and Schools

The impact of carefully planned and executed incentives is expected to be greater in educationally backward areas compared to areas that are performing relatively better. Current investments in missing school facilities and infrastructure development have to be combined with greater teacher presence and other positive interventions to improve performance. Identification of low performing areas and schools can be carried out using the data analysis in the study.

- Introduce initiatives in learning along with infrastructure improvements: The government has taken a major initiative in improving school infrastructure through initiatives such as the expansion of primary schools from 2 to 6 rooms, the Tameer-e-school program, and rebuilding earthquake affected areas. As the data analysis and literature have shown, merely improving buildings has little impact on education and specific measures to improve teacher attendance and student learning have to be introduced.
- Primary schools, girls' schools and those affected by the 2005 earthquake show lagging performance and should receive priority attention.

Education department officials and researchers can design interventions based on these recommendations that can be tested for their impact.¹⁵

6.2 Recommended Interventions for the Medium Term

To improve learning standards beyond a basic minimum level and to sustain progress made after the initial round of interventions, continued and longer-term changes are needed.

Develop Teachers' Career Structure

Currently teachers' and administrators' careers are weakly aligned to their performance based on improving learning standards for students. Teachers should be able to visualize advancements in their career paths supported by professional skills development opportunities. With clear progress goals and performance evaluations, teachers who cannot fulfill requirements of

¹⁵ A proposed experiment to assess the impact of a potential intervention is outlined in Annex 6.

expected career paths can leave early in their career or should not automatically expect promotions or other benefits. Interventions would include:

- Defining teachers' goals at various stages in their career, and align performance evaluations and incentives to identified career goals.
- Institute teacher re-certification during career path to test skills and demonstrate subject knowledge.
- Design incentives and compensation framework, promotions and up gradations to re-enforce performance based career progression.

Align Teacher Performance to School Level Progress

The data shows considerable variation in school outcomes in KP, pointing to different needs and goals for each school. Some schools will require greater effort to reach higher standards compared to others and teacher, staff and student performance has to be assessed against realistic goals. Interventions to help align teacher performance with school level goals would include:

- School Development Plans: Each school has to measure progress according to its own base level and set annual performance goals and implementation strategy linked to teacher incentives and monitoring. Common indicators across schools can be developed. A monthly school report that includes learning and performance measures based on these indicators can be included in the IMU survey. Parent teacher interaction showed strong correlation
- School principal's leadership and management: Principals should be made responsible for devising and implementing the School Plan. The KP Delegation of Powers under the Financial Rules & the Powers of Re-Appropriation Rules, 2001 is currently ineffective because budgets for principals are limited. This rule could be used to allow greater autonomy to principals to meet specific school needs such as remedial sessions or hiring assistant teachers.
- Establish a system of rewards for teachers and students based more than one assessment and also linked to third party monitoring and validation of results. Assessments based on student exam scores only can lead to narrow focus on 'teaching to the test' or manipulation of results, as studies in Pakistan, India and Kenya have shown.

Support Teachers via Training and Skills Development

Training and qualifications that are not aligned with curriculum and subjects being taught are not expected to improve student results.

- Pre-service and in-service training and mentoring, professional development, distance learning, use of technology, peer workshops in subject knowledge and teaching skills can be aligned to teaching tasks and teacher career goals.
- Train teachers in remedial learning. Students' low learning levels have to be addressed directly by organizing remedial workshops or classes. The high variation in ages within grades and large class sizes including "katchi" or pre-school age students in first grade,

makes instruction at the relevant level difficult. Remedial classes could be arranged during school, after school and during summer vacation depending on the particular needs and circumstances of the area and school.

Introduce Student Assessments in Grades 5 and 8

Currently the widespread perception of cheating in the matriculation examination sets a negative precedent for learning in the earlier grades.¹⁶ By introducing assessments in grades 5 and 8, there will be pressure to bring students up to a certain standard in early grades. The assessments should be low stakes and not the only way to gauge student competence.

Teacher Assessments

By introducing overall assessments of teachers in subjects taught, at various points in their service, a minimum performance threshold can be set. There may be a lot of variation in teacher capability and teacher assessments would present a way to authorize retraining or removal of incompetent teachers. Based on testing and evaluation of teachers, warnings would be given to low performers, and there can be clear consequences of repeatedly low performing teachers. The assessments can be incorporated into the regular KP legislative structure of PERS/CEI/and other evaluation and monitoring mechanisms.

Change Classroom Practices regarding Discipline, Attitude and, Content

Longer-term structural changes in the classroom are needed to raise the level of learning and student skills. Several issues of mastery of subjects, discipline, teacher and student behavior and attitudes have to be addressed simultaneously. To make these changes, officials in the government department and educators can borrow from other countries' experience (e.g., Pratham in India, and the CLASS experiment in Ecuador). Examples of best practices can also be found within the KP education system as evidenced from the FGDs.

Strengthen Parent Teacher Councils

More effort is required to make PTCS effective and functional. This is an opportunity for principals and teachers to learn about demand side issues that could be addressed such as costs of transport or uniforms and other issues parents might have.

6.3 Concluding Comments

In conclusion, substantial gains in educational achievement can be expected in KP with committed reform initiatives and well-designed interventions. As an immediate measure, focusing on very low performing areas with an emphasis on incentives to lower teacher absence and to fill teacher vacancies is likely to bring about positive results. Investing in infrastructure alone is not adequate and needs to be combined with lower teacher absence and interventions to

¹⁶ The matriculation certificate is an important qualification for further studies and for applying t jobs. Teachers and students will have the incentive to work hard if they feel that their efforts will be rewarded fairly at the time of exams and assessments. Greater pressure is needed on the matriculation board and associated services to ensure that there is no cheating and that the degrees are valid.

improve student learning. The focus group discussions gave context specific reasons for varying school performance. It was seen how even one committed administrator could make a big difference. More support at the local level would create incentives for greater leadership and innovation at the school and sub-district levels. More active engagement by parents and community members with local schools also had a positive impact. Consistent broader legislation aligned to improved incentives coupled with stronger leadership and autonomy at the school level would help to improve student and teacher outcomes. Currently the supervisory role is performed by several of the district managers; focusing the responsibility of monitoring teachers to specific administrators may be more effective. The administrative system has to be fair and transparent in carrying out accurate assessments of students and teachers in order to be taken seriously and for all concerned to make the effort required for good learning results.

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Annex 1: Literature Review Of National And International Experience On Teacher Incentives For Improved Teacher Attendance And Student Performance

Intervention	Country / study / sample design	Results
Interventions for reduced teacher absence		
<p>India nationwide</p> <p>Muralidharan et al. (2014).</p> <p>Determining impact of school inputs on teacher absence</p>	<p>Constructed new nationally-representative panel dataset of schools across 1297 villages in India by revisiting (in 2010) a randomly-sampled subset of the villages originally surveyed in 2003 and collecting detailed school and community level data.</p>	<p>-Improved inspection had a significant effect on lowering teacher absence.</p> <p>-Investing in better governance by hiring more inspectors to increase monitoring frequency could be over ten times more cost effective at increasing teacher-student contact time than hiring more teachers.</p> <p>-Improvement in infrastructure did not correlate with lower teacher absence.</p> <p>-Incentives work mostly in situations where these are backed by strong monitoring and supervision systems.</p>
<p>Uganda</p> <p>(Cilliers et al, 2014)</p> <p>Use of a mobile-based platform for reporting teacher presence</p> <p>Outcome identified: Lower teacher absence</p>	<p>Bonuses offered to teachers for higher attendance. Locally managed monitoring schemes using parents and head teachers to report teacher absence by using mobile phones.</p>	<p>Combined monitoring by both head teachers and parents was the most cost-effective way to improve teacher attendance (use of mobile phones).</p>
<p>Six low-income countries: Bangladesh, Ecuador, India, Indonesia, Peru and Uganda.</p> <p>Chaudhry et al (2006).</p> <p>Determinants of teacher and health worker absence in</p>	<p>Factors influencing absence among education and health workers. Unannounced visits to primary schools and health clinics. Surveys are close to nationally representative. Some areas were excluded for security or logistical reasons. In Bangladesh,</p>	<p>Illness is one of the main reasons for teacher absence.</p> <p>Suggest motivations such as pride, regard for peers are also among reasons for better attendance.</p> <p>Non-financial incentives considered</p>

Intervention	Country / study / sample design	Results
developing countries Outcome identified: Lower teacher absence	Ecuador, Indonesia, Peru, and Uganda, enumerators made two visits—typically several months apart. In India, three unannounced visits were made to each of about 3000 public schools over a span of 3-4 months. Majority of the fieldwork was carried out between October 2002 and April 2003	important for attendance
Changing teaching practices/teacher training for improved student learning		
Khyber Pakhtunkhwa, Pakistan Burki, Lutfaili and Zualkeman (2014). Mobile technology to teach students in remote areas Output identified: Improved student learning	Use of mobile technology 46 Public Primary Schools, located in Balkot and Manshera, Pakistan. Observed teachers in classrooms and provided monitoring and support to help teachers reflect and improve their practice. Worked with schools, teachers and communities.	Preliminary results from the first year of Literacy Boost implementation in KP province suggest that children, particularly girls and those from the most impoverished backgrounds, an from remote areas, significantly outperformed their peers in non-intervention schools in key measures like fluency, word recognition and comprehension Study shows potential for positive intervention involving teacher training / performance and academic support aided with technology
Bihar, India Spivak, (2013). Improving reading skills through remedial instruction techniques Output identified: Improved student learning	Changing teaching methods by regrouping students by level instead of age or grade. Focus on mastery of basic skills. NGO Pratham introduced remedial literacy techniques working with student groups in government schools	Improved student learning especially from summer sessions Successful intervention in teacher training in remedial teaching and grouping of students. Student performance improved by new methods.
Incentives for teachers and principals to improve student learning		

Intervention	Country / study / sample design	Results
<p>Punjab, Pakistan, Barrera-Osorio and Raju (2010)</p> <p>Evaluating per-student public subsidy to low cost private schools</p> <p>Outcome identified: Improved student learning; Subsidized (tuition free) education in low fee private schools</p>	<p>Bonus payment to teachers as a group reward based on achieving minimum test scores (paying teachers for performance)</p> <p>Sanctioning schools by ejecting them from the system if minimum test scores not achieved. (Supervision, monitoring at school level for student performance)</p> <p>Test data collected between 2007-2010 in five semi-annual rounds under the Private-public partnership program</p>	<p>Teacher bonus program did not improve learning levels, possibly since it was not translated into incentives schools created internally for teachers. Threat of program exit induced learning gains but the incentive was not effective in continuously raising learning levels. (short term effect)</p> <p>High stakes sanctions for achieving results might work in the short run but are difficult to sustain</p> <p>Teachers' incentives do not seem to work in the presence of a high stakes test-based accountability program.</p>
<p>Andhra Pradesh, India Muralidharan & Sundararaman (2011).</p> <p>Teacher performance pay. Experimental evidence from India</p> <p>Outcome identified: Improved student learning</p>	<p>Program offered modest financial rewards for teachers & schools for improved student math and language test scores.</p> <p>2-year program rural primary schools. Randomly allocated the incentive programs across a representative sample of 300 government schools with 100 schools each in the group and individual incentive treatment groups and 100 schools serving as the comparison group. Modest financial rewards given for increase in math and language scores.</p> <p>This is a robust experimental study where both short-term and medium term effects are</p>	<p>Positive effects of financial rewards on test scores. Students in incentive schools performed significantly better than those in control schools by 0.28 and 0.16 standard deviations in math and language tests respectively</p> <p>Group and individual teacher impact the same in the first year, teacher effect greater after 2 years. Longer term positive effects suggest condition of greater teacher presence leads to more teaching activity</p> <p>Study shows positive impact of pay for performance. Individual and group rewards</p>

Intervention	Country / study / sample design	Results
	rigorously estimated.	
<p>Kenya</p> <p>Glewwe, Ilias and Kremer (2010).</p> <p>Impact of teacher incentives on school based average student performance</p> <p>Outcome identified: Improved student learning</p>	<p>In-kind prizes provided to teachers and headmasters if students scored well on district exams. Prizes were awarded based on the average performance of all the students in the school. Rewarded Kenyan schoolteachers based on school based average student performance, penalizing for student absence in exam</p> <p>Randomized trial of a program. 100 schools in Busia and Teso districts. 1996 scores were used as baseline. The program lasted from 1998-99.</p>	<p>Students scored higher on the exams linked to teacher reward but not on other unlinked exams. Teacher attendance and homework assignments were unaffected but test preparation sessions increased. Exam participation increased by seven percent at the end of year 2, drop out rates were unaffected.</p> <p>Selective rewards linked to incentives such as monetary rewards for better scores can distort results – to prevent “teaching to the test” need to set broader educational goals and accountability-learning based on independent student assessment, lower dropouts, higher teacher and student attendance.</p>
<p>Lao PDR</p> <p>Dang and King (2013).</p> <p>Incentives and teacher effort.</p> <p>Outcome identified: Teacher effort measured by lesson preparation time and private tutoring</p>	<p>The Impact of financial and non-financial incentives on teacher effort. School survey data covering more than 1,500 teachers in 322 schools from Lao PDR. Methodologically, the paper provides a detailed derivation of a simultaneous ordinary least squares- probit model with school random effects that can jointly estimate teacher work hours and tutoring provision. Impact of financial and non-financial incentives on teacher effort</p>	<p>Salary delay reduces teacher effort while monitoring by a PTA, principals authority to dismiss teachers and autonomy in preparing lessons improves teacher effort. One month of salary delay reduces the odds of teachers providing tutoring lesson free of charge by 40 percent and the number of their tutees by 30 percent. Positive impact of a PTA (increases the probability of teachers offering tuition by 0.12 percent), and freedom to develop teaching materials induces teachers to work three additional hours a work.</p>
Chile	A group incentive program in which schools	Evidence supporting wage structure for teachers that recognizes pay for

Intervention	Country / study / sample design	Results
<p>Contreras and Rau (2012).</p> <p>Group monetary incentive for teachers based on school tournament</p> <p>Outcome identified: Improved student learning</p>	<p>with the highest average performance based on standardized test scores receive monetary rewards that are distributed equally among all teachers in the winning schools.</p> <p>Productivity bonus scheme called the National System of School Performance Assessment (SNED)</p> <p>Nationwide policy involving 90% of schools (introduced in 1996). Performed a nearest-neighbor matching estimator to determine the effects of the incentive on standardized test scores at the school level.</p>	<p>productivity increases in student achievement. The results are robust to different specifications and vary between 0.14 and 0.25 standard deviations for math and from 0.09 to 0.23 for language scores.</p> <p>This study shows the benefits of group incentives for teachers at school level</p>
Studies linking learning results to school and teacher characteristics		
<p>Andhra Pradesh, India</p> <p>Muraldharan et al (2013)</p> <p>Impact of contract teachers</p>	<p>Two year experiment following 100 schools with one extra contract teacher</p>	<p>Students in schools with one extra contract teacher performed significantly better in math and language compared to control group</p> <p>Contract teachers were also absent less than regular civil service teachers</p>
<p>Punjab, Pakistan</p> <p>Aslam and Kingdon (2011)</p> <p>Linking teacher characteristics to student achievement</p>	<p>Estimated education production functions linking student achievement to teacher assessments and teacher characteristics data for 65 private and public schools in Lahore</p>	<p>Teaching practices matter more than qualifications, certifications and experience, but pay scales are based on credentials and experience</p>
<p>Punjab, Pakistan.</p>	<p>Comparison of low- fee private and public schools</p>	<p>Student learning results better in private compared to public schools. Children in</p>

Intervention	Country / study / sample design	Results
<p>Andrabi et al (2007)</p> <p>Learning and educational achievements in Punjab schools</p> <p>Outcome identified: Improved Student learning</p>	<p>based on testing results of grade 3 students</p> <p>LEAPS survey panel data 2003 to 2007. 112 villages in Punjab, 812 government and private schools, 12,000 class 3 students, 5,000 teachers and 2,000 households. 3 districts of Attock, Faisalabad, and RahimYar Khan.</p>	<p>public schools were estimated to take 1.5-2.5 years to catch up to private school children in Class 3.</p> <p>Teachers are less educated, (recruiting mostly comprised of local female high school graduates) paid 5-6 times less in private schools but perform better compared to public school teachers. Private schools link teacher salaries efficiently to their performance (paid according to attendance and performing on the job)</p> <p>Lessons from private schools regarding use of local, female, secondary school educated teachers in areas of teacher shortage and for remedial instruction in primary schools</p>
<p>Punjab Pakistan;</p> <p>Das, Pandey and Zajonc, (2006).</p> <p>Learning levels and gaps in Punjab schools</p> <p>Output identified: Improved student learning</p>	<p>Linking test scores to school and household factors</p> <p>Survey of primary public and private schools in rural Pakistan focus on student achievement measured through test scores (LEAPS, 2003).</p>	<p>The largest learning gaps are between schools.</p> <p>In Punjab, the gap in English test-scores between government and private schools, for instance, is 12 times the gap between children from rich and poor families. Variation in learning between schools implies there are lessons to be learned from initiatives taken at the school level that would benefit children irrespective of household income</p> <p>The study highlighted the importance of school level influences on teacher and student performance</p>

Intervention	Country / study / sample design	Results
<p>Punjab, Pakistan Bari et al (2013).</p> <p>Review of Teacher recruitment and retention</p>	<p>Investigation of teacher recruitment and retention policies in Punjab</p>	<p>The study reviews laws and policies in the Punjab. Several issues are identified that influence teacher effectiveness. Political interference in teacher recruitment, lack of clear teacher transfer policy, court cases indicate recurring issues of late teacher salary payment, excessive leave by teachers</p>

Annex 2.1: Description of Teacher Posts In Elementary And Secondary Education

- 1. Primary School Teacher PST (BPS-12):** Primary School Teachers are initially recruited through National Testing Service (NTS) and the preferred qualification criteria for this post is a B.Ed.(Hons) Elementary or Associate degree in Education from a recognized university. The teachers are required to teach some or all subjects in the curriculum (Urdu, English, Islamiyat, Mathematics, General Studies, General Science, Social Studies, Physical Education) in grades 1-5.
- 2. Certified Teacher CT (BPS-15):** The minimum eligibility criterion is Bachelor's Degree OR equivalent qualification from a recognized University with Certified Teacher Certificate Two Years Associate Degree in Education from a recognized University. Depending on what grade they teach, certified teachers can teach multiple subjects or a particular subject to grade 6-10.
- 3. Drawing Master DM (BPS-15):** A teacher must have a Bachelor's Degree from a recognized University with One Year Drawing Master (DM) course certificate to become eligible for DM post. He or she teaches art and model drawing to grade 6 to 10.
- 4. Arabic Teacher AT (BPS-15):** The minimum qualification required is a Second Class Secondary School Certificate, from a recognized Board along with Shahdatul Alamia Fil Uloomul Arabia wal Islamia from a recognized Tanzimuatul Wafaqul Madaris OR a Master's Degree in Arabic from a recognized University. AT teaches Arabic language to grade 6 to 10.
- 5. Theology Teacher TT (BPS-15):** For becoming a TT, a candidate must have a minimum qualification of a Second Class Secondary School Certificate, from a recognized Board along with Shahdatul Alamia Fil Uloomul Arabia wal Islamia from a recognized Tanzimuatul Wafaqul Madaris OR a second class Master's Degree in Islamiyat from a recognized University. He teaches Islamiyat to grade 6 to 10.
- 6. Physical Education Teacher PET (BPS-15):** Bachelor's Degree from a recognized University with One Year junior diploma in Physical Education course from a recognized Institute OR Equivalent Qualification from Army is required to become entitled to apply for PET position.
- 7. Qari/Qariya (BPS-12):** The minimum qualification for this position is an Intermediate or equivalent qualification from a recognized Board with Hifz-e-Quran and Qirat Sanad from a recognized Institute. They teach Nazira-e- Qur'an and Tajweed to grade 6 to 10.

Annex 2.2: Rules affecting Teachers/Administrators & Students and its Impact on Education

Given below are some of the rules under the KPK Civil Service Act of 1973 and its subordinate legislations that create incentives for civil servants particularly for teachers and administrators. These rules are described with their subsequent impact on elementary and secondary education in KPK.

1. The KPK Civil Servants Act, 1973 (KPK. Act No. XVIII of 1973): Applying to general civil service appointments, terms and conditions of service, this legislation provides a framework for the provincial government's coordination and activities of civil servants serving in different departments. The Provincial Government in response to changing situations has amended the Act from time to time. The NWFP Civil Servants (Appointment, Promotion and Transfer) Rules, 1989, NWFP Civil Servants Promotion Policy 2009, Khyber PakhtunKhwa (Appointment, Deputation, Posting and Transfer of Teachers, Lecturers, Instructors and Doctors) Regulatory Act, 2011, Efficiency and Discipline Rule 2011, etc. are the sub-ordinate legislation under the Civil Servants Act 1973 made by entities empowered by the KP Parliament.

Comments: A civil servant is eligible to claim pension and other retirement benefits after completing twenty years of service. This rule provides job security to teachers and administrators but has disadvantages if followed without assessing employee performance. It could result in incompetent teachers staying in service, or the education department being deprived of good teachers if they are not allowed to serve beyond twenty years.

2. Posting & Transfer (Statutory Provision): According to Section 10 of the KPK Civil Servants Act 1973, every civil servant is liable to serve anywhere in the Province. The tenure of posting transfer shall be two years for settled areas and 1^{1/2} years for unattractive areas.

Comments: No clear criterion has been established for the term 'unattractive' area. It could mean a difficult to access location or areas with security problems, and it would help to specify these conditions more clearly. Postings and transfers are also not clearly linked to performance.

2. Instructions on Performance Evaluation Reports (PERs): These instructions are about writing PERs of the civil servants of the Province except for judges of KP High Court and members of KP Public Service Commission. The report is supposed to give a clear picture of the officer reported upon i.e. his/her personal qualities, performance standard, relationship with others, potential growth and his/her fitness for promotion to special posts according to individual aptitude (Badshah, 2013). According to the rules, the report should be initiated by the next higher officer and countersigned by an officer higher than the reporting officer, both being concerned with the work of the officer reported upon. For instance:

Officer Reported Upon	Reporting Officer	Countersigning Officer
Section Officer	Deputy Secretary concerned	Additional Secretary or Special Secretary or Secretary (if there is no Additional Secretary or Secretary)
All other officers	Next higher officer concerned	Officer higher than the reporting officer

Source: Badshah Amir; Manual of Civil Services Rules 2013

Comments: Despite the PER rules, sometimes less senior or equivalent grade officers may be responsible for evaluating teachers or principals, for example:

Officer Reported Upon	Reporting Officer	Countersigning Officer
Principal (BPS-20)	Deputy District Education Officer(BPS-18)	District Education Officer (BPS-19)
Principal (BPS-18)	Deputy District Education Officer(BPS-18)	District Education Officer (BPS-19)

Therefore, the evaluations are considered formal procedures without any real review or consequences. The inherent contradictions in implementing the PER, and rules applicable to evaluations of education personnel could be removed with clear criteria about performance and implementation procedures.

Since three aspects of performance including moral integrity, intellectual integrity and output of work are not included in the existing PER forms, the grades secured and marks obtained by the officer in overall assessment could be notionally repeated for other complementary evaluative aspects and form the basis of quantification. The qualitative performance is assessed by the categories: outstanding, very good, good, average and below average.

3. NWFP Civil Services promotion policy, 2009: This policy has been formulated to consolidate the existing promotion policy and to facilitate the line departments at every level in prompt processing of promotion cases of Provincial civil servants. CEI involves quantification of PERs, qualification, publications, research work etc. However, the criteria of CEI does not apply to teaching and administrative cadre below BPS-17 as they are exempted from fulfilling this condition. The present CEI system merely focuses on Metric exam result. This policy links

promotion with training and development of Comprehensive Efficiency Index (CEI) as mandatory for promotion. CEI is used as a yardstick to assess the efficiency of civil servants and a pre-requisite for getting promotion to various grades.

Linking Promotion with Training: The successful completion of the following trainings is mandatory for all Provincial Civil Service/Provincial Management Service (PMS) to various Basic Scales: **(a).** Mid-Career Management Course (MCMC) at National Institute of Management (NIM) for promotion to BS-19. **(b).** Senior Management Course (SMC) at National Management College, Lahore for promotion to BS-20. **(c).** National Management Course (NMC) at National Management College, Lahore for promotion to BS-21.

Comments: CEI can potentially be used to encourage healthy competition among teachers to become more efficient and punctual and positively impact students' learning and education outcomes. The condition of mandatory training for promotion is not applicable to civil servants in specialized cadres like doctors, teachers, and professors etc. However, pre-service training is mandatory for all teachers. Exemption of teaching cadre from training during service can have a negative impact on officers of non-teaching cadre who have to compete with officers of teaching group at the time of Provincial Selection Board meeting in respect of promotion to higher grades.

4. Deputation Policy: First introduced in July 1978, this policy provides eligibility to apply for deputation if a civil servant has rendered three years of service.

Comments: Due to the provision to apply for deputation, special incentives would be beneficial in retaining competent teachers and administrators in the education department and preventing them from moving to other departments.

5. The KPK Government Servants (Conduct) Rules 1987: These rules regulate the conduct of civil servants in connection with the affairs of the Province. These rules also apply to employees of the Provincial Government deputed to serve under the Federal Government or with a statutory Corporation or with a non-Government Employer.

Comments: According to section 4(d) of these rules, no Government Servant shall misappropriate or act fraudulently for his personal gains or willfully assist any other person to do so.

One of the provisions in these rules disallows the Government Servants from taking part in politics. Also, the Government servant will not allow any member of his family dependent on him to participate in politics. This has a positive impact on the atmosphere of the school.

6. The KPK Government Servants (Efficiency and Discipline) Rules, 2011: These rules shall apply to permanent as well as temporary employees of the civil service of the Province.

Comments: Regarding immediate decision required for proceeding inquiry against any officer, according to Efficiency & Discipline Rules, an immediate action cannot be taken and proper inquiry has to be done by the competent authority. In many cases it has been observed that this delay in dispensing justice leads to leniency towards the accused. This can engender a positive incentive for the 'accused' teacher or administrator and establish a negative trend of stretching the process of justice in favor of the accused.

To end proceedings, the competent authority takes action and when the action is completed and any penalty under E & D rules is imposed upon the accused officer/teacher, he/she can resort to service tribunal or any court of law against this penalty further delaying justice.

The regulation regarding removal of a civil servant in case of willful absence is applicable to teachers and administrators. It emphasizes the importance of teacher presence in schools and offices and could positively affect education outcomes via reducing teachers' absenteeism. However, in practice, very few teachers have been suspended since they might use political influence to get them exoneration from suspension or dismissal from service.

The E & D rules have defined the meaning of 'corruption', 'misconduct' and 'accused'; however, the rules are not clear on the segregation of criminal cases from civil cases. A bifurcation between them is required. Otherwise, the ambiguity of terms tends to create hurdles in dispensing disciplinary cases.¹⁷

8. The KPK Delegation of Powers under the Financial Rules & the Powers of Re-Appropriation Rules, 2001: There are limited powers for Category II officers. For instance, a Principal of Higher Secondary School (BPS 18) cannot spend more than Rs. 4000. Similarly, for the purchase of books, maps and teaching material, Category III and Category IV officers in education department are allowed to spend Rs. 1500 and Rs. 750 at a time respectively.

Comments: These amounts are insufficient to meet realistic needs of principals and teachers who want to introduce new books and other material in their schools. For example, computer science has been recently included in the curriculum of elementary and secondary education, and according to the rules, school principals have the authority to buy computers for their schools.

9. Fundamental Rules & Supplementary Rules (regulated under the purview of Civil Service Act 1973): According to rule v (2) of Appendix 3 of the F.R and S.R rules, Volume II, casual leave is not a recognized leave for the purpose of leave rules in F.R and S.R (Badshah, 2013). A total of 25 casual leaves are allowed in a year, including sick leaves. Employees can also avail 365 days medical leave during their service.

Comments: A teacher or administrator's pay is not intermitted when he or she takes casual leave. Thus, casual leave rules can possibly create negative incentives for teacher attendance. If a teacher

¹⁷ According to the Assistant Director Litigation Office, around 5000 cases have been filed in the Service Tribunal related to School Management Cadre & Teaching Cadre.

does not avail allowed leaves of 25 days in a year, he is not rewarded in any way. A positive incentive can be created through financial or non financial awards for teachers who do not avail their leave.

10. The KP regulatory Act, 2011 (appointment, deputation, posting and transfer of teachers, lecturers, instructors and doctors): This Act gives primary teachers the right to be selected on the posts in schools located in their own union councils.

Comments: This rule could help lower teacher absenteeism.

11. Teacher up gradation, 2012, Govt. KP Department of ESE: Up gradation of the posts for grant of incentive of higher pay scales to different categories/cadres of teachers in Elementary and Secondary Education will have salubrious impact on education outcome in KPK.

Comments: This regulation is meant to inject new enthusiasm into the teaching cadre and their teaching efforts. To ensure successful implementation, up gradation could be tied to performance evaluation and absence rules and linked to other rules- conditional on meeting performance criteria.

12. Parents Teachers Council (PTC): To provide quality education to the students, the active involvement of teachers and parents is indispensable. Therefore, to achieve this objective, in 2007, PTC has been established at school level. According to the School Management Code 2010, the PTC consists of the following members including:¹⁸

¹⁸ So far the only education legislation for KPK is the School Management Code KPK Province 2010 (previously known as the Education Code of 1935). It contains the guidelines for the Education Managers of the Province for maintaining Good Governance in the Department. Salient features of the code are:

- The regulations in this code apply to educational institutions (Schools) in the KP.
- There are two cadres of E & SE i.e. Education Managers' Cadre (Direction & Support) & Teaching Cadre
- Rules regarding recognition of schools
- General rules for recognized rules: rules for buildings and equipments; rules for organization of school work; rules for discipline, examination and fees etc
- Grant-in-Aid rules
- Rules for scholarships & stipends
- Rules regarding teacher certificates
- Supplementary rules for government and local bodies' schools
- Rules regarding departmental organization & procedure

- Parents of all students who are enrolled in the school. Such a Council is called General Council
- The General Council elects the Executive Committee of four members among the parents called PTC. This Committee then elects one person as their chairperson
- One person from the local community to provide help to the PTC
- A Nazim or Councilor of the union council if the union council system is in use
- A school principal as a secretary of PTC

Comments: For materializing the objective of 'access to quality education', strict rules need to be in place to discourage such corrupt practices. This will prevent principals from misappropriating PTC funds.

13. Corporeal Punishment (The School Management Code 2010): According to the revised education code, the principal is not allowed to inflict corporeal punishment but this rule is not strictly followed in many schools. However, the Child Protection Act 2005 has ensured protection to the students against punishment.

Comments: Clear guidelines need to be formulated about procedures that need to be taken in case of offenses by teachers and complaints by students. The introduction of the “*mar nahin pyar*” calls for changing practices in the classroom with focus on learning and activities that improve discipline without the need for corporeal punishment.

14. Misrepresentation of Age: The School Management Code 2010 directs the principal that student's age should be accurately registered on his first admission.

Comments: This rule is not followed in actual practice. On many instances, the school principal face litigation problems in case of not changing the date of birth of students for examination purposes etc. In rural areas, child competence and learning may not be reflected by age and allowing some flexibility along with remedial lessons for children could improve standards and be admitted with more appropriate age cohort.

15. Rationalization Policy 2014: In April 2014, the KPK Government announced the promulgation of rationalization policy for schools. Under the policy, surplus teachers would be transferred and posted in schools of their nearest places of choice subject to the provisions of need. Teachers will be posted in primary schools at a ratio of 1 teacher to 40 students. Similarly, rationalization of CT teachers would be at 1 CT per 1.5 class section in Middle/High/Secondary schools. Later, transfers would be completely banned. Similarly in future, recruitment of teachers would be made on school basis where they would have to perform their duty till retirement and show results.

Comments: It is important to note that majority of the primary schools do not have enough classrooms. To fully implement the rationalization policy, more rooms will be required to

accommodate the students in case of rise in enrollment. Moreover, at present, most CTs take 32 periods/week, a heavy workload by all standards and a negative incentive for them.

16. Notification regarding method of recruitment of School Management Cadre: In pursuance of the provisions contained in sub-rule (2) of rule 3 of the NWFP Civil Servants (Appointment, Promotion & Transfer) Rules, 1989, the E & SE Department have laid down the rules applicable to the posts of Schools Management Cadre.¹⁹ It was introduced in 2009 and then revised on April 7, 2012. Under this rule, the first appointment of District Education Officer (DEO) was made in 2011.

Comments: This regulation will positively impact induction of competent workforce from the open market but separation of School Management Cadre from Teaching Cadre may cause few issues. For example:

- The notification doesn't mention clearly whether Management or Teaching Cadre is transferable.
- Service structure/promotion of Management Cadre needs policy reforms. For instance, DEO is in Grade-19 and a School Principal is in Grade-20. Similarly, ASDEO is in Grade-16 and a Superintendent is in Grade-17. As was mentioned in the preceding paragraphs, DDEO is in Grade-18 but he is a reporting officer on Principal of Grade-20 for his performance evaluation.

17. Notification 24/07/2014 - KP Civil Servants (Appointment, Promotion & Transfer) Rules, 1989: This notification gives the detail about the initial recruitment for the posts of Subject Specialist (BPS-17), Director Physical education (BPS-17) and Secondary School Teacher (BPS-16).

Comments: For the posts of Subject Specialist (BPS-17) and Director Physical Education (BPS-17), fifty percent appointment will be made on the basis of seniority-cum-fitness and fifty percent initial recruitment.²⁰ While in case of Secondary School Teacher (BPS-16), this ratio of selection is 75:25 i.e. seventy five percent by promotion and twenty five percent by initial recruitment through NTS.

All teachers falling under the jurisdiction of District officers i.e. grade 9-14 are recruited through NTS. Grade 16 and onwards are recruited through Public Service Commission.

¹⁹ Its main purpose was to separate management from teaching cadre so that fulltime and well-trained education managers could focus their attention on education management.

²⁰ Seniority cum fitness: The position in seniority and performance evaluation in present scale/grade is taken into account while making promotion to next higher grade. A person senior in a cadre if fit as stated above will be considered for promotion. Otherwise, he will be superseded and next person if fit will be considered for promotion. (Note: fitness depends on PER)

This notification can result in departmental promotion and discourage the entrance of young and competent teachers into the teaching cadre. This shutting-door policy can have negative implications for E & SE education in KP, forcing the young teachers to change their professions and letting students bear the brunt of this shortsighted policy.

The regulation on **probation** is in practice. According to section 6(1) of Civil Service Act 1973, an initial appointment, not being an adhoc appointment will be on probation as may be prescribed (Badshah, 2013). It is two years for fresh recruitment and one year for promotion or change of post.

An issue regarding NTS: Teachers have started being recruited through NTS. It is made for a specific period (i.e. 1 year, 2 years etc.) and the contract is either renewed after a stipulated period or made permanent. However, this policy could create problems in the long run. If a government decides at a later stage to regularize such posts, it could create litigation problems such as zonal allocation of posts, seniority of provincial cadre posts etc. It might also require an Act of Parliament, which can cause political and administrative problems for the government.

Cluster System Approach: Cluster approach was notified in 2010 in the light of cabinet decision. Respective District officers in all the Districts of the province formulated the cluster. After the earlier strike by Primary school teachers' union, its implementation was suspended. Although GIZ has completed training for the Higher Secondary Schools Principals in 5-Districts of KPK, the rest of High School Principals are trained at Provincial Institute of Teacher Education (PITE) Peshawar.

Annex 3.1: Variable Definition

Variable Name	Description and Source
Tehsil Code	Designated a unique code to each district and tehsil.
Total Enrollment	Calculated manually by adding up “Number of students enrolled” from KG to 12 th grade as per Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Total Number of Students Present	Calculated manually by adding up “Number of students present” from KG to 12 th grade as per Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Percentage of Students Present	Calculated manually by dividing the Total Number of Students Present at time of survey by Total Number of Students Enrolled as per Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Percentage of Students Absent	Calculated manually by Subtracting Percentage of Students Present from 100 i.e. (100 - Percentage of Students Present). Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Students Absent Ratio	Calculated using the formula: (Percentage of Students Absent/100). Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Number of Teacher’s Physically Present in School	Taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014 as Total Number of Teachers Physically Present in School.
Total Registered Status Filled	Taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014 as Total Registered Status Filled.
Percentage of Teacher’s Physically Present in School	Calculated manually by dividing the Total Number of Teachers Physically Present in School by Total Registered Status Filled as per Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Percentage of Teachers Absent in School	Calculated manually by Subtracting Percentage of Teacher’s Physically Present in School from 100 i.e. (100 - Percentage of Teacher’s Physically Present in School). Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.

Variable Name	Description and Source
Teacher Absent Ratio	Calculated by (Percentage of Teachers Absent in School /100). Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Total Number of Non-Teacher Physically Present in School	Taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014 as Total Number of Non-Teacher Physically Present in School.
Total Non-Teacher Regular Filled	Taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014 as Total Non-Teacher Regular Filled.
Percentage of Non-Teacher's Physically Present in School	Calculated manually by dividing the Total Number of Non-Teacher Physically Present in School by Total Non-Teacher Regular Filled as per Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Percentage of Non-Teachers Absent in School	Calculated manually by Subtracting Percentage of Non-Teacher's Physically Present in School from 100 i.e. (100 - Percentage of Non-Teacher's Physically Present in School). Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Non-Teachers Absent Ratio	Calculated by (Percentage of Non-Teachers Absent in School /100). Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Reading Level Highest	Highest learning level of child in Urdu/ Sindhi/ Pushto. Coded from 1-5, 1 is beginner level and 5 is story level. Data has been taken from ASER Household Child Formation Survey.
Math Highest Level	Highest learning level of child in arithmetic. Coded from 1-5, 1 is beginner level and 5 is for a child who can do division. Data has been taken from ASER Household Child Formation Survey.
English Reading	Highest learning level of child in English. Coded from 1-5, 1 is beginner level and 5 is for children who can form sentences. Data has been taken from ASER Household Child Formation Survey.
Parent Teacher Meeting	Dummy variable depicting the number 1 when parent-teacher meeting did happen in last month and 0 otherwise. Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.

Variable Name	Description and Source
School Size	Number of students enrolled in the school multiplied by 100. Taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
School Level	Dummy variable coded 1 for primary schools and 0 otherwise. Taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Total Register Sanctioned	Number of teachers' posts sanctioned and filled in the school. Taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Teacher Toilet Functional	Number of teacher toilets functional per school. Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Teacher Chairs	Number of teacher chairs per school. Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Staffrooms	Number of staffrooms per school. Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Student Teacher Ratio	The ratio of Total Enrolled students to Total Registered Status Filled Posts for teachers. Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Attendance to Enrollment Ratio	Ratio of total attendance (Total Number of Students Present) to Total Enrollment. Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Gender	Created dummy variable from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014. Coded 0 for boys and 1 for girls.
Index Infrastructure	Numbered from 0 to 5 (low to high). Generated by indexing five different components of infrastructure i.e. Building availability, boundary wall, water functional, electricity functional, and toilet functional. Data has been taken from Independent Monitoring Unit (IMU), Government of Khyber Pakhtunkhwa 2014.
Income Level	Income level indicating the wealth of districts. Taken from MICS.
Literacy Rate	Literacy rate showing the literacy at District level. Defined as a person who can read and write, aggregated at district level. Taken from MICS.
Total Funds	Total funds that schools are receiving. Aggregated at Tehsil and District

Variable Name	Description and Source
	level. Taken from IMU, 2014.
Other Funds	Funds that schools are receiving from other sources like NGOs. Aggregated at Tehsil and District level. Taken from IMU, 2014.

Annex 3.2: Methodology of Selecting Focus Group Discussion Participants

Two focus group discussions were held in Peshawar. Officials from district administration, teachers and principals representing tehsils and schools with high and low performing boys and girls primary, secondary, and higher secondary schools were invited. IMU data was used to identify low and high performing schools, tehsils and districts. The overall distribution of residuals predicted by the statistical model (fixed effect model) is used for school performance within and across tehsils. Schools with residuals above the 85th percentile are categorized as High Performing (HP) schools, and those having residuals less than 15th percentile are categorized as Low Performing (LP) schools. Shangla, Buner, Kohistan Kohat and Mardan were chosen for FGDs.

Of the five districts chosen for FGD's, two (Kohistan and Shangla) are clear low performers, both in terms of general perception as well as the statistical approach taken here. Similarly, for the high performers, Mardan is a clear representative district. For Buner (selected due to high variation in school performance such as low performing tehsil Gagra) and Kohat (selected as high performing district), the general perception is at odds with the empirical evidence. The empirical estimates (see map) show Buner to be high performing with respect to primary schools but mid-performing with respect to middle schools. Furthermore, the estimates show Kohat to be mid-performing in both primary and middle schools. None-the-less, representatives from Buner and Kohat were invited to the FGD's to get their perspective on what matters for school performance allowing perceptions to guide the selection in their case.

The first focus group discussion was held with the district administration staff (both male/female) of the aforementioned districts. The first focus group discussion was conducted with 4 female and 7 male district and sub-district administrators. Eleven participants included 1 Sub-divisional Education Officer (SDEO), 4 District Education Officers (DEOs), 1 Additional District Education Officer (ADEO), 2 Deputy District Education Officer (DDEO), and 1 Assistant District Officer (ADEO), representing districts Kohat, Mardan, Shangla, Buner and Kohistan.

The second focus group discussion was with male and female representatives from primary, middle, high and higher secondary schools. Heads and teachers from both low and high performing schools in Peshawar district were invited. Only Peshawar district was selected for the second focus group discussion due to the convenience for the head teachers and teachers to attend. Schools were selected from both the low and high performing schools categories from each level of school (primary, middle, high and higher secondary school) with equal representation of gender. 6 schools were selected to represent male and female primary, middle, high and higher secondary school from low and high performing schools in Peshawar district, where five participants from these schools were able to attend.

Annex 4: Questionnaire/guidelines for Focus Group Discussions (FGDs): KP Education study

Overall objective of FGDs: For high and low performing *tehsils*/districts, assess how current incentives and evaluation systems are linked with improved teacher and student performance. Are these working? What are the main problems/reasons for success/failure?

There will be two focus group meetings.

- I. The first meeting is with district and sub-district administrative officials to assess how legislation and administrative structures are related to incentives, monitoring and accountability.
- II. The second meeting is with school level teaching staff and principals concerning teacher attendance, learning and student performance evaluations

Focus Group Discussion 1: District and sub-district administrators

Peshawar, Thursday, November 13, 2014

Request for 15 participants: 4 Assistant Sub-divisional Education Officer (ASDEO), 4 Sub-divisional Education Officer (SDEO), 4 DEO, 1 Assistant director, Litigation, 1 Deputy Director, Finance, 1 Deputy Director, Establishment (except for last three, all male, rest half male and half female staff)

- 1- **What is your opinion about the identified low and high performing schools/tehsils/districts?**
- 2- **What are some of the reasons for high and low performance in these tehsils/schools from your knowledge?**
- 3- **What are the main incentives/legislative rules for teachers and administrators that could result in better teacher attendance?** (probes: Teacher recruitment: How does teacher recruitment influence student performance?)
- 4- **Which incentives/legislative rules for teachers and administrators have helped to improve student learning?**

- 5- **What are some of the reforms/policies being implemented that influence teacher incentives? Which of these reforms have had some success? How is the success measured? How are these reforms linked to better student learning?**
- 6- **Supervision: Which department officials visit schools? How often do they visit? What do the visits entail?**
- 7- **How is teachers' performance evaluated?** (What are the measures of performance? How would you rank these measures of performance? Are there any rewards or sanctions linked to performance? Promotion? Transfers? Leave policy? Any bonus and other allowances linked to performance?)
- 8- **How often do teachers get fired for non-performance? Is there information on number of suspensions/ other disciplinary action against non-performing teachers?**
- 9- **EDOs (Male/female)-** Have any action plans been made at district level. Supervision, accountability and governance role. (Are there any indicators in place? For example a Performa or school record where observations can be written) What are the reasons for variation in student teacher ratios across schools? Executive District Officer, Deputy District Officer: *Key role in reprimanding, sanctioning a teacher or principal (we should try and find out what is involved- consequences of disciplinary action- what the rules are- how much direct influence does an EDO have, what are the main responsibilities)*
- 10- **Salaries:** How are salaries managed? What are the problems faced in terms of transferring salaries? Is there scope for using mobile technology for direct transfer of funds

Guidelines/questionnaire for Focus Group Discussion 2: Teachers and principals

Peshawar, Friday, November 14, 2014

- 1- **PT/CT Teachers:** Teachers meant only for primary classes but in fact no bar on promotion (some questions: Do new recruits have to have a minimum level of qualification? Has PT/CT been replaced by a diploma in Education?

2- Teachers with higher professional degree (**which professional degrees are considered for higher pay/promotion, other benefits/are these teachers assigned to specific classes like Matric science students?**)

3- Primary, middle school and high school teachers (**any requirements for teaching different levels?/differences in pay**)

4- Subject specialists: How are they assigned and what is their role

Principals of primary and higher schools: *Key role in ensuring the teacher delivers (we should try and find out how much discretion principals have- what can they do to discipline teachers who are absent, get them to give remedial sessions to students, enforce leave and other policies)*

Role in teacher performance: What are the consequences of teachers not performing? How are teachers evaluated for performance? How are they rewarded for performance or penalized for non-performance. How is student performance evaluated? How is it linked to teacher performance? What is the basis on which students are promoted? How much autonomy do principals have?

- 1- **Teacher Attendance: Supervision: Who supervises you?** (How frequently do department representatives visit schools? What do their visits entail? What is the role of the principal in monitoring your attendance? Are IT based systems of monitoring being used? Can these be used to improve attendance?)
- 2- **What are the incentives for better teacher attendance?** (Financial and non-financial incentives)
- 3- **What are the main incentives for better teacher performance in the classroom? Can you rank some of these incentives?** (What are some of the main incentives important for more effort by teachers, for making their work and delivery of results better? (Probes/follow up questions/options for ranking: Promotion, salary, transfer, bonus, work conditions (better school infrastructure, smaller class sizes), management incentives (more autonomy in lesson plans, salary on time).
- 4- **Teacher performance assessment system: Is there a system of recognition in place?** (Is the recognition on a collective or individual basis? What are informal and

formal ways of recognizing performance? Have school committees developed any informal mechanism for recognizing the performance of teachers?)

- 5- **What are the rules for promotions/salary increments and other bonuses. Based on qualification, training, years in service)** if there are any monetary incentives how are they administered?
- 6- **Motivation:** What is the hardest challenge for teachers? (Staying motivated/ regular? Maintaining discipline? Student attendance?)
- 7- **Autonomy in classroom: Who makes the lesson plans**
- 8- **How are students assessed?**
- 9- **How do you work with students to ensure they achieve mastery of basic reading and mathematics**
- 10-**How are students promoted to the next class?**
- 11-**Respect/status: What changes in treatment of teachers would be an important incentive for better attendance and performance of teachers?** (Which administrative officials/ staff members are respected the most by teachers? Do teachers find any of the officials intimidating?)
- 12- **Salary:** Do the teachers receive their salary on time? If there have been instances of delay, how long has the payment been delayed for? Can bonuses be transferred to teacher's bank accounts directly?

Annex 5: Proposed Experiment To Assess The Impact Of Intervention

Experiment using monetary and non-monetary incentives to improve teacher absenteeism and student learning

Research Aims and Objectives

We propose a randomized evaluation of five interventions in KP Pakistan to be designed in collaboration with the Government of KP, to improve teacher absenteeism, increase students' attendance and increase child learning. Our design allows us to disentangle whether teacher performance is improved by monetary incentives alone, or by giving regular performance feedback to the teachers, or by reducing the workload of teachers by filling in sanctioned posts in schools, or whether a combination of incentives and feedback is relatively more effective than a combination of incentives and rationalized workload through filling in vacant positions. Through these set of interventions this project seeks to answer the following research questions:

1. Can monetary incentives alone work in an underperforming education system? An education system where a large majority of schools have vacant teacher posts and there is no mechanism to provide performance feedback to the teachers.
2. In such a system, are the relative gains from introducing basic proposed interventions that aim to rationalize teaching workload or provide regular feedback to teachers or a combination of both relatively more effective than providing monetary incentives?
3. Can incentives work better in schools where teaching workload is rationalized?
4. Can incentives work better when combined with regular feedback to teachers?

Proposed Research Design

The proposed interventions will be implemented under KP Education Sector Reform Program. The interventions will be targeted to the bottom 30% of primary, middle and high and high secondary schools in KP that have vacant posts. A prospective experimental design will be applied to identify the causal effects of each of the proposed interventions. In the most basic form, each of the target schools will be assigned to one of the six groups: (i) school-level bonuses for all teachers in school; ii) feedback provided to teachers on quarterly basis on teacher-absenteeism and teacher-on-task assessment²¹; iii) filling of all vacant teaching posts in the treatment schools²²; iv) combination of (i) and (ii); v) combination of (i) and (iii); and vi)

²¹ Independent monitoring unit is collecting data on school level indicators from all schools in the province on monthly basis. An addendum to the instrument will be added to capture data on classroom observations and measures to assess if teachers are performing their tasks, like: date on blackboard; it was observed that teacher was engaged in teaching; students had notebooks open in front of them at the time of visit etc.

²² The Government of KP will sign a Memorandum of Understanding with the task-team indicating that the teacher filled on the sanctioned posts will not be transferred or removed till Jan 01, 2018.

program ineligible controls. Those schools assigned to each of these groups will maintain the status for a minimum period of three years.

By comparing the six groups we will test a number of hypotheses. We outline the four primary hypotheses below:

H1: Extrinsic incentives (financial rewards) improve performance of teachers and lead to better learning outcomes. That is, school-level bonuses will improve teacher and student attendance relative to the control. More time and effort devoted to teaching and learning will lead to improved test scores.

H2: Teachers might be overworked in low-performing schools because of vacant posts. Filling in vacant teaching posts in these schools will be a signal to the school that the Government is responsive to the needs of the school. Motivation to come to school, given manageable workload, is likely to reduce teacher absenteeism and in turn, quality of learning at school. Note, we will only evaluate incumbent teachers' performance and student outcomes for that particular teacher as a result of the intervention.

H3: Regular feedback and monitoring of teachers elicits higher effort from teachers. On quarterly basis the district administration will visit each school once to discuss performance with the teachers and schools. Successive underperformance on these indicators will be marked in ACR (annual confidential report) of the teacher. In a variant of this treatment the performance report will be shared by the district administration with the parent-teacher-association (PTA) in that school on quarterly basis, and PTA will be encouraged to provide support and encourage struggling teachers to improve performance. Top-down and/or bottom-up approaches that provide feedback and support to teacher with a threat of formal sanction (top-down) or social sanctions via PTA (bottom-up) will improve teachers' performance.

H4: Cluster of interventions that are likely to work at low performance stage (rudimentary education system) are different from the ones that work at medium performance stage. There is a wealth of evidence from rigorous experiments indicating mixed results of teacher incentives on learning outcomes and intermediate indicators. We expect that education systems that are at very basic levels of functioning might need basic fixes before financial incentives are introduced.

In addition to these four main hypotheses, we plan on testing the differential effects of the interventions by district, school-level and school-type (boys, girls and mixed). Further details are available from the investigators.

The evaluation will rely mainly on school level administrative data collected by the KP Education Department and Independent Monitoring Unit. In addition, student achievement tests will be administered to a small sample of schools within each group to capture quality of learning indicator for these schools.

The effects of the randomized interventions will be measured through difference-in-difference analysis using monthly monitoring data collected by Independent Monitoring Unit. School-level observations will be pooled for three rounds before the intervention and compared with pooled

observations of three rounds after the intervention. In addition academic assessments in Math and English will be administered in a sample of 24 schools in each district of KP (600 schools).

The primary outcome variable of interest is student test score. The tests for this study will be specifically designed for the evaluation by a team of consultants to ensure consistency of test items with the curriculum and textbooks. In addition to students' performance, a number of intermediate indicators will be tracked, including teacher absenteeism, teacher-on-task measures, preparation of lesson plans etc. All these indicators are based on the independent monitoring data collected by KP government supplemented by the addendum to be added to the questionnaire.

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