

# Accelerating Literacy Through Same Language Subtitling

February 8, 2022

The logo consists of a purple square with a white border. Inside the square, the text "The Campaign for" is in a small font at the top, "GRADE-LEVEL" is in a larger font in the middle, and "READING" is in the largest font at the bottom.

The Campaign for  
**GRADE-LEVEL**  
**READING**

# Moderator



## Kyle Zimmer

President, CEO & Co-Founder

First Book

@FirstBook

# Presenters



**Brij Kothari**

Founder  
PlanetRead  
@PlanetRead



**Deborah L. Nichols, Ph.D.**

Associate Professor  
Human Development and Family Studies,  
College of Health and Human Services  
Purdue University

# Commentators



**Kelly Butler**  
CEO  
Barksdale Reading Institute  
@MSReads1



**Kristal Moore Clemons, Ph.D.**  
National Director  
Children's Defense Fund  
Freedom School  
@KrisClemonsPhD



**Michael H. Levine, Ph.D.**  
SVP Learning & Impact  
Noggin/Nickelodeon  
@NOGGINKids

# India's Billion Readers (BIRD) Initiative

## Same Language Subtitling on TV



**Brij Kothari**



GLR Learning Tuesday, Co-sponsored by First Book  
February 8, 2022



## **A Day in the Life of Sangita Kumri | Student**

**Grade 5 | Age : 14**

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**Location : Utra Patti village,  
Jehanabad, Bihar**



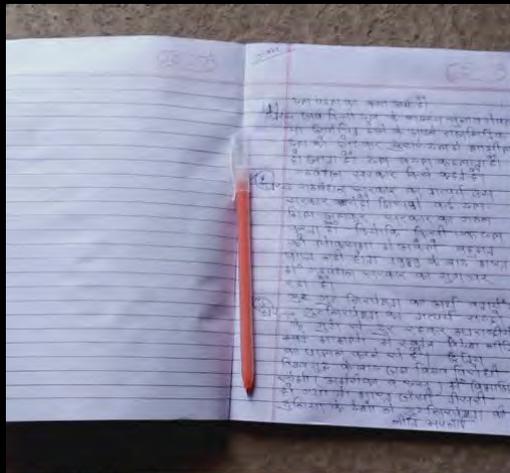
**5:00 AM**

Every day work for Sangeeta in the morning is to get the buffalo out of the barn.



**6:00 AM**

**After that she cuts the grass for the animals and washes the Utensil.**



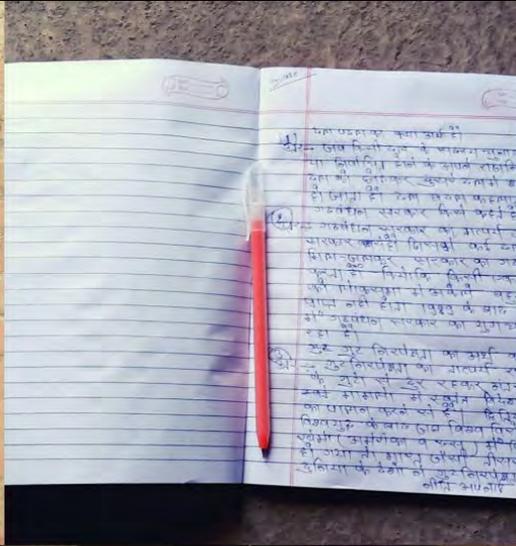
" लॉकडॉन की वजह से स्कूल बंद हुआ है तब से किताबें पढ़ने का बिल्कुल भी मन नहीं करता है क्योंकि किताबें छोड़े हुए 2 साल हो गए हैं।"



**2:00 PM**

Entire day Sangita is busy in the household chores because of which she cannot study at home.

" I don't feel like studying since it's been 2 years that school is closed because of lockdown"



संगीता कहती हैं कि " जब से लॉकडॉन लगा है तब से ऐसा लग रहा है कि मैं किताबें पढ़ना और अक्षर पहचानना भी भूल गई हूं।"

**"Ever since the lockdown has been declared, it seems that I have forgotten to read books and even recognize letters"**





**6:00 PM** Sangita cooking dinner for her family



**8:00 PM**

"टीवी देखना अच्छा लगता है  
क्योंकि पूरे दिन काम करते रहती हूं  
तो थोड़ा मनोरंजन भी हो जाता है"

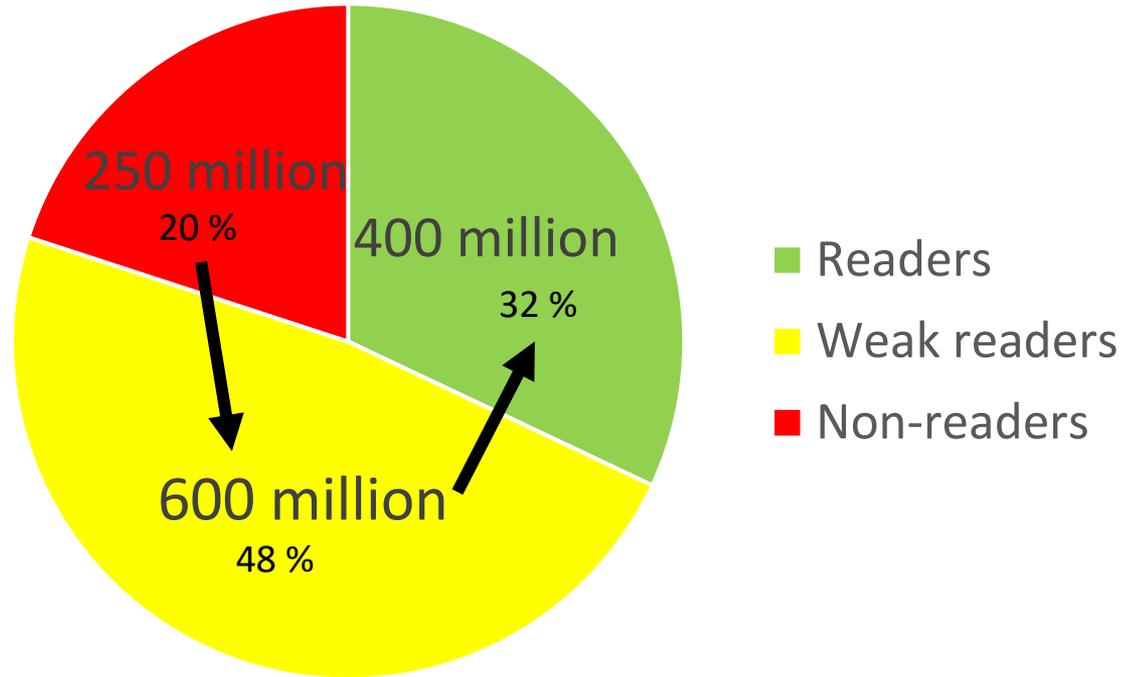
**"Because I work all day long,  
I like to watch TV for some  
entertainment"**

## Video



No, I don't know how to read.

# India's Reading Challenge

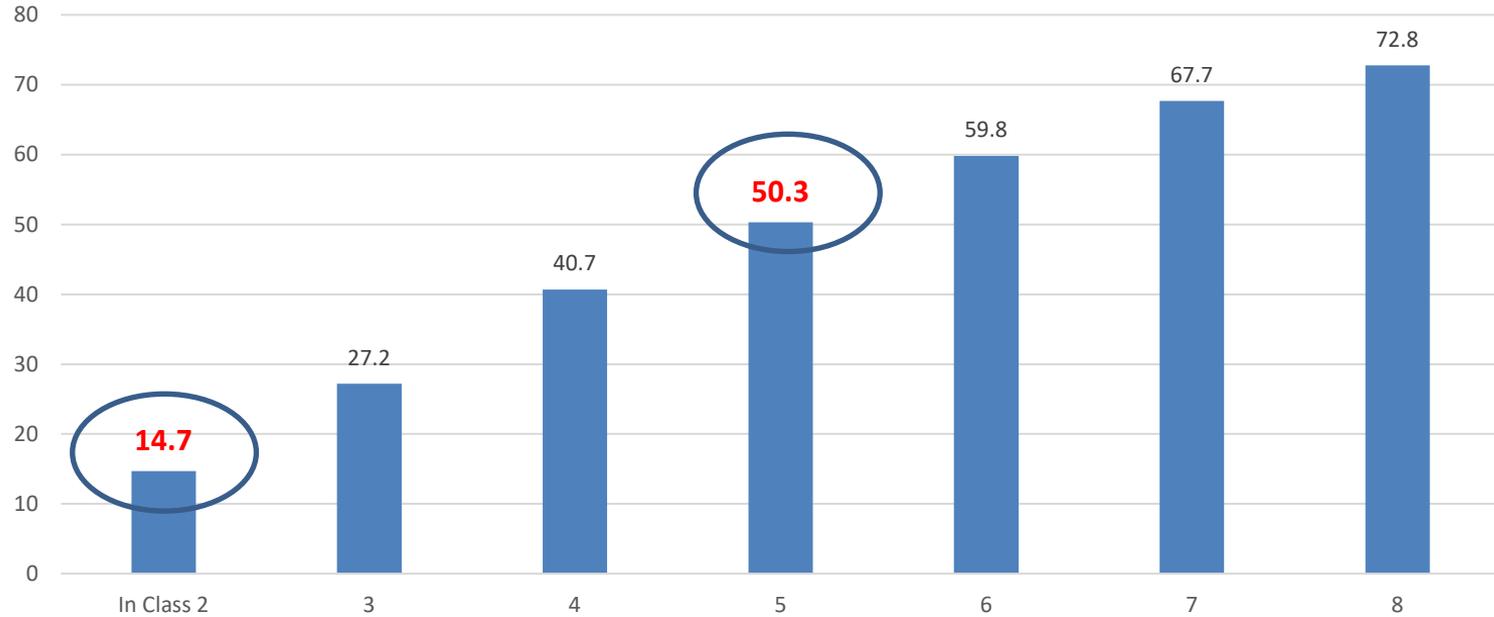


**850 million cannot read simple texts**

Estimate based on: [Kothari & Bandyopadhyay \(2010\)](#)

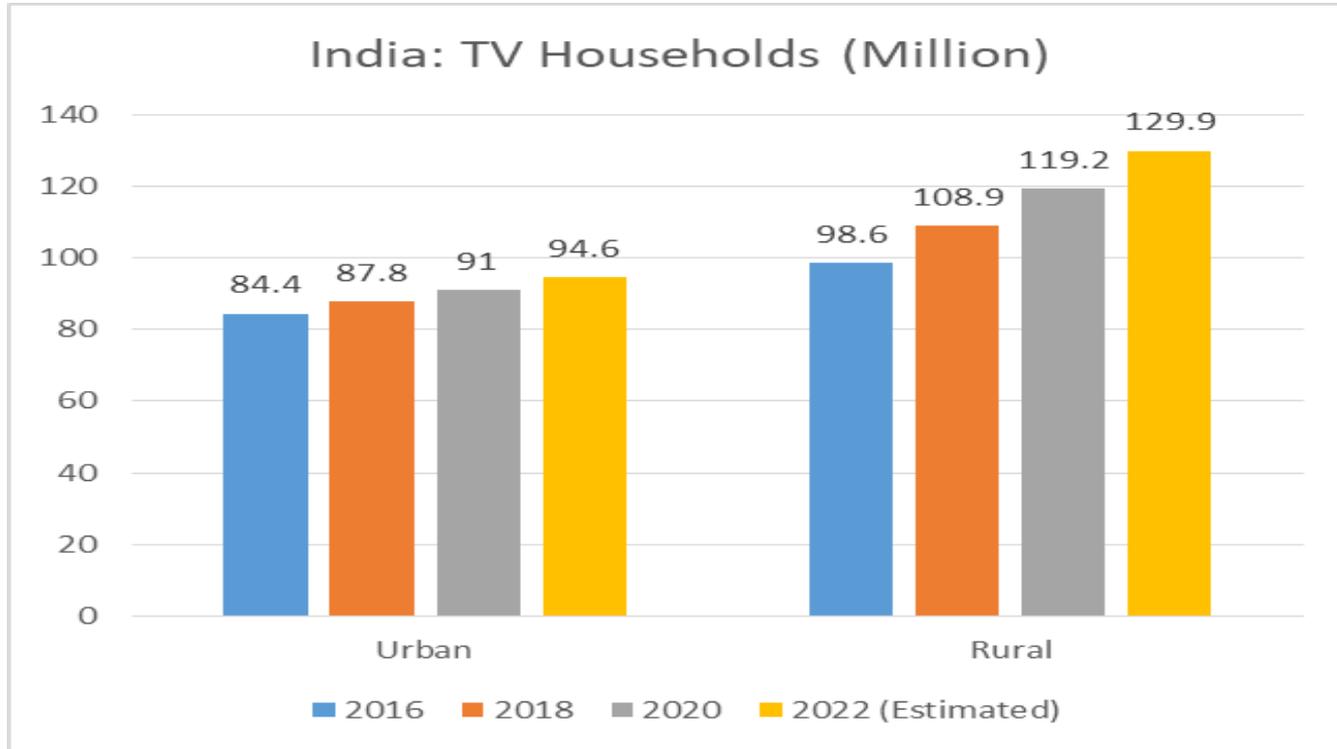
# India's Reading Challenge

Can read at Class 2 level (%)



Source: ASER (2018)

## TV Access in India



- TV Viewers: One Billion
- Screen time: 4 hours per day, for 70 years

Video

## Same Language Subtitling (SLS)



पार वाले पर ले

Video



Today's your day

Video

## Eye-tracking sample, weak-literate

No SLS

SLS



वो तुझे कैसे बयाँ करें

Subject: Sugna, female, age 24, Umarni village, Rajasthan

Video

## Eye-tracking sample, weak-literate

No SLS



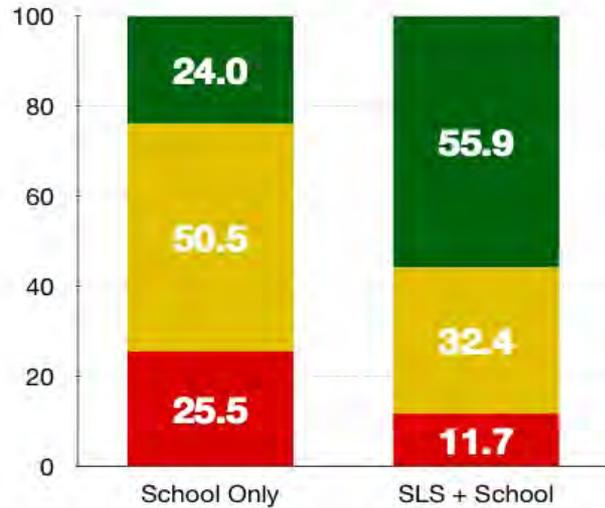
SLS



कुम्... कितने आदमी थे?

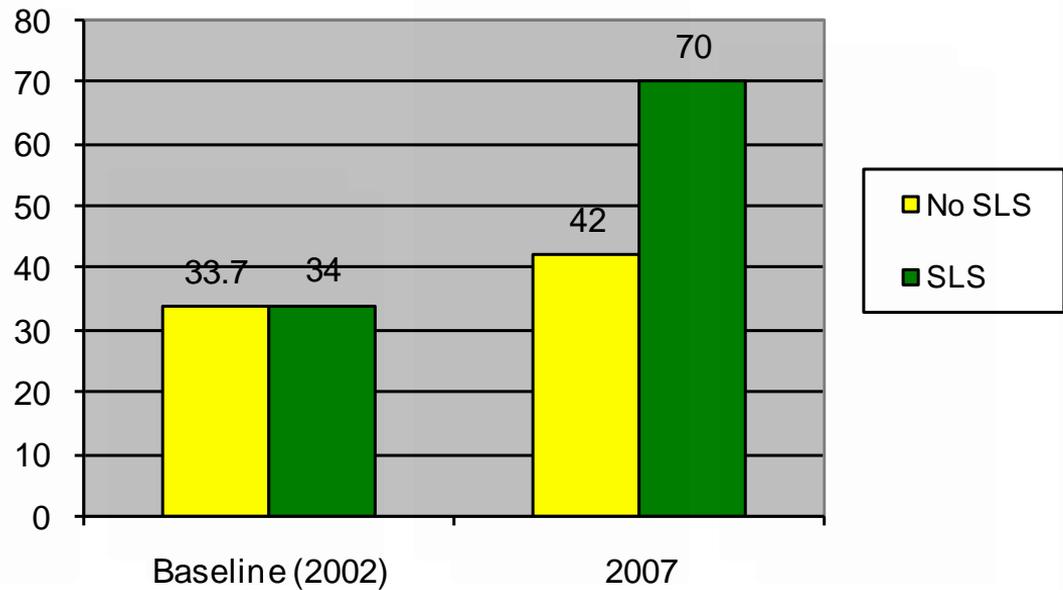
Subject: Sugna, female, age 24, Umarni village, Rajasthan

# Impact of SLS *on illiterate students*



■ Good-Reader ■ Early-Reader ■ Non-Reader

**Newspaper reading among early-readers**  
% Reading at least once a week



Data collected independently, after 4.5 years of SLS on national TV, by AC Nielsen (ORG-CSR)



**US\$ 0.25 for 70 years of reading to one person**



# Policy context

- Accessibility Standards for TV under the Rights of Persons with Disabilities (RPwD) Act, 2016
  - 50% entertainment content to have SLS by 2025
- Pandemic: 300 million children shut out from schools
- Global SDG 4: Quality Education

Video



**Same Language Subtitling**

# *Onscreen Print, Language, and Literacy Skills: What Does the Research Say?*

Deborah L. Nichols\*, Ph.D.

Purdue University

February 8, 2022

# Overview

- Who is Affected by What Content Under Which Circumstances?
  - Child Factors
  - Content Attributes
  - Contextual Features
- Why is Onscreen Print Effective?
  - Traveling Lens Model
  - Dual Coding Theory
- Recap

# Who is Affected by What Content Under Which Circumstances?

Micro-level CONTENT ATTRIBUTES need to work in concert with macro-level CONTEXTUAL FEATURES to provide duplicative content across multiple modalities while taking into account a CHILD'S INDIVIDUAL DIFFERENCES

## Outcomes

### Child Factors

- Child Demographics
- Science of Learning
- Cognitive Constraints
- Basic Cognition
- Prior Knowledge
- Transfer Deficit

### Content Attributes

- Form & Content
- Macrostructure/Frame
- Platform/Affordances
- Instructional Strategies
- Appeal & Usability
- Character Attributes
- Interactivity

### Contextual Features

- Family Demographics
- At-Risk Families
- Environmental Expectations
- Early Educators
- Parent-Child Interactions
- Parenting Styles

Barr, R., & Linebarger, D. L. (2010). Introduction to the special issue: Content and context in infant-directed media. *Infant and Child Development*, 19(6), 553-556. [Guest Editor, Special Issue]. Barr, R., & Nichols Linebarger, D. L. (2016). *Media exposure during infancy and early childhood: The effect of content and context on learning and development*. New York: Springer. Linebarger, D. L., & Vaala, S. (2010). Infants and toddlers, screen media, and language development: An ecological perspective. *Developmental Review*, 30(2), 176-202.

# Child Factors

Outcomes

Child Factors

- Child Demographics
- Science of Learning
- Cognitive Constraints
- Basic Cognitive Processing
- Knowledge/Experience
- Transfer Deficit

## Word Recognition | Decoding

- Deaf | Hearing Impaired<sup>1</sup>
- English | Other Language Learners<sup>2-6</sup>
- School-Age<sup>4,7</sup>

## Vocabulary Knowledge

- Deaf | Hearing Impaired<sup>8-10</sup>
- Learning | Reading Disabilities<sup>1,11-14</sup>
- English | Other Language Learners<sup>2-6,15-21</sup>
- School-Age<sup>4,22</sup>

## Screen Content Comprehension

- Deaf | Hearing Impaired<sup>8-10</sup>
- Learning | Reading Disabilities<sup>11-14</sup>
- School-Age<sup>7,22,23</sup>

## Listening Comprehension

- English | Other Language Learners<sup>24</sup>
- College | Adults<sup>2,25</sup>

## Reading Comprehension

- English | Other Language Learners<sup>3-6, 15-21</sup>
- School-Age<sup>1,26</sup>
- College | Adults<sup>25,26</sup>

## Motivation | Affinity | Usefulness

- Deaf | Hearing Impaired<sup>29</sup>
- Learning | Reading Disabilities<sup>30,31</sup>
- English | Other Language Learners<sup>5</sup>
- School-Age<sup>7,32,33</sup>
- College | Adults<sup>27</sup>

# Content Attributes

Outcomes

Content Attributes

- Form & Content
- Macrostructure/Frame
- Platform/Affordances
- Instructional Strategies
- Appeal & Usability
- Character Attributes
- Interactivity

## Potentials

- All TVs since the mid-1990s have CC decoders<sup>7,34</sup>
- Streaming services have the option to turn on captions in multiple languages
- Multiple studies support the use of onscreen print as supplemental literacy and language tools<sup>1-33</sup>



## Challenges

- Transcription issues
- Too much visual and verbal information can overwhelm attention (especially when not redundant)<sup>35</sup>
- Little attention to print (~9% of time OP present)<sup>35</sup>
- Those with < print experience/knowledge did best without onscreen print until a threshold number of views is reached<sup>36,37</sup>

# Contextual Features

Outcomes

Contextual Features

- Family Demographics
- At-Risk Families
- Environmental Expectations
- Early Educators
- Parent-Child Interactions
- Parenting Styles

Children growing up in poverty show larger gains from educ. screen media based interventions<sup>38,39</sup>

Children growing up in poverty use screen media more and value that experience more<sup>39-42</sup>

Low SES parents report engaging in shared screen media use in ways ~ to Middle SES parents' shared reading<sup>36</sup>

Incorporate simple strategies to encourage children to pay attention to onscreen print<sup>43</sup>

Repeated exposure helps make the print accessible for children with low redundancy for educational opportunity<sup>7,36,39,44</sup>

# Why Does Onscreen Print Work?

## Huston & Wright's Traveling Lens Model

- Comprehensibility of content drives attention
  - When understand content, > sustained attention
  - When boring or too difficult, attention wanes
- Prior knowledge, past experiences, and abilities affect comprehensibility
- Need a certain familiarity with and knowledge about print to begin to benefit
- Research suggests repeated exposure to onscreen print leads to > attention and enhanced learning<sup>7,36,39,44</sup>

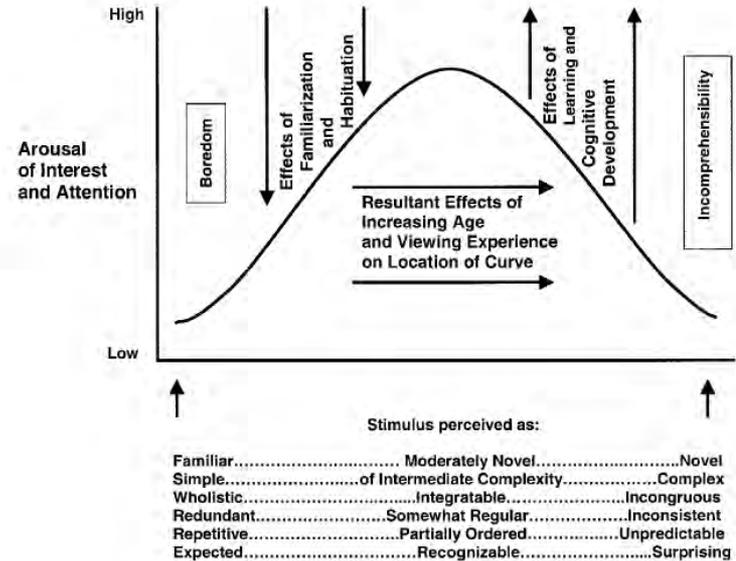


Figure 1. Traveling lens model. Reprinted from "The Forms and Codes of Television: Effects of Children's Attention, Comprehension, and Social Behavior," by M. L. Rice, A. C. Huston, and J. C. Wright, p. 32, in *Television and Behavior: Ten Years of Scientific Progress and Implications for the Eighties*, edited by D. Pearl, L. Bouthilet, and J. Lazar, 1982, Washington, DC: U.S. Government Printing Office. In the public domain.

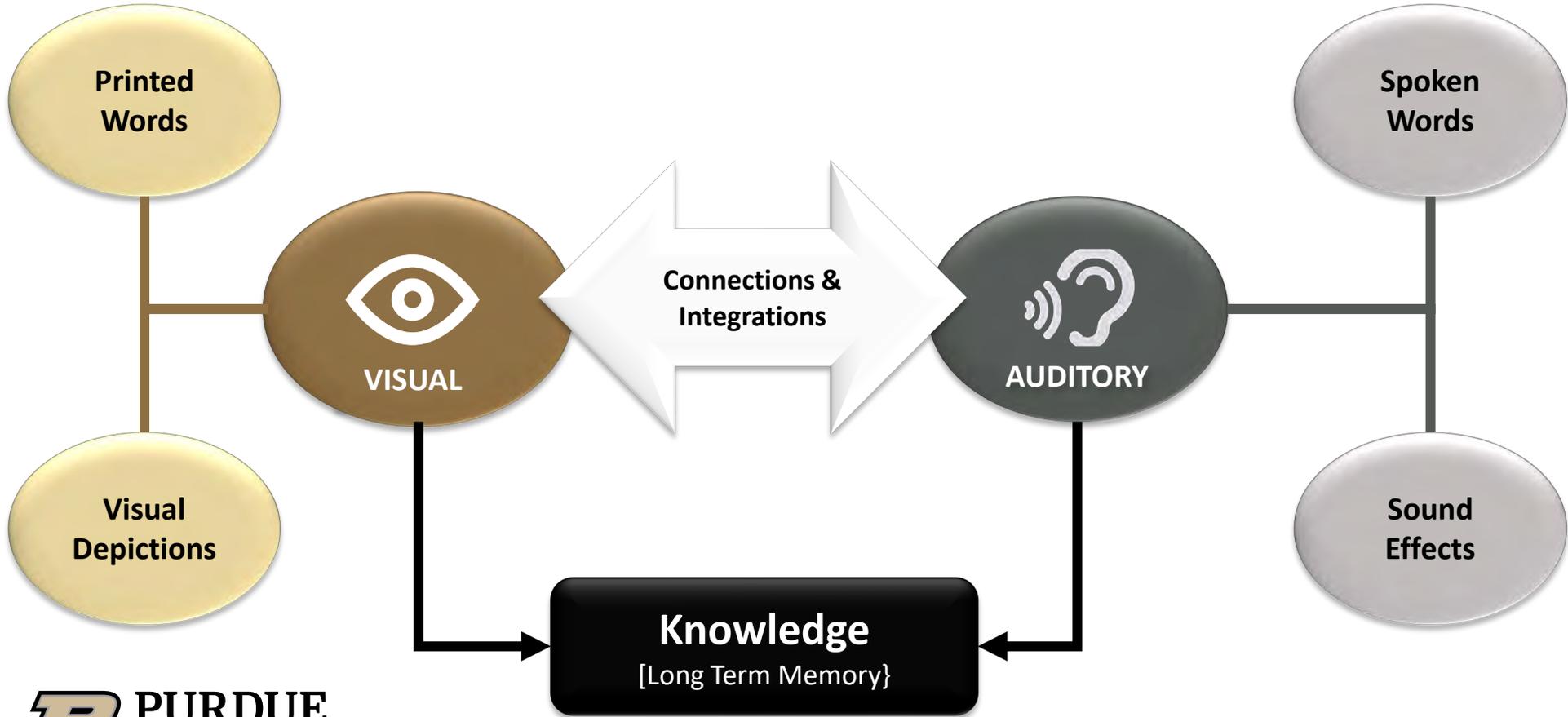
STIMULI

SENSES

WORKING MEMORY [limited]

SENSES

STIMULI



# To Recap

Children living in poverty have less access to traditional learning supports<sup>7,36,39,44</sup>

Research suggests that screen media content is preferred, valued, and effective as learning supports for these children<sup>39-42</sup>

Competence at learning from and perceived usefulness of media provide an opportunity to start with basic skills, motivate children, and move them toward stronger literacy skills<sup>7,32,33</sup>

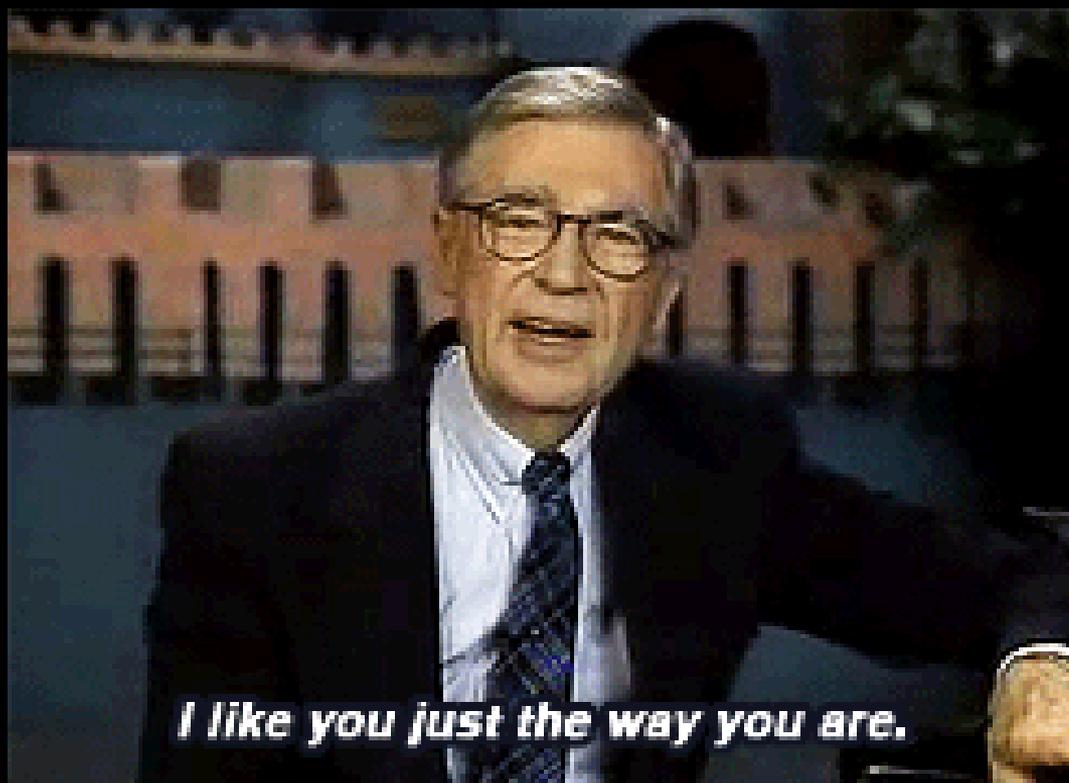
Once print familiarity is established and basic skills are developed, children will show enhanced benefits from both traditional and alternative learning supports<sup>36,37</sup>

IMPLICATIONS? Meet children where they are with the resources they have, prefer, and value<sup>36</sup>

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- **Post Doctoral Trainee:** Annie Moses (PhD, MSU), John Carroll University
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*I like you just the way you are.*

*Fred Rogers, Mr. Rogers' Neighborhood*

# Questions

**Deborah L. Nichols, Ph.D.**

[deborahnichols@purdue.edu](mailto:deborahnichols@purdue.edu)

+1.765.602.6388

# References

1. Koskinen, P.S., Bowen, C.T., Gambrell, L.B., Jensema, C.J. & Kane, K.W. (1997). Captioned television and literacy development: Effects of home viewing on learning disabled students. Paper presented at the Meeting of the American Educational Research Association, Chicago, IL.
2. Garza, T. (1991). Evaluating the use of captioned video materials in advanced foreign language learning. *Foreign Language Annals*, 24, 239-258.
3. Haugh, J. A., Wilson, R. M., & Koskinen, P. S. (1998, December). *Captioned television and vocabulary development: Effects of home viewing on second-language learners*. Paper presented at the meeting of the National Reading Conference.
4. Neuman, S., & Koskinen, P. (1992). Captioned television as comprehensible input: Effects of incidental word learning from context for language minority students. *Reading Research Quarterly*, 27, 95-106.
5. Parks, C. (1994). Closed captioned TV: A resource for ESL Literacy Education. ERIC Digest. Washington, DC: National Clearinghouse for ESL Literacy Education. (EDRS No. EDO-LE-94-02).
6. Price, K. (1984, Fall). Closed-captioned TV: An untapped resource. *MATSOL Newsletter*, 12, 4-5.
7. Linebarger, D. L. (2001). Learning to read using television: The effects of captions and narration. *Journal of Educational Psychology*, 93, 288-298.
8. Boyd, J., & Vader, E. A. (1972). Captioned television for the deaf. *American Annals of the Deaf*, 117, 34-37.
9. National Captioning Institute. (1983). Hearing-impaired children's comprehension of closed-captioned television programs. *Research Report 83-5*. Falls Church, VA: National Captioning Institute.
10. Nix, G. (1972). The effects of synchronized captioning on the assimilation of vocabulary and concepts presented in a film to intermediate level deaf children (Doctoral dissertation, University of Oregon, 1971). *Dissertation Abstracts International*, 132, 574A. (University Microfilms No. 72-8584).
11. Adler, R. (1985). Using closed-captioned television in the classroom. In L. Gambrell & E. McLaughlin (Eds.), *New Directions in Reading: Research and Practice*. Yearbook of the State of Maryland International Reading Association, 11-18.
12. Koskinen, P. S., Wilson, R. M., & Jensema, C. J. (1986). Using closed captioned television in the teaching of reading to deaf students. *American Annals of the Deaf*, 126, 493-498.
13. Koskinen, P. S., Wilson, R. M., Gambrell, L. B., & Jensema, C. J. (1986). Using closed captioned television to enhance reading skills of learning disabled students. In J. A. Niles & R. V. Lalik (Eds.), *Solving problems in literacy: Learners, teachers, and researchers* (pp. 61-65). Rochester, NY: National Reading Conference.
14. Koskinen, P. S., Wilson, R. M., Gambrell, L. B., & Jensema, C. J. (1987). *Using the technology of closed-captioned television to teach reading to handicapped students* (Performance Report, United States Department of Education, Grant No. G-00-84-300067). Falls Church, VA: National Captioning Institute.
15. Huang, H. C., & Eskey, D. E. (1999). The effects of closed-captioned television on the listening comprehension of intermediate English as a second language (ESL) students. *Journal of Educational Technology Systems*, 28(1), 75-96.
16. Perez, M. M., Van Den Noortgate, W., & Desmet, P. (2013). Captioned video for L2 listening and vocabulary learning: A meta-analysis. *System*, 41(3), 720-739.
17. Vanderplank, R. (2010). Déjà vu? A decade of research on language laboratories, television and video in language learning. *Language teaching*, 43(1), 1-37.
18. Danan, M. (2004). Captioning and subtitling: Undervalued language learning strategies. *Meta: Journal des traducteurs/Meta: Translators' Journal*, 49(1), 67-77.
19. Syodorenko, T. (2010). Modality of input and vocabulary acquisition. *Language learning & technology*, 14(2), 50-73.
20. d'Ydewalle, G., & Pavakanun, U. (1997). Could enjoying a movie lead to language acquisition?. In *New horizons in media psychology* (pp. 145-155). VS Verlag für Sozialwissenschaften, Wiesbaden.
21. Van Lommel, S., Laenen, A., & d'Ydewalle, G. (2006). Foreign-grammar acquisition while watching subtitled television programmes. *British Journal of Educational Psychology*, 76(2), 243-258.
22. Linebarger, D. L., Piotrowski, J. T., & Greenwood, C. R. (2010). Using captioned television as a supplemental literacy tool. *Journal of Research in Reading*, 33(2), 148-167.
23. Goldman, M., & Goldman, S. (1988). Reading with closed captioned TV. *Journal of Reading*, 31, 458.
24. Markham, P. I. (1989). The effects of captioned television videotapes on the listening comprehension of beginning, intermediate, and advanced ESL students. *Educational Technology*, 29, 38-41.
25. Shahsavandi, G. H. (2017). Effects of Closed-Caption Programs on EFL Learners' Listening Comprehension and Vocabulary Learning. *Journal of Studies in Learning and Teaching English*, 6(1), 47-70.
26. Griffin, R., & Dumestre, J. (1993). An initial evaluation of the use of captioned television to improve the vocabulary and reading comprehension of navy sailors. *Journal of Educational Technology Systems*, 21(3), 193-206.

## References

27. Jae, H. (2019). The Effectiveness of Closed Caption Videos in Classrooms: Objective versus Subjective Assessments. *Journal of Instructional Pedagogies*, 22.
28. Manda, I., & Suleha, S. P. Using Closed Caption In Improving Students Reading Comprehension at UIN Alauddin Makassar. *International Journal of Enhanced Research in Educational Development*, 5, 1-3.
29. Austin, B. A. (1984). Motivations for television viewing among deaf and hearing students. *American Annals of the Deaf*, 129, 17-22.
30. Spath, S. B. (1990). A study of closed-captioned television and word recognition for third and fourth-grade below average readers. *Dissertation Abstracts International*, 50, 1929.
31. Koskinen, P. S., Wilson, R. M., & Jensema, C. J. (1985). Closed-captioned television: A new tool for reading instruction. *Reading World*, 24, 1-7.
32. Gladdhart, M., Lebbin, C., & Layton, K. (1987). *Using closed-captioned television as an instructional medium for teaching normal hearing children sight words*. Unpublished manuscript.
33. Koskinen, P. S., Wilson, R. M., Gambrell, L. B., & Jensema, C. J. (1991). Captioned video technology and television-based reading instruction. In S. Clewell (Ed.), *Literacy: Issues and practice* (pp. 39-47). Bethesda, MD: Yearbook of the State of Maryland International Reading Association.
34. <sup>33</sup>National Captioning Institute. (1996). Who is NCI? [On-line]. Available: <http://www.us.net/nci/ncihome2.htm>.
35. Vaala, S., Lapierre, M., & Linebarger, D. L. (2009). *Attending to onscreen print in educational programming: the eye movements of children and adults*. A final report prepared for Corporation for Public Broadcasting. Philadelphia, PA: Annenberg School for Communication, University of Pennsylvania.
36. Linebarger, D. L., Moses, A., Garrity, K., & McMenamin, K. (2013). Learning vocabulary from television: Does onscreen print have a role? *Journal of Educational Psychology*, 105(3), 609-621
37. Linebarger, D. L., Kosanic, A., Greenwood, C. R., & Doku, N. S. (2004). Effects of viewing the television program *Between the Lions* on the emergent literacy skills of young children. *Journal of Educational Psychology*, 96 (2), 297-308.
38. Moses, A., Linebarger, D. L. & Wainwright, D.K., & Brod, R. (2010). *Television's Impact on Children's Vocabulary Knowledge: A Meta-Analysis*. A final report prepared for Corporation for Public Broadcasting. Philadelphia, PA: Annenberg School for Communication, University of Pennsylvania
39. Linebarger, D. L. (2015b). Super Why! to the rescue: Educational television, preschoolers, and early literacy skills. *International Journal for Cross-Disciplinary Subjects in Education*, 6(1), 2060-2068.
40. Lapierre, M., Piotrowski, J. T., & Linebarger, D. L. (2012). Background television in the homes of US children. *Pediatrics*. 130(5), 1-8.
41. Linebarger, D. L., Barr, R., Lapierre, M., & Piotrowski, J. (2014). Associations between parenting, media use, cumulative risk, and children's executive functioning. *Journal of Developmental and Behavioral Pediatrics*, 35, 367-377.
42. Linebarger, D.L., McMenamin, K. & Wainwright, D.K. (2009). *Summative Evaluation of Super Why!: Outcomes, Dose and Appeal*. A final report prepared for the Corporation for Public Broadcasting. Philadelphia, PA: Annenberg School for Communication, University of Pennsylvania.
43. Linebarger, D. L. & Piotrowski, J. T. (2010). Structure and strategies in children's educational television: The role of program type and learning strategies in children's learning. *Child Development*, 81(5), 1582-1597.
44. Garrity, K., Piotrowski, J. T., Lapierre, M., & Linebarger, D. L. (2014). The home literacy environment: Exploring how media and parent-child interactions are associated with children's language production. *Journal of Early Childhood Literacy*, 14(4), 482-509.

# Commentators



**Kelly Butler**  
CEO  
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@MSReads1



**Kristal Moore Clemons, Ph.D.**  
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# Questions & Discussion

# Upcoming GLR Learning Tuesdays Webinars:

## FUNDER TO FUNDER CONVERSATION

Big Investments for Big Impact: Increasing Access to Vision Care for Students  
Tuesday, February 15, 12:30-2:00 p.m. ET/9:30–11:00 a.m. PT

## LEARNING LOSS RECOVERY CHALLENGE

Policy Opportunities to Promote Social and Emotional & Early Relational Health  
Co-sponsored by Center for Study of Social Policy  
Tuesday, February 15, 3–4:30 p.m. ET/12–1:30 p.m. PT

## LEARNING LOSS RECOVERY CHALLENGE

Best Laid Plans: Lessons From the Fall for Reengaging Students in Learning  
Co-sponsored by Attendance Works  
Tuesday, February 22, 3–4:30 p.m. ET/12–1:30 p.m. PT

## LEARNING LOSS RECOVERY CHALLENGE

Innovation in In-School Tutoring: Updates from Research and On-the-Ground Efforts  
Co-sponsored by Overdeck Family Foundation  
Tuesday, March 1, 3–4:30 p.m. ET/12–1:30 p.m. PT

Please Join Us!

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