Multilingualism and Multiliteracy in primary schools in India

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The trigger

Problem:

Low learning outcomes of primary school children in multilingual India

Background:

Advantages to being bilingual or multilingual in attention and learning skills

Research question:

Why do some children in India show low learning outcomes at school?

Multilingualism and Multiliteracy: Raising Learning Outcomes in challenging contexts in primary schools across India (May 2016 – April 2020)

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Learning outcomes in Indian schools

- ASER studies conducted with 600,000 children across India: more than half of all children in Standard 5 could not read a Standard 2 level text fluently, and nearly half of them could not solve Standard 2 level subtraction task.

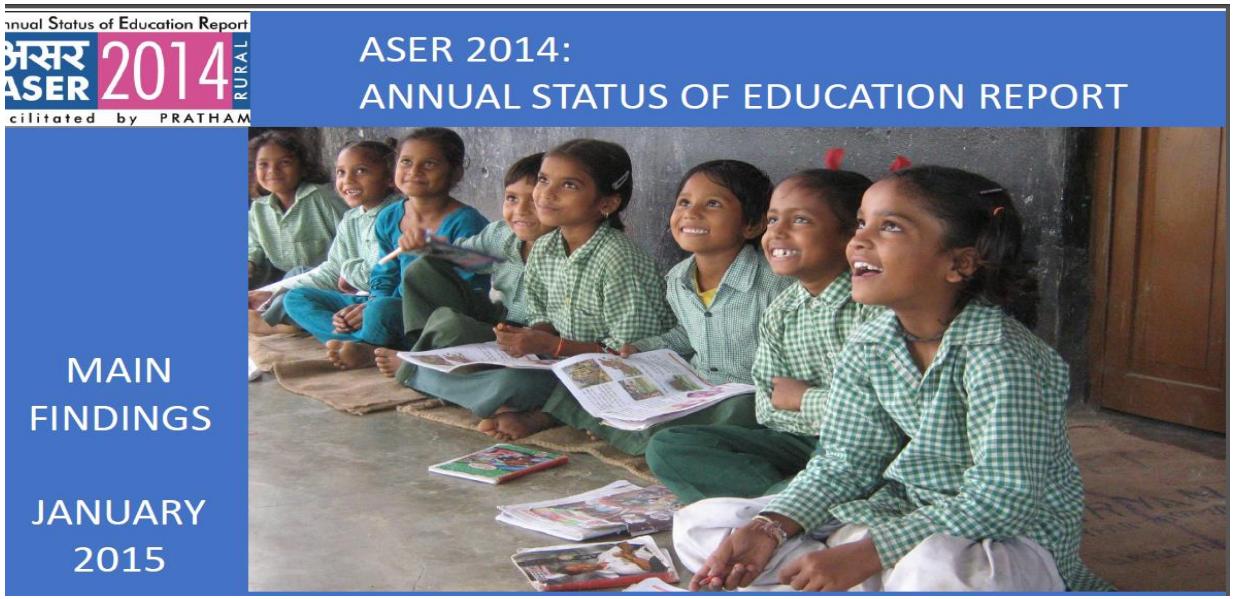
- Low literacy and numeracy can limit other important capabilities, e.g., critical thinking and problem solving

- Low school skills may lead to dropping out of school

- High dropout rate in schools affecting girls more than boys (Unesco's Education Report, 2015; **Annual Status of Education Report** Pratham, 2014).

- The gap between state and private schools increases every year

Multilingualism in India



Although multilingualism is the norm in India, level of proficiency in the home language depends on whether education includes the home language or not.

(Panda & Mohanty 2013; ASER 2014)

Education and the language of instruction

- Reports from developing countries suggest that 221 million children are educated in a language they do not speak at home

→poor education quality, drop-out rates, low literacy outcomes (Cummins 2009)

- Children educated in the second language but also in their home language show better learning skills than those only educated in a second language

Dosi, Papadopoulou & Tsimpli, 2016
Andreou, Dosi, Papadopoulou & Tsimpli, in press

Languages in India and medium of instruction

- 22 languages are recognized (*scheduled*) languages.

- Used as medium of instruction in different Indian states: Assamese, Bangla, Bodo, Dogri, Gujarati, Hindi, Kashmiri, Kannada, Konkani, Maithili, Malayalam, Manipuri, Marathi, Nepali, Oriya, Punjabi, Tamil, Telugu, Sanskrit, Santali, Sindhi, and Urdu.
- Hindi and English function as link languages, with the central government recognizing Hindi as the official language and English as the provisional sub-language (Devy, 2018)

Education in India is through a three-language formula: all children should be taught through the medium of a regional language or mother tongue, to which an additional modern Indian language (e.g. Hindi) and English can be added as curricular subjects
"the languages of the home, larger kinship group, street and neighbourhood, i.e. languages(s) that a child acquires naturally from her/his home and societal environment" (National Council of Educational Research and Training, 2005, p.36).

The role of English

The language of power and a gateway to improving one's socio-economic position.

Parental pressure to introduce English as early as grade 3 (or even at grade 1), and to use English as the medium of instruction (EMI), particularly in private schools (Annamalai, 2013).

→Sometimes, English-medium is only *in name*, and actual teaching takes place in the regional or local languages (Annamalai, 2004; Mohanty et al. 2010)

Code-switching or translanguaging (García and Li, 2013)

Do they make learning easier?

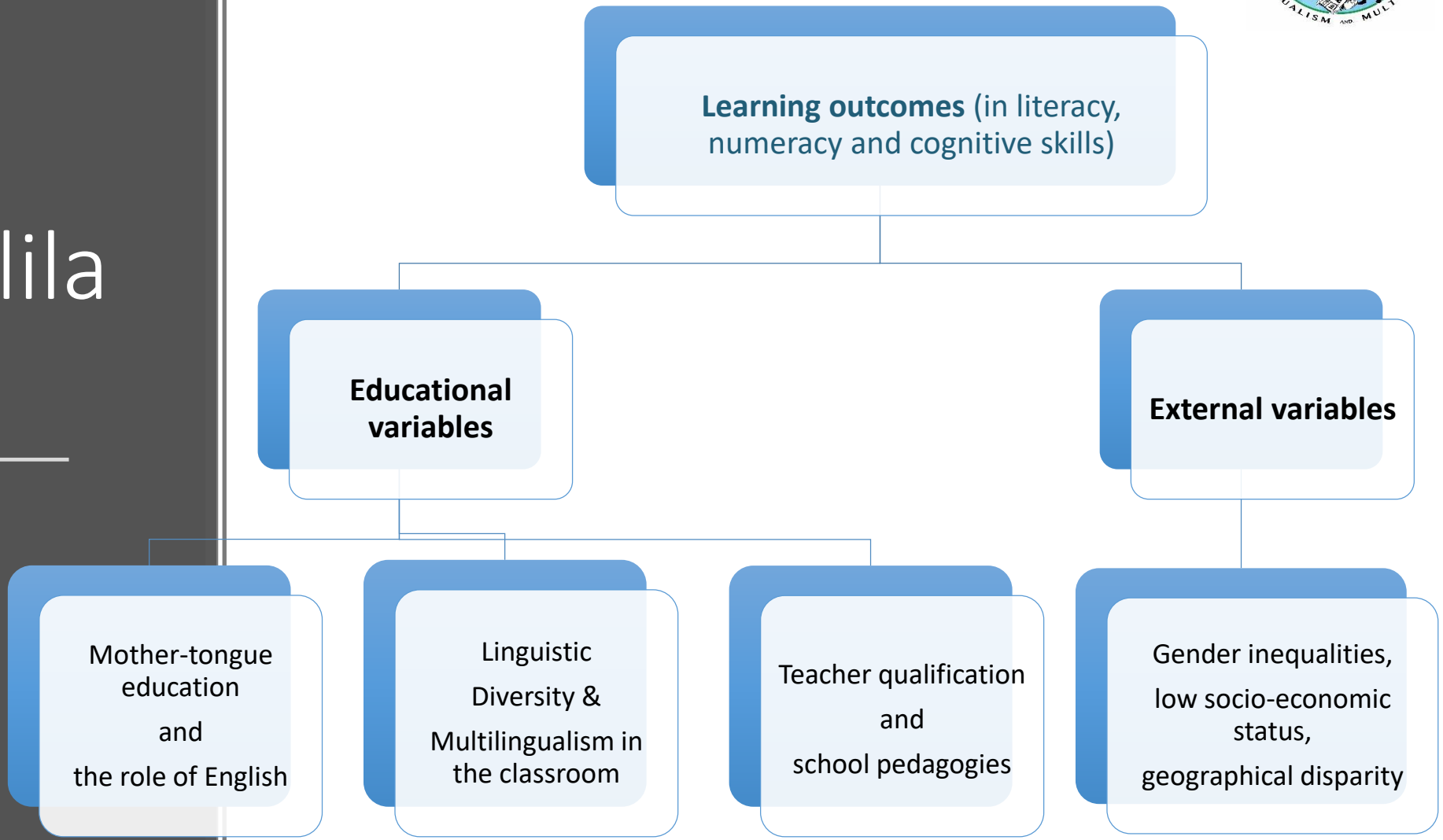
Other ‘realities’ of education in India

- Large class sizes, poor resources and teacher-centered pedagogies

Brinkmann (2015)

- Critical thinking not prioritised (Dyer and Choksi, 2002), little room for creativity or expression of independent thought (Jambunathan, 2005).
- Overage children: negative or positive factor in learning? (Alcott & Rose, 2017)
- Attempts to improve basic literacy and arithmetic skills among primary school children in India: Pratham’s large-scale ‘‘Read India’’ initiative (Banerji and Chavan, 2016).

The Multilila Project



Geographical and social factors

- Urban (Delhi, Hyderabad) vs. Rural (Bihar)
- Bihar is one of the less developed and educationally disadvantaged areas of India (Tsujita, 2009, Unesco EFA Report).
- **Urban areas**: Children living in slum vs. non-slum areas
- Urban slums are settlements with inadequate access to safe water, sanitation and infrastructure, poor structural quality of housing, overcrowding and insecure residential status.

→17% of urban citizens in India live in slums

→Linguistically more diverse areas because of large number of internal migrants who may speak other languages or varieties of the regional language.

The Multilila design

- Short longitudinal study: 2 points of data collection with a 12-14 month interval between them
- 1st round of data collection: Std IV (October-December 2017)
- 2nd round of data collection: Std V (November 2018- January 2019)
- N. Delhi & Hyderabad (Urban contexts: slum vs. non-slum areas)

- Patna (Bihar): cross-sectional data from town vs. non-remote rural areas, Stds IV and V

1. Surveys and questionnaires

- *Language* questionnaire – Child (Demographic info, Language use info, socioeconomic variables)
- *Headteacher* questionnaire
- (Maths & Language) *Teacher* questionnaire

- ***Classroom observation*** **tool**

Classroom observation tool

Section 3: Observation of Teacher Activity and Child Response:

[Please write one or more codes, where relevant. For example: A child may be listening and then repeating so in 3.3 insert codes 1 + 3)

Teacher activity codes:

1= Reading aloud
2= Verbal instruction
3= Telling a story
4= Writing on board
5= Demonstrating
6= Asking questions
7= Showing/talking about audio/video
8= Maths exercises
9= Problem solving exercises
10= Giving oral feedback
11= Experimentation
12= Marking papers/work completed
13= Taking dictation
14= Off-task
15= Classroom management/discipline
16= Reviewing or Summarising previous lesson
88= Other (specify)

Children's response codes:

1=Listening
2=Individual speaking
3= Repeating/choral response
4= Writing
5= Copying text
6=Reading
7=Reading aloud as a class
8= Calculating
9= Asking for clarification
10= Problem-solving
11= demonstrating
12= Uninvolved
88= Other (specify)

Language Codes

1= Bhojpuri
2= Haryanvi
3= Hindi
4= Magahi
5= Maithali
6= Punjab
7= Telugu
8= Urdu
9= English
10= Translanguaging
88= Other (specify)

3.1 Teacher activity	**T 1**	**T 2**	**T 3**	**T 4**	**T 5**	**T 6**	**T 7**	**T 8**	**T 9**	**T 10**	**T 11**	**T 12**	**T 13**	**T 14**	**T 15**	**T 16**	**T 17**	**T 18**	**T 19**	**T 20**	**T 21**	**T 22**	**T 23**	**T 24**	**T 25**	**T 26**	**T 27**	**T 28**	**T 29**	**T 30**
3.2 Languages used																														
3.3 Children's response																														
3.4 Languages used																														

2. Cognitive tasks

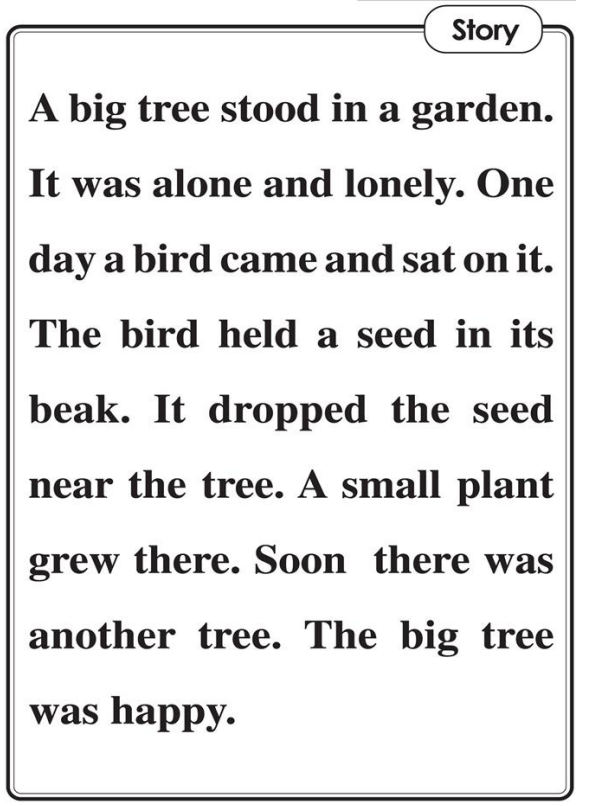
We tested children's problem-solving, complex working memory and attention skills

3. Literacy

- ASER (Basic literacy – www.asercentre.org):

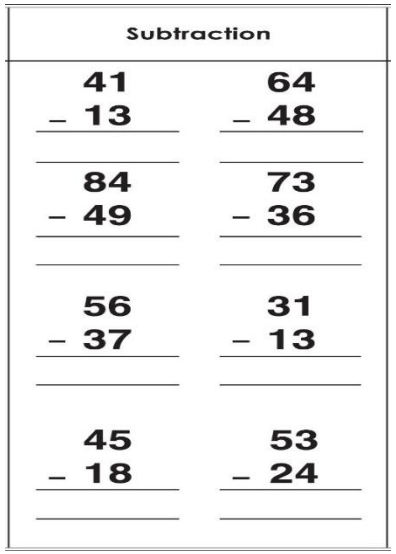
Letter naming, single word reading, reading of sentences, reading of passages and a couple of comprehension questions.

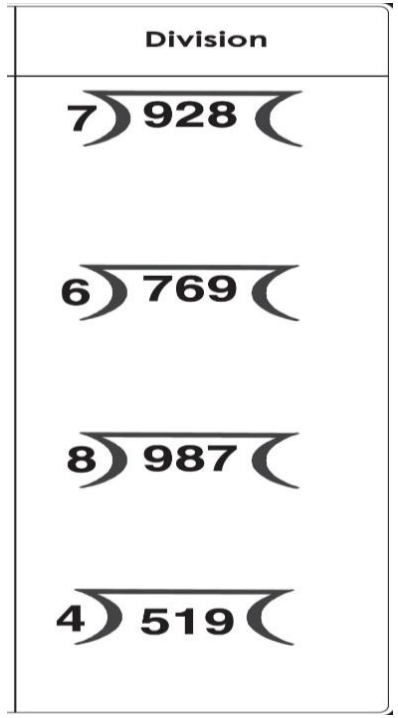
- Administered in the school language and English.



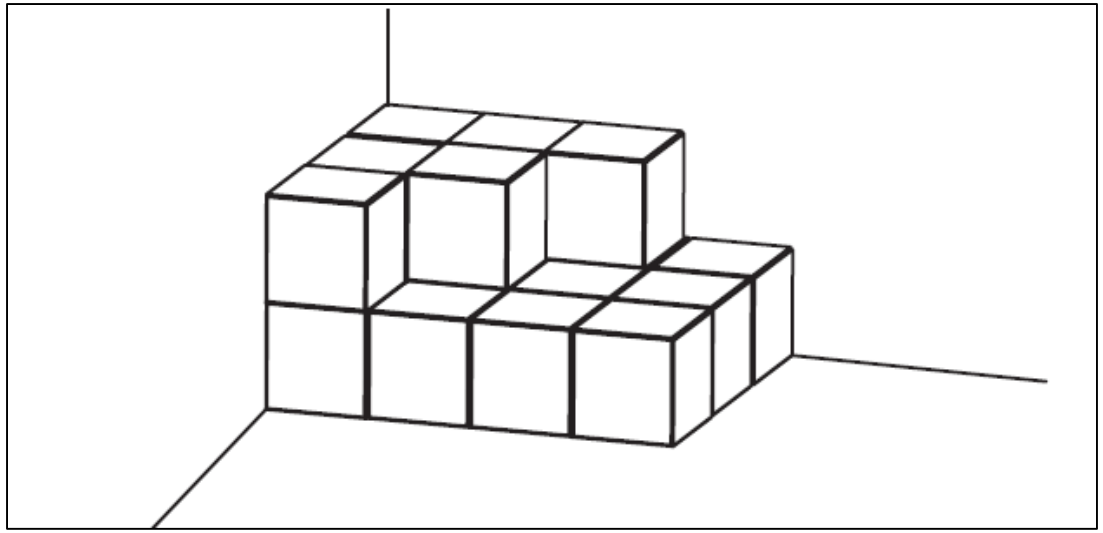
4. Basic Numeracy skills (ASER): Subtraction and Division

- Subtraction and Division tasks have a better discriminant value compared to Addition and Multiplication
- Division is the hardest of all four.





5. Mathematical reasoning: Word problems



- Most children could not read the problem so the researcher read it to them in Hindi or Telugu

Question 1:
Sita stacks the boxes (image 1) in the corner of the room. All boxes are the same size. How many boxes has she used, in total? [Please tick/circle]

A	25
B	19
C	18
D	13

Children in Std IV from Delhi & Hyderabad

Delhi (N= 397)					
Site	n	Medium of Instruction	n	Gender	n
Slum	194	**English**	251	Girls	198
Non-slum	203	**Hindi**	146	Boys	199

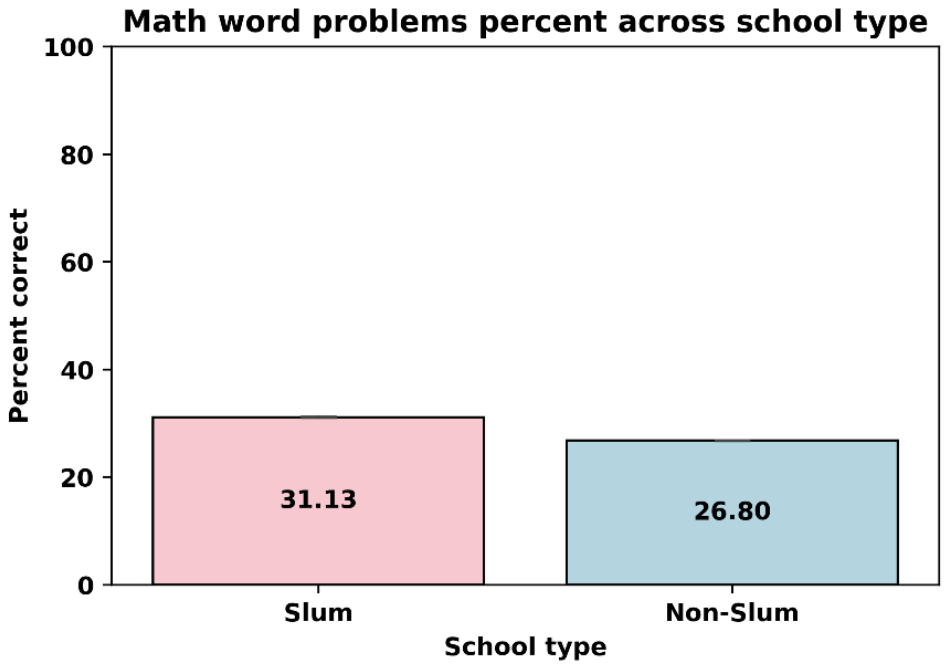
Hyderabad (N= 461)					
Site	n	Medium of Instruction	n	Gender	n
Slum	243	**English**	175	Girls	256
Non-slum	218	**Telugu**	286	Boys	205

Age of participants across the two cities

City	Range (in years)	Mean	SD
Delhi	8-12	8.77	0.63
Hyderabad	7-15	9.58	1.19

Some results: The ‘slum effect’ in Delhi

Mathematical Reasoning skills



- Slum > Non-slum

Task	Slum vs. Non-slum
Math word problems	U= 17267 (p= .02)*

- The urban poor may have an added advantage of dealing with quantity phenomena, the relationships and patterns in **multilingual and multi-communicative** contexts (cf. Stillman & Galbraith, 1998; Schoenfeld, 1996)

→ Would this predict better problem-solving skills for children in slum areas?

Children in slums & life experience

The role of language in education: Medium of instruction in Delhi and Hyderabad

- *Can monolingual education be a target in a multilingual society?*

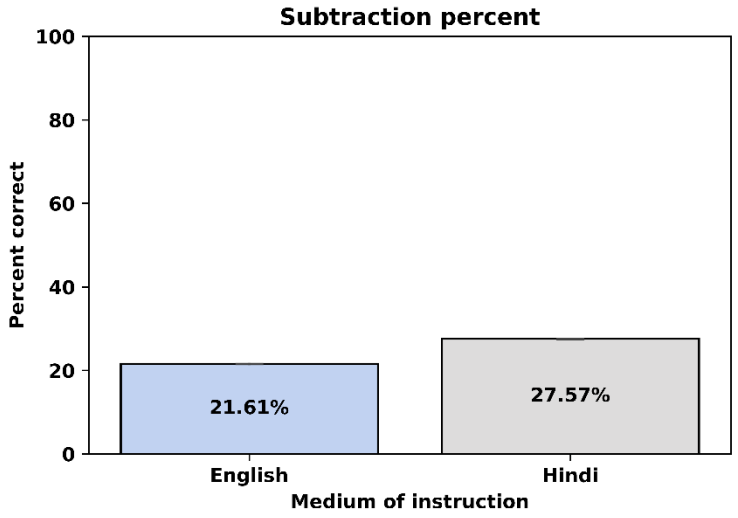
Medium of instruction: classification

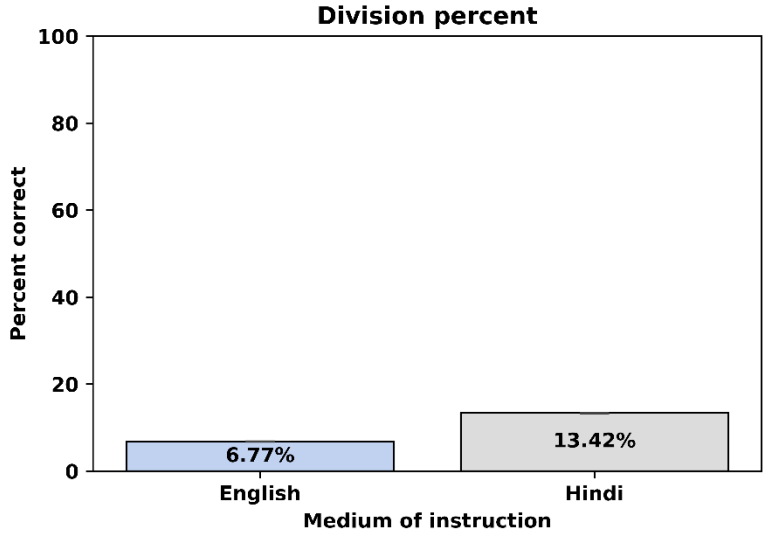
English (EMI), Hindi or Telugu

Officially assigned by the board of education

Textbooks, assessment and teaching carried out in the official medium.

Numeracy (subtraction and division): Delhi

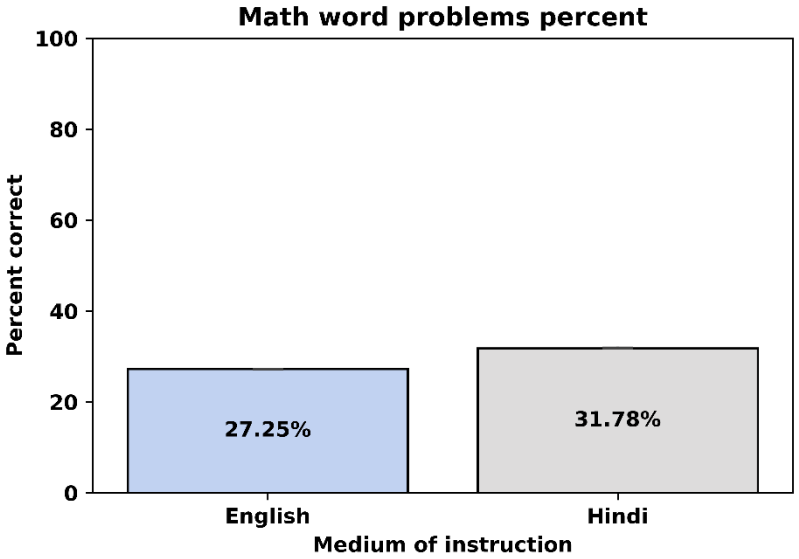


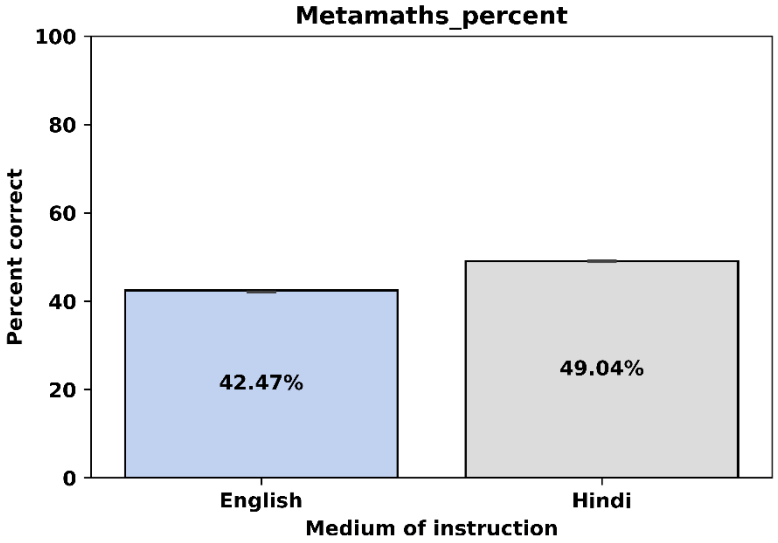


Hindi medium > English medium

Task	English vs. Hindi
Subtraction	U=15558 (p =.008)**
Division	U= 14842 (p<0.001)**

Mathematical reasoning (Delhi)





Hindi medium > English medium

Task	English *vs.* Hindi
Math word problems	U=15803 (p=0.01)**
Metamaths	U=15921 (p=0.02)*

Low learning outcomes.

Is a monolingual classroom a reality?

Delhi Schools

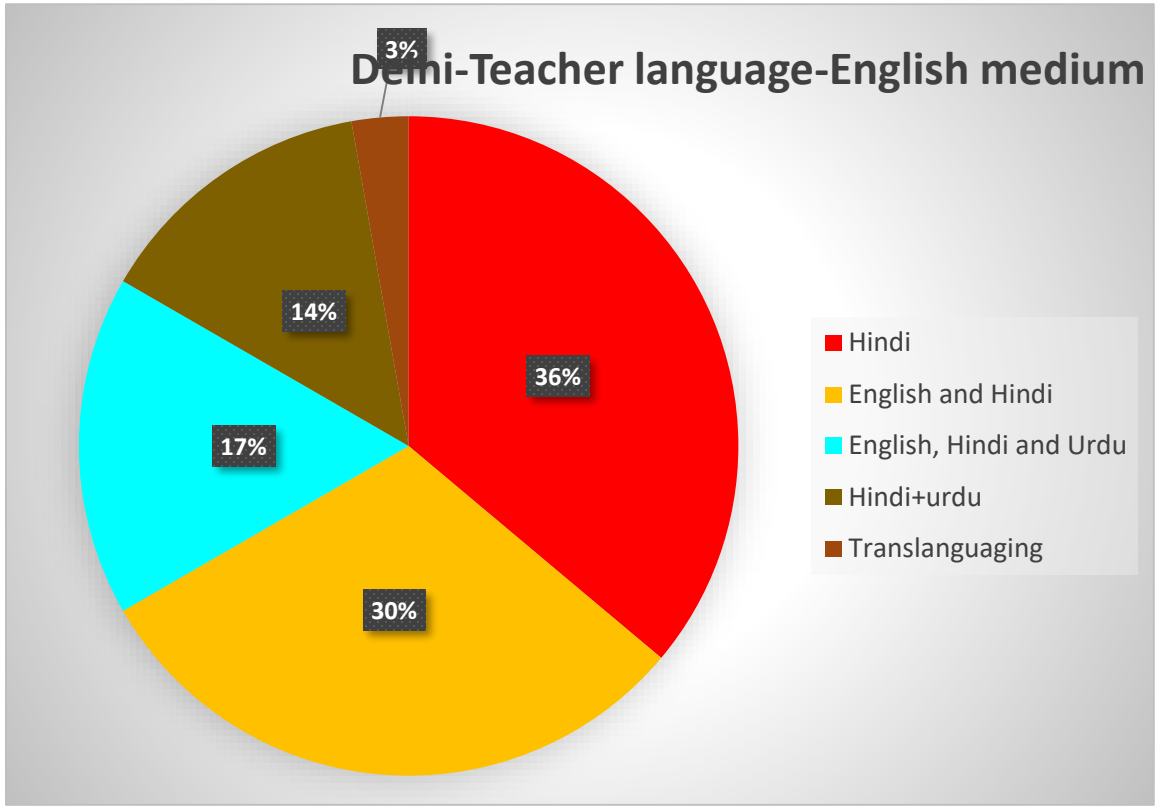
- 3 English-medium
- 2 Hindi-medium

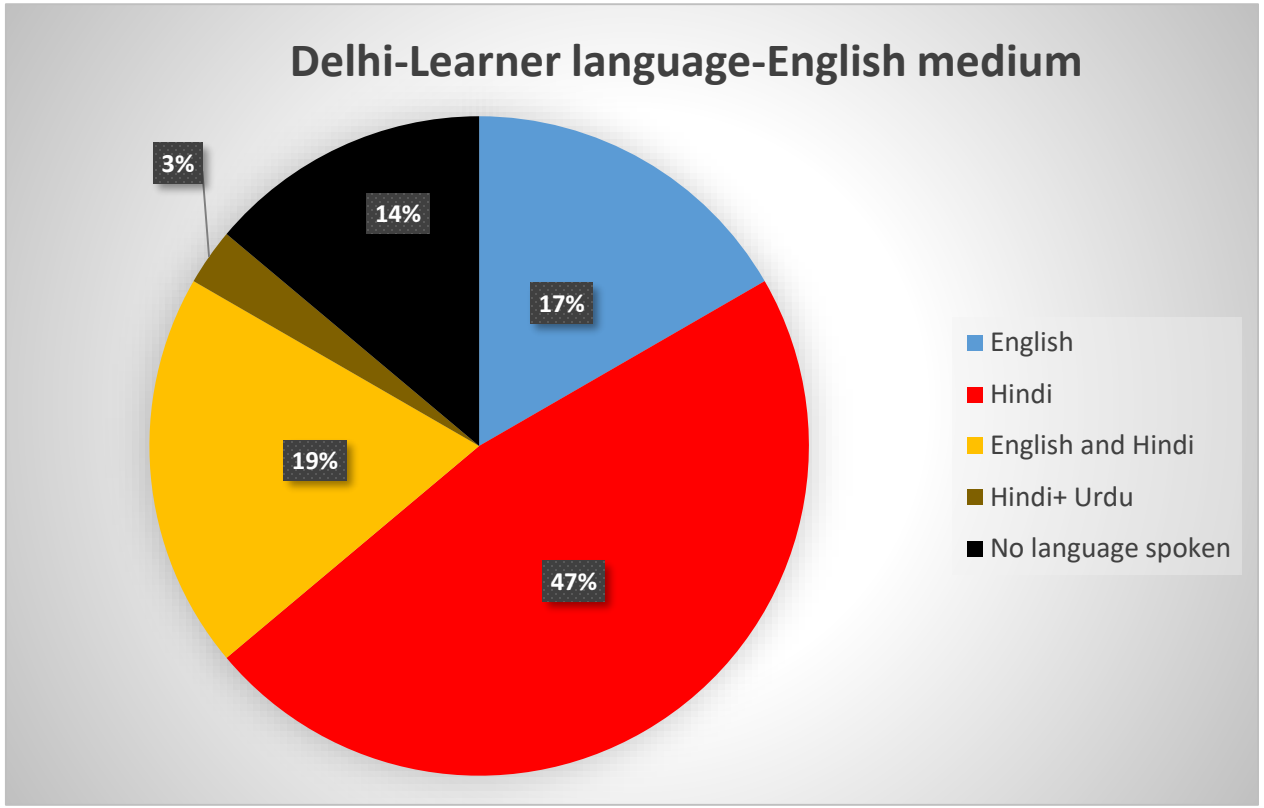
Hyderabad Schools

- 7 English-medium
- 13 Telugu-medium

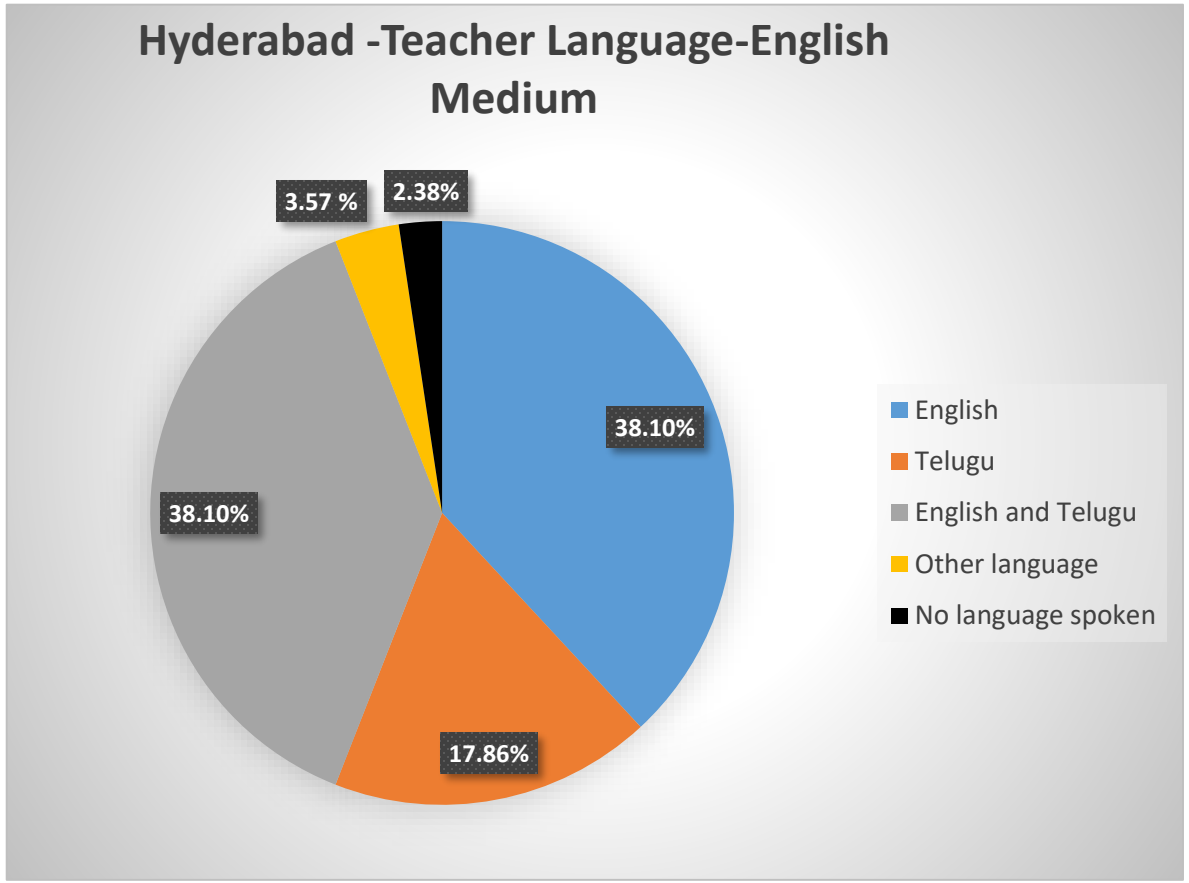
- Data from observations of English Language class and Math class from each of these schools.

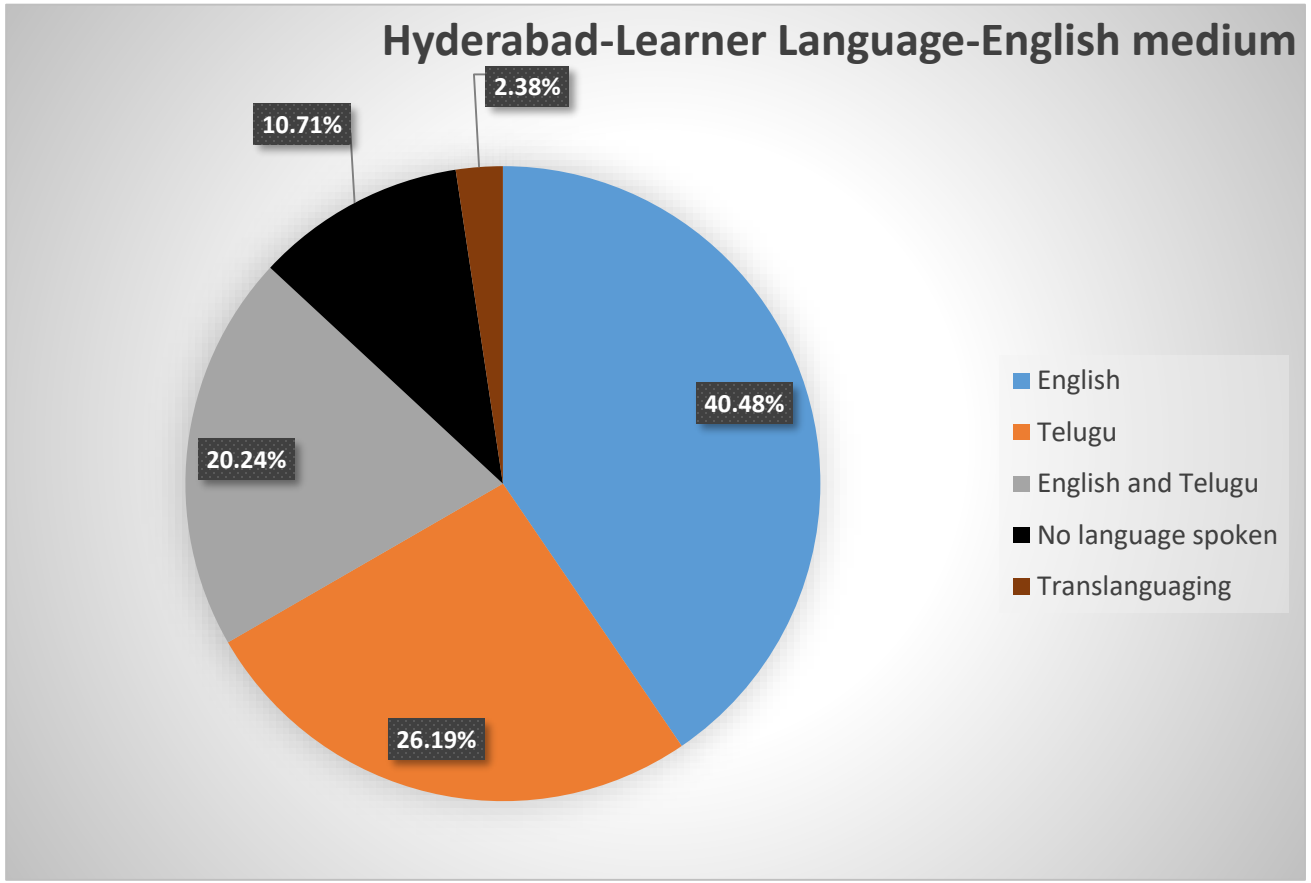
Language use in EMI schools in Delhi



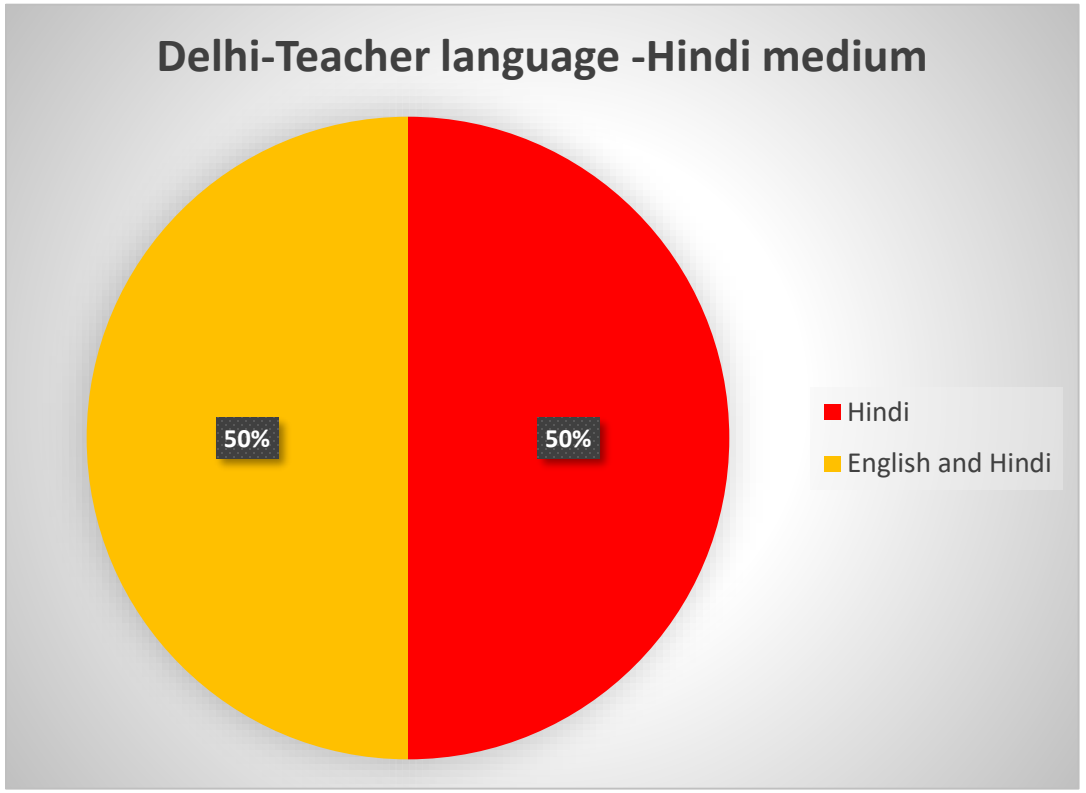


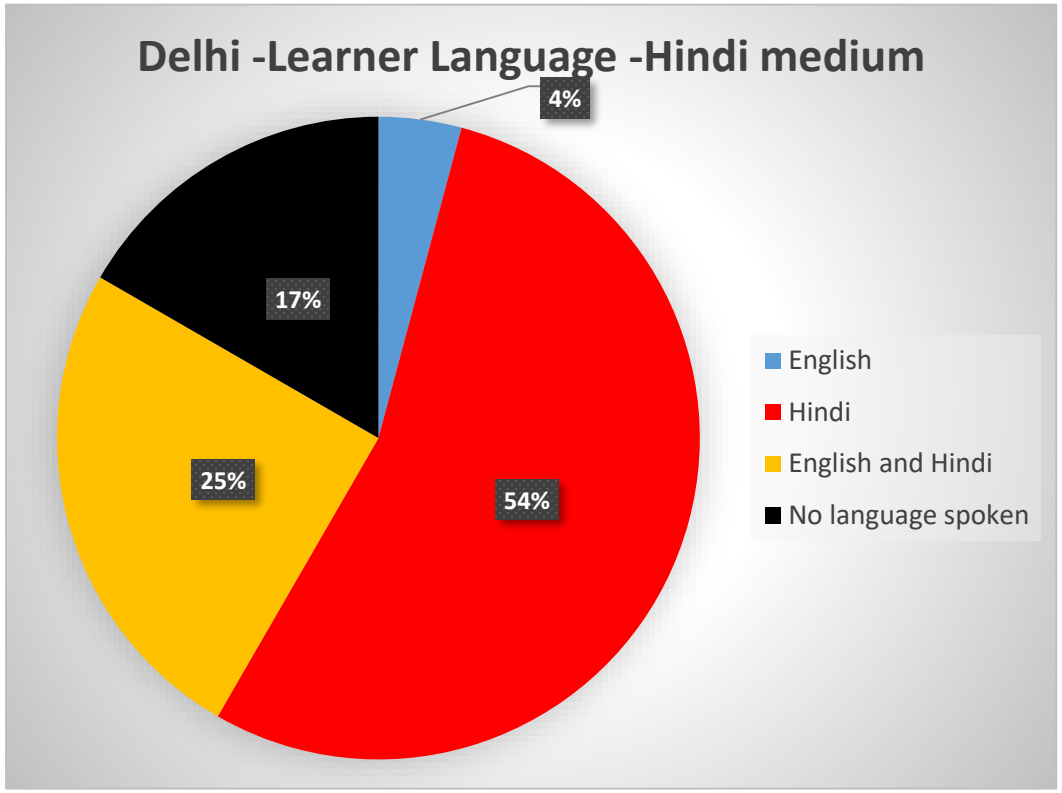
Language use in EMI schools in Hyderabad



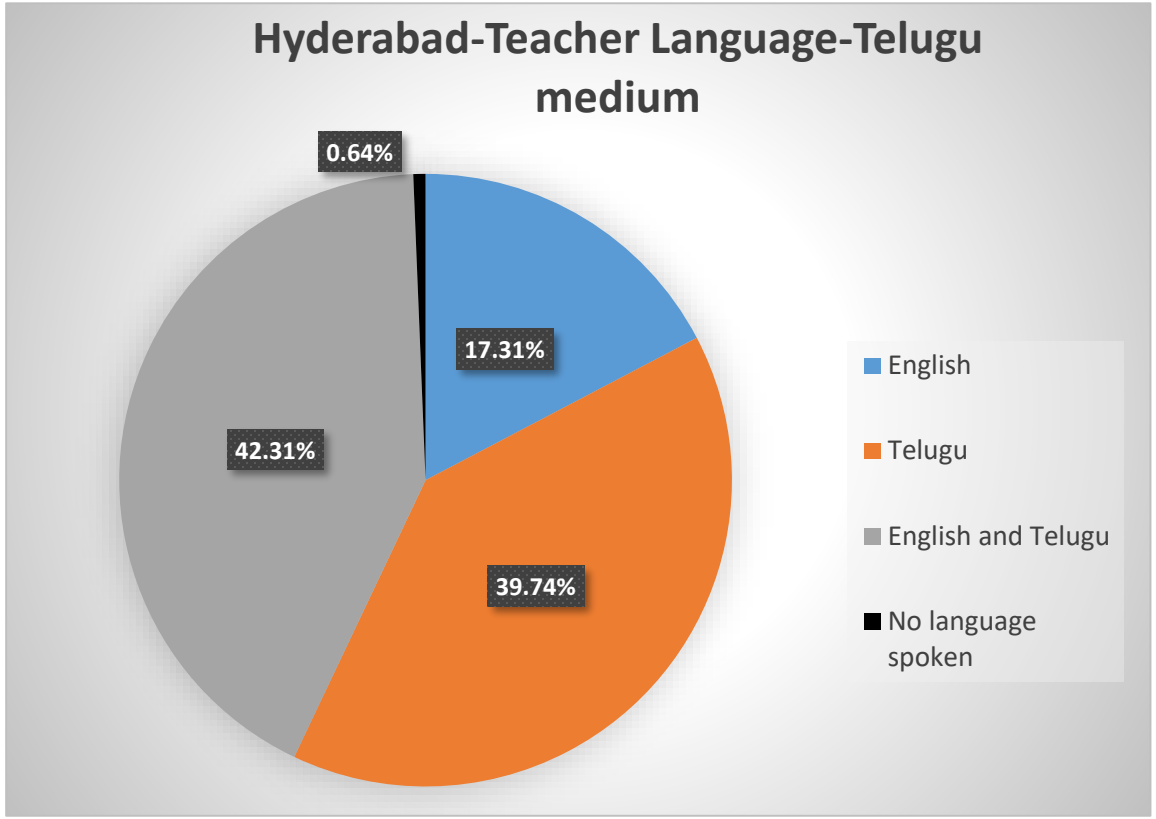


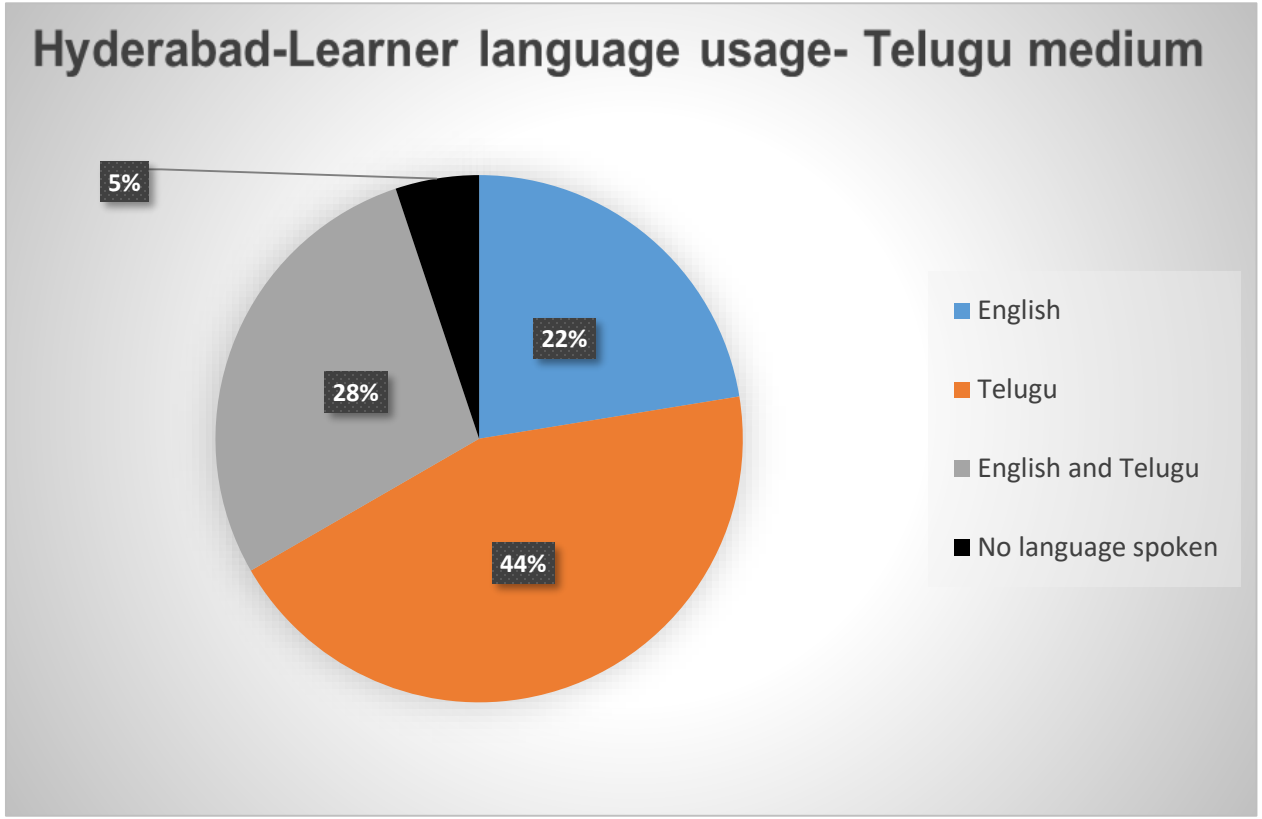
Language use in Hindi-medium schools - Delhi





Language use in Telugu-medium schools - Hyderabad





Multilingualism and medium of instruction

- None of the **official** mediums of instruction are used as separate and well-circumscribed languages in the actual teaching context

→ Multilingual individuals resort to multiple languages in classroom (both teachers and students) – even when the official medium of instruction is the regional language

- Is this detrimental to transfer of knowledge or is it sufficient for teacher and student to share the same pool of linguistic resources?
- Can multilingual practices lead to academic language use?

Low learning outcomes: Poor learners ?

Delhi schools	**N=397 (Overall)**	**N=333 (Outliers excluded)**
Tasks	Mean (SD)	Mean (SD)
Math tasks		
Number recognition	95.22 (13.83)	98.68 (6.86)
Subtraction	23.80 (22.14)	28.37(21.31)
Division	9.22(15.19)	10.99(15.99)
Metamaths	43.88(35.70)	52.31(32.83)
Word problems	28.92(22.43)	31.05(22.61)
Literacy tasks		
ASER English	53.91(25.79)	59.82(23.25)
ASER Hindi	75.64(29.12)	83.15(22.25)
Cognitive tasks		
Raven's Progressive matrices	55.66(15.72)	57.59(15.32)
N-back (A')	0.68(0.15)	0.69(0.14)
Flanker task		
Conflict effect(RT)	-27.98(73.70)	- 27.32 (69.23)
Conflict effect (Accuracy)	45.45(21.73)	46.23(21.26)

- We excluded participants who scored **0** on *5 or more tasks/subtests* from the sample.
- Overall,16% (n=64) of participants were removed from Delhi.

Sample profile of a poor learner

Participant 1	**English-medium Slum school (Delhi)**
Age/Gender	9 years/Female
Home language	Bihari
Other languages	Bengali, Hindi
Preferred language (watching TV, counting, interacting with parents)	Bihari, Bengali, Hindi
Raven's score	52.7% (Close to the group mean 57.59%)

Sample profile of a poor learner

Participant 2	**Hindi-medium Slum school (Delhi)**
Age/Gender	12 years/Male
Home language	Hindi
Other languages	Bhojpuri, English
Preferred language (watching TV, counting, interacting with parents)	Watching TV: Bhojpuri, Hindi and English Interaction with parents/siblings: Hindi
Raven's score	27.77% (far below the mean of the group 57.59%)

- Learning difficulties?

In lieu of conclusions

Overall, Hindi medium of instruction shows better learning outcomes and better cognitive skills in data from Delhi schools

-- The ‘slum’ effect in Delhi: social diversity and life experience contribute to cognitive profiles

-- Children who score ‘0’ in school skills: the role of language vs. cognitive skills could inform us on learning difficulties or disability

Open questions

- **Other factors** (not considered yet):
- Low school attendance rates (child and teacher);
- Links between the school and the society? (in materials or method of teaching)
- Distance between language of instruction and oral language (bookish Hindi and spoken Hindi)
- Distance between language of instruction and home language (Hindi / Bhojpuri)
- Noise

Thanks to:

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Local education authorities in Delhi and Hyderabad

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You, for your attention!

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Nainy Rao

Shitika Chowdhary

Shalini Yadav

Yashika Chandna

SUVARNA ALLADI

ABHIGNA REDDY S

ANU NAGALAKSHMI

DEEPA R

DEDEEPYA B

JOSHUA REDDY

JYOTHI M