Digital Technology and the Reading Brain: What Reading Legislation Overlooks

October 29, 2024 by **Esther Quintero** and **Kayla Reist**

The Shanker Institute and **Maryland READS** recently facilitated a **conversation between state and local education leaders in Maryland and literacy expert Dr. Maryanne Wolf** to explore the impact of digital technology on students' reading development. As Maryland joins other states in implementing policy reforms to improve reading instruction, it is essential to recognize and explore additional ecosystemic barriers that might prevent the state from achieving its reading proficiency goals.

A growing number of studies (discussed below) are showing that choosing to read on screens versus using printed materials can be a significant obstacle to acquiring deep reading and thinking skills. This post explores whether and how reading policy – state legislation in particular – is responding to this emerging concern.

The Shanker Institute has been **tracking and analyzing the content of reading bills enacted into law since 2019**. Technology, broadly defined,[1] has been one domain whose presence or absence we identified in these laws. This post focuses on mentions of digital media related to students, including its use in instruction, progress monitoring and assessment, as well as in reading interventions. Our analysis reveals that laws in nine states out of 50 that enacted some reading bill and out of 33 with comprehensive reading legislation discuss these uses of technology, as summarized in Table 1 below.

Table 1. Digital Technology Mentions Related to Students in Reading Legislation (2019-2023)

		Instruction Intervention	Monitoring Assessment	Evidence Based	State List
Arkansas	SB294	☑	☐	☑	☑
Colorado	SB19-199	☑	☑	☑	☑
Florida	CS/HB 7011	☑	☑	☑	☐
Idaho	HB555, SB1006	☑	☐	☐	☑
Michigan	HB4411, SB845	☐	☑	☐	☐
Minnesota	HF1	☑	☑	☑	☐
North Carolina	SB387	☑	☑	☐	☐
Texas	HB1	☑	☐	☐	☐
Utah	HB360, HB463	☑	☑	☐	☑

For example, Arkansas's SB 294 allows for up to $500 per eligible student per school year to be used for evidence-based digital literacy applications or software programs selected from a state-approved list. At least three other states (Colorado, Idaho, and Utah) mention similar lists. Of these, Colorado and Florida require these digital tools to be "evidence-based." Some bills use phrases such as "aligned with the science of reading," or, when referring to assessment, "valid and reliable" to convey the same idea. Utah's bills HB 360 and HB 463 state that the State Board of Education must select and contract with technology providers to offer "early interactive reading software" for literacy instruction and assessments in kindergarten through grade 3.

While these provisions are well intentioned, they may inadvertently do more harm than good by overlooking the risks associated with increased screen reading, especially for young students. To address these concerns, we urge reading experts, practitioners, and literacy advocates to bring the following research findings to the attention of lawmakers:

- **Lower Comprehension with Digital Reading:** A **2018 meta-analysis** of 54 studies involving a total of 171,000 participants demonstrated that reading comprehension is lower when reading digital texts compared to printed ones (**Delgado, Vargas, Ackerman, and Salmerón, 2018)**.
- **Negative Impact of Digital Devices in the Classroom:** **Salmerón, Vargas, Delgado, and Baron (2023)** found that even minimal daily use (30 minutes) of digital devices in classrooms is negatively associated with students' reading comprehension, with a more pronounced effect on younger students.
- **Negative Impact of Leisure Digital Reading:** A **2023 meta-analysis** of 26 studies showed that not all reading is created equal. For primary and middle school students, increased leisure digital reading was negatively associated with reading comprehension **(Altamura, Vargas, and Salmerón, 2023)**. Digital reading encouraged superficial interaction with texts and shallow processing, impairing higher-order cognitive skills.

From these empirical research findings, a few implications for policy and practice emerge. Of course, teachers working with students with special needs shall incorporate digital texts and technology as part of support or accommodations when appropriate.

1. **Keep Books and Printed Materials Central:** Maintain books and printed resources at the heart of classroom instruction to promote deeper reading and comprehension.
2. **Create a Thoughtful Process to Assess Digital Technology Use and New Adoption:** Schools should critically evaluate digital tools, preferably before implementation, to ensure they support student learning without unintended negative consequences.
3. **Educator Training:** Train school leaders, technology directors, and educators on whether and how to effectively incorporate digital tools into reading instruction and on how to teach students to adjust their reading approaches based on the medium and purpose of the reading task.

4. **Encourage Leisure Reading in Print:** Promote print-based leisure reading among the youngest readers, recognizing that not all reading is created equal.

5. **Design Better Digital Environments:** Develop digital applications that mitigate screen inferiority by incorporating research-based features (e.g., reduced scrolling) that support focus and deep reading.

In *Reader, Come Home*, Maryanne Wolf outlines a roadmap for building a new kind of biliteracy—one that enables students to shift between different modes of reading depending on the medium and purpose of reading. Key components include:

- **Emphasize Print Reading for Young Children:** For children ages 0 to 10, focus on learning to read and developing deep reading skills primarily through print. During this time, appropriate digital uses might include developing new literacies such as coding or high-quality developmental games to build automaticity.
- **Gradual Transition to Digital Reading:** Around the age of 10, carefully transition students to increased digital reading and learning. The timing of this shift should be determined by the child's individual characteristics and their reading ability.
- **Teach Medium Awareness and Reading Strategies:** From an early age, teach students that each medium has unique purposes and rhythms. As children begin reading on screens, instruct them in counter skills such as focusing on reading for meaning, avoiding skimming habits, and monitoring comprehension.
- **Promote Digital Wisdom:** Educate children on best practices for using digital technologies, including effective use of search engines, evaluating the credibility of information, recognizing biases and misinformation, and self-regulating attention and memory during digital consumption.

Considering this research, current reading legislation would benefit from strongly encouraging appropriate uses of digital media in classrooms. For example, by recommending that classrooms remain centered on print materials and books—almost exclusively for young readers—policymakers could mitigate the risks associated with early excessive screen reading. Ultimately, prioritizing print over digital mediums can better position states to achieve their reading proficiency goals and cultivate lifelong readers.

Footnotes:

[1] Language related to digital tools, software, or applications in the context of professional development for teachers or students' literacy instruction at school or home. Mentions of websites or online repositories were also considered technology mentions.

Esther Quintero is a senior fellow at the Albert Shanker Institute. Trish Brennan-Gac is the Executive Director of Maryland READS.

ABOUT MARYLAND READS

Maryland READS is a non-profit organization that was founded to end the literacy crisis in Maryland. Based on the most current rigorous research and evidence of impact, Maryland READS focuses on three proven paths to closing the literacy gap: improving reading instruction in the classroom through the Science of Reading; creating thriving community-based reading ecosystems outside the classroom; and addressing barriers that prevent students from becoming proficient readers like addictive technology. Through collaboration and strategic partnerships, Maryland READS is building a powerful statewide network to provide community leaders with a place to engage, share best practices, advocate and shape their action plans to ensure all children have the literacy skills necessary for success in school and beyond. Learn more about our growing reading network at **marylandreads.org**

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