

Teacher Sex and Instructional Time

The section below summarizes the findings relating to gender and the use of instructional time in the classroom. The section describes the differences in use of instructional time between a sample of male and female teachers.

A. The Sample and Measures.

The unit of analysis for this section is the timing of instructional activities during an observation of a complete classroom lesson in any one of three subject matters: Urdu, math or science. Observations were conducted in fourth and fifth grade classrooms on the second and third day of visits to 32 school sites. One researcher observed instruction while the other recorded the timings of various instructional activities. The researchers coordinated observations and timings. Altogether there were 260 valid timings.

It was accepted from the start of the study that it would be impossible to assume any accuracy for the actual amount of time used for various instructional practices. In surprise visits to trial schools before the formal data collection began, it was common to find teachers chatting together while classes were left unattended. The presence of observers created the unusual situation in some schools of compelling a full day of instruction. The timings reported here assume that when teachers teach they maintain a certain pattern in their daily teaching--a pattern of specific coordinated activities that even when taught in an abbreviated or expanded lesson will individually still consume approximately the same proportion of the classroom period. That is, if a teacher usually spends a quarter of the period in review when no researchers are present then she will continue to spend this proportion of the class period in review even when modifying her teaching for "show" purposes. The actual amount of time spent in any single activity, according to this assumption, may vary more as a result of the presence of observers in the classroom than the proportion of time spent in the activity.

Table 1 shows the achievement score for each subgroup. For more on the selection of the sample and the measures, see previous reports of the study.

Table 1: Sample Cases and Achievement Scores

CATEGORY	CASES		ACHIEVEMENT	
	M No.	F No.	M Mean	F Mean
Urdu	41	53	35	40
Math	47	56	24	19
Science	30	23	28	33

B. Instructional time.

This part details the differences between the boys' and girls' samples with regard to the use of instructional time. In other reports we have noted that many schools which are officially designated single sex schools are in fact mixed schools. Perhaps the single most important distinguisher in deciding what official label to apply to a school is not so much the sex of the children who attend the school as the sex of the teacher who directs the classroom study (this however is not an infallible indicator either). It is likely that this method of distinguishing an official gender label for schools is used for the practical purpose of routing teacher paychecks through the separate male and female directorates of education. Here the teachers being observed are female when the school is defined as girls and male when defined as boys.

In the tables the numbers represent sample mean times for a particular practice, either actual minutes or a proportion of the class period. It is difficult to determine what constitutes a noteworthy time difference. Even a difference as small as a minute, when multiplied over a school year of classes would make a substantial difference. On the other hand, to place great confidence in a small difference may be to assume an accuracy in the timers and a presumption of normality in the observed teachers' use of time that probably is not warranted. To avoid defining a cut-off point, all the data are presented below and all differences are reported; general conclusions are drawn at the end of the section.

Classroom timings are reported separately by main academic subject. Clusters of instructional practices and behaviors are aggregated according to the following categories:

- o review
- o preliminary statements
- o presentation
- o guided practice
- o independent practice
- o homework
- o other instructional activities (which cannot be categorized as above)
- o total instructional time
- o non-instructional time
- o total lesson period

A caution should be noted in interpreting the tables. The times reported below are averaged across the entire sample, including classes where the relevant practice may not be used at all. If a large proportion of the sample uses the practice, the averaged time will be higher than for a sample where the individual period of use is the same but there are fewer teachers using the practice. Because the interest here is in distinguishing between the two samples as a whole, the present method has been used.

1. Urdu

Table 2 shows the average time spent in various activities during Urdu periods by male and female

teachers.

Table 2: Average Sample Time Spent in Instructional Practices in Urdu

CATEGORY	URDU			
	Actual Time (min.)		Propor. Time (%) *	
	M	F	M	F
Review	2.5	2.8	6	6
Preliminaries	1.3	2.4	3	6
Presentation	14.0	6.4	41	15
Guided practice	7.5	13.6	19	32
Independent prac.	11.6	15.2	23	33
Homework	1.6	1.0	4	3
Other instruct.	1.5	2.8	3	5
Total instruct.	40.0	44.2	92	99
Non-instruct.	4.0	1.0	8	1
Total period	44.0	45.2	100	100

*Percent of total instructional time

In Urdu, female teachers used a little more time overall in the observed classes than male teachers. Both samples exceeded the official reports by headteachers about the usual lengths of period in their schools (see Annex A), probably as a result of the observers' presence in the room. Overall, there is little difference between the samples in the time given to subsidiary practices: review, preliminaries, homework and other instructional activities. Both samples spend about 80 percent of the instructional time in the major activities of presentation, guided practice and independent practice, but distribute the time for these activities differently.

Taking these major activities only, male teachers distribute the time as follows:

- o 49 percent to presentation,
- o 23 percent to guided practice
- o 28 percent to independent practice

Female teachers distribute the time as follows:

- o 19 percent to presentation
- o 40 percent to guided practice
- o 41 percent to independent practice

Thus, in Urdu, female teachers spend a great deal less time in presentation and much more time in guided and independent practice than male teachers.

2.Math

Table 3 shows the average times both samples spend in various instructional activities during math lessons.

Table 3: Average Time Spent in Instructional Practices in Math

CATEGORY	MATH			
	Actual Time (min.)		Propor. Time (%) *	
	M	F	M	F
Review	3.0	3.0	7	7
Preliminaries	1.6	2.0	4	5
Presentation	11.5	6.3	25	11
Guided practice	18.9	15.7	37	39
Independent prac.	11.6	16.8	22	35
Homework	0.7	1.3	2	3
Other instruct.	1.5	1.1	2	1
Total instruct.	48.8	46.2	95	97
Non-instruct.	3.0	1.6	5	3
Total period	51.8	47.8	100	100

*Percent of total instructional time

In math the male teachers used more instructional time than the female teachers, though both samples used more than the time officially reported for a lesson period. There was little difference between the samples in the amount of time given to the subsidiary activities of the classroom and both samples also spent about the same 85 percent time in the three major instructional activities of presentation, guided practice and independent practice. Again they distributed the time differently.

Taking these major activities alone, male teachers give:

- o 30 percent time to presentation
- o 44 percent time to guided practice
- o 26 percent time to independent practice

Female teachers give:

- o 13 percent time to presentation
- o 46 percent time to guided practice
- o 41 percent time to independent practice.

This means that in math, female teachers use much less time proportionately in presentation and much more time in independent practice than male teachers.

3. Science

Table 4 shows the average times both samples spend in various instructional activities during science lessons.

Table 4: Average Time Spent in Instructional Practices in Science

CATEGORY	SCIENCE			
	Actual Time (min.)		Propor. Time (%) *	
	M	F	M	F
Review	2.5	2.9	10	9
Preliminaries	2.0	2.2	7	7
Presentation	10.8	6.1	47	22
Guided practice	2.9	10.4	8	31
Independent prac.	7.5	8.7	25	28
Homework	0.3	0.2	1	1
Other instruct.	0.5	0.7	1	2
Total instruct.	26.5	31.0	98	97
Non-instruct.	0.8	0.9	2	3
Total period	27.3	32.0	100	100

*Percent of total instructional time

Note: Differences due to rounding.

In science, female teachers used more time for instructional activities than male teachers, though this time the period averaged less than the official time reported as the length for a lesson period. There was little difference in the time devoted to the subsidiary activities and about the same 80 percent time devoted to the three major instructional activities. Again the two samples distribute the time differently.

Male teachers give:

- o 59 percent time to presentation
- o 10 percent time to guided practice
- o 31 percent time to independent practice

Female teachers give:

- o 27 percent time to presentation
- o 38 percent time to guided practice
- o 35 percent time to independent practice

Consequently, the female teachers give much less time to presentation and much more time to guided practice than male teachers.

C. Conclusions.

If, as assumed in the design of the study, proportional time is more indicative of the time spent in various instructional practices in normal daily teaching than actually recorded time, then the

following conclusion can be drawn:

Female teachers spend proportionately more time than male teachers in:

- o preliminaries at the start of the lesson in Urdu and math
- o guided practice in all subjects
- o independent practice in all subjects
- o homework in math

Female teachers spend proportionately less time than male teachers in:

- o review in all subjects
- o preliminaries in science
- o presentation in all subjects
- o homework in Urdu and science

The consistency with which female teachers use greater or less proportions of time than males in selected activities makes it possible to say that there are distinctly different male and female styles of teaching. For example, male teachers tend to give more formal presentations of subject matter--they lecture in the way that is expected of a master and his students, with the flow of knowledge from the authority to the students and not vice versa. They spend less time in the kind of rapid-fire exchanges with their students that characterize most guided practice. Female teachers on the other hand, reject formal presentation, spend a great deal more time in close guidance of their students and are much more likely to have an independent practice where they relate one on one to students.

The question that arises is, "Which of these approaches is more productive of good academic performance?" If the way male and female teachers allot time for the major instructional activities are compared with the way effective teachers of both genders allot time for the same activities, then it is possible to evaluate how the two styles fare. These three major activities are "presentation," "guided practice," and "independent practice."

Table 5 shows the way the strategies of males and females compare overall while Table 6 summarizes the strategies of effective teachers to serve as a basis for evaluating the effectiveness of the gender-based patterns.

Table 5: Proportional Time* Spent in Major Activities: by Gender

CATEGORY	URDU		MATH		SCIENCE	
	M	F	M	F	M	F
Presentation	++++	+	+++	+	+++++	++
Guided practice	++	++++	++++	++++	+	+++
Independent practice	++	++++	++	++++	+++	+++

*Time is reported here as a proportion spent on the major activities only. + stands

for 10-19% ++ for 20-29% etc.

Table 6: Proportional Time* Spent in the Major Instructional Activities

CATEGORY	URDU		MATH		SCIENCE	
	Eff	LE	Eff	LE	Eff	LE
Presentation	++	+++	+	++	++++	++++
Guided practice	+++	+++	++++	++++	+++	+
Independent practice	++++	+++	++++	+++	++	+++

*Time is reported here as a proportion spent on the major activities only. + stands for 10-19% ++ for 20-29% etc.

Generally speaking, though not precisely the same, the female strategy comes closer than the male strategy in emulating the effective pattern in use of time for all subjects. By concentrating on practice in Urdu and math, female teachers may provide the essence of good instruction in those subjects, while male teachers short-change the period of practice with their longer than necessary periods of presentation. Similarly in science where the emphasis is on introducing and developing comprehension of concepts, there needs to be adequate chance to practice the concepts under the supervision of a teacher. Male teachers spend almost no time in such guided practice.

Reinforcing evidence that the strategies of female teachers may be more effective than male teachers strategies comes in the generally higher academic performance of the students of female teachers. Table 1 showed the difference in the overall scores of students of male and female teachers. In Urdu and science the mean scores of the female teachers' students are higher than those of the male teachers' students and in math they are almost the same. Table 7 shows the maximum achievement score for each group. In all subjects the maximum scores of female teachers' students are higher than those of male teachers' students. In Urdu the minimum score of students of female teachers is also considerably higher, while in math and science minimum scores are about the same.

Table 7: Maximum Achievement Scores: by Gender

CATEGORY	URDU		MATH		SCIENCE	
	M	F	M	F	M	F
Max. sample ach. score	68	85	44	50	50	58
Min. sample ach. score	7	23	4	6	8	7

Why, then, are the mean math scores not also better for girls? Female teachers several times mentioned to researchers the difficulty they had in covering the entire syllabus in math because they were unable to do some of the work themselves. It is possible that this is a problem that is passed on

from one class to the next because of an inadequately trained teaching force. It might also reflect the more limited experience females have with mathematical computations because of restrictions on the movement of women in transacting business in the market. Whatever the reason, it is clear that girls do not lack the natural ability in math as their maximum scores indicate.

It is perhaps obvious, but bears mentioning, that instructional time has both quantity and quality dimensions. Proportioning time according to any preconceived template cannot guarantee academic performance. In fact, it is probably not so much the amount as the quality of activity that goes on in a given time period that is important in raising academic achievement performance. Above, the emphasis has been upon comparing quantities of time, actual and proportional, spent in various activities during the classroom period. The proportions of these times spent in classroom activities over an entire sample suggest rather than indicate how time might be used more effectively to contribute to better academic performance. The key issue remains the one of how to improve the quality of instruction that goes on in each of the activity periods.

ANNEX A

Table A shows the amounts of instructional time reported officially for girls' and boys' schools of the sample.

Table A: Instructional Time in Sample Schools (check this data)

CATEGORY	SAMPLES	
	BOYS mean	GIRLS mean
schools having shorter day(s) in the week	47	65
number of classroom periods/normal*	6.3	7.1
periods/short**	4.9	4.8
minutes in a period normal day*	42	41
short day**	36	40
number of minutes/da normal day*	265	291
short day**	176	192
minutes in the break	30	33
hrs.in the year	1052	1044

*Of those using a period system. **Of those having a period system and a short day.