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EFFECT OF TEACHER LEVEL AND QUALITY OF FORMAL SCHOOLING AND PROFESSIONAL TRAINING ON STUDENTS ACHIEVEMENT IN PRIMARY SCHOOLS OF PAKISTAN:

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INTRODUCTION:

Speedy growth of primary education in Pakistan has been accompanied by several problems. First, teaching profession has failed to attract highly qualified people. Usually a middle school graduate or a matriculate come into this profession and it is believed that they are not well qualified to teach in the primary schools. Secondly, there is a general criticism that only those people who are not accepted in any other profession, join education department. These people usually hold IInd or IIIrd division in their academic education. Being at the medium or low ebb of the achievement scale, it is argued that they are incapable of performing their duties efficiently and effectively. Third, when increase in the number of trained teachers is a natural need for the expanding system of education, there is a genuine concern for the maintenance of quality in the training imparted. Trained teachers are considered sine qua non for quality education in primary schools. This paper attempts to test the validity of these assumptions. More specifically, the intent is to analyze the following issues:

1. Is there any influence of teachers level of education on student achievement. Also does teacher's achievement in

his formal education influence students achievement.

2. Is there any influence of teachers level of professional education on students achievement. How does quality of teacher's professional education affect students achievement.

METHODOLOGY:

The data used to examine these questions come from a national sample survey of primary schools conducted by the Academy of Educational Planning and Management, Ministry of Education and Harvard University under Project BRIDGES during December 1988 and January 1989. The purpose of the survey was to identify factors that contribute to the achievement and promotion of students in primary schools. About 900 teachers were interviewed, using carefully pretested interview protocols, in many aspects of schooling, ranging from the physical facilities of the school to teacher's background and their teaching practices. The sample of about 500 schools was selected using probability sampling applied first to districts and then to schools within districts. The four provincial capitals and the Federal District were included in the study. The interviewers visited each school, besides interviewing the headmasters and teachers, administered achievement tests in Mathematics and Science to 11,000, students of fourth and fifth classes. These tests were based on the primary school curriculum and developed by the Primary and Non Formal Education Wing of the Ministry of Education with the assistance from the World Bank. Basically the teachers interviewed were those teaching fourth and

fifth classes in their respective schools. Using a separate identification number for each teacher and assigning that same number to students taught Mathematics and Science by him, a link is established between mean stores obtained by students and information provided by teachers.

The characteristics of the teachers discussed in this paper were chosen because of the role of these factors in the effectiveness of teachers. It is hypothesized that level and quality of formal education possessed by the teacher influences students achievement. It is also said that teacher's level and quality of professional training enhances students achievement.

In the questionnaire, teachers were asked to supply information on their level of formal education and professional training and grades/division obtained in these levels. At present two types of grades/ divisions are awarded to the students. Some Boards/ University's grade students on the scale of A, B, C, D, and E while the other distribute the students into Ist, IInd and IIIrd Division.

However, for all practical purposes, grade A and B are equivalent to Ist Division, grade C and D are equivalent to IInd Division and E and IIIrd Division are considered as equal.

In this paper different grades/divisions were grouped and classified into respective divisions.

The teachers having academic qualifications above FA/FSc and professional qualification above CT[1] level are not included in this analysis because under present service rules, they are not likely to stay in primary schools. The specific characteristics of the sample analyzed in this paper included the following:

1: Out of 900 teachers interviewed, 458 possessed academic qualifications from primary to FA/FSc and professional training from non to CT. These 458 teachers constitute the specific sample for this study.

a) In terms of academic education, five teachers were primary school graduates, 18 middle school graduates, 345 were matriculate, 85 were FA and six were FSc degree holders. Out of this sample, 65 possessed obtained Ist Division, 327 IInd Division and 73 IIIrd Division in various levels of formal education.

b) In terms of professional education, one was untrained,

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[1] Four types of professional training are discussed in this paper:

1. PTC stands for Primary Teaching Certificate, one year professional training offered to perspective teachers after 10 years schooling.
2. JV stands for junior vernicular teaching certificate offered after 10 years formal schooling. This programme has been abandoned since long. However, a number of teachers working presently in primary schools hold this certificate.
3. S.V. means senior vernicular certificate of one year duration, also offered after 10 years schooling. S.V. teachers were originally prepared to teach classes 6th, 7th and 8th but presently, they are also working as primary school teachers.
4. CT means certificate in teaching and this programme is one year duration, is offered after 12 years schooling.

372 were PTCs, 52 hold JV certificate, 13 were SVs and the remaining 19 were CTs. Among all, 185 were first divisioners, 261 were IInd divisioners and the remaining 10 were third divisioners.

Majority of the Teachers were matriculate, PTC degree holder and IInd Divisioners in academic as well as professional education.

ANALYSIS OF DATA:

Teachers level of formal schooling and students achievement:

Member's of the teaching profession as persons need the same general education important for all thoughtful people. For the teacher as a professional, however, formal education has unusual urgency. Teachers broad educational background helps the learners to intellectualize their experiences, gain new insights and develop the motivation in students to continue more learning.

The first, question in this paper was to find out whether the formal education of teachers is related to the achievement test scores of their students. The table I presents the relationship between teacher's formal education and students achievement in all 4 achievement tests.

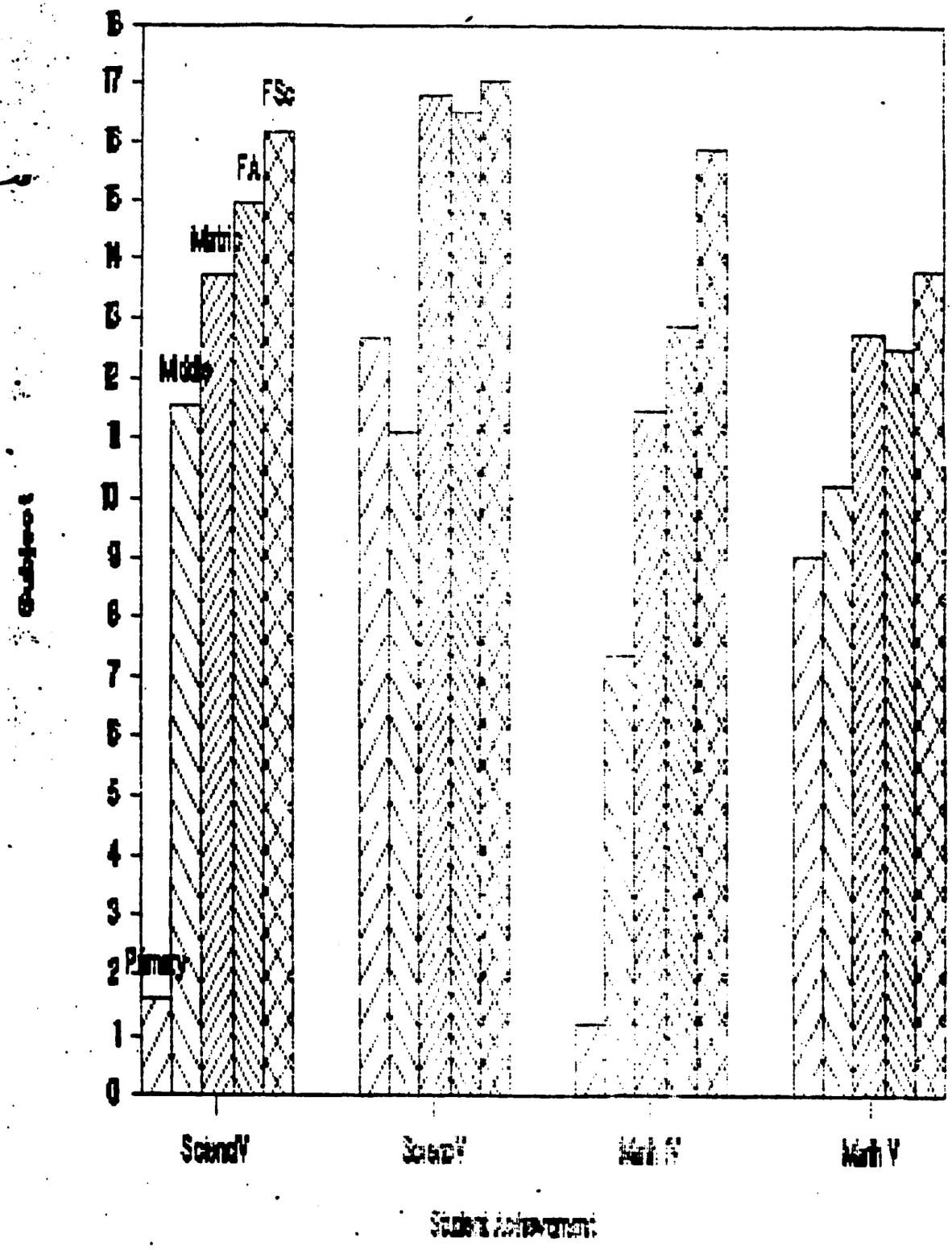
Table I: Teachers Academic Qualification and Students Achievement

Teachers Qualification	S4	S5	M4	M5
Primary	1.600	12.66	1.200	9.05
Middle	11.55	11.09	7.35	10.25
Matric	13.72	16.80	11.46	12.73
F.A.	14.97	16.52	12.87	12.52
F.Sc	16.21	17.05	15.92	13.82
Mean for entire population:	13.82	16.48	11.60	12.61
Significance Value:	.0179	.0214	.0138	.501

It can be observed from the table that for all achievement tests, the average score rises with the teacher's level of education. All of differences reported in the table are statistically significant except Maths 5 where the results fall short of statistically significance. In Science 4, students of the teachers with primary education scored (1.6000) but there is only one case in this category. Those with middle school 11.55, Matric 13.72, F.A. 14.97 and F.Sc with 16.21%. In Science 5, the score ranges from 12.66 for primary school graduates to 17.05 for F.Sc. degree holder. In case of Math 4, the lowest score is 1.200 for teachers with primary education, and moves upward gradually with the increase in teachers level of education. In Math 5, the range is 9.05 for teachers with primary level of formal schooling and 13.82 for FSc degree holders.

These findings confirm the importance of formal education for better achievement in 4th and 5th class Science and Mathematics subjects. This fact can be further observed from the figure No.I.

Effect of Teacher Schooling on Std. Ach



What is the role of quality of teachers formal education when measured by their grades/divisions? It is generally argued that teachers having first division are more effective than teachers having II or III Division in their academic education. This issues was analyzed in two different ways, firstly teachers were divided into different grades/divisions with respect to their formal level of education. The particular concern was to see that how teachers having same level of education but different grades/divisions differ from each other in terms of their performance. Secondly how teachers having first division in various levels of education differ from those having IInd or IIIrd division. Table 2 and 3 presents the summary of results.

Table 2: Teachers Division in Formal Education and Students Achievement

Level of Schooling	Division	Mean Score			
		S4	S5	M4	M5
Primary	1	-	15.00	-	-
	2	1.60	11.50	1.20	-
	3.	-	-	-	-
Middle	1	14.25	9.25	8.25	9.54
	2	10.66	11.74	6.91	10.47
	3	-		-	
Matric	1	12.91	16.91	9.94	2.43
	2	14.01	16.86	11.98	13.16
	3	12.69	16.29	10.23	10.66
F.A.	1	-	16.01	12.87	13.96
	2	15.11	15.99	12.34	11.33
	3	11.64	17.99	14.04	14.98
FSc	1	-		15.92	-
	2	17.39	14.53	16.79	11.46
	3	11.63	19.58	12.54	16.17

Table 3: Teacher's Division in Formal Schooling and Students Achievement

	Science IV	Science V	Math IV	Math V
I-Prim	-	15	-	-
I-Mid	14.25	9.25	8.25	9.54
I-Mat	12.91	16.91	9.94	12.4
I-FA		11.01	12.87	13.96
I-FSc			15.92	
II-Prim	1.6	11.5	1.2	
II-Mid	10.66	11.74	16.91	10.47
II-Mat	14.09	16.86	11.98	13.16
II-FA	15.11	15.99	12.34	11.33
II-FSc	17.39	14.53	16.79	11.46
III-Prim	-	-	-	9.05
III-Mid	-	-	-	-
III-Mat	12.69	16.29	10.28	10.66
III-FA	11.64	17.99	14.04	14.98
III-FSc	11.63	19.52	12.54	16.17

Table 2 and 3 show that there is an evidence to conclude that there is a positive relationship between teachers formal education and students achievements in 4th and 5th class science and Mathematics test. But there is no evidence to conclude that teachers possessing same qualification but different grades/divisions perform differently. Similarly teachers having different levels of education but same division do not differ significantly when their performance is measured by the achievement of their student.

A further analysis of this phenomenon is again made in table 4. In this table, teachers possessing different level of education are grouped with respect to their grades/division.

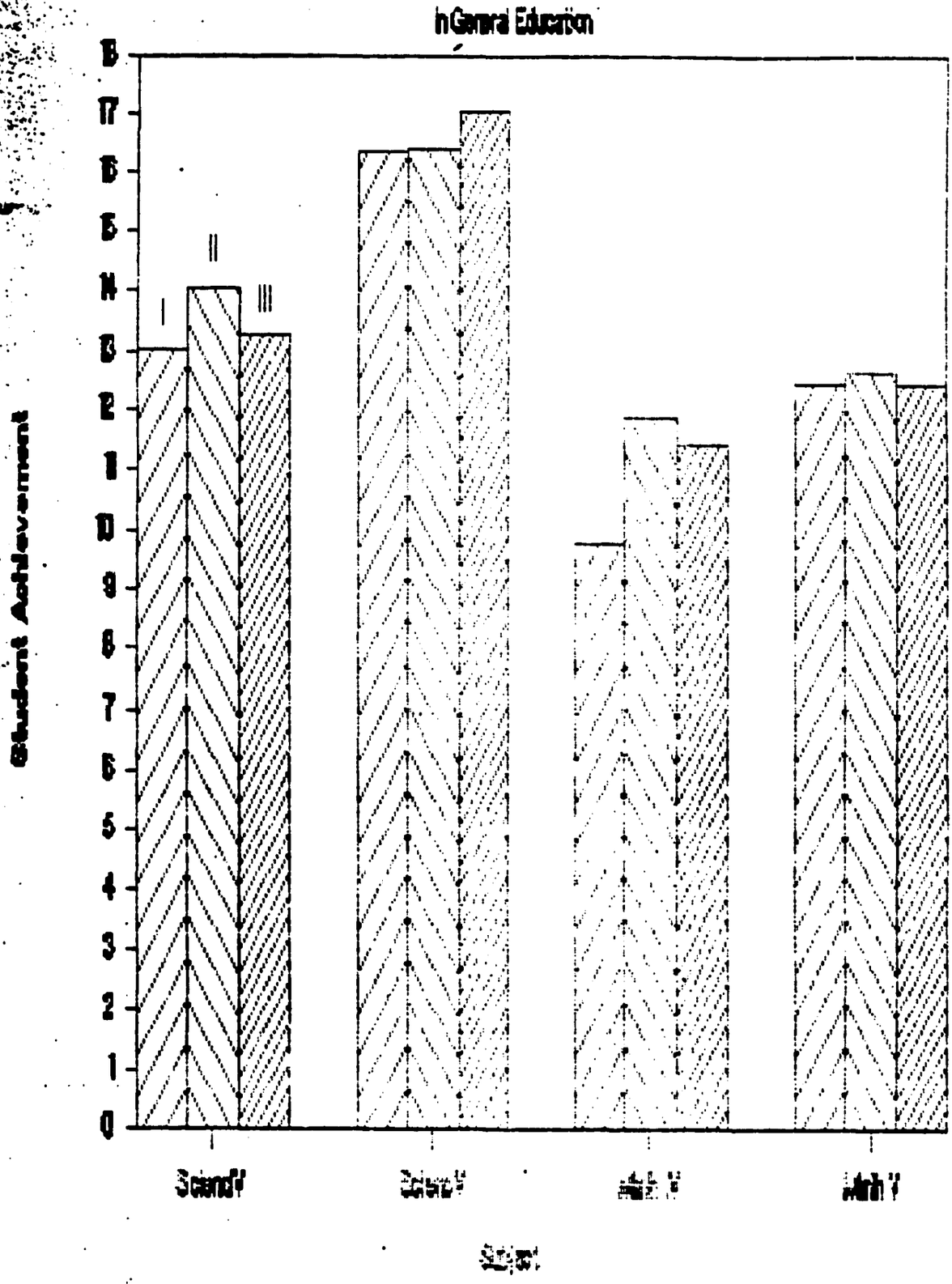
Table 4: Teachers Division in formal schooling and students achievement.

Division	S4	S5	M4	M5
Ist Division	13.03	16.24	9.77	12.46
IInd Division	14.08	16.39	11.90	12.68
IIIrd Division	13.27	17.05	11.45	12.45
Sig.Level	0.389	0.797	0.171	0.944

As it can be observed from the table teachers grade/division show no relationship with students achievement in all 4 tests. This

phenomenon is further clarified in figure 2 which again confirms that what ever may be the achievement level of teachers in their formal schooling, has no relationship with students score in all four tests.

Effect of Teacher Achievement



Teacher's Level of Professional Education and Students Achievement:

Professional education of teachers is considered an important factor in the promotion of qualitative primary education in Pakistan. However, this assumption falls short of evidence. Table 5, presents the relationship between the teachers qualifications and students achievement.

Table V

Teachers Professional Qualification and Student Achievement

Teachers Qualification	Mean Score			
	S4	S5	M4	M5
None	14.64	-	14.36	-
PTC	13.94	16.57	11.53	12.40
JV	13.78	15.61	12.59	14.48
SV	10.1	16.87	8.88	11.79
CT	13.00	16.75	11.00	13.40
Sig. Level:	.5586	.851	.650	.229

As it can be observed from the table that untrained teachers who are very few (only one) in this sample seem to be more effective than the trained teachers. However, on overall there is no significant relationship between teacher's professional education and students achievement in all 4 tests.

Figure 3 further clarifies that teacher's professional qualification has no effect on students achievement.

Effect of Professional Education

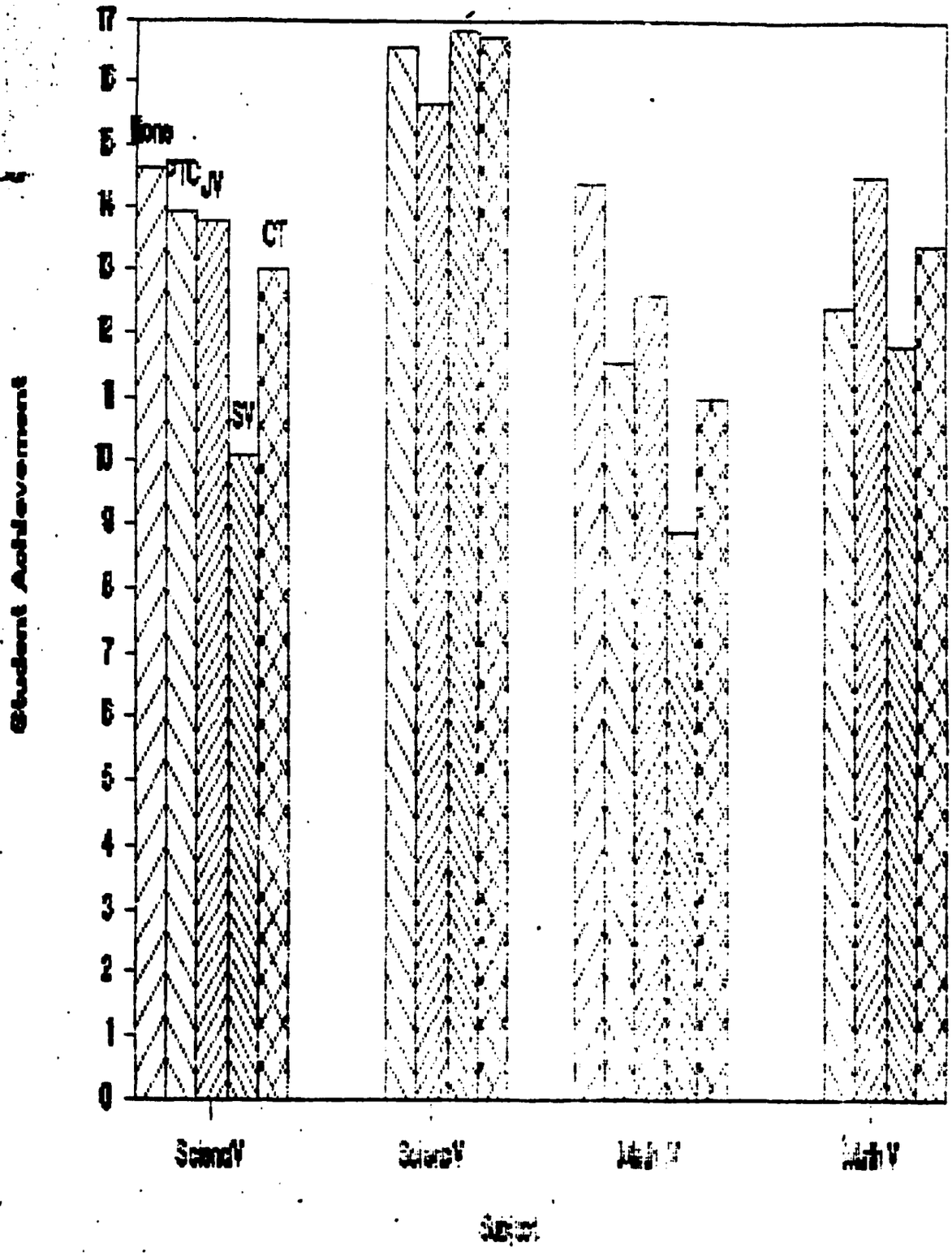


Table-VII:

Division	Students Mean Score			
	S4	S5	M4	M5
PTC-I	13.42	16.54	11.02	12.37
JV-I	14.12	14.88	13.49	13.18
SV-I	9.89	24.15	9.69	14.89
CT-I	11.75	16.42	-	11.77
PTC-II	14.28	16.55	11.84	12.43
JV-II	14.02	15.52	12.12	14.98
SV-II	10.46	11.09	7.49	10.33
CT-II	14.32	14.89	8.11	14.02
PTC-III	13.56	16.78	12.33	12.07
JV-III	8	27.17	-	13.57
SV-III	-	-	-	-
CT-III	-	23	13.67	27.5

In order to further clarify this point, all the teachers were grouped into Ist, IInd and IIIrd division and mean scores of students in all tests were calculated and compared with respect to grade/divisions of teachers in professional education. Table 8 presents the summary of findings.

Effect of Teacher Achievement

In Professional Education

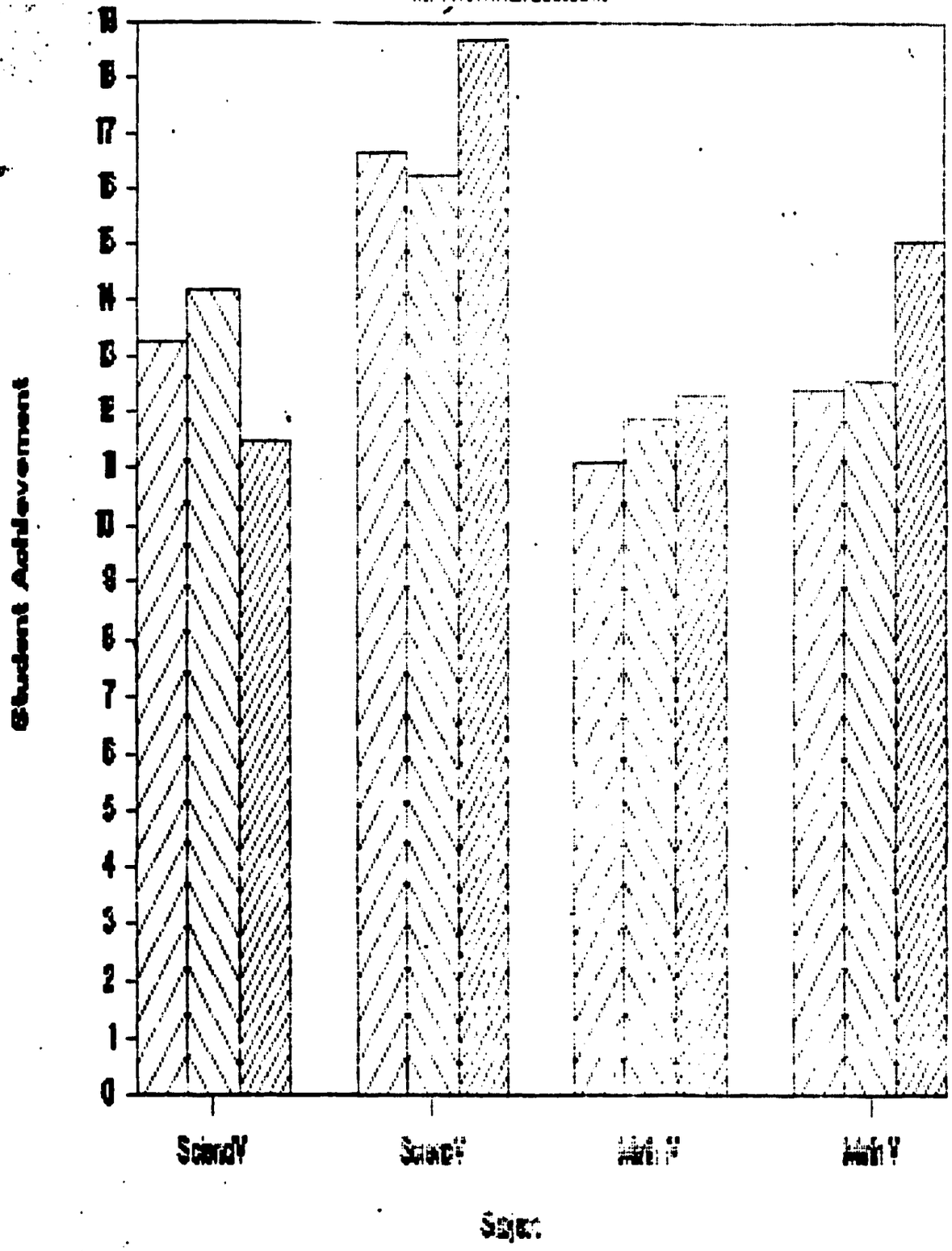


Table 8: Teachers Division in Professional Education and Students Achievement.

Division	S4	S5	M4	M5
Ist Division	13.30	16.67	11.11	12.40
IInd Division	14.21	16.24	11.91	12.66
IIIrd Division	11.52	18.69	12.33	15.05
Sig.Level	0.227	0.530	0.514	0.40

As is evident from the table, there is no link between grades/divisions and students achievement. This phenomenon is presented in figure 4.

Conclusion and Further Discussion:

The analysis of data has provided sufficient evidence that formal schooling has positive relationship with students scores in all tests of Science and Mathematics administered to fourth and fifth class students. The students, mean scores rise in all tests with the increase in teachers formal education. The results in Maths 5, though not statistically significant but are in the same direction. However, grades/divisions obtained by teachers in their formal schooling make no difference on students achievement. Whether the teachers earned I, II or IIIrd division in his formal schooling has no relationship with students performance on all four tests.

Professional education is considered very important for the teachers to perform their duties effectively and efficiently. But in this study, there is no difference in student's achievement taught by teacher's possessing PTC, JV, SV and CT. Moreover, teachers possessing better grades in their professional training are held in high esteem. They are preferred in recruitment, and promotion. But various grades/divisions possessed by teacher's show no relationship with students performance.

These findings demand further analysis to explain (a) why level of teacher's formal education has proved to be effective (b) why different categories of professional education have not produced any difference on student's achievement (c) why different grades/divisions obtained by teachers in formal and professional are not related to students achievement.

In order to answer these questions some further analysis was done. This analysis was of two types. Firstly teacher's background such as his age, professional experience and his duration in that particular school was explored. Secondly, teachers classroom practices such as physical punishment, use of kits, use of integrated curriculum, use of modules, use of monitors, use of blackboard, contacts with parents were analysed. Teacher's different background did not correspond to differences in students achievement. However, there is evidence to say that differences in formal education influence students performance. Therefore the

impact of teachers formal education on student's achievement remains un-resolved. Similar analysis was done with respect to various levels of professional education prosessed by teacher. All the teachers having different grades/divisions do not differ on use of blackboards, tests, assignment of home work, use of integrated curriculum, use of monitors, contacts with parents, use of kits, duration of stay in particular school, and physical punishment of students.

This means that all four types of professional training possessed by teachers have no relationship with students performance This may be the reason that professional education has not produced any effect on student's performance.

There is no effect of grades/divisions earned in formal education or professional training on classroom practices which included, testing of students, use of blackboard, contacts with parents, teaching pattern, assignment of homework, use of teaching kit, teaching experience, integrated curriculum and use of modules, contacts with parents.

Summary

This paper attempted to find out the influence of (a) teacher's formal education (b) grade/division in formal education (c) teacher's professional education (d) grade/division earned by teacher's professional education, on students achievement in

science and maths for class IV and V. Teacher's formal education has shown significant influence on all four achievement test. The student's level of achievement rises with the increase in teachers level of formal education. However, grade/division earned by teacher in his formal education does not influence students level of achievement. In all four tests there is no significant evidence to claim that teachers having 1st division or IInd division in their formal education are more effective than teachers with third division.

These findings blatantly speak for inaccuracies in classifying examination results into grades/divisions. In fact there is some thing wrong with in the national examination system some exploratory studies may be taken to unveil these defects with particular reference to paper setting, conduct of examinations and evaluation of answer books.

Teachers's professional education has failed to show any influence on students performance. Again there is no relationship between grades/divisions earned by teachers in their professional education and students achievement.

Mr. Ikram qureshi in his paper "Impact of Preservice Teacher Training and Classroom Practices in Primary School of Pakistan" prepared during BRIDGES workshop has also found out that there is no relationship between inservice training and teaching practices in the classroom.

These findings may not be treated as recommendations for abolishing teacher education programme altogether. What is needed is to evaluate the present teacher education programme and make necessary changes and reforms in it.

In the light of these findings, following recommendations are made for policy development.

Recommendations:

Teachers formal level of education be increased. This may be done by enhancing the entry requirement in the teaching profession.

The in-service teachers may be encouraged by providing financial incentive to earn higher levels of education.

For all practical purposes such as appointment/promotion, preference should be given to those who possess/acquire higher levels of formal education. Examination system must be critically evaluated and improved in the light of research findings carried out on scientific bases.

Trained teachers have shown no difference in their performance than untrained teachers. There is no influence of teacher's level and quality of professional education on students performance on all four achievement tests. Teacher education programme must be evaluated. Necessary measures, as demonstrated by research finding

may be appreciated and incorporated into teachers training programmes. There is an urgent need to evaluate the present teacher education curriculum in Pakistan because this curriculum is not making any influence on teaching practices and students achievements.

ENDNOTES.

1. This paper was produced during the BRIDGES Training Workshop on Analysis of Survey Data which took place at the Academy of Educational Planning and Management from January 6 to February 8, 1990. The workshop was conducted by Donald Warwick and Fernando Reimers from Harvard University. Earlier drafts of this paper were discussed in the training workshop and received feedback from the instructors as well as from the participants: Ijaz Ahmad, Nawaz Ahmad, Islamuddin Baluch, M. Anwar Hussain, Syed Fazal-Qadir, Nasim Qaisrani and Ikram Qureshi. The contents of this paper are the sole responsibility of the author.

The data used in this paper were collected in the AEPAM-BRIDGES National Sample Survey of Primary Schools in Pakistan carried out during 1988-1989. This survey was part of the BRIDGES Project, a Cooperative Agreement between the Harvard Institute for International Development and the Office of Education, Bureau of Science and Technology, United States Agency for International Development.

The study which provided the data for the analysis reported in this paper could not have been carried out without the participation of a number of persons. The study is a joint project of BRIDGES and the Academy of Educational Planning and Management, Ministry of Education, Pakistan. Professor Laeeq Ahmed Khan and Dr. Abdul Ghafoor, Directors of the Academy helped in carrying out this research and in organizing the training workshop in data analysis. Dr. Sarfraz Khawaja of the Academy participated in the design of the study and solved many administrative problems. Aslam Bhatti was the field coordinator for research in the Federal District and supervised the production and distribution of questionnaires. Kursheed Ahmed and Ijaz Ahmad were the field coordinators for research in Balochistan, M. Anwar Hussain in Punjab, Syed Fazal-Qadir in North West Frontier Province, and Ghaffar Siddiqui and M. A. Meher in Sindh. Our deepest appreciation also goes to the more than 100 interviewers, too many to name, who provided hard work,

enthusiasm and care in collecting the data. Nasir Amin of the Academy provided diligent and dedicated supervision of data entry. Coding of the data was the responsibility of a team of BRIDGES staff including Haroona Jatoi and Habib Khan of the Academy.