An Analysis of Government Primary Schools' Characteristics Influencing Student Achievement in Northern Sindh

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Abstract

The study aimed to measure the characteristics of government primary schools and to evaluate class IV students' performance in mathematics and science standardized achievement tests. Three instruments were used to collect data from fifty- five government primary schools of district Sukkur. Data were analyzed for frequencies, percentages, mean and standard deviation. Tests were administered to 1073 students. The overall students mean score was found 31.68 and standard deviation 10.32. The mean score in science was32.55% and in mathematics 31.46%. Based on the percentage mean score of Science and Mathematics, schools were categorized accordingly. Schools where students' performance was satisfactory in tests were found to have more capacity in terms of availability of physical facilities, teaching resources, level of professional support, teachers' and head teachers' own professional commitment. Schools, where students' performance was unsatisfactory, a few of the inhibiting factors were evidenced. In the light of the findings, the study has made several recommendations for the improvement of the quality of education in primary schools.

Keywords: School characteristics, Students' achievement, Government primary-schools

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Introduction

The role of school characteristics in the provision of quality education has been widely recognized. School characteristics add towards the quality of education. School characteristics include physical facilities, level of community school relations, management support, availability of teaching resources, quality of teachers, the role of head teachers, and learning environment. Research suggests that school characteristics determine the quality of education being imparted in the school. Moriarty (2018) elucidates that quality education is one of the tools to achieve the targets of sustainable development goals. The Goal four in this regard acknowledges the significance of quality of education and lifelong learning opportunities without any discrimination. The attainment of quality education has become a key area for education policy not in Pakistan but also in the World. Several national, international protocols and conventions have stressed the significance of quality education. World Education Forum (2000) not only stressed the need to achieve education for all but also perceived the need to improve the quality of education at all levels in terms of measurable learning outcomes. These outcomes should address basic numeracy, literacy and life skills of students.

Improving the academic achievement of students has remained a driving force behind all policy initiatives. In spite of government policy initiatives, students' progress in government primary schools of the province of Sindh has remained a critical challenge to all stakeholders. Saeed, Gondal and Bushra (2005) state that since the creation of Pakistan, low quality of education has remained a critical issue for the nation. Due to this low quality of education, primary education has been suffering severely. Studies conducted by different organizations of Pakistan confirm that there is declining trend in students' achievement at primary level. Therefore, the need is to identify the factors responsible for the present state of affairs. This situation needs to be examined in the context of Sindh. Therefore, considering the significance of the problem, the study focuses on studying the characteristics of selected government primary schools and students' achievement and also identifying factors responsible for the low quality of education at primary level.

Students learning achievement are one of the indicators to measure school characteristics. Several studies have been conducted to measure students' achievement in Pakistan. With respect to learning achievement of students in primary schools, Mukhtar (1999) realized that it was low. He quoted the report on Human Development in Asia 1998; the basic competencies on children in a nationwide sample of 11-12 year old were very low. According to this report, only 35% children could read, 17.5% could write a letter (Perveen, 2008). Shah (1984) conducted a study on comparing the achievement of grades of fourth and five students taking Science and Mathematics. The study found that the average percentage

the score of Grade-IV students in Science was 25.9% whereas it had been 19.3% in Mathematics. The findings of the study, "Basic competencies of children in Pakistan", conducted by Pervez (1995), showed that the competency level of writing a letter was the lowest in children of Pakistan. The percentage of children, who are competent in Sindh, was 22.9%. Apart from this, in 1999, a study, **"**Levels of Pupil Achievement in Primary Schools of Punjab", was conducted in Punjab. It was found that total average score was only 25.1 %. Students especially girls performed better in Urdu than Mathematics. The performance of boys was better in Mathematics whereas girls did well in Urdu subject. In a study conducted by AEPAM (1999),it was found that learning achievement of Grade-V students in the province of Sindh stood to be 71% for boys and 74% for girls in the subject of Science whereas in Mathematics it was 79% for boys, and 82% for girls. With this end in view, it was concluded that students showed high performance in Science, and Urdu whereas their performance in Mathematics was low. Sindh Bureau of Curriculum and Extension Wing (2000) also conducted a study in 2000. It was a base line survey. The findings of the study indicated that students of all classes scored constantly high in Sindhi language as compared to other subjects. Thus students answered correct questions between 40 and 47% in Sindhi language; between 01 and 20% in Mathematics; between *7* and 22% in Science; between 05 and *23* % in Social Studies, and between *29* and 34 % in Islamiyat

Research Methodology

The present study was descriptive in nature. The research design has been explained in the following table:

Table 1
A Brief Description of Research Design

Research Question(s)	Data Collection Instrument(s)	Population	Sample	Data Analyses Strategy

What are the characteristics of government primary schools with reference to physical facilities, teaching styles, level of professional support, availability of free textbook and effectiveness of school management committees (SMCs)?	'Questionnaire' **Justification** The Questionnaire helped to collect School Profile(i.e. information about physical facilities, level of professional support provided to schools, availability of free textbook and SMCs effectiveness	There are 1100 Government primary schools situated in District Sukkur	Convenient sampling strategy was used to select 55 primary schools. (Based on male, female, rural- urban location and language of instruction i.e. Sindhi/Urdu)	Frequencies Tables
	'Classroom Observation Protocol' Observation helped to understand teaching styles of teachers	Observation of Lessons in case of study School	Maths and science lessons were observed	Classification of emerging themes accordingly
How students perform in Mathematics and Science standardized achievement tests?	Standardized Achievement tests were developed by PEACE, Bureau of Curriculum Sindh Jamshoro	All Students of selected primary schools	Class IV students were tested in science and mathematics The total number of students were1073.	Measures of central tendency were calculated. This provided an overview of students' performance in maths and science.

Analysis of Students Mathematics and Science Test Results

The standardized achievement tests for the subject of Science and Mathematics was held in 55 government primary schools of District Sukkur. These tests were made and standardized by Education & Literacy Department's Wing, PEACE Sindh, and Jamshoro. The frequency of Students appeared in tests was 1073. The test was conducted on three types of schools i.e. boys' primary schools, girls primary schools and mixed primary schools. Further analyses of test results with reference to different aspects have been provided herewith:

1. Overall students mean score was 31.68 and the standard deviation stood 10.32 in science and mathematics tests.
2. The mean score in Science was 32.55% and standard deviation had been 11.74. The minimum marks were 2 and maximum marks obtained had been 62%.
3. The mean score in Mathematics was found 31.46% and Standard deviation has been 10. The minimum marks were 2 and maximum marks obtained were 63%.

4. In mixed gender schools the mean score in Science was 31.26% and in mathematics it was calculated 31.36%.
5. The frequency of students who attempted science and mathematics tests were 1073. Of whom 52% of students were from schools which were situated in urban areas of the district and 48% were from rural areas.
6. 82% students that appeared in tests were Sindhi and 18% were from Urdu medium background.
7. Girls mean score was found 33.40% while boys were 31.61%. The urban schools mean score was 30.75% while rural schools mean score was 32.57%.

Comparison of Students' Test Scores with School Characteristics: Cumulative Observation

While visiting government. Primary schools in Sukkur District, the principal researcher along with two data collectors performed different tasks. The data collectors collected school profile and administered tests. Before the test was administered, data collectors obtained General Registers of class IV students, made seating arrangement and administered mathematics and science tests. While principal researcher took notes of key observations in schools, supervised test administrations process, observed science and mathematics lessons and completed the classroom Observation paperwork. In order to record data, the researcher maintained a reflective diary.

After the assessment of answer scripts, four categories of students' test scores emerged as under:

Category One	Category Two	Category Three	Category Four
Less than 25% Mean Score in Science and Mathematics fall in this category	Between 25%- 32% Mean Score in Science and Mathematics fall in this category	Between 33%- 39% Mean Score in Science and Mathematics fall in this category	40% and above Mean Score in Science and Mathematics fall in this category

Based on the percentage of test scores with emerging four categories, key observations and test scores were matched with school characteristics. For convenience, characteristics of schools come under category one and category two are placed together and similarly, schools under category three and category four have been placed together.

The analyses has been provided as under:

Characteristics of Category One and Two Schools

The total number of schools that comes under this category is 25, of which 10 boys, 4 girls and remaining are mixed gender schools. The researcher observed following things about these schools.

i. In Sukkur city, the majority of these schools are situated in densely populated areas, where large numbers of private schools exist. In rural areas, these schools are situated at a far distance from taluka headquarter of district education department. In both situations, the District of Education Department is not available to monitor local schools. Data indicated that supervisors primary education did not frequently visit these schools.

ii. These category schools are the hub of teachers associations where they conduct their meetings. When they conduct their associations meeting schools postpone for teaching activities. As a result, students run away from school and it suffers their studies and ultimately achievement.

iii. Admissions to these schools are decreasing day by day.

iv. When researcher, observed their classrooms, a large number of teachers used the traditional way of teaching. Teachers were not fully aware of the content they were teaching. Teachers hardly used the concrete material in Science and math lessons.

v. It was observed that "Category One" schools had low a level of physical facilities. In mixed schools, there were issues for separate toilets for girls. There was also lack of furniture in these schools.

vi. School management committees (SMCs) are not effective in these schools. Data indicated that 'Category One' schools averagely conducing SMC meeting once in a year.

vii. Science and Maths were being taught by arts/humanities background teachers. No resources were visible to the classrooms.

viii. The monitoring of administrators was limited to count the number of students and availability of teacher in the classroom. The researcher did not find any evidence of academic support being provided with teachers in terms of resources.

ix. Co-curricular activities were rarely held in "Category One" schools.

Characteristics of 'Category Three and Four' Schools

The total number of schools that comes under this Category is 30, of which 6 boys, 7 girls and remaining are mixed gender schools. The researcher observed following things about these schools.

1. These schools are situated at convenient places where transport facility is available for teachers. Majority of this category schools are located near the office of supervisor. The monitoring of these schools is comparatively easy about Assistant District Officer Education (ADOE) and supervisory staff. Data also confirms that on average supervisors visit these schools once a month.

2. During observing the lesson, it was seen that majority of the teachers in these schools had science background. They were encouraging their students to ask questions. When students raised questions teachers politely responded.

3. It was interesting to note that the administration and teachers in this classification lived locally. It was revealed that teachers give extra time for students in evenings.

4. The administration realized the importance of SMCs for improvement in these schools.

5. In this category, students of two schools obtained more than 40% average marks. The researcher observed that different charts were displayed in classrooms and teachers used mind maps while teaching science. The researcher observed one mathematics teacher used local manipulative (stones, beads) while teaching numbers and fractions.

6. The level of physical facilities in these schools was better. Majority of buildings were recently built. Teachers had staff rooms. Separate toilet facility was available in mixed gender schools. In some schools, wide play area was available for students.

7. Teachers used not only textbooks but also appropriate resources while teaching.

Discussion

The present study has attempted to find out the characteristics of government primary schools and to evaluate class IV students' performance in Mathematics and Science standardized achievement tests. The standardized achievement tests for the subject of Science and Mathematics was held in government primary schools of District Sukkur. The frequency of students appeared in tests was 1073. In the present study, it was found that the overall mean score was 31.68%. The mean score in Science was 32.55% and in Mathematics were 31.46 %. In a study on Student Learning Achievement Assessment (2009) survey in the subject of Mathematics for class V children in Sindh, this study was conducted by PEACE Sindh, Bureau of Curriculum Sindh, it was found that the all provincial mean score of Maths was 44.7%. The mean score of Sukkur District was found to be 41.96% which verifies the findings of the present study. The similar kind of study was also conducted by Sukkur IBA University under Standardized Achievement Test (SAT). The Standardized Achievement Test (SAT) - III (2014-15) was conducted to assess different dimensions of students achievement in Sindh. The results show that Maths average score found 20%, Science 15% and language (Urdu/Sindhi) was 40% in class V. The examination was based on Sindh Textbook Boards prescribed textbooks

The level of physical facilities in government primary schools of Sukkur was not encouraging. The findings of the present study suggest that majority of schools in Sukkur lacked basic facilities such as boundary wall, clean toilets and water facility. While visiting the schools it was noticed that these resources were not provided in the schools. The ASER study (2010) concluded that of the total government primary schools survey, only 55.4% had useable water facilities, 43% had functional toilet facility.

Sindh Education Foundation (2007) conducted a study on the level of implementation of Education for All (EFA) goals i.e. quality of education. It was found that in Sukkur District 100% of PSTs used chalk and talk method (lecture method) in the classroom. The findings further indicated that the observers did not find any displays in the classrooms, no form of any activity done with the lecture. These findings match with the finding of the present study.

The findings of the present study indicate that in schools where administration and teachers were involved in teachers associations their students performed poorly in science and math test. Other studies such as Rose and Gallup, 1998, p. 5, Cited in Voss, 2004) verified the findings that teachers unions affected students' output.

During observation of the lesson, it was found that teachers did not have written lesson plans with them. It is experience of researcher that written lesson plans help teachers to achieve learning goals effectively. Rink (2006) confirms that when teachers plan their lessons (i.e. design, and organize their tasks) effectively, it enhances productive teaching and learning for students.

The classroom observation indicated that, in the majority of cases, teachers were dominant in the classrooms during the lessons. Students' engagement to the learning process was seldom found. The research indicates that when students do not participate in teaching and learning, it lessens their motivational level. When students' motivational level is low it affects their performance in the classroom. The schools were students performed better, higher scores in sciences was attributed to the teachers having a bachelor degree in Sciences or had been teaching for a number of years. The case of Mathematics is not different from Science. Mabogoane (2004, Cited in Sarah, Vanessa and Elsie, 2008) elaborated that qualification and experience of Science teachers relates to the quality of students learning in the classroom. The observation showed that teachers were using Science and Mathematics textbooks during lessons delivery. The researcher found that eight teachers used detailed notes while teaching. Supplementary resources

were also not used in most classrooms to complement the lessons. Sarah, Vanessa and Elsie (2008) reported that use of better resources tended to get better achievement scores.

Recommendations

Results from the study indicate the following recommendations for the primary education in the Sindh province:

1. Instead of establishing new primary schools, the researcher suggested renovation of existing government schools with the extension of following facilities: Teachers staff room or discussion room, bookshelves, availability of Science equipment/material that address class 1-5 Science concepts, supplementary resource materials for teaching science and maths.

2. To promote a reading culture in primary schools additional reading material such as books, children's magazines in local languages might be needed. In mixed gender schools, separate toilets for boys and girls is recommended immediately. Boundary wall should be built along with the specified play area facility to children.

3. It is suggested to initiate Continuous Professional Development (CPD) programs in the subject of Mathematics and Science. The Mathematics and Science textbooks should be redesigned according to 2006 National Curriculum. The content of training should be based on Students Learning Outcomes (SLOs).

4. Provincial Education Assessment Centre (PEACE) may adopt clear policies on students' assessment and communicate this policy to all teacher training institutions and district education authorities.

5. SMCs should be made operational in all primary schools throughout the province and funds may be released for this purpose. SMCs should be made responsible to utilize funds. These funds should be utilized for improving the quality of teaching and learning.

6. The role of teachers' unions may be restricted, union officials may not be allowed to conduct their meetings in schools.

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