



Leading education
and social research
Institute of Education
University of London

Teachers as stakeholders: Voice, choice and incentives

Geeta Gandhi Kingdon

Introduction

- T crucially important stakeholder
- Consider three aspects:
 - Do teachers have voice ?
 - Do teachers have choice ?
 - Do teachers have incentives?

Teacher representation in UP Legislative Council, various years

Year	Total seats	Teacher Members	Ex-teacher members	Total Teachers	Teachers as % of total
1952	72	7	5	12	17
1954	72	7	4	11	15
1956	72	6	4	10	14
1958	108	10	4	14	13
1960	108	12	4	16	15
1962	108	16	2	18	17
1964	108	14	3	17	16
1966	108	10	4	14	13
1968	108	12	2	14	13
1970	108	14	2	16	15
1972	108	14	0	14	13
1974	108	18	1	19	18
1976	108	17	3	20	19
1978	108	14	1	15	14
1980	108	15	0	15	14
1982	108	16	2	18	17
1984	108	19	5	24	22
1986	108	13	0	13	12
1988	108	17	1	18	17
1990	108	15	1	16	15
1992	108	16	4	20	19
1994	108	15	3	18	17
1996	108	16	3	19	18
1998	108	14	0	14	13
2000	100*	17	6	23	23
2002	100	16	7	23	23
2004	100	17	5	22	22
2006	100	15	4	19	19
2008	100	14	4	18	18
Average	103	14	3.23	16.9	16.6

Teachers' representation in the UP Legislative Assembly

Legislative Assembly	Total MLAs	Teacher MLAs	% of MLAs that were teachers
1. First (1952)	430	N.A.	N.A.
2. Second (1957)	430	11	2.6
3. Third (1962)	430	26	6.0
4. Fourth (1967)	425	21	4.9
5. Fifth (1969)	425	27	6.4
6. Sixth (1974)	425	22	5.2
7. Seventh (1977)	425	23	5.4
8. Eighth (1980)	425	39	9.2
9. Ninth (1985)	425	30	7.1
10. Tenth (1989)	425	27	6.4
11. Eleventh (1991)	425	36	8.5
12. Twelfth (1993)	425	46	10.8
13. Thirteenth (1996)	425	37	8.7

Source: Table 6.5 Kingdon and Muzammil (2003).

Table 3: Important teacher actions in UP (1956-2004)

Year	From	To	Duration (days)	Details
1956	31 Jan.	31 Jan.	1	-
1959	3 May	8 May	2	Main demand: revision of pay scales
1964	24 Apr.		1	4,000 teachers demonstrated
	4 Aug.		1	10,000 teachers demonstrated; 11-point charter included demands for triple-benefit-scheme
1965	11 Mar.	28 Mar.	18	30,000 teachers demonstrated; demands included interim relief, equal pay to G and PA teachers; hunger strike by some teachers from 22-28 March; central govt announced financial help for UP Teachers; GOUP increased salaries of PA teachers by Rs. 20 per month.
1966	5 Dec.	10 Dec.	5	5,000 teachers demonstrated in violation of prohibitory order; demand was pay parity between G and PA teachers; teacher leaders were jailed but released on 17 th December.
1968-69	25 Nov.	5 Jan.	45	Initially 3000 teachers demonstrated (600 arrested); strike intensified; 20,000 teachers sent to jail; Demands included pay parity between PA non-teaching staff and G employees and direct salary to PA teachers from the state govt treasury
1971	27 Jan.	18 Feb.	23	Total strike observed; issues were lack of implementation of agreements; 1000 teachers and their leaders arrested.
1973	3 Dec.	23 Dec.	21	11-point charter of demands included nationalisation of education; 500 teachers arrested.
1974	14 Jan.	4 th Mar.	>2	Pandey group threatened to go on strike; on 4 th March, demonstration invited 'lathi charge'. Leader badly injured, remained hospitalised for 8 days. This was made an issue for prolonging the strike.
1975	31 Mar.	31 Mar.	>1	Demonstration in front of LA, demanding pay increases and nationalisation of education. 2000 teachers arrested.
1977-78	2 Dec.	13 Jan.	42	Organised by Pandey group of MSS; demands included the nationalisation of education, retention of education of Concurrent List, and parity in gratuity pensions etc. between PA and G teachers; 40,000 teachers took mass casual leave; 80,000 striked; 30,000 teachers were arrested
1979	1 May	1 May	1	Demonstrated against the Employees Service Conditions and Dispute Reconciliation Act, which sought to regulate the activities of teacher unions
1981	27 Jan.	27 Jan.	1	Pandey group's dhama and demonstration to ask for a Education Service Commission to regulate teacher appointments
	17 Aug.	17 Aug.	1	'Pen down' strike against the removal of temporary teachers from service
	21 Oct.	21 Oct.	1	'Pen down' strike in demand for pay revision
	7 Nov.	7 Nov.	1	Mass casual leave and demonstration because of dissatisfaction with the UP Pay Commission's recommendations
	16 Nov.	16 Nov.	1	Sit-in or dhama at Raj Bhavan in demand of pay revision
	24 Nov.	24 Nov.	1	'Fast until death' (A-maran Anshan) protest; fasting teachers arrested
	27 Nov.	27 Nov.	1	Pandey group and Sharma group stage separate demonstrations
	1 Dec.	3 Dec.	3	Strike in opposition to the UP Pay Commission's recommendations
1984	12 Jan.	18 Feb.	35	Demands included nationalisation of education; 3000 teachers sent to jail; schools remained closed for 35 days
1985	30 Aug.	30 Aug.	1	-Sharma group of MSS organised mass casual leave
	5 Sep.	5 Sep.	1	-Sit-in at DIOS office, 'postcard to chief-minister' campaign
	5 Nov.	5 Nov.	1	-80,000 teachers took mass casual leave
	7 Nov.	7 Nov.	1	-40,000 teachers demonstrated; 28 demands included nationalisation of education, payment of salary for the previous strike period, abolition of private management in schools, and regularisation of ad-hoc teachers etc.
1986	5 Sept.	5 Sept.	1	All three groups had agitations in 1986. On 5 Sept. Scooter rally agitation against the appointment of part-time teachers
	20 Sept.	20	1	'Chalk down' strike, against National Policy on Education
	14 Nov.	Sept. 14 Nov.	1	Rally to demand the implementation of the Fourth Pay Commission's recommendations, schools remained closed
1987*	15 Sept.	7 Oct.	23	Agitations on 16 June (warning day), 15 September (historic rally of teachers with govt employees suppressed by use of tear gas and lathi-charge, one person died and many teachers were injured; many teachers were arrested; called off on 7 Oct), and 13 November (60,000 teachers participated in a rally). GOUP announced generous improvements in DA.

Year	From	To	Duration (days)	Details
1988**	14 Oct.	26 Oct.	13	GOUP failed to implement 1987 agreement; Awareness week observed from 25 August. Big rally organised on 15 September; fasting by rotation organised from 25 Sept to 11 Oct; Shouting slogans: "Jeene Layek Vetan Do" (give wages worth a living). GOUP admitted that in giving new scales, a new burden of Rs 656 crores would come on its shoulders. Talks held 26 Oct. and agreement reached.
1989	19 Aug.	19 Aug.	1	All MSS factions in unified rally to demand Central pay scales for UP teachers; to make 450 more unaided schools aided; for the regularisation of ad-hoc teachers. Agreement pushed up GOUP education expenditure sharply.
1990	9 Aug. 29 Aug.	9 Aug. 30 Aug.	1 2	Pandey group's sit-in dharna in support of their 15-point charter of demands Sit-ins at Director of Education's offices. Agitation programmes for Nov /Dec. postponed in view of Babri Masjid unrest
1991	5 Jan. 27 Nov.	5 Jan. 27 Nov.	1 1	Pandey group demonstrated at LA in support of 51 point charter of demands, including regularisation of ad hoc teachers, bringing more schools onto the aided list, and remove of pay anomalies. Thakurai group agitated in month of August Demonstration at LA and gherao of the Director of Education offices - demanding implementation of various govt orders. MSS underwent a further split this year - a new group (the Bhatt group) formed.
1992	10 Jan. March	10 Jan. March	1 'many days'	10,000 teachers involved in a sit-in by the Shama group of MSS on 10 th Jan.; Many days' teaching wasted in March due to mass casual leave, demonstrations and sit-ins. Unions declared (but did not carry out) a boycott of examinations.
1993	21 July 5 Sept 16 Oct	21 July 7 Sept 16 Oct	1 2 1	No statewide agitation of teachers in 1993 but most previous issues were taken up at low levels of agitation. Thakurai group satyagrah on 21/7/93; sit-in on 7 th Sept and a processions and demonstrations on 5 th Sept (31 demands) and 16 th Oct. Many other demonstrations were also held during the year but they did not make a notable impact.
1994	25 Nov.	6-Dec.	11	Agitations took place on 5-6 May (demonstration); 25 th Oct (picket); strike 25 Nov-6 Dec (strike); main demands were: unaided private schools be brought on aid list, regularisation of ad hoc teachers, removal of pay anomalies, no modification be attempted in the Salary Disbursement Act
1995	24 Aug. 14 Nov.	24 Aug 14 Nov.	1 1	Sit-in at the offices of the District Inspector of Schools and at the LA, 49 point charter of demands All four groups of the MSS came together in historic unity to demonstrate
1996	17 Jan.	23 Jan.	7	Jail-bhara andolan (Fill-the-Jails agitation). Talks with the governor ended the agitation - but MSS factions accused each other for calling-off the agitation. Sit-in (dharna) on 6 June demanding salary payment in the first week of the month; demonstrations on 12 th Dec. at the district headquarters of all teacher unions in the state, with a 13 point charter of demands for district magistrates - one particular demand was the release of the report of the Fifth Pay Commission.
1998	1 July 8 July	7 July 6 August	7 29	Non cooperation movement by MSS which crippled the education system in the State of UP. It was the beginning of the agitation for the implementation of Fifth Pay Commission recommendations. Indefinite full strike started from 8 th July over the State involving about 5 lakh teachers. Government tried to suppress the agitation but the leadership did not bow down. Lathi charge on teachers rally on 30 July and the strike was suspended on 6 August in people's interest (Janhit)
1999	22 August 9 Septem ber 20 Sept.	22 August 9 Sept. 20 Sept	1 1 1	Mammoth rally in Lucknow of teacher Mahasangh (all teacher unions and employees' unions combined). Teacher leaders were arrested yet lakhs of teachers joined the rally, blocked the roads in the State capital and offered their arrest. Black day was observed by closing all schools in the State and condolence meetings were held to mourn the death of teacher leader Bhagwan Bux Singh (who was murdered in Lucknow) A huge torch rally (Mashal Juloo) was taken out in Lucknow.
2000	23 Octobe	23 Octobe	1	Mammoth rally of Mahasangh in Jyotiba Phule Nagar for implementing the Fifth Pay recommendations

Table 7
Salary expenditure as a proportion of total expenditure

YEAR	Recurrent as a % of total educational expenditure	Salary as a percentage of total recurrent educational expenditure (%)		
		<u>Primary</u>	<u>Junior</u>	<u>Secondary</u>
1960-61	74.7	87.9	85.1	72.3
1965-66	79.4	90.7	89.2	75.3
1969-70	85.0	92.3	90.4	85.6
1974-75	87.1	96.6	94.3	87.1
1981-82	94.8	96.7	93.8	89.9
1987-88	97.3	NA	NA	90.7

Source: Table 13.13 Kingdon and Muzammil (2003), constructed from (GOI, Education in India), various years.

Note: The figures published for the year 1987-88 for primary and junior education levels are not comparable with figures published in previous years because for 1987-88, non-teaching staff salaries have been lumped together with the item 'other' giving the implausibly low figures of 94.0% and 91.6% for primary and junior education respectively. After the late 1980s, the publication of the breakdown of total educational spending into salary, consumables, and other expenditure has been discontinued, i.e. it does not appear to be published any more. For instance, the 1994-95 copy of 'Education in India', published in the year 2000, had no such table. Note that prior to 1960-61, expenditure information in published documents was not presented by item of expenditure (salaries, consumables, others, etc) but rather by expenditure on boys' schools and expenditure on girls' school, etc or expenditure by source.

ICSE Class X exam, 2003

Mean mark, by subject

Subject	Mean mark	SD	Minimum	Maximum
English	67.15	15.3	20	97
Second language	79.73	8.9	28	99
History-geography	70.09	14.3	20	99
Maths	68.92	18.4	15	99
Science	65.72	17.0	20	99

ICSE data 16 states	Including only pre-determined teacher characteristics (TC)			Including characteristics in TC'
	OLS	School FE	Pupil FE	Pupil FE
Member of union	0.1788** (4.17)	-0.2342** (-6.91)	-0.2266** (-6.72)	-0.2347** (-6.91)
MA or PhD qualification	0.1206** (9.07)	0.0929** (9.63)	0.0914** (9.58)	0.0923** (9.51)
Pre-service teacher training	0.0602** (4.66)	0.0871** (10.0)	0.0885** (10.2)	0.0911** (10.5)
First division in hisec exam	0.1020** (5.35)	0.1092** (7.74)	0.1053** (7.52)	0.1113** (7.94)
Christian	0.0214 (1.43)	0.0254* (2.49)	0.0252* (2.49)	-0.0060** (-4.21)
Female	-0.0384** (-2.74)	0.0039 (0.40)	0.0020 (0.21)	0.0247* (2.45)
Age	0.0459** (10.2)	0.0272** (8.69)	0.0260** (8.38)	0.0049 (0.52)
Age square	-0.0005** (-9.51)	-0.0003** (-8.21)	-0.0003** (-7.84)	0.0240** (7.00)
Subject dummies	yes	yes	yes	yes
Pupil variables	yes	yes	--	no
School variables	yes	--	--	no
Number of clusters	16	172	10016	10016
Estimated Bias (Equation (7))	0.57	0.27	0.91	0.88
Ratio (a)	0.31	--	--	--

Table 10
Achievement equation, government primary schools only, UP
(Dependent variable: z-score of achievement mark)

	Ordinary Least Squares			School Fixed Effects		
	(1)	(2)	(3)	(4)	(5)	(6)
Class 4	0.240*** (16.55)	0.239*** (16.61)	0.235*** (16.20)	0.285*** (17.15)	0.278*** (16.91)	0.285*** (17.13)
Subject Maths	-0.0560*** (-2.92)	-0.0579*** (-3.01)	-0.0585*** (-3.05)	-0.0664*** (-3.66)	-0.0674*** (-3.71)	-0.0675*** (-3.71)
Wave 2	0.0983*** (14.59)	0.0981*** (14.57)	0.0981*** (14.57)	0.104*** (16.38)	0.103*** (16.31)	0.104*** (16.36)
Child characteristics						
Age	0.0171** (2.02)	0.0171** (2.02)	0.0182** (2.14)	0.0553*** (6.46)	0.0555*** (6.48)	0.0555*** (6.48)
Male	0.127*** (6.56)	0.122*** (6.29)	0.119*** (6.18)	0.147*** (7.75)	0.144*** (7.55)	0.146*** (7.66)
Log weight (kg)	0.654*** (7.32)	0.658*** (7.37)	0.659*** (7.38)	0.495*** (5.81)	0.502*** (5.88)	0.496*** (5.82)
Height (cm)	0.0072*** (4.04)	0.0070*** (3.96)	0.0071*** (3.98)	0.0058*** (3.32)	0.0057*** (3.28)	0.0057*** (3.29)
Recently ill§	-0.0793*** (-4.00)	-0.0765*** (-3.87)	-0.0776*** (-3.92)	-0.0938*** (-4.92)	-0.0926*** (-4.85)	-0.0936*** (-4.91)
Mother education	0.0423*** (10.11)	0.0430*** (10.32)	0.0427*** (10.21)	0.0427*** (10.65)	0.0427*** (10.66)	0.0426*** (10.64)
Ln assets	0.101*** (8.21)	0.103*** (8.32)	0.103*** (8.37)	0.0591*** (4.95)	0.0605*** (5.06)	0.0601*** (5.02)
Teacher characteristics						

Achievement equation, government primary schools only, UP
(Dependent variable: z-score of achievement mark)

	Ordinary Least Squares			School Fixed Effects		
	yes	yes	yes	yes	yes	yes
Child characteristics						
Teacher characteristics						
Age	0.0095*** (6.08)	0.0094*** (6.05)	0.0084*** (5.30)	0.0118*** (5.73)	0.0108*** (5.58)	0.0117*** (5.67)
Male	-0.110*** (-5.27)	-0.112*** (-5.51)	-0.0913*** (-4.29)	-0.150*** (-4.79)	-0.136*** (-4.71)	-0.150*** (-4.77)
Qualification BA	-0.0057 (-0.24)	-0.0001 (-0.00)	-0.0095 (-0.39)	0.118*** (3.05)	0.0984*** (2.62)	0.120*** (3.08)
Qualification MA	-0.00016 (-0.01)	0.00383 (0.14)	-0.00654 (-0.24)	0.120*** (3.03)	0.115*** (2.98)	0.126*** (3.16)
First division	0.0279 (0.97)	0.0291 (1.02)	0.0229 (0.80)	0.151*** (3.78)	0.147*** (3.69)	0.153*** (3.84)
Para teacher	0.0968** (2.44)	0.0939** (2.38)	0.0614 (1.51)	0.233*** (4.53)	0.212*** (4.33)	0.231*** (4.47)
Governance variables						
Union member	-0.0589** (-2.21)		-0.0550** (-2.06)	-0.106** (-2.37)		-0.0904* (-1.95)
Politically connected		-0.238*** (-3.77)	-0.256*** (-4.03)		-0.142** (-1.99)	-0.101 (-1.36)
<i>N</i>	8185	8185	8185	8185	8185	8185
Adjusted R-square	0.25	0.25	0.25	0.27	0.27	0.27
Altonji's estimated bias	0.141	-0.128	---	0.988	0.198	---
Altonji's Ratio	---	1.85	---	---	---	---

Why should TU and PC reduce learning?

- Do TU / PC reduce teacher effort?
- We have several measures of effort
- Regressed each of these on TU & PC
 - Controls for teacher characteristics
 - School FE estimator
 - Not necessarily causal

**The association of 'union membership' and of 'political connectedness' with some teacher effort indicators
(Govt. Primary Schools, Uttar Pradesh): School Fixed Effects Estimates**

Dependent variable	Coeff on union member variable	Coeff on 'met or personally knows teacher MLC/MLA	Coeff on 'met or personally knows teacher MLC
Teacher's absence rate	-0.004 (-0.084)	0.075 (1.23)	0.161** (1.98)
% of T's school time given to teaching	-0.207 (-1.42)	-0.498*** (-2.62)	-0.373 (-1.45)
% of T's school time given to organising prayers/games	0.258* (1.86)	-0.391** (-2.20)	-0.478** (-1.96)
Number of days of non-teaching duties outside school	-2.609 (-0.80)	5.127 (1.22)	5.467 (1.05)
Cites 'social work' as an occupation other than teaching	0.077 (0.81)	0.212** (2.01)	0.452*** (3.02)
Has contested any election [^]	0.057 (0.8)	0.312*** (3.07)	0.286** (2.53)
Has filed a education related court case	-0.068 (-1.28)	-0.114** (-2.01)	-0.139* (-1.65)
Agrees that 'frequently absentee teachers should be paid less'	0.027 (0.21)	-0.139 (-0.92)	-0.591*** (-2.86)

Each regression controls for teacher age, gender, religion, education, and para vs. regular status.

VOCABULARY RELATED TASKS : DO TEACHERS KNOW WORD MEANING?

Four difficult words are given. Please write their meaning using simple words

TASK WITH DIFFICULT WORDS	Bihar govt. schools			UP govt. schools		Bihar/ UP	ALL
	Reg.	Para 05	Para 06	Reg.	Para	Private	All
Word meaning							
Not attempted	8.8	10.8	10.2	5.0	8.3	12.5	9.4
Wrong meaning	35.5	33.4	35.4	27.2	29.3	32.0	32.2
Partial meaning	12.4	14.8	17.3	16.9	13.5	15.1	14.9
Full meaning	42.4	41.0	37.1	50.8	48.9	40.4	43.4
% struggling with task							
No attempt or wrong meaning	44.3	44.2	45.6	32.2	37.6	44.5	41.6

SUMMARIZING TEXTS : EXAMPLES FROM TEACHERS

7. उपरोक्त अनुच्छेद का सारांश अधिकतम दो वाक्यों में लिखें। (सरल भाषा का प्रयोग करें जिससे कि बच्चे आसानी से समझ सकें।)

बूढ़ा आदमी था जो समझदार था। उसने इतनी अधिक उम्र में पौधा लगाया लच्छों पेड़ पौधों हमारे लिए अधिक आवश्यक है। इसलिए हमें उसी तरह की तरह काम करना चाहिए।

7. उपरोक्त अनुच्छेद का सारांश अधिकतम दो वाक्यों में लिखें। (सरल भाषा का प्रयोग करें जिससे कि बच्चे आसानी से समझ सकें।)

एक बार एक राजा ने देखा कि एक बूढ़ा आदमी आम का पौधा लगा रहा है। राजा उसके इस परोपकार के कार्य को जानकर खुश हुआ और उसने उस व्यक्ति को इनाम में सौ मोहरें भेंट कीं।

SUMMARIZING TEXTS : CAN TEACHERS SUMMARIZE ?

TASK WITH PASSAGE	Bihar govt. schools		UP govt. schools		Bihar/ UP	ALL	
	Reg.	Para 05	Para 06	Reg.	Para	Private	All
Gave meaningful summary?							
Not attempted	3.5	2.4	5.6	3.3	2.6	8.6	4.4
Irrelevant/wrong	25.4	27.0	40.5	28.6	40.2	37.9	33.0
Partially meaningful	25.4	15.9	22.5	9.9	16.2	16.4	17.9
Fully meaningful	45.6	54.8	31.5	58.2	41.0	37.1	44.7
% Struggling with task							
	28.9	29.4	46.1	31.9	42.8	46.5	37.4

SUMMARIZING TEXTS : CAN TEACHER SUMMARIZE USING SIMPLE LANGUAGE

TASK WITH PASSAGE	Bihar govt. schools		UP govt. schools		Bihar/ UP		ALL
	Reg.	Para 05	Para 06	Reg.	Para	Private	All
Of those writing meaningful summary							
Summary easy to understand							
Easy to Understand	71.2	69.6	78.6	79.3	81.3	73.8	75.0
Are there any spelling errors?							
No spelling error	32.0	29.1	28.2	54.7	48.2	46.7	39.6
1-2 Spelling errors	44.3	38.5	25.6	30.2	35.5	34.4	35.3
>=3 spelling errors	23.7	32.5	46.2	15.1	16.4	18.9	25.1

EXAMPLE 3: SPOTTING SPELLING & GRAMMATICAL MISTAKES

9. नीचे दिए गए अनुच्छेद में कुछ सामान्य गलतियाँ हैं। अनुच्छेद को ध्यानपूर्वक पढ़ें एवं गलतियों में घेरा लगाएं।

चित्रकार अपनी कुँची और रंगों से सुन्दर चित्र बनाते हैं, तो मुर्तिकार अपना छेनी और हथौड़ी से पत्थरों में जान फूँक देते हैं। घर, पुल, सड़क आदि को बनानेवाले ऐसे ही कुशल कारिगर होता है। इन सभी लोगों को आप क्या कहते हैं। ये सभी कुषल कारीगर हैं। इन्हें शीलपी भी कहते हैं। बहुत से लोग और भी अलग-अलग चीजें बनाते हैं।

Spotting mistakes	Bihar			UP		BH/U P	All
	Reg	Para 05	Para 06	Reg	Para	Priva te	All
% teachers choosing 1 or more correct word as "wrong"	53.5	43.4	47.2	46.1	44.4	46.5	46.8
% teachers who found only 3 or less spelling mistakes	58.7	61.3	66.4	31.9	36.8	45.7	50.3
Note: There were 6-7 spelling mistakes in each of the samples.							

Example 1: ARITHMETIC PROBLEM : Percentages

Example 1: Percentage problem

There are 38 children enrolled in a class. Of these 23 children are present today. What percent of children are absent today?

Or

A class has 55 children. Of these 32 have books. What percent of children do not have books?

Teachers were asked to solve the problem and show the steps for solving the problem.

This type of problem is in UP and Bihar state textbooks for Std 5.

Teachers were graded on whether they:

- **"Know"** : Give the correct solution
- **"Explain"** : Show easy steps to solve the problem

EXAMPLES

5.1 "किसी कक्षा में 55 छात्र हैं। इनमें से 32 छात्रों के पास किताब है। उन छात्रों का प्रतिशत निकालें जिनके पास किताब नहीं है?"

∴ कक्षा में छात्रों की संख्या = 55

∴ छात्रों के पास किताब की सं० = 32

∴ जिन छात्रों के पास किताब नहीं है = $55 - 32 = 23$

∴ कुल छात्रों की संख्या जिनके पास किताब नहीं है = 23

बच्चे का पहले व्यव का पहचान करवाएंगे। उसके बाद बच्चे की संख्या को अलग करवाएंगे फिर फिर, जिनके पास किताब है या नहीं दोनों अंकों को अलग करवाएंगे फिर उसे व्यव की विधि द्वारा समझा देंगे।

Example 1: PERCENTAGE PROBLEM : Findings

	Bihar				UP			All
TASK PERCENTAGE WORD PROBLEM	Reg.	Para 05	Para 06	Priv.	Reg.	Para	Priv.	
Not attempted	14.4	12.0	26.4	37.0	16.7	23.5	28.6	20.6
Incomplete	32.7	48.8	46.2	25.9	40.0	40.0	54.6	42.6
Wrong steps	5.8	6.4	5.5	11.1	10.0	3.5	1.3	5.7
Correct steps wrong answer	3.9	6.4	3.3	3.7	4.4	7.0	1.3	4.6
Correct answer no steps	0.0	1.6	3.3	0.0	1.1	4.4	2.6	2.1
Solved correctly	43.3	24.8	15.4	22.2	27.8	21.7	11.7	24.5
% Struggling	52.9	67.2	78.1	74.0	66.7	67.0	84.5	68.9

ARITHMETIC : AREA PROBLEM in Teacher test

AREA PROBLEM TASK	Bihar				UP			All
	Reg.	Para 05	Para 06-07	Priv.	Reg.	Para	Priv.	
No attempt	27.9	28.8	38.5	51.9	30.0	48.7	41.6	36.6
Incomplete	19.2	25.6	26.4	7.4	18.9	19.1	26.0	21.8
Wrong steps & A	5.8	4.0	1.1	3.7	7.8	3.5	2.6	4.1
Correct steps, wrong A	3.9	3.2	8.8	0.0	4.4	1.7	5.2	4.1
Only correct A, no steps	4.8	5.6	3.3	0.0	8.9	4.4	9.1	5.5
Solved correctly	38.5	32.8	22.0	37.0	30.0	22.6	15.6	27.9
% struggling with task (row 1 to 3)	52.9	58.4	66.0	63.0	56.7	71.3	70.2	62.5

Example 3 : SPOTTING & UNDERSTANDING COMMON MISTAKES

Example 2

$$\begin{array}{r} 9 \overline{) 927} \quad (103 \\ \underline{9} \\ 027 \\ \underline{000} \\ 27 \\ \underline{27} \\ 00 \end{array}$$

$$\begin{array}{r} 9 \overline{) 927} \quad (13 \\ \underline{9} \\ 027 \\ \underline{000} \\ 27 \\ \underline{27} \\ 00 \end{array}$$

$$\begin{array}{r} 9 \overline{) 927} \quad (92 \\ \underline{81} \\ 117 \\ \underline{090} \\ 270 \\ \underline{270} \\ 00 \end{array}$$

Samples of children's work shown. Teachers asked to choose...

% Teachers did the following:	Bihar Govt. Regular	Bihar Govt. Para	UP Govt. Regular	UP Govt. Para	Bihar UP Pvt.	All teachers
Chose wrong option	15.8	22.6	15.4	26.5	25.9	21.7
Chose correct option	84.2	77.4	84.6	73.5	74.1	78.3

Ability to explain - EXAMPLES

5.1 किसी कक्षा में 46 छात्र नामांकित हैं इनमें से 28 लड़के हैं। कक्षा में लड़कियों का प्रतिशत ज्ञात करें।

$$\frac{27}{46} \times \frac{100}{100} = \frac{27}{14} = \frac{13}{14}$$

5.1 "किसी कक्षा में 38 छात्र नामांकित हैं। इनमें से आज 23 छात्र उपस्थित हैं। कितने प्रतिशत छात्र अनुपस्थित हैं?"

कक्षा में छात्र की संख्या 38 है कुल

अतः उपस्थित है 23

$$\text{इसलिए } 38 - 23 = 15$$

इसलिए 15 छात्र अनुपस्थित है।

Teachers' own views about their difficulties in maths teaching

Percentage of teachers who say they agree with the statement
“Sometime I have difficulties in addressing the mathematical queries and problems of my students”

	BIHAR				UP			
	Fully agree	Parti ally agree	Some what agree	Dis agree	Fully agree	Parti ally agree	Some what agree	Dis agree
Govt. school teachers	24.5	11.0	46.8	17.7	15.2	18.3	43.1	22.3
Private school teachers	16.7	12.5	45.8	25.0	16.9	18.5	36.9	27.7

Only about 20% of govt. school teachers believe they don't face problems.

About 80% admit to have difficulties sometimes.

This suggests possible interest in in-service training to upgrade maths skills

SchoolTELLS survey (2008)

Higher resources, lower effort

	UP		
	Reg.	Para	Priv.
Salary/month, 2008 (after 6 th Pay Comm.)	12,017 25,000	3,000 3,500	940 1500
Absence rate	24.6	12.0	17.4
% time teaching	75.3	83.3	89.0

Structure of accountability matters more than resources