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Impact of Students' Strength on their Academic Achievement in the Subject of English

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Abstract
The purpose of the study was to investigate the impact of students' strength on their academic achievement in the subject of English at primary level in districts of Attock and Lahore. For the selection of schools, purposive sampling technique was used to select the government primary school (GPS), 95 students from GPS school of district Attock whereas 100 students from GPS of district Lahore. Data was collected through an achievement test in English (ATE) after developing table of specification. ATE contained 20 questions covering two lower cognitive levels i.e. knowledge and comprehension. The achievement test was validated through experts' opinions and pilot study. The reliability of English achievement test was 0.702. Data was analyzed using descriptive statistics (mean and SD) and inferential statistics (independent sample t-test and one-way ANOVA). Results revealed that there was no significant impact on students' academic achievement by location whereas students' strength in a classroom has a significant impact on their academic achievement in the subject of English. The study recommends adequate teacher-student ratio, preferably 1:25 for students' better academic achievement in English. Furthermore, more in-service training courses for teachers should be organized by school management and Quaid-e-Azam Academy for Educational Development (QAED).

Key Words: *Students' Strength, English Achievement Test, Primary Schools*

Introduction

A balloon filled with air expands and eventually bursts, similar to the enormous increase in class size. Class size is an ongoing issue in education and it is continually expanding in many districts. Researchers and educators argued that in a smaller class students are given more instructional time and are able to focus more on the curriculum being taught instead of discipline and other issues that are occurring around them especially in larger classes (Leahy, 2006). Fan (2012) confirmed that in smaller classes, time spent on classroom management was decreased which led to improvement in academic achievement.

Gottfredson and Dipetro (2011) confirmed this theory as they found that student-student classroom dynamics improved in smaller classrooms, which in turn led to a more effective teaching environment. In addition, O'Brennan, Bradshaw, and Furlong (2014) found that student perceptions were improved in smaller classrooms. Graue, Raushcer, and Sherfinski (2009) confirmed that smaller classes did give teachers more opportunities to reach out to parents and include them in the educational process. Rodriguez and Elbaum (2014) found that the strongest predictor of parental participation into the educational process was class size.

Resnick (2003) suggested that smaller classes benefited student achievement claiming that teachers in small classes paid greater attention to each pupil. Pedder (2006) stated that smaller class size allowed teachers to cover more curriculum and students to be more cognitively engaged. These two features led to improved student achievement.

Konstantopoulos and Chung's (2009) findings are in-line with research done by Bosworth (2014) who examined 4th and 5th grade class size data provided by the North Carolina Education Research Data Center. Bosworth concluded that "class size reductions appear to both raise average attainment and help close achievement gaps" (p. 162). Konstantopoulos and Chung (2009) reinforce the indication that small class size is beneficial to students in elementary grades.

Babcock and Betts (2009) used a panel dataset containing achievement scores, grade point averages, and a rich set of behavior measures for primary school students in the San Diego Unified School District to analyze the effects of class size. Their findings indicate that class-size expansion may reduce gains for low achievement students. Dee and West (2011) stated that:

> Smaller classes promote behavioral engagement by allowing teachers to limit disruptive behavior as well as to encourage attentiveness and asking questions. Smaller classes may also help teachers promote emotional engagement in the form of student interest and personal academic identification. Finally, smaller classes may promote cognitive engagement by allowing teachers to assist students in flexible problem-solving in the face of challenges (p. 33).

Atta, Jamil, Ayaz, Shah, and Shah (2011) found that secondary class sizes under 20 students have a significant impact on student achievement, and Brühwiler and Blatchford (2011) concluded that a one student 2 reduction in class size resulted in a half point increase in student grade point average at both the primary and secondary level.

As stated by Schwartz et al. (2012) and Olatunde (2010), class size shows a relationship to academic achievement. Celik and Koc (2015) also identified an inverse correlation between student achievement and size of the class. Gbore and Daramola (2013) examined a significant relationship between the academic achievements of students consisting of 1-20 students that were able to secure higher scores in their tests than counterparts in large classes which consisted of more than 20 students. Ndioho and Chukwu (2017) affirmed that a teacher often comes across the challenges of having to monitor, assess, evaluate and control students in a class consisting of more than 70 students in order to identify their weaknesses and strengths.

Ding and Lehrer (2010) and Dee and West (2011) discovered that having classes similar in size tend to have a positive effect on students' achievements while Shin and Chung (2009) identified that this effect seemed to have a larger impact on elementary schools rather than in secondary schools. Gottfredson and Dipetro (2011) revealed that having smaller size classes created a better learning environment for students by enhancing the student to student dynamics. In addition to this statement, O'Brennan, Bradshaw and Furlong (2014) discovered that the perspective of students improved during their stay in smaller sized classrooms.

Theoretical Framework of the Study

In 1984, researchers conducted a study in the state of Tennessee to determine the effects of class size on student achievement known as the student-teacher achievement ratio (STAR; Word et al., 1990). Konstantopoulos and Chung (2009) used quantile regression analyses from Tennessee's Student Teacher Achievement Ratio (STAR) project to provide convincing evidence that all types of students (e.g., low, medium, and high achievers) benefit from being in small classes (in early grades) across all achievement tests.

As part of the project, students were given the Stanford Achievement Test periodically throughout the 4 years of the study. The 11 students' scores were recorded and analyzed (Folger & Breda, 1989). Specifically, Konstantopoulos and Chung (2009) found that:

> For certain grades, in reading and science, low achievers seem to benefit more from being in small classes for longer periods. It appears that the lasting benefits of the cumulative effects of small classes may reduce the achievement gap in reading and science in some of the later grades (p. 125).

Konstantopoulos and Chung (2009) asserted that small class size increase student achievement for students of all academic achievement levels and for low achievers in particular. They offered a hypothesis for their findings which showed that:

> In small classes teachers are more likely to identify low achievers and hence are more likely to provide instruction designed to benefit these students in early grades. Alternatively, in small classes, there is a higher likelihood for low achievers to interact with teachers and be more engaged in learning (p. 150).

The rationale of this study is to provide answers to the problem of the increasing fear among students against English subject and probe further so as to improve academic performance at primary level. The results will be useful to the students, stakeholders, teachers, policy makers to design and implement the policies to improve the students' academic performance and the quality of education by changing the attitude of students towards English subject and improving the teaching procedures.

The reviewed literature suggests that smaller class sizes result in better academic achievement. Studies show that smaller class sizes improve non-cognitive skills in students (Dee & West, 2011; Pipere & Mierina, 2017). Therefore, the purpose of the present study was to investigate the impact of students' strength on their academic achievement in the subject of English. The study carried following three objectives;

1. To examine the mean difference and variation among students' academic achievement in the subject of English against students' strength.
2. To investigate the difference among students' academic achievement in the subject of English.
3. To identify the difference among students' academic achievement in the subject of English against students' location.

Hypotheses

H_{O1}: There is no significant mean difference and variation among students' academic achievement in the subject of English against students' strength

H_{O2}: There is no significant difference among students' academic achievement in the subject of English

H_{O3}: There is no significant difference among students' academic achievement in the subject of English against students' locale.

Methodology

The study employed causal comparative research design. It was delimited to public sector schools of two districts i.e. Attock and Lahore of the Punjab province, Pakistan. The researchers divided students' classes into four categories: a) category 1, 1-11; b) category 2,12-22; c) category 3, 23-33; and category 4, 34-44. Four government primary schools were selected by keeping in mind the categories using purposive sampling technique. The details of population and sample can be seen in the following table:

Table 1

Population and Sample of the Study

Category	Students-Strength	Attock	Lahore	Total

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		P	S	P	S	P	S
1.	1-11	39	8	42	9	81	17
2.	12-22	51	15	61	27	112	42
3.	23-33	79	28	98	23	177	51
4.	34-44	118	44	121	41	239	85
Total		287	95	316	100	603	195

*Notes: *P=Population S=Sample*

Table 1 represents that 195 students out of 603 students were selected from the sampled districts of Attock and Lahore, out of which 95 were out of 287 students from district Attock and 100 out of 316 students were from district Lahore.

Instrumentation and Data Collection

Data were collected through achievement test in English (ATE). It was developed by developing proper table of specification. The weightage given to various units was 50 % knowledge level and 16 % comprehension. The test contained 20 questions covering first two cognitive levels i.e. knowledge and comprehension with a total mark of 30. Validty of the instrument were ensured by experts' opinions who were expert in the field of test development and belongs to area of Assessment and test development.

A pilot study was done to ensure validity and reliability of the instruments. The researchers piloted forty achievement tests, which was based on 20 MCQs, for piloting from primary school students of Punjab. The weak items were improved to suit the purpose of the study. Item analysis was done for the finalization of the data. Descriptive statistics (mean score and SD) and inferential statistics (independent sample t-test and one-way ANOVA) were used as statistical techniques using SPSS version 20.0 to analyze the quantitative data.

Results

The results of students' achievement tests are analyzed using both descriptive and inferential statistics. The details of the analysis are given below:

Analysis of students' achievement test

H_{O3}: There is no significant difference among students' academic achievement in the subject of English against students' location.

Table 2

Location-wise Comparison of GPS' Students against their Classroom Strength

Measures	Location	*N*	*M*	*SD*	*t-value*	*df*	*sig(2-tailed)*
English Achievement Test	Attock	95	17.66	5.521	.919	193	.359
	Lahore	100	16.87	6.578			

An independent-samples t-test (table 2) was conducted to investigate GPS students' academic achievement in the subject of English against location. Students' academic achievement against location have no significant difference at $p \geq 0.05$ level of significance in the scores of District Attock (M=17.66, SD=5.521) and Lahore (M=16.87, SD=6.578); t (193) =.919, p = .359. Hence, it is concluded that there was statistically no significant difference among GPS' students against location.

H_{O2}: There is no significant mean difference and variation among students' academic achievement in the subject of English against students' strength

Table 3 (a)

Mean and Standard Deviation of GPS' Students in English Subject against their Classroom Strength

Measures	Students' Strength	*N*	*Mean*	*SD*
English Achievement Test	1-11	17	16.53	3.064
	12-22	42	16.36	5.169
	23-33	51	19.39	5.814
	34-44	85	16.56	6.837
	Total	195	17.25	6.083

Table 3 (a) represents the overall mean values of students' responses show that those students who classroom strength were 23-33 (19.39) were relatively performed better in English achievement test than other students (i.e. 1-11, 12-22 and 34-44). The standard deviation value shows that there seems little variation in students' achievement test of English having 1-11 classroom strength (3.064) were relatively lower than other students (i.e. 12-22, 23-33 and 34-44).

H_{O3}: There is no significant difference among students' academic achievement in the subject of English against Students' Strength

Table 3 (b)

One- way ANOVA summary table for the Students of GPS against Classroom Strength

Measures	*Groups*	*df*	*F*	*Sig*
English Achievement Test	Between	3	2.940	.034
	Within	191		
	Total	194		

One-way ANOVA was applied to investigate GPS' Students' academic achievement in the subject of English against their classroom strength. There was statistically significant difference in GPS' Students' academic achievement in the subject of English at $p \geq 0.05$ level of significance against their classroom strength. Hence, it was concluded that there was statistically significant difference in GPS' Students' academic achievement in the subject of English against their classroom strength.

Table 3 (c)

Post- hoc test of difference among Students in English Subject against their Classroom Strength

Classroom Strength	Classroom Strength (a)	Classroom Strength (b)	*Mean Difference*	*P*
English Achievement Test	23-33	34-44	2.833*	.041
	34-44	23-33	-2.833*	.041

Post- hoc test (Tukey HSD) (c) was conducted to find out the mean difference of GPS' students in the subject of English against their classroom strength. Hence, it is concluded that the students of GPS have significant effect having classroom strength 23-33 at value $p \leq 0.05$ level of significance than other students who belongs to different classroom strength.

Discussion and Conclusion

The present study found no significant impact of location on public sector primary schools' students at primary level. Owoeye, Joseph Sunday (2010) et al conducted the study on school location and academic achievement in Ekiti state, Nigeria showed that school location has a significant effect on students' academic achievement; students in urban schools perform better than those students from rural schools. The present study contradicts the findings of the previous study.

The present study found significant impact of classroom strength on public sector primary schools' students at primary level. the present studies support the findings of previous studies of Aoumeur (2017), Bosworth (2014), Chatterji and Lin (2018), Finn et al. (2005), Folger and Breda (1989), Glass and Smith (1978), Glass and Smith's (1979), Konstantopoulos and Chung (2009), Pedder (2006), Perry (1995), Pipere and Mierina (2017) and Resnick (2003)

Glass and Smith (1978) found that "reduced class size can be expected to produce increased academic achievement" (p.4). Chatterji and Lin (2018) and Pipere and Mierina (2017) indicated that smaller class size improves non-cognitive skills, which in turn, improves academic achievement. Aoumeur (2017), Finn et al. (2005), Folger and Breda (1989) Konstantopoulos and Chung (2009) investigated that small class size is

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beneficial to students in elementary grades. Glass and Smith's (1979) meta-analysis of small class sizes found that small class sizes (20 students or less) were associated with improved academic performance.

Perry (1995) found out that a small class size is more important to school achievement. Konstantopoulos and Chung (2009) found all types of students benefit more in later grades from being in small classes in early grades. Bosworth (2014) discovered that class size reductions help close achievement gaps.The Tennessee student-teacher achievement ratio (STAR) study showed a significant increase in student achievement when class sizes were reduced in Grades K–3 (Word et al., 1990).

Resnick (2003) stated that smaller classes benefited student achievement claiming that teachers in small classes paid greater attention to each pupil and became better, more involved students. Pedder (2006) said that smaller class size allowed teachers to cover more curriculum and students to be more cognitively engaged. These two features led to improved student achievement.

Based on the findings, it is concluded that location has no impact on students' academic achievement in the subject of English at primary level whereas students' classroom strength has a significant impact on students' academic achievement of English.

Recommendation and Implications

The study recommends that government should develop classroom reduction policy. As rationalization policy is not sufficient to deal with students' classroom ratio. There is a need to consider that rationalization policy is made to deal with student ratio at institutional level not at classroom level. The study also recommends adequate classroom ratio for primary school students' should be 25 to 30 for better classroom performance and in-service training courses for teachers should be organized by school management. The findings of the study may have implications for further research in the following context:

1. The data collected in the present study was only from public sector primary schools' students. In future study, the researchers can examine the same study on secondary, higher secondary level, graduate or postgraduate level.
2. The data collected in the present study was only from GPS' students against location and classroom strength. In future study, the researchers can examine different demographics variables such as gender, school type, teachers, heads etc.
3. This study included the sample of public sector primary schools' students. Further research may be carried out on private sector primary schools' students.

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