

Ohio UPSTART Pilot Report

August 2017



About UPSTART

UPSTART is a program administered by the nonprofit Waterford Institute that utilizes a home-based education technology approach, with strong parent support and engagement, to develop the school readiness skills of preschool children.

- Preschool-age children (primarily 4 years of age) use the program for 15 minutes a day, 5 days a week and receive an individualized reading, math, and science curriculum, with an emphasis on reading. For those homes that do not have them, computers and internet are provided as part of the program.

UPSTART is comprised of 3 software programs:

- *Waterford Early Learning (WEL)* delivers individualized instruction in reading, math, and science that adapts to each child's learning trajectory. The program includes: 360 digital books; 330 animated songs; thousands of activities and lessons; and hundreds of instructional hours that meet the national, state, and professional standards and guidelines.
- The *Waterford Assessments of Core Skills (WACS)* is a fundamental testing breakthrough for assessing very young children who do not know how to read. It is computer adaptive and offers scoring and reports easily understood by parents.
- *Camp Consonant* offers additional help with reading. Set in a fun camp setting, it features 3,700 unique activities, including songs, games, reading passages, and a built-in motivational system. It provides more than 150 hours of instruction and features a brain-research-based, multi-sensory approach.

Reading skills taught in the UPSTART program include:

- Phonological Awareness – Phonemic segmenting and blending;
- Phonics – Letter name knowledge, letter sound knowledge, and word reading;
- Comprehension and Vocabulary – Vocabulary knowledge and oral comprehension; and
- Language Concepts – Concepts of written language from letters and pictures to basic grammar.

Ohio UPSTART Pilot

Waterford recruited children for the Ohio UPSTART pilot with the assistance of the Corporation for Ohio Appalachian Development (COAD).

In the UPSTART program, students focused on using the *Waterford Early Reading Program (ERP)*, the early literacy portion of *Waterford Early Learning (WEL)*, in their homes from November 2016 to July 2017.

At the beginning of the program, parent/guardian training was conducted in-person for all participants and, at the same time, children were assessed using the *Waterford Assessments of Core Skills (WACS)* to have a baseline for evaluating the pilot program. In early August 2017,

children were assessed for a second time using WACS, and parents/guardians were asked to complete a survey related to their experience with the UPSTART pilot program.

Waterford Assessments of Core Skills (WACS) Results

Waterford Assessments of Core Skills (WACS) is a computerized adaptive test of early literacy for students in pre-kindergarten through second grade. Initial content validity for WACS was established against state and national standards for 11 subsets:

- letter recognition
- letter sound
- initial sound recognition
- blending
- segmenting¹
- reading real words
- reading nonsense words
- sight words
- reading comprehension
- listening comprehension
- vocabulary

All items were calibrated for item response theory to determine item difficulty. To establish concurrent validity and predictive validity, student performance on WACS was compared to performance on five commonly-used standardized tests also measuring reading skills: Dynamic Indicators of Basic Early Literacy Skills (DIBELS), Texas Primary Reading Indicator (TPRI), Idaho Reading Indicator (IRI), Iowa Tests of Basis Skills (ITBS), and Stanford Achievement Test Series (SAT 100). All correlations between tests are highly significant. Additional analyses indicate that WACS is internally coherent and has strong test-retest reliability.

WACS is an adaptive test. Pre-kindergarten students such as those in the UPSTART program only see the basic skills unless they perform well, in which case they also see advanced skills. When students take WACS for the first time, most of them receive basic skills only. As students use *Waterford Early Learning (WEL)* and advance their reading abilities, they perform better at the end of the program when taking WACS, and are able to successfully complete basic skills as well as advanced skills. Therefore, the number of students receiving advanced skills increases from the beginning of the program to the end of the program. Additionally, as more students complete reading comprehension successfully at the end of the program, fewer students complete listening comprehension at that time.

The following is the question difficulty ranges for WACS by grade. Note each grade is divided into thirds, for example, kindergarten beginning, kindergarten intermediate, and kindergarten advanced.

Grade	Beginning	Intermediate	Advanced
Preschool	1001 - 1333	1334 - 1666	1667 - 2000
K	2001 - 2333	2334 - 2666	2667 - 3000
1	3001 - 3333	3334 - 3666	3667 - 4000
2	4001 - 4333	4334 - 4666	4667 - 5000
3	5001 - 5333	5334 - 5666	5667 - 6000
4	6001 - 6333	6334 - 6666	6667 - 7000

¹ Advanced skill not included in the UPSTART WACS test.

In Ohio, scores for students were obtained in the following sub-strands: Overall Score, Blending, Initial Sounds, Letter Sounds, Letter Recognition, Listening Comprehension, Reading Comprehension, Vocabulary, Nonsense Words, Sight Words, and Real Words.

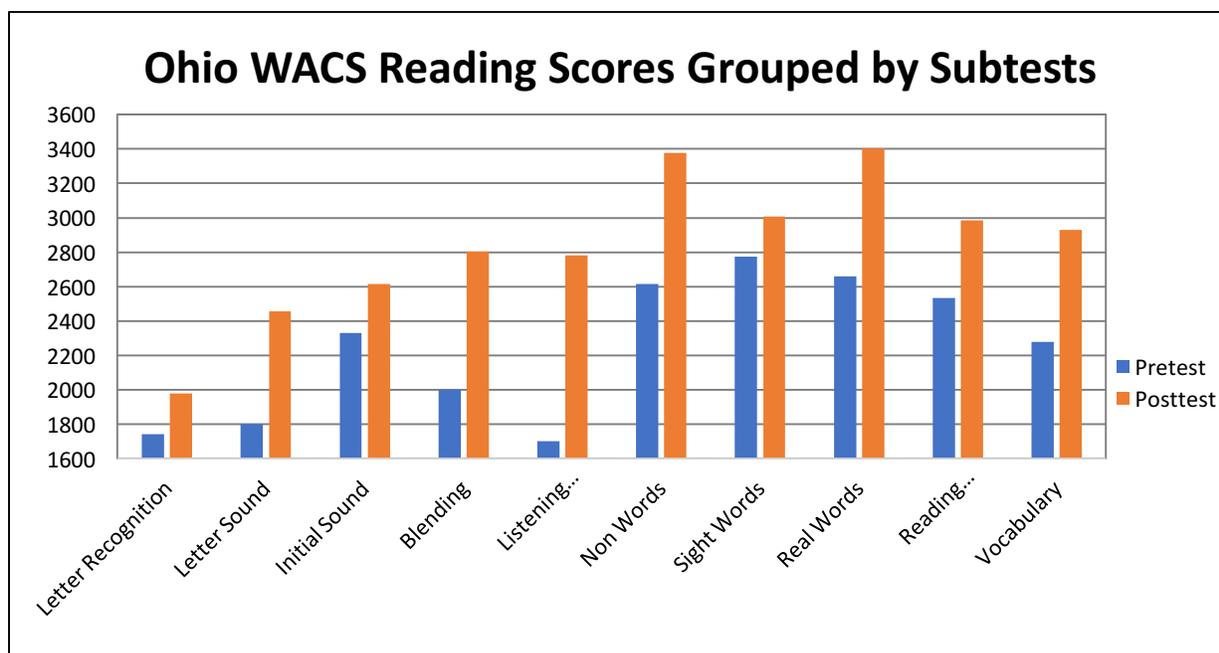
The following table exhibits significant positive differences between students' scores before using UPSTART and students' scores after using UPSTART. Students scored higher on all sub-skills after using UPSTART.

Using a Paired Samples *t*-Test, pre-test and post-test scores were analyzed; *p* value is the probability that the observed difference between the scores is due to chance. The results were as follows.

Overall Score	Analysis revealed a significant difference between pre-test and post-test scores, $t(1, 41) = -6.67, p < 0.01$.
Blending	Analysis revealed a significant difference between pre-test and post-test scores, $t(1, 41) = -6.24, p < 0.01$.
Initial Sounds	Analysis revealed a significant difference between pre-test and post-test scores, $t(1, 41) = -3.68, p < 0.01$.
Letter Sounds	Analysis revealed a significant difference between pre-test and post-test scores, $t(1, 41) = -4.10, p < 0.01$.
Letter Recognition	Analysis did not reveal a significant difference between pre-test and post-test scores, $t(1, 41) = -0.91, p < 0.370$.
Listening Comprehension	Analysis revealed a significant difference between pre-test and post-test scores, $t(1, 26) = -2.41, p < 0.05$.
Vocabulary	Analysis revealed a significant difference between pre-test and post-test scores, $t(1, 41) = -2.22, p < 0.05$.

Results for advanced skills not reported as the number of students completing both tests is too small.

The following graph shows mean results for WACS pre- and post-tests grouped by subtests in the Ohio pilot:

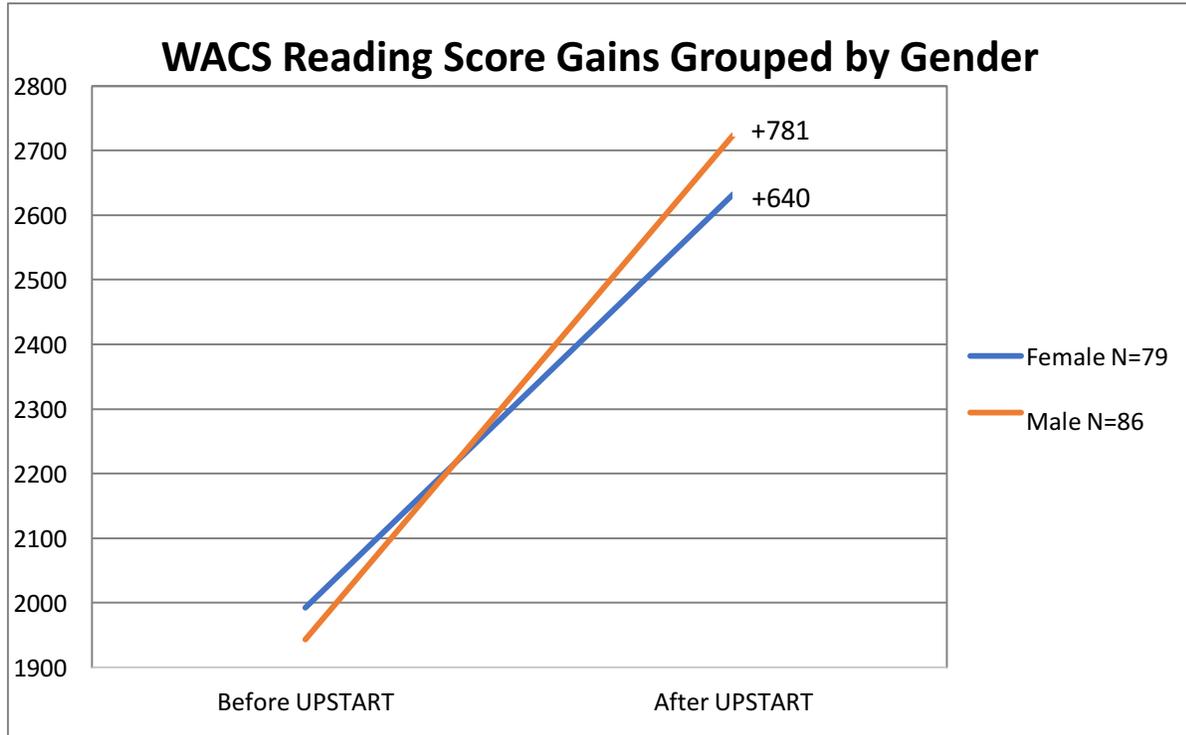


The following chart shows mean WACS scores and their grade equivalents:

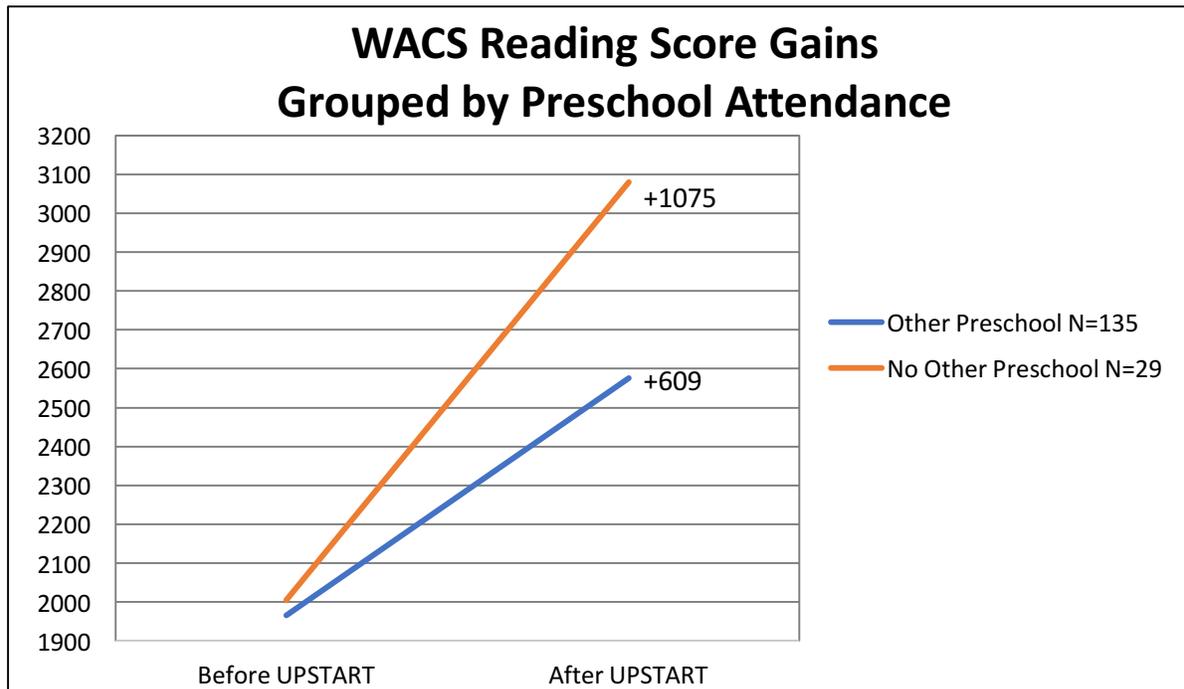
Measured Individual Skill	Final WACS Score	Grade Equivalent
Blending	2806	Kindergarten Advanced
Initial Sounds	2614	Kindergarten Intermediate
Letter Sounds	2457	Kindergarten Intermediate
Letter Recognition	1981	Pre-Kindergarten Advanced
Listening Comprehension	2781	Kindergarten Advanced
Vocabulary	2931	Kindergarten Advanced
Reading Comprehension	2984	Kindergarten Advanced
Nonsense Words	3379	1 st Grade Intermediate
Sight Words	3008	1 st Grade Beginning
Real Words	3402	1 st Grade Intermediate



The following graph shows WACS gains by gender. The numbers within the graph indicate point score gains from pre- to post-test.

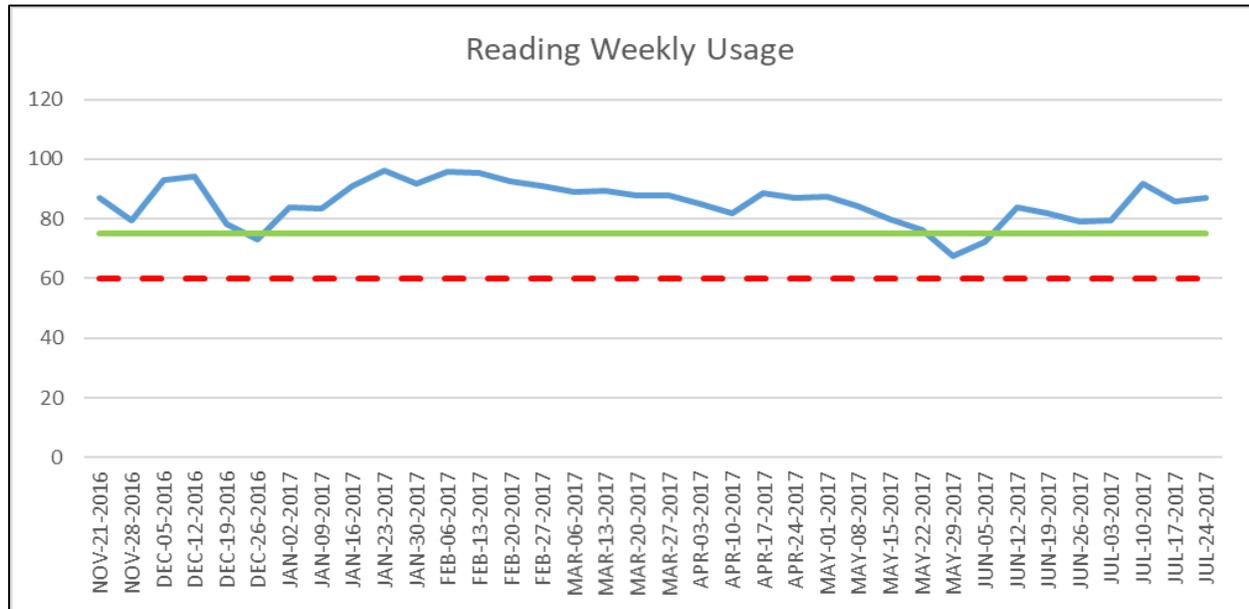


The following graph shows WACS gains by preschool attendance. The numbers within the graph indicate point score gains from pre- to post-test.



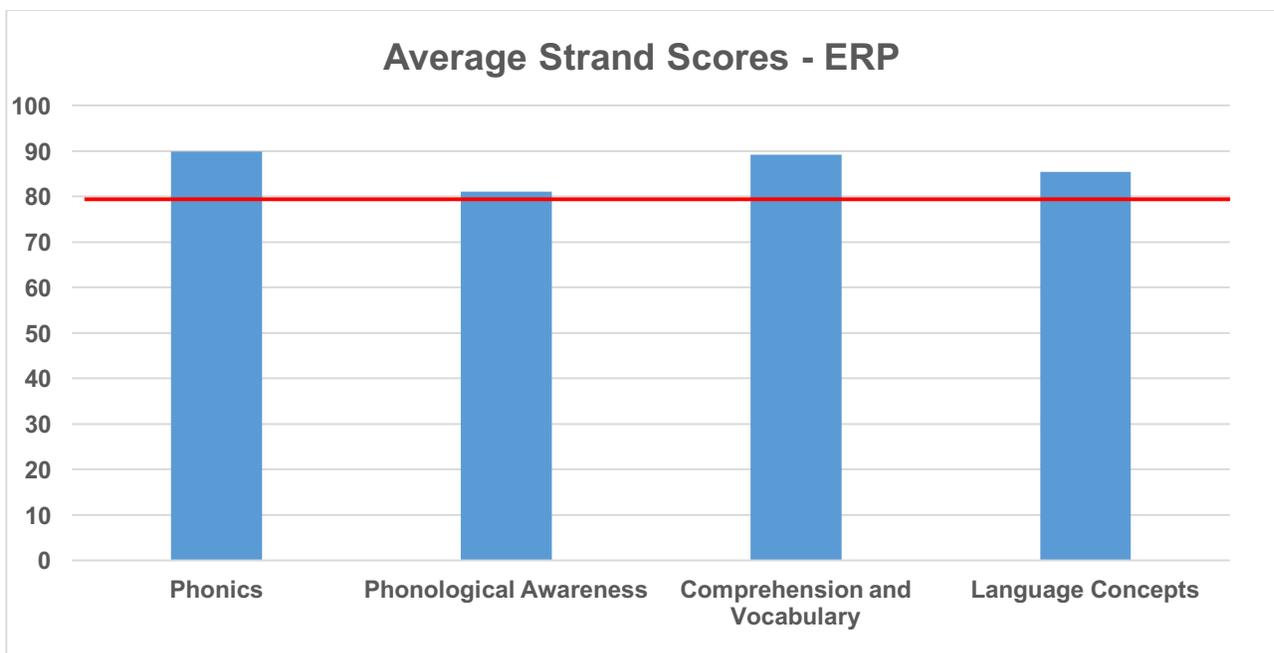
Other Data Reporting from the Ohio Pilot Program

Average Weekly Usage: The following graph illustrates the average weekly usage of the Early Readiness Program (ERP) for Ohio participants on a weekly basis, as shown by the blue line. The green line indicates the recommended usage criterion of 75 minutes of weekly usage. Usage is a key indicator of parent involvement with the program. The average weekly reading usage for Ohio was 86 minutes, and the total average for the year was 2,312 minutes for mid-November through the end of July.



Strand Scores: Strand scores are scores for subskills (phonics, phonological awareness, comprehension and vocabulary, and language concepts) as a percentage of 100. A score of 80 or higher within Waterford ERP represents mastery, which is the goal of the cognitively based UPSTART program. Mastery is the basis for more advanced learning (especially the transition from pre-reading skills to reading), so the foundation has been set in the early months of the program for continued success as the program progresses. The sequencer, within the software, individualizes instruction to provide remediation until a child achieves mastery.

The following graph illustrates the average score, organized by strand, for all students who scored on a given strand for ERP. The red line represents the expected average score, 80. Graphs such as these can help to illustrate an area of struggle overall. This graph shows that the average score for the four ERP strands calculated was above 80, representing “mastery” in each of the four areas.

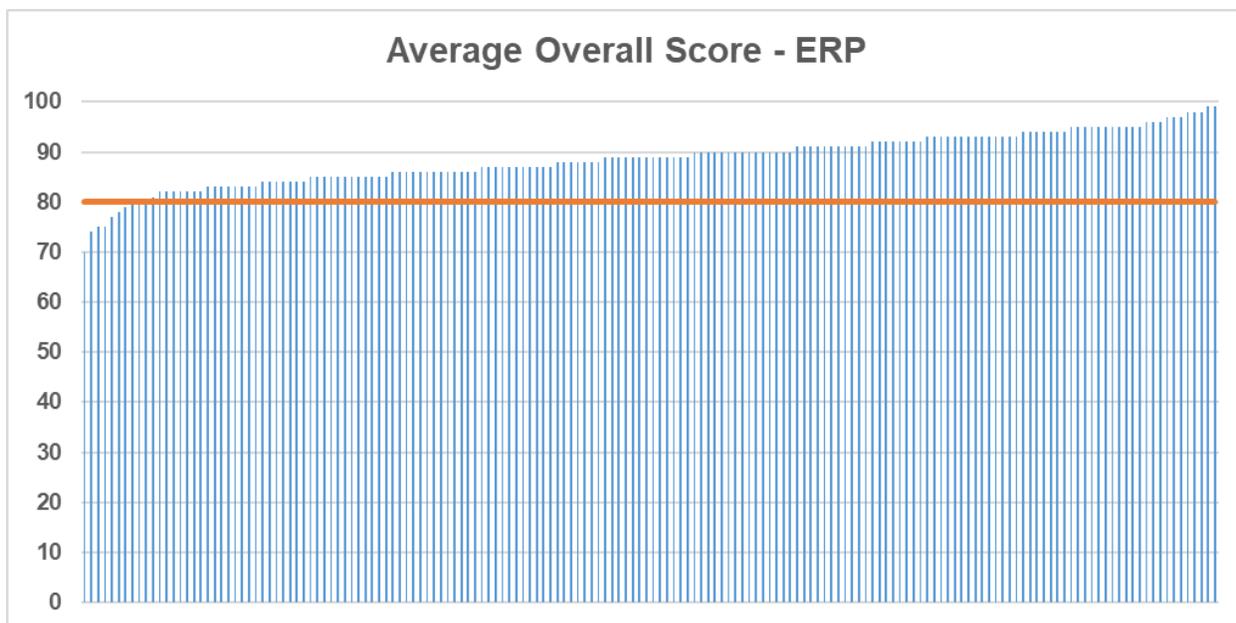


For the Ohio UPSTART pilot, the final average:

- Phonics score was **89.83**.
- Phonological Awareness score was **80.40**.
- Comprehension and Vocabulary score was **88.63**.
- Language Concepts score was **88.44**.



Average Overall Scores: The following graph depicts the average overall score per student for ERP. The orange line emphasizes the expected average overall score, 80, which represents “mastery”. Each blue bar represents the score of an individual student. This graph shows 159 out of 166 students had an overall ERP score of 80 or higher. The average overall score was 88.59.



Parent Satisfaction: Parents/guardians participating in the Ohio UPSTART pilot program completed a comprehensive survey to provide feedback related to their, and the child’s, experience in the program. Responses to survey questions and additional comments from parents/guardians participating in the Ohio UPSTART pilot program include:

Survey Question Responses

- *UPSTART was helpful in preparing my child for Kindergarten – 100% YES*
- *Participation in UPSTART was beneficial – 100% YES*
- *I would recommend the program to family members and/or friends – 100% YES*
- *If my UPSTART child had/has younger siblings, I would enroll them in UPSTART – 100% YES*
- *I feel because of the UPSTART program, I will be more involved in my child’s education when he/she starts school – 92% YES*
- *While my child was in the UPSTART program, I became more aware of what my child needed to learn and my child’s academic abilities – 98% YES*
- *Representatives were friendly and courteous in our communications – 100% YES*
- *Representatives were knowledgeable about the program and the software – 100% YES*
- *Any issues I had were resolved to my satisfaction – 100% YES*
- *It was helpful to have a consistent routine – 100% YES*
- *In general, did your child enjoy/like the software? – 98% YES*
- *Was the software age appropriate? – 100% YES*



Additional Comments

- *[My daughter] really loved when she finally learned to read a book all by herself.*
- *While trying to be sneaky, I spelled out a word in conversation. It shocked me when she sounded it out and then shouted what I had spelled. That's the moment when I knew, UPSTART works!!*
- *Her ability to read, write, answer word math problems, and read the calendar has been incredible!!*
- *UPSTART was really helpful in determining the biggest areas of need/weakness in my son's learning! I love that the program met him where he was academically while still challenging him to push himself harder.*
- *My child has a rare form of epilepsy. This program was extremely beneficial! I know I could not have taught him everything the program taught him in the last year. I feel so blessed to have been part of this test group!*
- *There is nothing more amazing than watching your barely 5-year-old READ words.*
- *My son loved this so much, he was an ambassador for it, telling everyone about his amazing "computer preschool". I also sang its praises to everyone with similar aged children!*
- *My son can Read!*