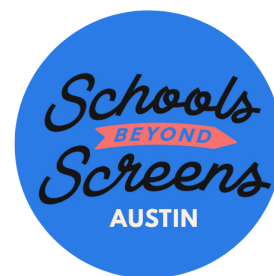


Schools Beyond Screens – Austin

Research and Recommendations for Intentional Technology Use in Austin ISD



Current Research: Technology and Screen Use in Schools

1. Technology Has Not Delivered Academic Gains at Scale

U.S. schools have spent over \$30B on devices. Research shows no meaningful improvement in academic outcomes and, in some cases, lower performance with increased screen time [4][2][1]. Districts are now reassessing 1:1 device programs after limited returns and classroom challenges [14]

Meta-analytic evidence shows a **negative relationship between digital technology use and academic performance**, including lower test scores and weaker mastery of core subjects [4]. Excessive screen exposure is also associated with **reduced readiness for school**, including delays in language and cognitive development [5].

2. Screens Introduce Cognitive Costs

Screens fragment attention, increase task-switching, and weaken memory formation [2][1].

High levels of screen use are associated with **attention problems, reduced learning efficiency, and weaker executive functioning** [2][1]. These effects are strongest when screen use is passive or replaces human interaction.

3. Platforms Are Designed for Addiction (Not Cognitive Development)

Modern platforms use autoplay, infinite scroll, and variable reward structures to maximize time-on-device. Legal findings show platforms are designed to “hook” young users and can contribute to harm [3]. These design patterns increase distraction and reduce sustained attention, which is essential for learning [2]. A recent jury verdict finding YouTube liable in a landmark addiction case further reinforces this dynamic [15].

4. Screens Displace Higher-Value Activities

Screens replace reading, discussion, and hands-on work. Screen use displaces essential developmental behaviors, including **face-to-face interaction, physical activity, and sustained cognitive effort** [6][7]. These activities are critical for language development, social skills, and learning.

Children learn most effectively through **direct human interaction and active engagement**, not passive consumption [8].

5. Analog Methods Lead to Stronger Retention and Higher Processing Activity

Research in neuroscience and cognitive psychology shows that **handwriting activates widespread brain networks associated with memory and learning**, producing stronger retention than typing. A recent EEG study demonstrated that handwriting engages significantly greater neural connectivity in regions tied to **working memory and information encoding** [9].

This is partly because handwriting integrates **visual, motor, and sensory systems**, leading to deeper encoding of information and improved recall [10,11].

Studies also demonstrate that learning is most effective when **multiple sensory modalities—including auditory input—are engaged simultaneously**, strengthening long-term memory formation [12]. Verbal instruction, discussion, and read-aloud formats support **phonological processing and auditory memory systems**, which are critical for early literacy and comprehension development.

In contrast, screen-based learning is associated with **shallower processing and reduced comprehension** compared to paper-based methods, particularly in younger learners [13].

6. Generative AI introduces risks that do not outweigh the benefits

Benefits to using generative AI in classrooms include its potential to help students learn to read and write, and its convenience for teachers creating lesson plans and materials. However, independent research consistently confirms that the risks overshadow these benefits, because they introduce **cognitive deficits in children academically, socially, and emotionally**. [16, 17]

Students engage in cognitive offloading, not only letting the AI think for them but never obtaining the critical thinking skills themselves. In addition, AI is designed for engagement and becomes an echo chamber, rarely pointing out harmful ideas and in some cases encouraging them. Education experts studying AI in schools call for a moratorium. [18]

7. Screen Use During Mealtimes

Screens during meals are linked to poorer nutrition [3][7]. Millions of dollars are spent on school lunch programs because it is known that a child's success is significantly impacted by nutrition - introducing screens is an inhibition to proper nutrition needed for cognitive processing.

Research shows that screen exposure during routine interactions (such as meals) reduces **verbal and social interaction**, which is essential for language and cognitive development

[3][7] [8]. These interactions are a primary driver of early learning, and their disruption has measurable negative effects.

References

- [1] **Zhang, Z. et al. (2021)** Screen time and cognitive development in children: systematic review and meta-analysis.
- [2] **Muppalla, S.K. et al. (2023)** Effects of excessive screen time on child development.
- [3] **Mallawaarachchi, S. et al. (2024)** Screen use contexts and cognitive outcomes in early childhood. *JAMA Pediatrics*.
- [4] **Kuş, M. et al. (2025)** Meta-analysis of technology use and academic performance.
- [5] **Li, X. et al. (2025)** Screen time and developmental readiness in early childhood.
- [6] **CDC (2025)** Screen time and displacement of health behaviors.
- [7] **University of Rochester Medical Center (2025)** Screen time and child behavior and social development.
- [8] **Children and Screens Institute (2023)** Screen exposure and early cognitive development.
- [9] **van der Meer, A. L. H., & van der Weel, F. R. (2024)** Neural connectivity during handwriting vs. typing. *Frontiers in Psychology*.
- [10] **Mueller, P. A., & Oppenheimer, D. M. (2014)** The pen is mightier than the keyboard: Advantages of longhand over laptop note-taking. *Psychological Science*.
- [11] **Mangen, A., & Balsvik, L. (2016)** Pen or keyboard in beginning writing instruction? Some perspectives from embodied cognition.
- [12] **Shams, L., & Seitz, A. R. (2008)** Benefits of multisensory learning. *Trends in Cognitive Sciences*.
- [13] **Delgado, P., Vargas, C., Ackerman, R., & Salmerón, L. (2018)** Don't throw away your printed books: A meta-analysis on reading comprehension in digital vs. paper media. *Educational Research Review*.
- [14] **Singer, N. (2026, March 29).** *Chromebook remorse*. **The New York Times**.
- [15] (2026). *Jury finds Instagram and YouTube liable in landmark social media addiction trial*. **Associated Press News**.
- [16] **Turner, C.** "The Risks of AI in schools outweigh the benefits, study says." Jan 14, 2026. NPR.
- [17] **Burns, M, Winthrop, R, Luther, N, Venetis, E, Karim, R.** "A New Direction for Students in an AI World." Jan 14, 2026. Brookings Institution.
- [18] **Gioino, C.** "Exclusive: doctors and education experts who studied AI's impact on the young call for a 5-year moratorium in schools." April 16, 2026. Fortune.com.

Suggested School Guidelines

The guidelines below are intended as practical, developmentally appropriate defaults for all school settings—including classrooms, library time, cafeteria, recess, PE, specials, and other instructional or supervised periods—to support consistent practices while preserving teacher and staff judgment, instructional flexibility, and responsiveness to student needs.

Instruction should be delivered using non-screen methods unless a screen-based approach is clearly necessary to achieve a specific instructional objective.

Restricted Use

- Do not use screens:
 - As a **reward, distraction, or behavior management tool**
 - During **lunch, recess, free time, parties, or transitions**
 - For **unstructured or unsupervised (“free”) device use**
- These uses reduce opportunities for **self-regulation, social interaction, and attention development**.
- Use alternatives: movement breaks, reading, centers, art, extra recess, or independent activities, as appropriate to the classroom or setting.

Default Approach

- Instruction should default to **non-screen methods** (written work, physical books, verbal instruction).
- Screens should be used **only when they provide a clear instructional advantage** (e.g., simulation, visualization, or access to otherwise unavailable content).
- When possible, **use audio instead of screens** (music, read-alouds, verbal instructions).
- **Prioritize authentic student work** over technology-centered products when digital tools do not meaningfully enhance learning.

Video Use

- Video may be used only if all conditions are met:
 - Directly tied to a lesson objective
 - Provides clear value beyond non-screen alternatives
 - Short in duration (generally under ~10 minutes)
 - Paused for discussion or engagement
- Passive video viewing is not considered instructional practice.
- Note the Texas Education Agency recommends limiting screen time in Pre-K to no more than 30 minutes (half-day) or one hour (full-day), and emphasizes that technology should enhance—not replace—hands-on learning, conversation, and social interaction.

Devices & Software

- Minimize individual device use; when used, it should be intentional and narrowly defined (e.g., standardized testing preparation).
- Device use should be teacher-directed and task-specific.
- No open-ended, unstructured or unsupervised (i.e. “free”) exploration on devices.
- Avoid the use of apps with advertisements, additional subscription tiers that enable consumerization (Prodigy is an example), or autoplay (YouTube).

Artificial Intelligence

- Given current developmental considerations and risks, no use of AI tools in elementary classrooms for instruction (teacher usage for lesson planning and administration is outside the scope of these guidelines)
- This includes chatbots, generative AI tools (Google’s Gemini included), and AI-assisted content generation.

Learn More & Get Involved

This document summarizes the current research informing the Schools Beyond Screens – Austin recommendations. We encourage parents, educators, and community members to learn more, join the conversation, and advocate for more intentional, developmentally appropriate technology use in Austin ISD.

[Read and sign the petition](#) urging Austin ISD to adopt evidence-based, developmentally appropriate technology policies for students.

Follow [Schools Beyond Screens – Austin](#) on Facebook for research highlights, advocacy updates, and opportunities to get involved.

