

# A QUASI-EXPERIMENTAL EVALUATION OF THE *COMMON SENSE MEDIA* DIGITAL CITIZENSHIP CURRICULUM

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# EXECUTIVE SUMMARY

Digital technology is deeply integrated into the lives of children and youth. While technology provides youth with exciting opportunities for learning, connection, and creativity, it also carries risks, including unhealthy use and exposure to misinformation and harassment. Schools are increasingly using digital citizenship education to provide students with protective information and skills. Yet, despite widespread adoption, there is limited rigorous evidence on whether such programs achieve their intended outcomes.

The Common Sense Media Digital Citizenship Curriculum offers free, developmentally targeted lessons for grades K–12 on healthy tech habits, privacy and safety, digital identity, online relationships, cyberbullying, and information and media literacy. This independent evaluation represents the first large-scale outcome evaluation of its program impact for middle school youth (grades 6–8).

## Study Overview

The quasi-experimental evaluation involved 15 middle schools nationwide (seven implementation schools, eight control schools) and 3,908 students. All students completed baseline surveys in fall 2024 and follow-up surveys two months later.

The evaluation assessed three core outcomes:

- **Knowledge** of digital citizenship terms and concepts
- Self-reported **behaviors** aligned with digital citizenship skills
- **Self-reported digital literacy and well-being skills** measured by a newly developed Digital Engagement and Literacy Index (DELI) that includes 10 subscales measuring youth perceptions of skills in areas such as online safety, media balance, online civility, and media literacy

## Key Findings

Overall, the study provided encouraging evidence that Common Sense Media's Digital Citizenship Curriculum strengthens students' digital knowledge, attitudes, and behaviors.

- **Knowledge Gains**: Students in implementation schools demonstrated statistically significant improvements in digital citizenship knowledge (e.g., media balance, privacy, online safety, and media literacy) across all grades, while similar gains were not observed in control schools.
- **Behavior Changes**: Among 7th and 8th graders, students in implementation schools were significantly more likely to adopt protective online behaviors, including limiting data collection by apps, reconsidering posts after thinking about their digital footprint, de-escalating online drama, and taking action (e.g., blocking or telling an adult) when uncomfortable online. These gains suggest students were actively applying lessons in real digital contexts.
- **Self-Reported Digital Literacy and Engagement Skills**: The Digital Engagement and Literacy Index (DELI) subscales are valuable for measuring youth self-perception and decision-making in digital contexts. Changes in DELI scores were most notable for 8th graders in implementation schools, with statistically significant gains by these students in attitudes toward media balance, awareness of tech influence, news/media literacy, online bystander support, and positive online participation subscales. Fewer changes were observed among 6th and 7th graders across all schools.
- **Teacher Perspectives:** Teachers rated student engagement between seven and eight on a 10-point scale and reported that students actively related lessons to their own lives. Engagement was highest for Cyberbullying & Online Harms lessons for 6th graders and Relationships & Communication lessons for 7th and 8th graders.

## Additional Insights

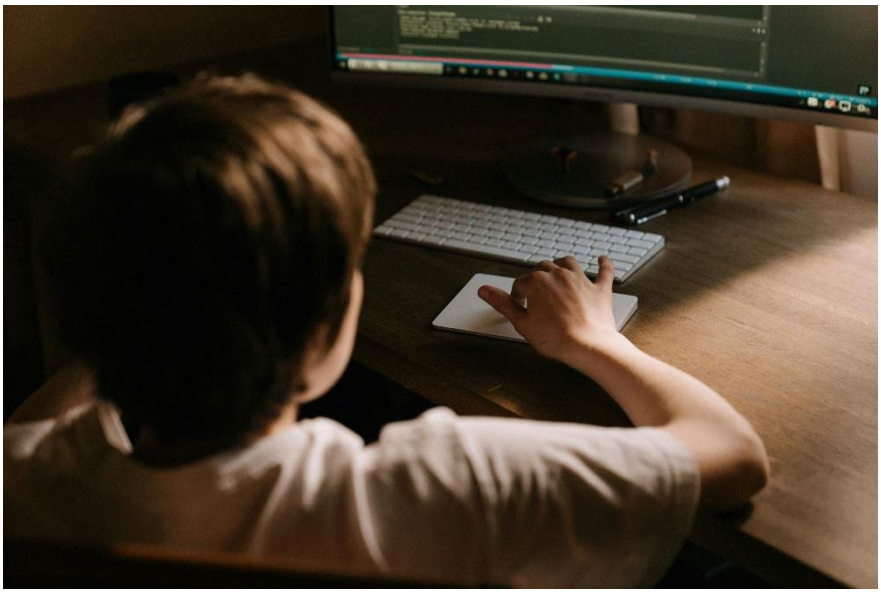
- **Grade Differences:** The strongest program effects were seen for 8th grade students and to a lesser extent 7th grade students. For 6th grade students, the program found only knowledge gains, with no behavioral gains or changes in literacy and well-being skills. Younger students may need more time, adjusted curriculum, and additional reinforcement before they translate knowledge into behaviors.
- **Gender Differences:** Girls reported more interactive technology use, scored higher on knowledge, and reported more positive digital citizenship behaviors and attitudes than boys. Digital citizenship education may need to expand to better target unique concerns for different gender groups. Digital citizenship may need to increase specific messaging relevant for boys.
- **Tech Use Patterns:** Medium-level technology users outperformed both low-level and high-level users on knowledge, behaviors, and DELI scores, suggesting that balanced use may correlate with healthier digital practices.

## Conclusions

This evaluation adds to the evidence base for digital citizenship education, showing that structured, developmentally targeted curricula can improve knowledge and online behaviors. Results were strongest for older middle school students, but early exposure may set the stage for longer-term benefits.

# SECTION 1: BACKGROUND

Digital technology has been fully integrated into play, learning, entertainment, and communication for children and youth (Martinovic et al., 2018; Urbanova et al., 2023; Virós-Martín et al., 2025). Ninety-seven percent of children ages 3–18 in the U.S. have home internet access through a computer or a smartphone (National Center for Education Statistics, 2023). Social media use among children and adolescents has become nearly universal, with 95% of teens and 40% of younger children (ages 8–12) reporting social media use (Vogels et al., 2022). The average U.S. teen spends nearly five hours per day using various forms of social media, YouTube being the most common (90%), followed by TikTok (63%), Instagram (61%), Snapchat (55%), and Facebook (32%). The recent introduction and increasing accessibility of artificial intelligence (AI) will likely further expand the ways youth interact with technology (Madden et al., 2024).



## Digital Technology and Risks for Youth

While digital technology benefits children in many ways, it also brings risks. Research has found links between unhealthy use of technology and risks to children's mental health (George et al., 2017; Shannon et al., 2022). Excessive time spent on social media and greater screen use has been associated with increased risk of mental distress, depression, anxiety, stress, greater body dissatisfaction, lower levels of self-esteem, and diminished overall well-being (Barthorpe et al., 2020; Khalaf et al., 2023; Riehm et al., 2019; Shieun et al., 2022; Weigle & Shafi, 2024). Some studies have shown adverse effects of social media use on executive functioning, working memory, and sleep (Hale & Guan, 2015).

There is also the risk of victimization for children and youth online. In one study, an estimated one in six young adults surveyed were victims of online sexual abuse before the age of 18 (Finkelhor et al., 2022). Bullying and sexual harassment can also happen to youth through digital communications (Taylor et al., 2021). A national survey in the U.S. found 37% of teens reported cyberbullying victimization and 15% reported online sexual harassment experiences (Copp et al., 2021).

Finally, the spread of information has increased substantially with the expansion of social media and AI, leading to the rapid dissemination of photos, videos, and news headlines. It can be difficult for youth, as well as adults, to distinguish between true and fictitious information or content (Tamboer et al., 2023). Problems with distinguishing real and misleading or artificially generated information could result in misinformed decisions and unnecessary anxiety for youth.

## Digital Citizenship Education

Educational programming has been developed over the past several decades to help children improve their online skills and reduce risks and harm. Early internet safety education concentrated on the dangers of online predators, warning youth about the risks of communicating with unknown people online (Jones et al., 2024). Contemporary digital citizenship education has broadened to include a wider range of issues, such as media balance, privacy concerns, online scams/fraud, and combating misinformation (Cortesi et al., 2020). Schools are increasingly embedding digital citizenship programs into regular classroom instruction. In a recent survey, about 60% of U.S. teachers reported using digital citizenship curricula or resources, with cyberbullying identified as the most frequently addressed topic (Vega & Robb, 2019). A national survey of early childhood educators found that three-quarters of teachers in grades 3–5, and 60% of teachers in grades K–2, reported teaching digital citizenship in their classrooms (Lauricella et al., 2020).

However, despite its widespread adoption, digital citizenship education has undergone very little evaluation to determine whether it achieves its intended outcomes. The few studies that have been conducted have generally involved small samples and limited comparison data (Bickham et al., 2021; Crombie & Trinneer, 2003; Brookshire & Maulhardt, 2005; Chibnall et al., 2006).

## The *Common Sense Media* Digital Citizenship Curriculum



The Common Sense Media Digital Citizenship Curriculum evaluated in this study provided six developmentally targeted lessons for grades K–12. The lessons were designed in collaboration with Project Zero at the Harvard Graduate School of Education. Across each grade, lessons covered: 1) media balance, 2) privacy & safety, 3) digital footprint & identity, 4) relationships & communication; 5) cyberbullying & online harms; and 6) information & media literacy. The aim of the curriculum was to provide students with tools for responsible, informed, and positive online engagement.

Since the evaluation was conducted, Common Sense has revised their Digital Literacy & Well-Being Curriculum for grades K–12. The new version of the curriculum builds upon the foundational six-topic framework established in the original digital citizenship program described above. While recognizing that these core areas remain essential for students to navigate, the content has been updated to reflect the online issues that young people face today, such as AI literacy, financial literacy, and a deeper focus on media literacy and digital well-being.

## Study Goals and Research Questions

To help establish an evidence base for improvement of the curriculum quality of children's online safety and digital citizenship education, the current study used a rigorous evaluation design to better understand the impact of the *Common Sense Media* educational approach by measuring changes in knowledge, attitudes, and behaviors for 6th, 7th, and 8th graders. In this study, 3,908 students at 15 middle schools participated in a quasi-experimental, pre-post design evaluation (seven implementation schools and eight control schools). The study sought to examine whether middle school students who receive the Common Sense Media Digital Citizenship curriculum showed:

1. An improved understanding of **digital citizenship terms and concepts** compared to students who did not receive the program.
2. Increases in **digital citizenship-related behaviors** in the month following the program compared to students in control condition schools.
3. Improved self-ratings across 10 subscales of a newly developed **Digital Engagement and Literacy Index (DELI).**

# SECTION 2: STUDY METHODOLOGY

## Overview

Fifteen middle schools across the U.S. participated in the study: 7 schools in an implementation condition and 8 schools in a control condition. Students in all schools completed baseline surveys from September to December 2024, and post-test surveys were provided to students approximately three months later. In implementation schools, the Common Sense Media Digital Citizenship Curriculum was taught to students in the weeks following the baseline survey.

## School Recruitment

The school sample was drawn from $N$ = 24,016 schools included as part of the 2023 National Center for Education Statistics' (NCES) Education Demographic and Geographic Estimate database of public elementary and secondary schools (NCES, 2023). The sample was limited to schools that had 6$^{th}$, 7$^{th}$, and 8$^{th}$ grades, and, to ensure that participating schools had an adequate and roughly equivalent sample size, the sample was also limited to schools between the 25$^{th}$ and 75$^{th}$ percentile of student population sizes ($n$ = 12,913).

From October to November 2023, we randomly sampled 1,200 schools to attempt recruitment for participation. This sample of schools was cross-referenced with Common Sense Media's database of active Digital Citizenship Curriculum users. After eliminating these schools, the 614 schools that remained were mailed 1) a one-sided invitation letter addressed to the school principal, 2) a one-sided Q&A sheet with additional information, 3) a flyer with details about the study with a QR code to an online survey in which they

could indicate interest in participation, 4) a postcard-size card on which schools could reply to our recruitment attempt via mail, and 5) a prepaid business-reply envelope to return the postcard. Materials were mailed in January 2024. Additionally, we directly emailed principals using names and emails provided on each school's or district's website. Each contact received two subsequent reminder emails. After limited response to our outreach, we selected a second sample using the same methods, contacting an additional 1,082 schools from February to March 2024. Across all recruitment methods, we received interest in participation from a total of 52 schools from January to June 2024. Out of the 52 schools that responded with interest, we received no response to follow-up emails at 16 schools, and an additional 21 schools withdrew at different points after learning more details about the study due to unforeseen changes in personnel, decisions by upper administration, or other events which limited their ability to participate. Our final sample was drawn from a total of 15 schools.

The study was initially planned as a cluster randomized controlled trial (RCT) design. However, during planning stages, several schools decided that they could not provide the curriculum to their students as requested but could participate in a control condition. The design therefore converted to a quasi-experimental design assigning schools to implementation or control conditions as they were able, with seven schools participating in an implementation condition and eight schools participating in a control condition.

Table 2.1 below provides student body size and characteristics across participating schools. Student body sizes for the three grades ranged from 180 to 834 (mean = 379). Information was collected on each school's Title I status as a proxy for socio-economic status (SES) of students at the school. Title 1 status identifies schools that receive supplemental financial assistance to help children from lower-income families. No information on Title 1 status was available for two schools; two were not receiving any

Title 1 funding; seven schools received Title 1 targeted assistance; and four schools received Title 1 funds for school-wide assistance.

Schools represented different geographic regions of the U.S., with seven schools located in the Midwest, three schools located in the Western U.S., two schools located in the South, and three schools located in the Northeast. Most of the schools were located in large urban or small metropolitan districts, with only two schools classified as rural. Race and ethnicity distributions for students varied across schools, but most were majority White.

**Table 2.1: School Characteristics**

| School ID | School Size | Title I Assistance | U.S. Region | Urbanicity Code[a] | Race/Ethnicity |
|---|---|---|---|---|---|
| **IMPLEMENTATION SCHOOLS** | | | | | |
| **1.1** | 6: 95<br>7: 94<br>8: 114<br>Total: 302 | Targeted Assistance | Midwest | 1 | Black: 1.3%<br>Hispanic/Latino: 4.3%<br>White: 90.8%<br>Other: 5.2% |
| **2.1** | 6: 78<br>7: 94<br>8: 99<br>Total: 265 | Schoolwide | West | 2 | Black: 1.1%<br>Hispanic/Latino: 16.6%<br>White: 71.3%<br>Other: 11.0% |
| **3.1** | 6: 100<br>7: 84<br>8: 75<br>Total: 259 | Not a Title I School | South | 2 | Black: 1.2%<br>Hispanic/Latino: 0.4%<br>White: 98.4%<br>Other: n/a |
| **4.1** | 6: 163<br>7: 140<br>8: 168<br>Total: 471 | Not a Title I School | Northeast | 1 | Black: 2.1%<br>Hispanic/Latino: 5.8%<br>White: 72.0%<br>Other: 20.1% |

| School ID | School Size | Title I Assistance | U.S. Region | Urbanicity Code[a] | Race/Ethnicity |
|---|---|---|---|---|---|
| **5.1** | 6: 151<br>7: 136<br>8: 165<br>Total: 452 | Schoolwide | Northeast | 2 | Black: 0.7%<br>Hispanic/Latino: 3.6%<br>White: 92.8%<br>Other: 3.0% |
| **6.1** | 6: 125<br>7: 123<br>8: 119<br>Total: 367 | No information | West | 1 | Black: 3.8%<br>Hispanic/Latino: 85.6%<br>White: 1.9%<br>Other: 8.7% |
| **7.1** | 6: 136<br>7: 131<br>8: 166<br>Total: 433 | Targeted Assistance | South | 1 | Black: 0.7%<br>Hispanic/Latino: 31.2%<br>White: 61.0%<br>Other: 7.2% |
| **CONTROL SCHOOLS** | | | | | |
| **1.0** | 6: 190<br>7: 195<br>8: 194<br>Total: 579 | Targeted Assistance | Midwest | 1 | Black: 1.4%<br>Hispanic/Latino: 7.0%<br>White: 87.3%<br>Other: 4.2% |
| **2.0** | 6: 82<br>7: 56<br>8: 85<br>Total: 223 | Targeted Assistance | Midwest | 4 | Black: 0.5%<br>Hispanic/Latino: 11.2%<br>White: 86.0%<br>Other: 2.3% |
| **3.0** | 6: 159<br>7: 146<br>8: 165<br>Total: 447 | Targeted Assistance | Midwest | 1 | Black: 1.0%<br>Hispanic/Latino: 6.9%<br>White: 87.1%<br>Other: 5.0% |
| **4.0** | 6: 87<br>7: 132<br>8: 141<br>Total: 360 | Targeted Assistance | Northeast | 5 | Black: 1.7%<br>Hispanic/Latino: 4.7%<br>White: 79.4%<br>Other: 14.2% |
| **5.0** | 6: 128<br>7: 95<br>8: 64<br>Total: 287 | No information | West | 1 | Black: 10.5%<br>Hispanic/Latino: 19.8%<br>White: 25.2%<br>Other: 44.5% |

| School ID | School Size | Title I Assistance | U.S. Region | Urbanicity Code[a] | Race/Ethnicity |
|---|---|---|---|---|---|
| **6.0** | 6: 294<br>7: 265<br>8: 275<br>Total: 834 | Targeted Assistance | Midwest | 1 | Black: 5.2%<br>Hispanic/Latino: 9.3%<br>White: 80.4%<br>Other: 5.1% |
| **7.0** | 6: 81<br>7: 74<br>8: 79<br>Total: 234 | Schoolwide | Midwest | 1 | Black: 26.1%<br>Hispanic/Latino: 43.7%<br>White: 15.2%<br>Other: 14.9% |
| **8.0** | 6: 66<br>7: 67<br>8: 47<br>Total: 180 | Schoolwide | Midwest | 1 | Black: 26.3%<br>Hispanic/Latino: 3.0%<br>White: 59.8%<br>Other: 11.0% |

[a] Urban rural classification: 1 = urban large metropolitan, 2 = urban medium/small metropolitan, 4 = rural adjacent; 5 = rural non-adjacent

## Research Procedures

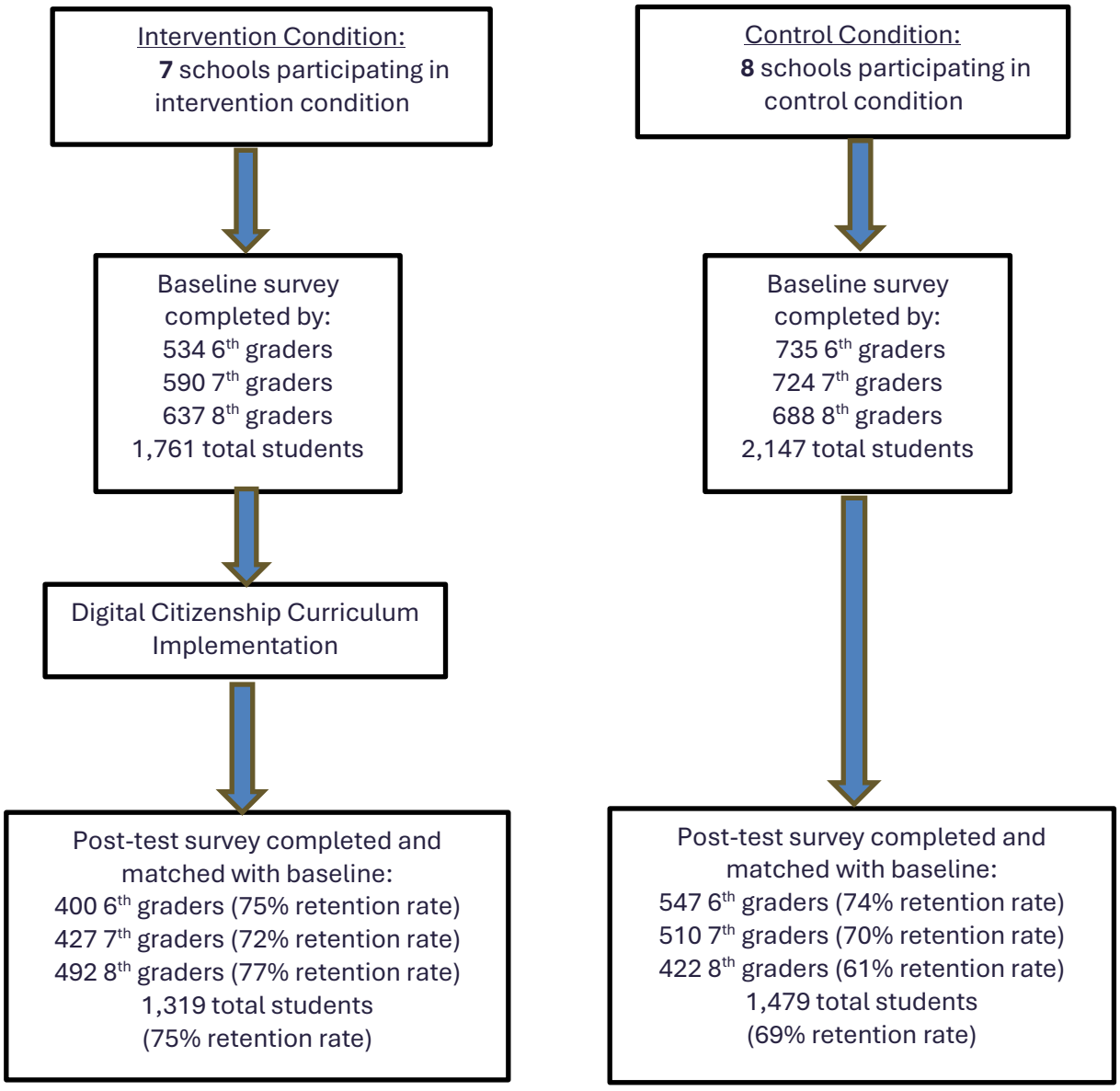
The University of New Hampshire Institutional Review Board reviewed and approved all research protocols for the study. Most schools used passive consent procedures, where parents were provided with information about the study and were given the option to opt their child out of participation in the survey component if they chose. Two schools (one implementation and one control school) required active consent (signed permission) from parents, which was obtained.

Surveys were administered to all participating students at two different times: 1) the baseline survey was administered to 3,908 students across the 15 schools from the end of September to the beginning of December 2024, and the post-test survey was administered from the end of October 2024 to April 2025, approximately one to two months after completion of the final lesson. The time between baseline and post-test

averaged 3.23 months for implementation schools and 3.13 months for control schools. Although careful efforts were made to provide the post-test to all youth who completed the baseline survey, absences during both administrations and some issues connecting surveys with assigned research ID numbers resulted in a smaller set of youth with matched baseline and post-test data (*n* = 2,798, 71% average retention). Figure 2.1 provides a flow of sample size and retention for each grade and study condition.

For implementation schools, all six lessons of the Common Sense Media Digital Citizenship Curriculum were administered in full to 6th, 7th and 8th grade classes in each school following the baseline survey. Most of the schools chose to teach the lessons during their advisory/home room period, but two schools taught them in physical education and health classes. The total number of staff teaching the curriculum ranged from two to 14 teachers, with an average of 6.5 teachers per school. In four of the schools, teachers were grade-specific, meaning they always taught the curriculum to the same age group. In the other three schools, the same set of teachers taught the curriculum to multiple classes in different grade levels. All teachers at implementation schools were invited to a one-hour implementation training session by the Common Sense team. At least one teacher from all but one of the implementation schools attended.

**Figure 2.1: CONSORT Flow chart**



## Measures

In addition to basic student demographic information (sex, race/ethnicity, grade level), the survey instrument collected information on technology use and on three study outcome areas: Digital Citizenship Knowledge, Digital Citizenship Behaviors, and the 10-subscale Digital Engagement and Literacy Index (DELI)[1]. Below, we review each of these areas of the survey in more detail.

### Tech Use

A number of survey questions asked about students' technology use, including: 1) the types of devices they have used to go online (e.g., a phone, a computer at school, a computer at home, etc.); 2) whether they have a smartphone that is just for them to use; 3) what activities they have done online (e.g., looked at social media sites, posted on social media sites, played or streamed music, watched videos online, etc.); 4) how often they talk with friends using texts, direct messaging (DMs), or apps; 5) websites or apps they have used (e.g., Facebook, Instagram, etc.); 6) whether they play online video games that allow them to talk to other players, and if yes, whether they have conversations online with players that they don't know in person.

High tech user. We created a composite variable called "high tech user" using eight items in the survey: total number of devices used within the past month, total number of more participatory online activities within the past month (including posting videos online, posting on social media, looking at social media, playing games online, and watching videos online), number of apps or social media websites used within the past month, and how often students talked online with friends within the past month.

[1] Survey questions and scales used in the evaluation are available by request to the authors.

Structural equation modeling was used to estimate a latent class analysis of "tech users." Three distinct classes were identified: **low tech user**, **medium tech user**, and **high tech user.**

## Digital Citizenship Knowledge

The Common Sense Media Digital Citizenship Curriculum provides different lessons to 6th, 7th, and 8th grade students. To measure the impact of the program on student knowledge, several grade-specific multiple-choice questions were created that tested understanding of digital citizenship vocabulary and concepts. Table 2.2 provides an example knowledge item for each grade, the total number of items per grade, and KR-20 statistic (reliability). The correct response is shown in bold text.

**Table 2.2: Knowledge Items**

| Grade | Example Item | Number of items | KR-20 |
|---|---|---|---|
| 6th Grade | Which one of these is a "red flag" feeling?<br>● You get a text about an exciting event coming up.<br>● You see something online that is important to remember.<br>● **You see a post or message online that makes you feel uncomfortable or worried.**<br>● A news headline grabs your attention. | 13 | .67 |
| 7th Grade | What does "copyright" mean?<br>● **Legal protection that creators have over the things they create.**<br>● The right to use someone else's property without permission.<br>● The right to sell a product online for a limited time.<br>● A legal term for something that is for sale. | 12 | .64 |
| 8th Grade | Which of the following is true about breaking news? | 17 | .77 |

| Grade | Example Item | Number of items | KR-20 |
|---|---|---|---|
| | • It covers events that happened a long time ago.<br>• It is always objective and doesn't have bias.<br>• It is always the most reliable because the information is current.<br>• **It reports on developing stories so all the facts may not be known.** | | |

There were **13** knowledge questions for 6th graders, **12** knowledge questions for 7th graders, and **17** knowledge questions for 8th graders. Items were multiple choice. Missing data was coded as an incorrect response. KR-20 statistics indicate acceptable reliability.

## Digital Citizenship Behaviors

Several questions were also created for each grade to capture whether any digital citizenship-related behaviors changed from pre- to post-program. There were **four** behavior questions for 6th graders, **five** behavior questions for 7th graders, and **six** behavior questions for 8th graders. Responses for each item ranged from 1 to 5 (not at all true, not very true, somewhat true, mostly true, very true), with an option for youth to choose a "not applicable" response (e.g., "I haven't been online in the last month"). Each behavior item was analyzed separately. Table 2.3 below provides an example behavior item for each grade. There was some overlap in items across grades.

**Table 2.3: Behavior Items**

| Grade | Example Item | Number of Items |
|---|---|---|
| 6th Grade | In the last month, when I started to feel bad using the Internet or social media, I switched to an offline activity (like going out with friends, reading, or another hobby). | 4 |
| 7th Grade | In the last month, I changed my mind about sharing something online after thinking about my digital footprint. | 5 |
| 8th Grade | In the last month, I used strategies (like turning off cookies, adjusting privacy settings, or limiting what I share) to limit the amount of data that companies and apps collect about me online. | 6 |

## The Digital Engagement and Literacy Index (DELI)

The Digital Engagement and Literacy Index (DELI) has 10 subscales covering a range of digital well-being and citizenship topics. Subscale items ranged from four to nine. The DELI was developed for the evaluation with some adaptation of prior work by the authors (Jones & Mitchell, 2016; Jones, et al., 2024).

Youth in all grades responded to all DELI questions. Response options for each item ranged from 1 to 5, with a higher score indicating more agreement: strongly disagree, disagree, neutral, agree, strongly agree. The subscales, example items, and Cronbach's alpha (reliability) are provided in Table 2.4. Alphas demonstrate good to excellent internal consistency across subscales.

**Table 2.4: DELI Subscales**

| DELI Subscale | Example Item | Number of Items | Cronbach's Alpha (6th, 7th, 8th) |
|---|---|---|---|
| Media Balance | I balance the time I spend online and offline pretty well. | 4 | .78, .81, .82 |
| Digital Well-Being | I pay attention to how the things I do online make me feel. | 4 | .72, .79, .82 |
| Privacy & Safety | I try to limit how much information companies are collecting about me online. | 5 | .73, .78, .80 |
| Posting Awareness | I think about the different people who may end up seeing what I say or post online. | 4 | .74, .77, .81 |
| Online Civility | I try not to say things online that I might regret. | 5 | .83, .88, .89 |
| Tech Influence Awareness | I am aware of the ways that online content is trying to influence me. | 4 | .84, .88, .89 |
| Online Safety | I would tell an adult if an online conversation became unsafe. | 6 | .87, .89, .90 |
| News & Media Literacy | I search different sources of information to make sure things I see online are true. | 9 | .88, .92, .92 |
| Online Bystander Support | I try to help when I see people I know being targeted in mean ways online. | 6 | .91, .92, .92 |
| Positive Online Learning & Participation | When I'm online I share things with friends and family that I am proud of. | 6 | .83, .88, .88 |

# SECTION 3: BASELINE DATA

## Sample Demographics

A total of *N* = 3,908 middle school students responded to the baseline school survey. **Table 3.1** below shows the rates of participation by the student bodies across schools. Participation rates were calculated by dividing the number of students who completed the baseline survey in each grade by the number of students enrolled in that grade for each school. Most schools had participation rates of 75% or more. One-third of the schools in the evaluation had participation rates over 90%. Only three schools had a participation rate lower than 50%. Smaller participation rates were due to implementation schools that had only one or two teachers involved in providing lessons, limiting participation in the study to only a few classes per grade. Additionally, participation rates were lower at schools where active (signed) parental consent procedures were required.

**Table 3.1: Baseline Survey Participation Rates**

| School ID | % Total Participation Rate | 6th Grade % (n) | 7th Grade % (n) | 8th Grade % (n) |
|---|---|---|---|---|
| **IMPLEMENTATION SCHOOLS** | | | | |
| 1.1 | **90% (273)** | 92% (87) | 100% (94) | 81% (92) |
| 2.1 | **84% (224)** | 75% (66) | 100 (94) | 65% (64) |
| 3.1 | **93% (242)** | 99 % (99) | 92% (77) | 88% (66) |
| 4.1 | **39% (182)** | 23% (38) | 47% (66) | 46% (78) |
| 5.1 | **83% (375)** | 83% (126) | 88% (120) | 78% (129) |

| School ID | % Total Participation Rate | 6th Grade % (n) | 7th Grade % (n) | 8th Grade % (n) |
|---|---|---|---|---|
| 6.1 | **43% (159)** | 51% (64) | 30% (37) | 49% (58) |
| 7.1 | **71% (306)** | 40% (54) | 78% (102) | 90% (150) |
| **CONTROL SCHOOLS** | | | | |
| 1.0 | **68% (396)** | 88% (167) | 54% (105) | 64% (124) |
| 2.0 | **87% (193)** | 78% (64) | 100% (56) | 86% (73) |
| 3.0 | **95% (470)** | 91% (144) | 100% (146) | 100 (165) |
| 4.0 | **95% (342)** | 96% (110) | 93% (123) | 87% (123) |
| 5.0 | **73% (209)** | 87% (112) | 82% (78) | 30% (19) |
| 6.0 | **25% (208)** | 8% (24) | 37% (99) | 31% (85) |
| 7.0 | **77% (181)** | 29% (64) | 81% (60) | 72% (57) |
| 8.0 | **91% (163)** | 97% (64) | 85% (57) | 89% (42) |

**Table 3.2** below shows characteristics of the sample. The sample was relatively evenly distributed by gender, with 49.9% of students identifying as male (*n* = 1,946), 48.6% identifying as female (*n* = 1,897), and the remaining 1.5% identifying as some other gender (*n* = 60). There were no statistically significant differences in gender between the control and implementation groups.

Most the students were White (69.7%; *n* = 2,724). About 12% of the sample (*n* = 478) were Hispanic/Latino, and less than 10% of students were other races, including Black, Asian,

American Indian/Alaska Native, Middle Eastern/Northern African, Hawaiian, or some other race. The control group had significantly higher percentages of Asian, Black, and Middle Eastern or Northern African students compared to the implementation group. The implementation group had a significantly higher percentage of Hispanic/Latino and White students than the control group. The other racial groups did not differ significantly between control and implementation groups.

**Table 3.2: Sample Characteristics**

| Gender | Total % | Implementation % | Control % |
|---|---|---|---|
| Male | **49.9%** | 50.1% | 49.6% |
| Female | **48.6%** | 48.3% | 48.8% |
| Other | **1.5%** | 1.5% | 1.5% |
| Race | | | |
| Asian/Asian American | **6.5%** | 5% | 7.6%** |
| American Indian or Alaska Native | **2.7%** | 3.2% | 2.4% |
| Black/African American | **6.8%** | 3.6% | 9.3%*** |
| Middle Eastern or Northern African | **2.5%** | 1.4% | 3.4%*** |
| Hispanic/Latino | **12.2%** | 15.5%*** | 9.6% |
| Hawaiian | **0.8%** | 1% | 0.7% |
| White | **69.7%** | 72.2%** | 67.6% |
| Other race/ethnicity | **7.7%** | 7.8% | 7.5% |

***p<.01; *** p<.001*

## Technology Use

We asked students about the devices they use and what they do online. Almost 80% (*n* = 3,089) of the students said that they had a smartphone mostly for their own use (see Table 3.3). Phones were the most common way to go online, used by a little over 80% of students (*n* = 3,276). Most students also reported using computers at school (80.6%; *n* = 3,150) and at home (61.5%; *n* = 2,403). Only 1% (*n* = 37) of the students surveyed answered "none of the above," meaning they did not use any of the devices that were asked about. Usage of phones was statistically significantly higher among implementation group students compared to their control group counterparts. However, usage of computers at school, computers at home, and tablets was significantly higher among students in the control group.

Students also answered questions about the types of things they do on their devices. Most students watched videos online (89.2%; *n* = 3,405), searched for information online (83.4%; *n* = 3,260), and played games online (83.3%; *n* = 3,254). The least common activity for this group of students was posting videos online, which fewer than a third of the sample reported doing (29%; *n* = 1,132). Only 1.8% (*n* = 72) of respondents reported that they did not do any of the activities we asked about.

There were significant differences in technology use between implementation and control schools at baseline. Overall, implementation schools had higher percentages of students who said they looked at or posted on social media sites and posted videos online. Control schools, on the other hand, had significantly larger percentages of students who said they used their devices to search for information online and look at emails (both from school and other senders). These group differences can also be seen in the tech use composite

variable, where 39% of students in implementation schools were categorized as “high tech users” versus 33% of students in control schools.

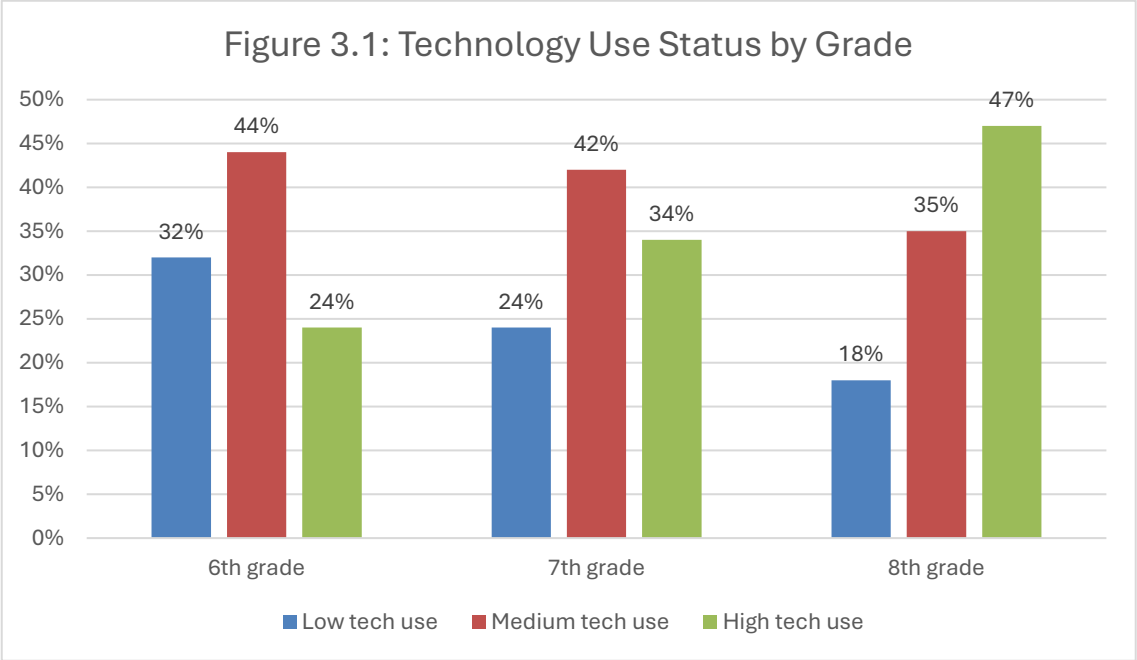
**Table 3.3: Technology Use**

| Devices Used | Total % | Implementation % | Control % |
|---|---|---|---|
| Phone | **83.8%** | 85.9%** | 82.2% |
| A computer at school | **80.6%** | 79.1% | 81.8%* |
| A computer at your home | **61.5%** | 59.7% | 62.9%* |
| A computer at a friend’s home | **14.5%** | 15.3% | 13.8% |
| A tablet (like an iPad) | **56.2%** | 54.6% | 57.6% |
| A smartwatch | **23.7%** | 23.7% | 23.7% |
| None of the above | **1.0%** | 1.3%* | 0.7% |
| Do you have a smartphone that is mostly for just you to use? | | | |
| Yes | **79.4%** | 82.1%*** | 77.1% |
| No | **20.7%** | 17.9% | 23.0%*** |
| What have you done online (with either a phone or computer) in the last month? | | | |
| Looked at social media sites | **30.1%** | 72.1%** | 68.2% |
| Posted on social media sites | **43.1%** | 47.6%*** | 39.4% |
| Played or streamed music online | **75.0%** | 74.5% | 75.5% |

| | | | |
|---|---|---|---|
| Watched videos online | **89.2%** | 88.6% | 89.6% |
| Posted a video online | **29.0%** | 32.7%*** | 25.9% |
| Searched for information online | **83.4%** | 80.1% | 86.1%*** |
| Played games online | **83.3%** | 83.1% | 83.4% |
| Looked online for something you wanted to buy | **70.2 %** | 69.9% | 70.5% |
| Looked at emails from school | **62.9%** | 52.3% | 71.5%*** |
| Looked at emails that are not from school | **42.1%** | 37.7% | 45.8%*** |
| Tech Use Composite | | | |
| High tech user | **35.3%** | 38.6%*** | 32.6% |
| Medium tech user | **40.1%** | 35.3% | 44.0% |
| Low tech user | **24.6%** | 23.4% | 26.1% |

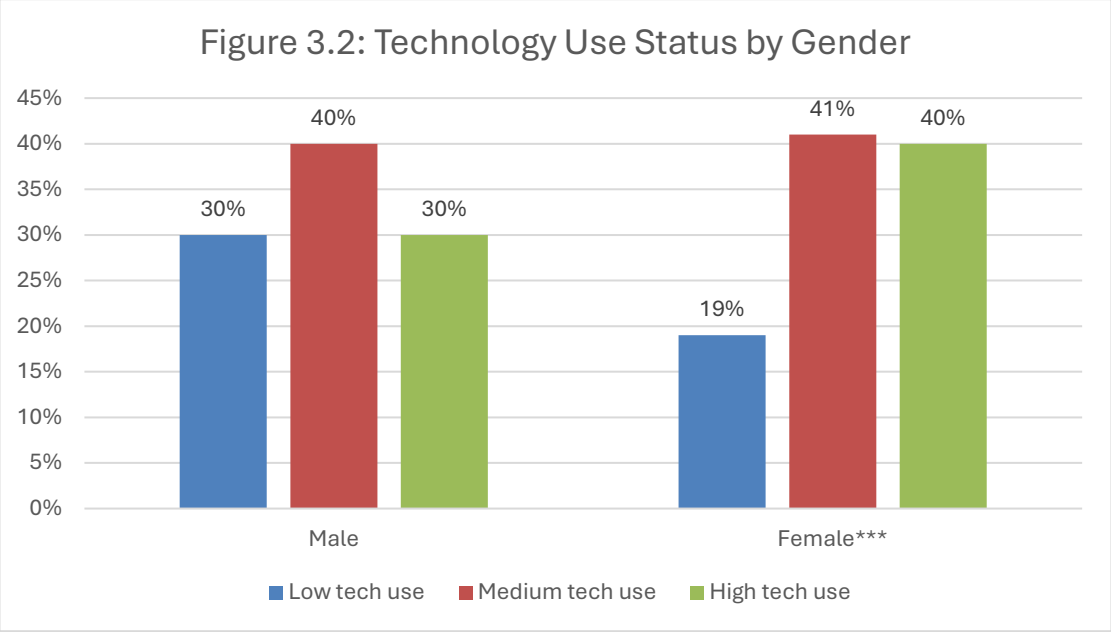
*p<.05; **p<.01; *** p<.001

Below, **Figures 3.1** and **3.2** show differences in tech use status by grade and gender, respectively. Tech use differed significantly across both variables. The percentage of students categorized as high tech users increased significantly across grades, from 24% in 6th grade to 47% in 8th grade.




*** p<.01

Technology use also varied significantly by gender, with 40% of girls categorized as high tech users compared to only 30% of boys.




***p<.01

## Knowledge Scores

**Table 3.4** below shows how the percent of correct knowledge questions ("knowledge score") at baseline varied by grade, gender, and level of tech usage. Differences in percentage correct scores are not necessarily meaningful across grades due to variations in question difficulty. However, differences in scores within grades can help us understand subgroups of students with greater knowledge of digital citizenship concepts. When comparing genders, for example, girls scored higher on knowledge items than boys across every grade. Medium tech users had greater mean scores for knowledge scales compared to high tech users and low tech users in both 7th grade and 8th grade. Finally, there were baseline differences in knowledge scores for control and implementation schools, with 6th and 7th grade students in control schools showing greater baseline knowledge of digital citizenship concepts than students in implementation schools.

**Table 3.4: Knowledge Score (% Correct) Across Grade**

| | 6th Grade (13 questions) | 7th Grade (12 questions) | 8th Grade (17 questions) |
|---|---|---|---|
| **Baseline Average Scores** | **65%** | **62%** | **56%** |
| **Gender** | | | |
| Boys | 62% | 61% | 53% |
| Girls | 67% | 64% | 59% |
| *p-value* | ***<.001*** | ***<.05*** | ***<.001*** |
| **Tech Usage** | | | |
| Low tech user | 62% | 58% | 49% |
| Medium tech user | 66% | 67% | 60% |
| High tech user | 65% | 60% | 56% |
| *p-value* | ***<.05*** | ***<.001*** | ***<.001*** |

| | 6th Grade (13 questions) | 7th Grade (12 questions) | 8th Grade (17 questions) |
|---|---|---|---|
| **Implementation/Control** | | | |
| Implementation | 60% | 60% | 57% |
| Control | 67% | 64% | 55% |
| *p-value* | ***<.001*** | ***<.01*** | *n.s.* |

## Behavior Scores

We examined differences in baseline digital citizenship behavior scores across student subgroups. **Tables 3.5, 3.6,** and **3.7** below examine baseline differences by gender, technology use status, and implementation versus control groups for the behavior questions asked in 6th, 7th, and 8th grades. If students indicated the question did not apply to them (e.g., they didn't use social media or hear about news), they were not included in analyses for these summary tables. The tables provide the percentage of students who reported that the behavior was mostly or very true for them (versus not at all, not very, or somewhat true).

In 6th grade, students were asked to think about the last month and report how true the following behaviors were for them:

1. When I started to feel bad using the Internet or social media, I switched to an offline activity (like going out with friends, reading, or another hobby).
2. When I received texts, messages, or emails with links in them, I thought about whether they might be a scam.
3. When I saw digital drama, I tried to de-escalate the situation by commenting on something positive, ignoring the post, or talking to the person involved.
4. When reading news online, I checked my sources before telling others about it.

**Table 3.5: 6th Grade Behavior Scores**

| Item | Total | Male | Female | Low Tech | Med. Tech | High Tech | Imp. | Control |
|---|---|---|---|---|---|---|---|---|
| 1. | 44% | 44% | 44% | 44% | 45% | 42% | 44% | 44% |
| 2. | 58% | 59% | 57% | 54% | 58% | 62% | 59% | 57% |
| 3. | 31% | 29% | 34% | 28% | 32% | 32% | 29% | 33% |
| 4. | 44% | 46% | 42% | 40% | 45% | 46% | 43% | 45% |

Differences between all subgroup comparisons were non-significant (p = .05).

Among 6th graders, students were most likely to report considering the possibility that texts, messages, or emails were a scam (Item 2). Less than half of 6th graders reported that it was mostly or very true that they had switched to offline activities if they felt bad using the internet (Item 1), de-escalated digital drama (Item 3), or checked sources before sharing news (Item 4). There were no statistically significant differences by gender, tech use, or implementation group.

In 7th grade, students were asked to think about the last month and report how true the following behaviors were for them in the last month:

1. I have used strategies (like turning off cookies, adjusting privacy settings, or limiting what I share) to limit the amount of data that companies and apps collect about me online.
2. I changed my mind about sharing something online after thinking about my digital footprint.
3. I noticed when I felt uncomfortable, sad, or anxious when online and thought about how I could handle that feeling.

4. When witnessing digital drama, I have tried to de-escalate the situation by commenting something positive, ignoring the post, or talking to the person involved.
5. I have thought about copyright issues when using information I found online.

**Table 3.6: 7th Grade Behavior Scores**

| Item | Total | Male | Female | Low Tech | Med. Tech | High Tech | Imp. | Control |
|---|---|---|---|---|---|---|---|---|
| 1. | 32% | 29% | **35%*** | 25% | **36%*** | 30% | 30% | 33% |
| 2. | 33% | 31% | 35% | 31% | 34% | 34% | 34% | 33% |
| 3. | 25% | 24% | 27% | 21% | 26% | 28% | 25% | 26% |
| 4. | 34% | 29% | **36%*** | 26% | 34% | **37%*** | 33% | 34% |
| 5. | 25% | 27% | 24% | 22% | **29%*** | 22% | 22% | **29%*** |

**p<.05*

Agreement with each of the behavior items was generally low (25–34%) among 7th graders. There were some differences by student subgroups: 1) Girls and medium tech users were more likely than other students to say that they used strategies to limit data collection from them online (Item 1), and 2) Girls and high tech users said that they were more likely to try to de-escalate digital drama (Item 4).

In 8th grade, students were asked to think about the last month and report how true the following behaviors were for them in the last month:

1. I changed my notification settings to reduce the number of notifications I get on my device.

2. I used strategies (like turning off cookies, adjusting privacy settings, or limiting what I share) to limit the amount of data that companies and apps collect about me online.
3. I changed my mind about sharing something online after thinking about my digital footprint.
4. I used strategies like blocking someone or telling a trusted adult when I felt pressured or uncomfortable in an online conversation.
5. When I saw hate speech online, I tried to make the situation better.
6. When reading breaking news online, I thought about bias before sharing the story or telling others about it.

**Table 3.7: 8th Grade Behavior Scores**

| Item | Total | Male | Female | Low Tech | Med. Tech | High Tech | Imp. | Control |
|---|---|---|---|---|---|---|---|---|
| 1. | **37%** | 39% | 36% | 36% | 41% | 35% | 36% | 38% |
| 2. | **27%** | 24% | **30%*** | 25% | **33%*** | 25% | 28% | 27% |
| 3. | **35%** | 30% | **40%***** | 34% | 36% | 33% | 33% | 36% |
| 4. | **44%** | 33% | **55%***** | 42% | 49% | 41% | 44% | 43% |
| 5. | **29%** | 25% | **32%*** | 32% | 31% | 27% | 28% | 29% |
| 6. | **31%** | 28% | 34% | 33% | **37%*** | 27% | 33% | 28% |

**p<.05; *** p<.001*

Of all behaviors measured for 8th graders, the most common (44% very or mostly true) was blocking someone or telling an adult if someone made them feel uncomfortable online (Item 4). Only a little over a quarter of 8th graders were using strategies at baseline to reduce the amount of data collected from them (Item 2) or responding to hate speech online to try to make the situation better (Item 5).

Girls were more likely than boys to use strategies to reduce online data collection, think about their digital footprint, block or tell an adult if they felt uncomfortable online, and try to make the situation better after seeing online hate speech. Medium tech users were more likely than low and high tech users to use strategies to reduce online data collection and think about bias before sharing breaking news.

## Digital Engagement & Literacy Index (DELI) Scores

**Table 3.8** shows overall mean scores for the 10 DELI subscales and examines differences by grade. Overall, student mean ratings were the highest for the Online Safety subscale (3.95) and lowest for Media Balance (3.35). Mean scores could range from 1 to 5, where a 1 means "strongly disagree" and 5 means "strongly agree."

There were significant differences between grades for most subscales. Typically, Subscale scores decreased significantly as grades increased, with 6th graders having higher scores than 8th graders on almost all subscales.

**Table 3.8: DELI Subscale Differences by Grade**

| Subscale | Total | 6th | 7th | 8th | p-value |
|---|---|---|---|---|---|
| **Media Balance** | 3.35 | 3.39 | **3.41** | 3.23 | **<.001** |
| **Digital Well-Being** | 3.57 | **3.70** | 3.54 | 3.47 | **<.001** |
| **Privacy & Safety** | 3.53 | **3.68** | 3.49 | 3.44 | **<.001** |
| **Posting Awareness** | 3.59 | **3.65** | 3.59 | 3.54 | **<.01** |
| **Online Civility** | 3.78 | **3.93** | 3.78 | 3.63 | **<.001** |
| **Tech Influence** | 3.69 | 3.73 | 3.70 | 3.65 | n.s. |

| Subscale | Total | 6th | 7th | 8th | p-value |
|---|---|---|---|---|---|
| **Online Safety** | 3.95 | **4.14** | 3.95 | 3.78 | **<.001** |
| **News & Media Literacy** | 3.51 | **3.59** | 3.53 | 3.42 | **<.001** |
| **Online Bystander Support** | 3.58 | **3.66** | 3.61 | 3.47 | **<.001** |
| **Positive Online Learning & Participation** | 3.57 | 3.55 | **3.62** | 3.53 | **<.05** |

**Table 3.9** compares baseline DELI subscale mean scores across gender, tech use, and implementation versus control group. Girls scored statistically significantly higher across all Subscale compared to boys. Medium-level tech users scored higher than low and high users across all Subscale. Finally, there were differences between implementation and control school students on most subscales with control school students typically scoring higher than implementation school students.

**Table 3.9: DELI Subscale Differences by Gender, Tech Use, and Implementation Group**

| Subscale | Boys | Girls | Low Tech | Med. Tech | High Tech | Imp. | Control |
|---|---|---|---|---|---|---|---|
| **Media Balance** | 3.28 | 3.42*** | 3.37 | 3.51*** | 3.14 | 3.27 | 3.41*** |
| **Digital Well-Being** | 3.41 | 3.73*** | 3.58 | 3.70*** | 3.40 | 3.51 | 3.61** |
| **Privacy & Safety** | 3.45 | 3.62*** | 3.55 | 3.62*** | 3.43 | 3.50 | 3.56* |
| **Posting Awareness** | 3.43 | 3.76*** | 3.41 | 3.68*** | 3.61 | 3.56 | 3.61 |
| **Online Civility** | 3.62 | 3.95*** | 3.76 | 3.91*** | 3.63 | 3.75 | 3.80 |

| Subscale | Boys | Girls | Low Tech | Med. Tech | High Tech | Imp. | Control |
|---|---|---|---|---|---|---|---|
| **Tech Influence** | 3.65 | 3.74** | 3.68 | 3.80*** | 3.59 | 3.64 | 3.74** |
| **Online Safety** | 3.76 | 4.16*** | 3.93 | 4.09*** | 3.81 | 3.92 | 3.98* |
| **News & Media Literacy** | 3.40 | 3.63*** | 3.49 | 3.64*** | 3.39 | 3.55 | 3.47** |
| **Online Bystander Support** | 3.45 | 3.72*** | 3.52 | 3.70*** | 3.49 | 3.56 | 3.59 |
| **Positive Online Learning & Participation** | 3.47 | 3.66*** | 3.46 | 3.64*** | 3.56 | 3.52 | 3.61** |

**p<.05; **p<.01; *** p<.001*

**Table 3.10** provides DELI subscale scores across knowledge score quartiles. There was a significant linear relationship between all DELI subscale mean scores and knowledge scores. Mean DELI scores increased significantly for each knowledge score quartile group, with students with the highest knowledge scores having significantly higher DELI subscale scores.

**Table 3.10: DELI Subscale Means Across Knowledge Scores Quartile Groups**

| | Knowledge Score Quartiles | | | |
|---|---|---|---|---|
| Subscale | Bottom Quartile | 2nd Quartile | 3rd Quartile | Top Quartile |
| **Media Balance** | 3.10 | 3.27 | 3.43 | 3.59*** |
| **Digital Well-Being** | 3.17 | 3.51 | 3.71 | 3.84*** |
| **Privacy & Safety** | 3.22 | 3.47 | 3.64 | 3.75*** |
| **Posting Awareness** | 3.22 | 3.57 | 3.73 | 3.80*** |
| **Online Civility** | 3.38 | 3.74 | 3.93 | 4.01*** |

| Subscale | Knowledge Score Quartiles | | | |
|---|---|---|---|---|
| | Bottom Quartile | 2nd Quartile | 3rd Quartile | Top Quartile |
| **Tech Influence** | 3.29 | 3.66 | 3.80 | 4.00*** |
| **Online Safety** | 3.42 | 3.91 | 4.15 | 4.25*** |
| **News & Media Literacy** | 3.22 | 3.46 | 3.60 | 3.74*** |
| **Online Bystander Support** | 3.26 | 3.56 | 3.70 | 3.77*** |
| **Positive Online Learning & Participation** | 3.33 | 3.51 | 3.63 | 3.76*** |

*** *p<.01*

# SECTION 4: QUASI-EXPERIMENTAL EVALUATION RESULTS

This section of the report provides evaluation results of the study. Only students with matched pre-test and post-test data were included in analyses conducted for this section: *n* = 2,798 students (1,319 students from implementation schools and 1,479 students from control schools). The goals of the evaluation were to identify if students from implementation schools saw improved 1) post-test knowledge, 2) digital citizenship-related behaviors, and 3) DELI subscale scores in comparison to control schools, while controlling for their baseline scores.

Data Analysis. When analyzing data from students who are grouped within schools, multi-level modeling is often used to control for the degree that student level outcomes may be influenced by factors related to the schools they attend. However, for 6th and 8th grade students, we found no influence of school-level factors on individual student changes in test scores. For 7th grade, there were only small differences between schools. And, as seen in Section 3 above, there were significant differences at baseline on most outcomes at the group level between control and implementation schools. Therefore, following recommendations from the field under these circumstances (e.g., McNeish, Stapleton, & Silverman, 2017), analyses were conducted on the control group and implementation group in parallel (i.e., separately), adjusting for one level of nesting: individual observations (baseline and post-test responses) within students.

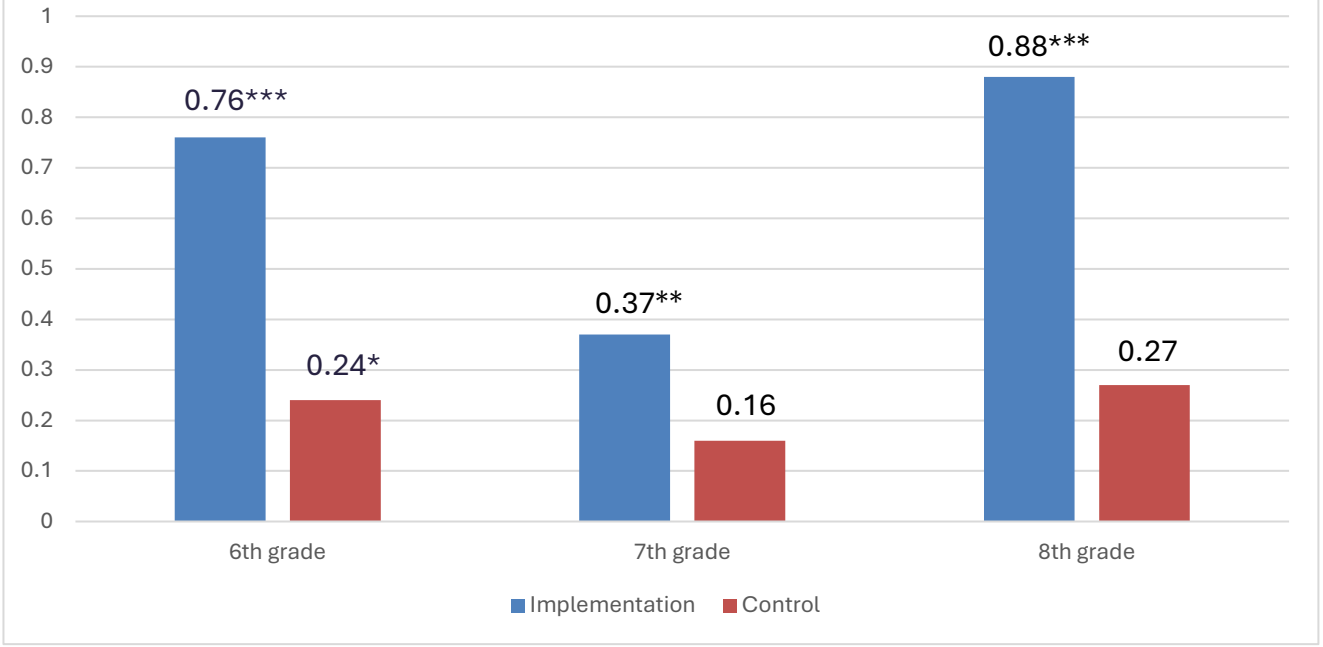
We utilized mixed-effect linear regression to examine differences in knowledge scores, as well as baseline vs. post-test DELI subscale scores, and ordinal multinomial logistic regression to estimate changes to behavior item scores for each group.

## Knowledge Scores

To analyze differences across implementation and control group student knowledge, sums of correct answers were calculated for each grade. To compare the change from pre-test to post-test for these groups, we conducted **repeated measures mixed-effect model analyses** for implementation or control group status on post-test knowledge scores, adjusting for gender and baseline knowledge scores.

**Figure 4.1** below shows unstandardized effect sizes (regression coefficients) for the pre- to post-change for control school students and implementation school students, for each grade level.

Figure 4.1: Changes in Pre- to Post-Knowledge Scores for Implementation and Control Schools




**p<.05; ***p<.001*

The regression coefficients represent the average amount that knowledge scores have changed at post-test while *adjusting for students' starting scores and the effect of gender* (because there were known gender differences in knowledge scores at baseline).

Among 6th grade implementation students, the average increase in knowledge score was 0.76 points between baseline and post-test time periods. This increase was greater than the 0.24 point increase among 6th grade control students. For 7th graders in control schools, students' scores didn't change much over time. However, in the schools where the program was implemented, students' scores increased significantly. For 8th graders in control schools, there was a small improvement, but it was not statistically significant, whereas the effect size for the change in knowledge for 8th graders in implementation

schools was significant. Findings suggest that the Digital Citizenship program had a meaningful positive impact on students' knowledge, with largest effects for 8th graders.

## Digital Citizenship-Related Online Behaviors

As with the knowledge questions, the behavior questions varied to account for the different topics covered in the 6th, 7th, and 8th grade lessons. **Table 4.1** below presents odds ratio comparisons for 6th grade behavior questions, 7th grade behavior questions, and 8th grade behavior questions, analyzed for implementation and control schools. Statistically significant odds ratios are in bold.

**Table 4.1: Coefficients for Changes in Pre- to Post-Behavior Item Scores for Implementation and Control Schools**

| Behavior Items | **Implement. Schools** Odds Ratios | **Control Schools** Odds Ratios |
|---|---|---|
| **6th Grade** | | |
| When I started to feel bad using the Internet or social media, I switched to an offline activity (like going out with friends, reading, or another hobby). | 1.04 | 1.12 |
| When I received texts, messages, or emails with links in them, I thought about whether they might be a scam. | 1.18 | **1.58*** ** |
| In the last month, when I saw digital drama, I tried to de-escalate the situation by commenting on something positive, ignoring the post, or talking to the person involved. | 1.17 | 1.02 |
| When reading news online, I checked my sources before telling others about it. | 0.93 | 1.02 |
| **7th Grade** | | |
| I used strategies (like turning off cookies, adjusting privacy settings, or limiting what I share) to limit the amount of data that companies and apps collect about me online. | **1.30*** | 0.95 |
| I changed my mind about sharing something online after thinking about my digital footprint. | 1.17 | 0.99 |
| I noticed when I felt uncomfortable, sad, or anxious when online, and thought about how I could handle that feeling. | **1.58*** ** | 1.09 |

| Behavior Items | Implement. Schools Odds Ratios | Control Schools Odds Ratios |
|---|---|---|
| When witnessing digital drama, I tried to de-escalate the situation by commenting something positive, ignoring the post, or talking to the person involved. | 1.13 | 1.08 |
| I thought about copyright issues when using information found online. | **1.45**** | 1.09 |
| **8th Grade** | | |
| I changed my notification settings to reduce the number of notifications I get on my device. | 1.15 | 1.16 |
| I used strategies (like turning off cookies, adjusting privacy settings, or limiting what I share) to limit the amount of data that companies and apps collect about me online. | **1.46***** | 1.08 |
| I changed my mind about sharing something online after thinking about my digital footprint | **1.36**** | 1.07 |
| I used strategies like blocking someone or telling a trusted adult when I felt pressured or uncomfortable in an online conversation. | **1.28*** | 0.93 |
| When I saw hate speech online, I tried to make the situation better. | 1.21 | 1.08 |
| When reading breaking news online, I thought about bias before sharing the story or telling others about it. | 1.21 | 0.86 |

**p<.05; **p<.01; ***p<.001*

The odds ratios measure the likelihood of an increase in how true the statement was for students when comparing their post-test response to baseline. An odds ratio that is above 1 represents an increase in the likelihood of students saying the statement was true at post-test when compared to baseline, while an odds ratio below 1 means the likelihood that a student said a statement was true at the post-test was lower at baseline. For example, an odds ratio of 1.46 means students were **1.46 times** more likely to say the statement was true at post-test when compared to baseline. In our analyses, the **only statistically significant odds ratios were above 1**, meaning that for those items, the

likelihood that students said the statements were true *increased* at post-test, suggesting an **improvement in digital citizenship-related behaviors**.

For 6th graders, there were no significant changes from baseline to post-test for implementation school students, and one item increased significantly for 6th grade control students. However, for 7th and 8th graders in the implementation schools, several of the behavior items showed significant odds of an increase at post-test, while no such changes were seen for control school students.

Specifically, 7th graders in implementation schools showed a statistically significant increased odds of reporting that in the last month they used more strategies to limit the amount of data collected by apps, noticed when they felt sad, uncomfortable, or anxious online, and thought about copyright issues when using information found online. Eight graders in implementation schools also had a significantly increased odds of reporting higher pre-test endorsement of using strategies to limit the amount of data collected by apps, changing their mind about sharing something after considering their digital footprint, and using strategies like blocking or telling an adult if feeling pressured or uncomfortable in an online conversation.

## Digital Engagement & Literacy Index (DELI) Subscales

Broader digital literacy and well-being skills were measured with the Digital Engagement & Literacy Index (DELI). Unlike the knowledge and behavior survey questions, the DELI subscales were intended to measure more general impressions of how children and youth's online self-concept. Students in every grade responded to DELI questions, and the scales, although inclusive of digital citizenship concepts, were not designed to capture the specific program content provided to each grade.

The DELI has 10 subscales: 1) Media Balance, 2) Digital Well-Being, 3) Privacy & Safety, 4) Posting Awareness, 5) Online Civility, 6) Tech Influence Awareness, 7) Online Safety, 8) News & Media Literacy, 9) Online Bystander Support, and 10) Positive Online Community. Findings below in **Table 4.2**. show effect sizes (coefficients) for the 10 DELI subscales for implementation and control schools by grade. Analyses used a repeated measure mixed model conducted separately for implementation and control schools, controlling for gender, baseline smartphone usage, and baseline knowledge. Coefficients represent unstandardized effect sizes of post-test scores, accounting for pre-test scores.

**Table 4.2: Coefficients for DELI Subscales**

| | 6th | | 7th | | 8th | |
|---|---|---|---|---|---|---|
| | **Imp.** | **Cntrl.** | **Imp.** | **Cntrl.** | **Imp.** | **Cntrl.** |
| Media Balance | 0.01 | -0.03 | -0.06 | 0.02 | **0.10*** | 0.01 |
| Digital Well-Being | 0.03 | -0.03 | 0.05 | 0.07 | 0.07 | -0.01 |
| Privacy & Safety | -0.02 | 0.03 | 0.05 | 0.01 | 0.04 | 0.06 |
| Posting Awareness | -0.05 | -0.01 | 0.07 | 0.01 | 0.04 | 0.07 |
| Online Civility | -0.08 | **-0.13***** | -0.01 | 0.04 | 0.05 | **0.09*** |
| Tech Influence Awareness | 0.03 | 0.01 | 0.05 | **0.08*** | **0.08*** | 0.06 |
| Online Safety | **-0.13**** | 0.01 | -0.07 | 0.03 | 0.06 | 0.02 |
| News & Media Literacy | -0.03 | -0.02 | 0.01 | 0.01 | **0.07*** | 0.04 |
| Bystander Support | -0.05 | -0.04 | -0.05 | -0.05 | **0.09*** | 0.05 |
| Positive Online Community | 0.04 | 0.03 | 0.02 | -0.05 | **0.15***** | 0.04 |

**p<.05; **p<.01; ***p<.001*

For 6th and 7th grades, results showed few significant changes in scores across the three-month follow-up period. In fact, for 6th grade the only significant changes went in the opposite of the desired direction for both implementation (Online Safety) and control schools (Online Civility). For 7th graders, the only significant change was seen in one subscale for control school students (awareness of tech influence).

On the other hand, 8th grade students at implementation schools saw significant positive change from pre- to post-test on **five out of the 10 subscales:** Media Balance, Tech Influence Awareness, News & Media Literacy, Bystander Support, and Positive Online Community. This contrasts notably with 8th grade students in control schools, where there were only significantly positive changes for one subscale: Online Civility.

# SECTION 5: TEACHER SURVEYS

The study collected survey information from teachers at implementation schools in an effort to better understand how the Common Sense Digital Citizenship Curriculum program was implemented and teacher experiences with the program.



We asked teachers to describe how long they spent teaching the lessons. Across lessons and grades, teachers mostly reported conducting lessons from 21 to 40 minutes. Seventh grade teachers reported shorter lesson time compared to other grades. We also asked teachers whether they chose to use any of the additional supplementary materials, including Family Tips, Family Activities, and Extend the Lesson materials. In 6th grade, over one third reported using additional material. The most commonly used materials were Extend the Lesson and Family Tips. In 7th grade, just over one fourth of the teachers included additional materials. This was most typically Extend the Lesson. Finally, 22% of the 8th grade lessons included the use of additional material. Most of the time, the 8th grade teachers used Extend the Lesson materials as supplements. Very small numbers used Family Tips (*n* = 5, 4%) or Family Activities (*n* = 2, 1%).

The survey also asked teachers to rate how engaged students were with each lesson and the extent they felt that students understood the lesson. Ratings were from 1 to 10 (with 10 = very engaged or understood the lesson very well). **Table 5.1** below provides the mean engagement and understanding scores for each lesson in 6th, 7th, and 8th grades.

**Table 5.1: Teachers' Perceptions of Student Engagement and Understanding**

| | 6th Grade | | 7th Grade | | 8th Grade | |
|---|---|---|---|---|---|---|
| **Lesson Area** | **Engmnt** | **Undrstnd** | **Engmnt** | **Undrstnd** | **Engmnt** | **Undrstnd** |
| **Media Balance** | 6.90 | 7.81 | 7.23 | 7.95 | 7.17 | 8.34 |
| **Privacy & Safety** | 7.50 | 7.94 | 7.46 | 7.85 | 7.21 | 8.12 |
| **Digital Footprint & Identity** | 7.45 | 7.30 | 7.00 | 7.80 | 7.50 | 8.45 |
| **Relationships & Communication** | 7.86 | 7.86 | 7.53 | 7.94 | 8.28 | 8.24 |
| **Cyberbullying & Online Harms** | 7.89 | 8.16 | 7.28 | 7.62 | 8.12 | 8.50 |
| **Information & Media Literacy** | 7.84 | 7.00 | 7.00 | 6.94 | 7.33 | 7.87 |

The ratings by teachers on how well students were engaged in the Digital Citizenship lessons suggest that broadly, engagement was strong, averaging between 7 and 8 on a 10-point scale. Engagement was highest for the Cyberbullying & Online Harms lesson for 6th graders (Digital Drama Unplugged) and the Relationships & Communication lesson for 7th graders (My Social Media Life) and 8th graders (Sexting and Relationships).

The lessons were also rated as being well understood by students, with scores averaging from 7 to 9 on a 10-point scale. Understanding of lessons was higher overall for 8th graders than 6th and 7th graders. Ratings of how well students understood lessons was slightly lower for the Information & Media Literacy lesson than for other lessons across grades.

## Feedback from Teachers

The surveys also collected open-ended responses and feedback from teachers. Many of the comments were regarding positive aspects of the lessons and things the students

learned. Teachers described examples of the students relating to the material and applying it to their own lives. Sample quotes include the following:

> *The lesson went well. The students enjoyed the video. They like making connections with the characters in the video. It is relatable to their lives.*
> **-6th grade teacher, Relationships & Communication lesson**

> *This lesson was exceptionally informative when it comes to this particular topic. I found the video to be extremely impactful since it sounds very different coming from a teacher and students their own age.*
> **-8th grade teacher, Relationships & Communication lesson**

> *I really enjoyed this lesson since the students were able to relate the concept directly to their lives. We had a big discussion about making a plan and challenging ourselves to unplug based on our habits. A bunch of the students chose a specific number of days to take a break from gaming, YouTube, or social media.*
> **-6th grade teacher, Media Balance lesson**

While most lesson feedback was positive, teachers also had suggestions on improving the timing, organization, and flow of the lessons. Some teachers suggested that synchronization between the materials on the slides and material on handouts could be improved, noting that these two different modes of delivery were difficult to manage simultaneously while teaching.

Balancing the important material within the limited confines of a class period proved challenging for some teachers. Teachers often wished they had more time to complete the

lessons. Some reported in their survey that they ran out of time or that they skipped specific parts, like videos or discussions, to fit as much as possible into their class time.

Finally, while most teachers seemed to appreciate the breadth of topics included in lessons, some found certain topics more challenging. For example, one comment from a 7th grade teacher noted that cyberbullying seemed difficult or "abstract" for students to grasp if they had not experienced it firsthand. Additionally, one 8th grade teacher shared that they did not feel comfortable teaching some parts of the sexting lesson due to its "sensitive" content. However, most teachers considered the topics very important and relevant to their students.

# SECTION 6: CONCLUSIONS AND RECOMMENDATIONS



The study outlined in this report provides encouraging evidence that the Common Sense Media Digital Citizenship Curriculum strengthens students' knowledge of digital citizenship concepts and improves digital citizenship-related behaviors and attitudes. Knowledge gains persisted a full month after the program was delivered to 6th, 7th, and 8th graders. It is also notable that, even in a short follow-up period, changes in behaviors—such as using strategies to protect against data collection by companies, considering digital footprint before sharing information online, de-escalating online drama, and blocking or telling an adult in response to unwanted online interactions—increased for students receiving the Digital Citizenship Curriculum.

The dissemination of Digital Citizenship programs has been widespread in the U.S., and Common Sense Media has been one of the major leaders of educational efforts. Their engagement in program evaluation demonstrates important additional leadership. Evaluation research has not kept pace with the programming development in this area over the past decade, and information on evidence-based practices is notably lacking. This study begins to shape information about which approaches and messages work best and helps the field understand more about how students respond to information about digital health and literacy.

The study has limitations that should be considered when interpreting the findings. Lower than anticipated school enrollment and the quasi-experimental design limited our ability to fully account for preexisting group differences and reduced the statistical power of the study. Additionally, the follow-up period was short. Future research is needed to expand and build on the results of this study. Nonetheless, the findings outlined below are informative and provide an important initial foundation as evaluations of digital citizenship and online safety education programs continue to expand.

## Summary of Evaluation Findings

- Retention of vocabulary and understanding of digital well-being and literacy concepts were significantly improved for all students across 6th, 7th, and 8th grades who received the Digital Citizenship program, knowledge that was maintained one to two months after completing the lessons. Similar knowledge gains were not seen for students in the control conditions.

- Significant changes were also seen in online behaviors for students in implementation schools, suggesting that information learned from the Digital Citizenship Curriculum was put into practice by students. Behaviors related to protecting oneself from data collection by online companies and apps, standing up to online drama, online safety behaviors, and considering one's digital footprint when posting improved for 7th and 8th grade students who received the program. These changes were not seen for students in control schools.

- Findings supporting the effectiveness of the Common Sense Digital Citizenship program were stronger when outcomes focused on the content of the lessons received by the students, or on past-month behavior changes. Fewer changes across the study time frame were seen with the DELI subscales for 6th or 7th grade students in implementation or control conditions. However, there was evidence of

substantial improvement in a number DELI scores for 8th graders, improvements not seen for 8th grade students in the control group.

- In general, results across measures were strongest for 8th grade students and weakest for 6th grade students. More information is needed to understand the lack of program impact for 6th graders. While the 6th graders showed knowledge gains, behavioral and attitudinal changes were minimal. Additionally, across the whole sample, 6th graders were the only grade where DELI subscales showed some regression (backward trend) from pre- to post-test.

  Multiple factors may contribute to the pattern seen in 6th graders: (1) Lower technology exposure: Students in early 6th grade may not be actively engaged enough online, and in particular with social media, for behavioral/attitudinal changes to manifest in a two-month window; (2) Response recalibration: Sixth grade students at post-test may be demonstrating more realistic (less naive) assessments of online safety as they interact more online across 6th grade; or (3) Developmental shifts: Sixth graders may also be demonstrating the effects of a challenging adjustment period from later elementary school and rapidly increasing independence and peer influence as they adapt to middle school. This may translate to a changing identity where they see themselves as more independent and more comfortable with risk as the year goes on. Qualitative follow-up research with 6th graders is needed to understand which of these mechanisms is most relevant.

## Additional Study Findings

In addition to outline evaluation findings, which were the primary focus of the study, survey results identified additional relationships across students and outcomes that can inform digital citizenship educational efforts.

- **Gender differences were consistent across outcomes.** Girls were more active users of technology than boys. They also scored higher than boys on knowledge scales, endorsed more digital citizenship-related behaviors in 7th and 8th grade, and had higher digital well-being and literacy scores across every DELI subscale.

- **The relationship between intensity of technology use and digital citizenship behaviors and attitudes is complex.** Medium tech users outperformed both low tech and high tech users on knowledge scores, DELI subscale scores, and digital citizenship behaviors. This suggests that balanced engagement may support healthier digital practices than either limited or excessive use.

- **Digital citizenship behavior gaps:** Only a minority of students regularly practiced core protective behaviors (e.g., limiting data collection, considering digital footprint, de-escalating online drama). While it is promising that the Common Sense Digital Citizenship Curriculum resulted in improvements in these behaviors, findings highlight the need for innovative prevention strategies to increase protection.

- **Knowledge and children's approach to online engagement go hand in hand:** Digital citizenship knowledge was strongly associated with higher DELI subscale scores, suggesting that cognitive skills and healthy online behaviors reinforce each other. This has promising implications for prevention-focused educational strategies.

## Recommendations

Study findings point to some recommendations for both program development and future research:

1. From 6th to 8th grade, technology use increased, but self-reported digital citizenship skills and behaviors decreased. This likely reflects a normative developmental shift, as peer influence grows and boundary testing intensifies during middle school. These findings underscore the importance of intentional digital citizenship education and make the curriculum's positive effects for 7th and 8th graders particularly meaningful. The curriculum successfully improved outcomes for students who would otherwise be experiencing natural declines in these competencies. Digital citizenship education may be especially critical during the transition into mid-adolescence.
2. More research is needed to understand study findings for 6th graders. It might be that different educational content may be needed for 6th graders. Since the evaluation was completed, Common Sense Media has developed an updated Digital Literacy & Well-Being Curriculum that incorporates enhanced skill-building and empowerment components, which improve impact for 6th graders. It could also be that the educational content is effective but requires a longer follow-up period to see effects. While 6th graders showed limited immediate effects, introducing concepts before heavy technology use begins may establish foundational knowledge that helps students resist the natural decline as they become more active online.



3. Research is also needed to better understand repeated exposure to digital citizenship education over time. This evaluation focused on a one-time program exposure to youth who had not previously received the Common Sense Digital

Citizenship Curriculum in prior grades. However, Common Sense has designed their program content to be delivered at each grade, with learning building on themes taught in prior grades. Future research should test the value of multi-year, longitudinal exposure to digital citizenship programming. A one-time intervention may not be sufficient to counter the ongoing pressures and influences that naturally weaken digital citizenship competencies as technology use intensifies.

4. In general, the study highlights the need for more research on how technology use and digital citizenship self-perceptions and behaviors vary for different subgroups of youth in and across middle school.
    - Grade level differences in technology use, knowledge, and attitudes changed dramatically across 6th, 7th, and 8th grade. Sixth grade, for example, was the only grade where DELI subscale scores decreased from pre- to post-test. It is important to better understand the changes in online safety and well-being behaviors and attitudes that are happening within short developmental time frames during middle school.
    - Gender differences identified in the study were also notable and worth further discussion among online safety and digital citizenship program developers to make sure that educational content is inclusive of some of these differences. Boys may need messaging that aligns with their online activities and experiences.
    - Finally, study results identified that there is a middle ground of youth digital engagement, with moderate technology use connected to the healthiest outcomes. This finding reinforces the value of educational content that promotes balance, rather than simple "more or less" messaging about screen time.
5. Overall, it was clear from study results that there is substantial room to improve healthy digital habits for young people. Some of the responsibility for this lies with parents, policymakers, and the technology sector, but educational program

developers could consider creative ways to help youth further expand digital citizenship skills and behaviors. Digital citizenship content could be combined with other prevention programs (social emotional learning, dating violence, bullying prevention, relationship health, or sex education) to tackle more difficult behaviors and experiences.

6. The field would benefit from additional consideration of program theory for digital citizenship, digital balance and well-being, online safety, and media and news literacy programs. The research team, in collaboration with the Common Sense team, spent a great deal of time defining what measurable outcomes might look like for middle school youth who receive the Common Sense Digital Citizenship program, but larger conversations are needed to expand on this work.
7. We encourage other researchers to continue to advance evaluation research in this area. It is only through multiple evaluation studies that we can understand which educational program components and messaging work best, in what ways, and for which youth. How does digital citizenship education impact long-term well-being and safety? At what ages are certain types of topics and messaging most effective? These are questions that require a body of research knowledge. We are pleased to work with the Common Sense team to advance work in this area and hope that it can help inspire similar efforts.

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