**Background**

Young children worldwide, ages 3-9 spend 1400-1600 hours a year with screens, including television, tablets, phones, movies, and “related media” annually. Teachers know that screen-time in early childhood can curb creative play, stunt vocabulary and suppress the development of neural pathways. We see the distressing results in dull-eyed students who lack focus, shun self-regulation, resist reading and “act out” in class.

As well, much of the time children spend with screens is: (1) sedentary, leading to obesity and under-utilized muscle groups, (2) passive, leading to ‘unconscious’ absorption of ideas and the inability to think about media or understand how it is affecting them, and (3) addictive, contributing to limited self-control, lack of interest in other activities, and sleep disorders

Research done at the Harvard Graduate School of Education in collaboration with UNESCO and involving 100,000 children from 132 countries further demonstrates that students who cannot pay attention, communicate effectively with peers, or solve problems have an increased likelihood of failing school, becoming excessively aggressive and falling into lifelong poverty.

**Program Description**

Screen Smart® is an accelerative, interdisciplinary learning program designed to address these problems and close the achievement gap in early childhood classrooms. The data and outcomes included in this report detail the evidence-based means by which Screen Smart accelerates learning, and thus shrinks the achievement gap for underserved and at-risk children. As well, this report demonstrates that children who participate in the Screen Smart program have internalized the concepts for lasting outcomes, as evidenced by increased literacy and critical thinking skills reported by teachers at the start of Screen Smart Year 2 and Year 3.

While engaging the whole body and mind of each child, the curriculum uses neuroscience-based techniques to make screen engagement an *active, intentional and intellectual* process, thereby reversing the habits of sedentary and passive viewing and boosting educational outcomes, whether learning is in the classroom, or remotely. The program’s multi-sensory curriculum provides early childhood students with vital auditory, visual and kinesthetic stimulation while engaging them in close analysis of media texts.

Screen Smart teaches students the 21st century skill of being “screen smart” by:

1. Integrating neuroscience-based kinesthetic micro-movements into the core curriculum, thereby elevating children’s energy and focus as a means of improving classroom learning and self-regulation,
2. including foundational literacy/narrative concepts & vocabulary in all lessons,
3. modeling extended response and intellectual rigor around media while creating the

expectation that students pay close attention to detail and then discuss and write about what they watch.

Screen Smart’s educational outcomes are further enhanced by the program’s emphasis on having children apply their “screen smart skills” both in the classroom and at home, diminishing situational learning and contributing to increased parent involvement during screen time.

**Outcomes Measured by ICMC**

-Interest and student engagement. Recognized as vital for student learning, retention, and application of ideas to other classroom topics.

-Participation. Although teachers do not grade for participation, it is an essential part of the behavioral mortar that cements the bricks of learning. Early childhood experts including Bredekamp, Piaget, and Montessori emphasize the importance of student participation in effective early childhood teaching.

-Progress is charted in:

* + - Understanding and use of literacy-related vocabulary
    - Use of complete sentences
    - Understanding and use of basic literacy constructs
    - Attention to/retention of detail **and** the ability to use those details to think about, analyze texts and infer meaning
    - Discussion and writing about media texts
    - Social-emotional learning and self-regulation

**Program Reach**

Twenty-one Pre-Kindergarten, five Kindergarten, three First Grade, and three Second Grade classrooms participated in a Screen Smart residency in six schools. Screen Smart students received weekly on-site instruction (25-40 minutes) in their classrooms.

Total number of students reached across schools: 474.

***Westcott School****:* 8 sessions residency – 6 classrooms: 4 PreK, 2 Kindergarten classrooms.

***Doolittle School:*** 12 sessions residency – 5 classrooms: 2 PreK classrooms, 1 Kindergarten, 1 First grade, 1 Second grade classrooms.

***Columbia Explorers Academy:*** 12 Sessions residency - 6 PreK classrooms.

***Helge Haugan School:*** 12 sessions residency – 5 PreK classrooms.

***Everett School:*** 12 sessions residency – 5 classrooms: 2 PreK, 1 Kindergarten, 1 First grade, 1 Second grade classrooms.

***Kershaw School****:* 12-sessions residency for Screen Smart Years 1, 2, and 3 - 5 classrooms: 2 PreK Year 1, 1 Kindergarten Year 2, 1 First grade, 1 Second grade Year 3 classrooms.

**Curriculum Design & Customization**

The interdisciplinary Screen Smart curriculum is designed to support a broad range of early childhood academic and developmental domains:

-Critical thinking:

Children state why they did or did not like visual texts seen in the classroom and/or at home. They are also asked to compare visual texts and contrast their differences.

-Metacognition:

Students are instructed to notice, then think and talk about what they are thinking and feeling.

-Inference:

Discussions during and after screenings continually challenge students to notice and reflect on ideas that they had inferred.  E.G. How do we know that what we think about a specific detail in the story is true?

-Social-emotional learning:

Students relate self to text, text to world and participate in discussions evoking empathy for others. The curriculum incorporates social-emotional learning by focusing on identifying what the character feels, how students feel while watching, and how the film affects them.

-Literacy skills & vocabulary building:

Daily emphasis on narrative structure develops students’ ability to discuss a story in terms of plot, character, setting, beginning/middle/end, main idea, theme, problem and solution, etc. Curriculum design for Screen Smart is closely aligned with ELA Common Core frameworks and CPS Scope & Sequence for each grade level.

*-*Reading Support:

* + Students read, review, and identify letters and words appearing in the titles and credits of all films.
  + Poems are read aloud by students individually, in small and large groups prior to viewing films based on those poems.
  + Fundamental literacy frameworks and vocabulary are used in each session, including characters, plot, setting, fiction, and non-fiction.

-Math Learning:

Children use addition and math logic to count identifying objects, characters, and sound effects during the viewing of films. Students also identify multiple shapes (circles, squares, and octagons) during one of the films.

- Focusing and Self-Regulation:

Using short, high-energy movements led by instructors, teachers, and students, children practice focusing and learning to control their bodies.

-Fine Motor Skills:

The Screen Smart curriculum incorporates kinesthetic rubrics that support the development of fine motor skills in early childhood. According to the Journal of Developmental Psychology, mastery of hand gestures can enhance children’s ability to follow verbal instructions.

-Speech Coaching:

Articulation/enunciation and focusing rubrics are given greater emphasis in classrooms with high numbers of ELL students. Students practice exercises focusing on strengthening consonants and are encouraged to use articulation and diction exercises when answering questions during class.

-Extended Response Inclusive of Individual Communication & Peer-to-Peer Dialog:

Throughout each session, scaffolding supports extended response and self-regulation. Students are led in discussions about character motivation, alternatives to character decisions, and the difference between reality and dream sequences in films.

2022 Innovation: ELL Support with Visual Anchor Charts and Translation:

ICMC developed a comprehensive set of resources to boost outcomes in classrooms in which the majority of students spoke a language other than English. ICMC designed anchor charts that included visual elements connecting English words with images for greater comprehension. Screen Smart instructors also learned key phrases in students’ native language and rehearsed “real time translation” techniques to allow teachers to translate Screen Smart curriculum and student responses. Additionally, ICMC developed Spanish language resources for teachers for each session. Sent prior to each week’s session, these resources contained key learning constructs, vocabulary and a guide for “pause and question” strategies.

**Quantified Outcomes**

The outcomes cited below are based on data analysis of the following assessment instruments and outcomes:

1. Written teacher evaluations (pre-program, midpoint, and final)
2. One drawing exercise
3. Two parent feedback document
4. Daily in class evaluations by a trained ICMC evaluator using an assessment instrument with 93 questions for each session.
5. Daily video documentation of each session

Inferential Reasoning & Higher Order Thinking

- At the start of the program, teachers of Screen Smart Year 1 as well as year 2 and 3 students reported that 40% could volunteer inferences during discussions.

- In the first two weeks of the program, 74% of students, who were asked by the instructor, could satisfactorily state a part they liked in a film and why. By the final two sessions, 98% of students asked could state a part they liked and why they liked it.

- At the beginning of the program, teachers for Screen Smart year 1 students reported that approximately 30% of students and 60% of year 2 and 3 could apply critical thinking to narrative based media. At the end of the program, teachers of year 1 students reported 65% and teachers of year 2 and 3 students reported 68% demonstrated improved critical thinking.

- At the beginning of the program, 53% of students in Screen Smart Year 1 and 100% of Screen Smart Year 2 and 3 could notice and talk about details in a story. By the end of the program, teachers for all Screen Smart years reported 78% of students were able to notice and talk about details in a story during Screen Smart and regular class time.

Self-to-text and text-to-world connections

In their pre-program evaluation surveys, teachers across all grades reported that an average of 41% of Screen Smart Year 1 and 75% of Screen Smart Year 2 and 3 students regularly made text-to-self connections in classroom discussions. By the end of the program, 68% of Year 1 and 80% of Year 2 and 3 students were able to relate what they see in media texts to their own lives and talk about those connections.

Year 2 and 3 students offered contrasts between a film setting, and their city, as well as comparisons between some of the films screened in Screen Smart.

-In the first few sessions, 79% of students asked stated they talked to someone at home about what they watched. By the final few sessions, 97% of students asked stated they were talking to someone at home about what they watched, including many students who claimed they told a grown up that something was “too scary” or inappropriate for them to watch. Students across grade levels offered alternatives to watching something upsetting, and the majority of students continued to offer alternatives where relevant in subsequent sessions through the end of the program.

Social Emotional Learning

-76% of year 1 students and 68% of year 2 and 3 students demonstrated improved social emotional learning as a result of the Screen Smart program.

Metacognition

On the first day of the program 63% of students in Screen Smart year 2 and 3 classrooms recalled that what we see on screens goes “in our minds.”

Students also noted that using screens for an extended period causes them to “feel tired” or “eyes start to hurt,” and “you might think what you see on screens is true.

By the end of the program, the majority of students were able to explain that it is important to be Screen Smart “because when you watch videos, it goes into your mind,” “So you can concentrate on the movie” and “know what is happening,” and “if it makes you feel scared, you don’t have to watch it.”

Vocabulary

-At the start of the program, teachers reported that 36% of Screen Smart Year 1 students and 80% of Screen Smart Year 2 and 3 students were able to understand, and 26% of Screen Smart Year 1 and 75% of Screen Smart Year 2 students used the fundamental vocabulary (character/plot/setting) of storytelling. At the conclusion of the program, teachers reported that 62% of Screen Smart Year 1 students and 83% of Screen Smart Year 2 and 3 students recognize the words, respond with correct answers to questions about character/plot/setting, and use terms accurately.

Focusing and Self-Regulation Skills

-63% of students across all grade levels demonstrated the improved self-regulation and focus during remote Screen Smart. 72% of students were reported use energy and concentration when engaged in screen use and other learning activities during regular class time. In each session, students showed that they had mastered and could independently use the ICMC energy and concentration exercises to enhance their focus during screen time.

Motor Skills

- Children over all grade levels demonstrated improved fine motor skills in hand movements (taught as part of supporting kinesthetic rubrics) by the 5th week of the program. By the 5th week of Screen Smart, students in one 2nd grade class started a regular routine of volunteering to lead gross and fine motor exercises as a transition from Screen Smart to their next activity. This remained a routine for the duration of the program.

Extended Response

-70% of children in all grade levels and Screen Smart years participated in extended response discussions over the 12-weeks of the program.

Memorization

- Several students across grade levels memorized the first 2-4 lines of two poems that were the subjects of films in the program within 10-15 minutes of practice and retained memorization through the conclusion of five subsequent weeks of the program.

Parent Feedback

-Outcomes from “funwork” returned by 16% of parents indicated that 87% of students across all grades engaged in the “energy and concentration” rubric before watching screens at home. Some teachers reported getting feedback from parents, stating, “Some parents did ask about the program and what it was because their kids would talk to them about it at home.” S. Varela, PreK, Columbia Explorers Academy. Another Columbia Explorers Academy teacher, Ms. Sullivan claimed, “A handful of parents mentioned their students demonstrated increased critical thinking when watching media together.” Finally, PreK teacher, Ms. McKinney of Kershaw mentioned “A couple parents mentioned how their child asked to watch a movie or tv program with a family member and then discuss it.”

**Select Teacher Feedback:**

Focus and Self-Regulation

The students became more self-aware, as in, they realized that they must use energy to concentrate on the task at hand, whether it’s watching a movie or listening to a read aloud. Ms. O. Garcia, K, Everett School.

An important program outcome is that students were able to be reflective and proactive around how they engage with all different types of screens. I like that students are building their understanding and awareness of the different screens that they use in their everyday lives. I like that students are practicing strategies on how to interact with media that can be scary or inappropriate, and that they have the opportunity to share these experiences collectively and build off of each others' thoughts. I am glad that students have the chance to reflect on the media that they watch on screens, and are encouraged to do something about something that they watch that may be inappropriate for them (turn it off, do a different activity, talk about it, etc.) Ms. Lara, PreK, Haugan School.

Kids are now aware that some of the things they are watching is having an impact on them and have some ideas for turning it off , choosing another activity and most importantly talking to someone about what they saw so it can't stay in their minds. Ms. Wheatley, PreK, Haugan School.

The students really became aware of paying attention to details in videos. They applied the use of their "energy" during different times of the day, especially during activities related to videos, Ipads etc. Ms. Varela, PreK, Columbia Explorers Academy.

I teach sign language while I teach so it's very similar to pairing new vocabulary to movement so it helps students remember the word and the meaning of it. It is inevitable that our students are exposed to screens. As they get older, they are allowed more and more screen time; helping them practice now how to ground themselves while they are watching, how to reflect on what they've watched and how it makes them feel are all skills they will have to learn and strengthen. Ms. Almodovar, 1st, Kershaw School.

Improved Communication & Thinking Skills

The first important outcome was that the students were able to be respectful to each other while discussing their views and opinions. Ms. Wheatley, PreK, Haugan School.

A few English language learners in the class have been trying out speaking English with Screen Smart program staff, while they speak Spanish during all other parts of the day. Receptive understanding of English seems to have improved in all learners. Ms. Ruiz, PreK, Columbia Explorers Academy.

Literacy, Vocabulary & Social Emotional Learning

The most important outcome was the students being able to articulate how what they watched made them feel. Ms. Birden, K, Kershaw School.

I like that Screen Smart focuses on the vocabulary through videos to keep the students engaged (plot, characters, setting). Also, students are making inferences as the instructor asks questions and students use the clues form the video and their brains to come up with an answer. Students were able to notice key details in videos including identifying the setting using clues, and identifying characters and their feelings. Ms. Roney, 1st grade, Everett School.

Students think more about their emotions while watching the screen and realize how it makes them feel. They have also been able to describe more details while reading stories. Ms. Rojas, PreK, Doolittle School.

Students are connecting the terms setting and characters very easily between screen and book. They are also developing an understanding of the plot and getting better at answering questions about why they think something. Such as why do you like that, why do you think that. Ms. Wheatley, PreK, Haugan School.

Participation

I think the letter sound practice with Screen Smart has directly contributed to Eden's confidence to speak at school--he had been evaluated for selective mutism, and although he has always been an active participant at school, he has not spoken. Making sounds with his mouth with Mr. Joe was his first step towards full words at school, and he has been talking nonstop for about a week now! Ms. Tryneski, PreK, Columbia Explorers Academy.

Some of my diverse learners have demonstrated increased focus during this program. Ms. Lara, PreK, Columbia Explorers Academy.

All students with English as a 2nd language, participate more in class. Ms. Roney, 1st, Everett School.

We have noticed that some of our DL's have been participating more. They seem to be more engaged with the hand motions and body movements. Ms. Gregory, PreK, Columbia Explorers Academy.

There has been ore verbal participation, and willingness to attend for those who are less likely to participate verbally. Ms. Gaddis, PreK, Westcott School.

I have two students who are diverse learners and they really enjoy the hand motions that go along with the program. That seems to help them be more engaged. Ms. Rojas, PreK, Doolittle School.

Integration into Classroom Practices

Teachers report integrating Screen Smart techniques in their classrooms outside of ICMC instructional sessions.

One outcome of the program is that I learned how to facilitate discussions as a teacher around screen time and how different screen visuals provoke different feelings (rather than saying simply ‘that's not appropriate for your age.’ Also, using proper body posture to help improve focus as well as using the vocabulary, ‘we need to keep our mind awake in order to be able to learn.’ Ms. Korbecki, K, Doolittle School.

I adore the concept of Screen Smart, so much so I've used the same concepts to help support other learning in the classroom. Like developing who the characters are, the setting, the plot, emotions, comparing and contrasting events and characters, nonfiction and fiction stories, asking and answering questions about a short film. Ms. Almodovar, 1st, Kershaw School

I have noticed that students have practiced using the "energy and concentration" approaches with their hands when we transition into a different activity outside of the classroom. When students share some of the media they have watched at home during our morning meeting or in general class time, they have talked about how it made them feel, and other students have contributed and supported them. We have discussed what students can do if they are watching something on a screen that they do not feel comfortable with, and as a class have come up with alternative activities for students to do. We have also discussed the concept of who characters are in books, and students have identified characters they may see on screens as well. Ms. Lara, PreK, Columbia Explorers Academy.

During our read alouds we discuss the characters and setting of the stories. We also talk about how some games and videos they see on their parent's cell phones may not be kid appropriate and may make them feel uncomfortable. I have had kids respond to other kids and tell them what they watched doesn't sound like kids should be watching it. Ms. McKinney, PreK, Kershaw School.

We are learning to use just right words to describe character feelings. I have been able to use the work from screen smart as a connection. For instance, I would say ‘just as we are learning to talk about the things we see on a screen with screen smart, we are going to learn to talk about the books we read.’ Ms. O. Garcia, K, Everett School.

On Fun Fridays we get to watch a movie. I hear students using some of the terms you all have discussed in whole group. Students are able to identify characters and setting really well. Ms. Pearson, K, Westcott School.