

Research and Conceptual Basis for *Simon S.I.O.*™

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Abstract: This paper presents the conceptual and research basis for an intervention reading software program designed to help struggling and delayed readers master decoding skills and increase word recognition fluency.

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Introduction

No Child Left Behind (NCLB) emphasized instructional programs and teaching methods proven through high-quality scientific research. The Reading First program (Title I, Part B, Subpart 1 of NCLB, intended to improve the reading skills of K-3 students, was based on the findings of the National Reading Panel (NRP, 2000)). NRP identified the five essential elements of reading instruction as phonemic awareness, phonics, vocabulary, fluency, and comprehension. This paper examines the Simon S.I.O.™ software program, provides evidence of its scientific research basis and discusses how the program aligns with the NRP findings.

“Simon S.I.O. is based on the best instructional practices to date and is grounded in extensive field-testing. Because it is computer-based and incorporates a personal tutor, students move at their own pace, enjoy individualized lessons and feedback and receive extensive practice on the skills necessary for mastering phonological awareness.”

Ted Hasselbring, Ed.D.

Laura J. Goin, M.Ed.

Simon S.I.O.—Early Reading Assessment & Intervention

Simon S.I.O. is a supplemental, multi-level software program designed for the early assessment and intervention of reading difficulties. The program provides K-3 students with systematic instruction in the alphabetic principle, and is also designed to build fluency and comprehension. The program was based on the Simon Sounds It Out® instructional program created by Ted Hasselbring, Ed.D and Laura Goin, M. Ed.

Simon S.I.O. is used by students at or below grade level, including students with learning disabilities, and English Language Learners. Its utility as an intervention is based on assumptions that difficulties in automatic word recognition negatively affect reading fluency and comprehension and that children who get off to a poor start in reading need to be helped as early as possible. For children who do not develop phonological awareness and phonics skills through regular classroom instruction, more intense instruction is necessary to prevent further declines at later ages (Torgesen, 2004). For these children, phonological awareness and phonics skills should be taught in a structured, systematic way (NRP, 2-92). “It is a tragedy that both general and special education practices and policies continue unchanged even as extensive converging evidence makes clear that one major solution to the problem of school failure in general, and reading failure in particular, is early identification and prevention” (Finn et al, 2001 , p. 270).

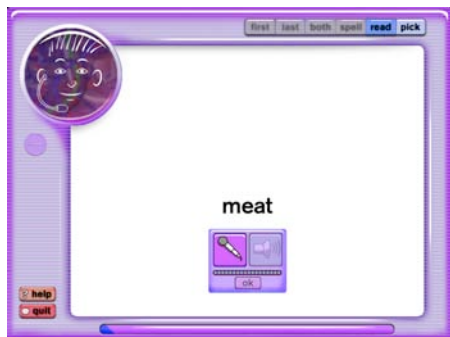
Simon S.I.O. and Alphabets

Simon S.I.O. explicitly and systematically teaches phonics through a combination of synthetic, onset-rime, analytic, phonics-in-context, phonics-through-spelling, and analogy phonics. Using the software, students read words by mapping speech sounds to parts of words. The program focuses on beginning and ending sounds, with six activities that teach several sounds at a time. The lessons and activities are organized into Stages 1 & 2. Each stage consists of 33 levels of instruction with eight activities at each level. Stage 1 incorporates 300 words and covers single consonants and common blends. It includes approximately 120 words in 33 word families such as at, ug, ake, all, ack, eep, ock, unk, ump, etc. with consonant sounds and some blends (sp, bl cl, pr, sm.). Stage 2 has 33 levels, teaches 300 words, and covers more complex blends and digraphs. It includes an additional 120 words in 33 word families such as eet, ore, eam, uck, ank, ight, etc. and other blends (br, gr, dr, sl, kn, wr, tw, scr).

For each level, students identify the correct beginning sound in each word (Figure A); identify the ending sound; identify both the beginning and ending sounds;



Figure 1



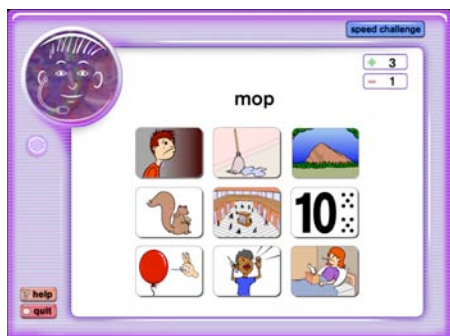
spell the word; read the word; and then pick the word that matches the spoken word. They practice decoding skills by dragging onsets and rimes with the mouse to the correct position to complete words. They hear and see words repeatedly to help comprehension and retention, and can read words into a microphone and hear them read back (Figure 1). Activities are presented between sessions and levels.

Simon S.I.O.'s activities also build phonological awareness (the ability to segment words into syllables and sounds) as students blend the individual units of language into words. Current research (Ehri, 2004, Hatcher, Hulme, and Snowling, 2004) supports the use of such instructional approaches that combine phonological awareness training with explicit phonics instruction.

Simon S.I.O.—Fluency and Comprehension

Reading comprehension requires both the mastery of sound-symbol correspondences and phonic word-attack strategies, and the ability to apply these skills quickly and effortlessly so that recognizing words becomes automatic. In addition to supporting the development of alphabetic skills, Simon S.I.O. helps students build fluency as they master each lesson and activity. In addition, in the program's Speed Challenge feature, students are shown a word and nine pictures (Figure 2). They must sound out the word and select the matching picture as quickly as possible.

Figure 2



Simon S.I.O. provides comprehension supports throughout the lessons and activities. Students are constantly prompted to make meaning as they read. In the reading activities, for example, students are reminded to “imagine what the picture might show” and “think about what the words mean as you read.” In the program's Reading Challenge, students are presented with one or two sentences that include a key word from the level. They can have the sentences read to them if needed, then they record the sentences themselves (Figure 3).

Figure 3



Efficacies of Instructional Technology

Because Simon S.I.O. is software-based, each student receives individual instruction and feedback. The program monitors each student's progress word-by-word, repeating problem words until the student achieves mastery. The program's activities “branch” automatically based on the student's performance, allowing him or her to review lessons as necessary, or advance to the next lesson. This adaptive instructional feature helps ensure that students don't move through the program with incomplete understandings, false beliefs, or naïve renditions of the reading concepts they're being presented with. This approach is consistent with the importance of automatic word recognition to fluency and comprehension, and it also relates to the view that new knowledge must be constructed from existing knowledge (Bransford, Brown & Cocking) .

Current research supports software-based instruction as an effective method for supplementing reading instruction (e.g. Blok, Oostdam, Otter & Overmaat, 2002). In a controlled study of 46 at-risk kindergartners, (Mioduser, Tur-Kaspa and Leitner 2000) reported that software that allowed concrete manipulation of letters and word components in activities and games involving the decomposition, re-composition and creation of words, contributed to the acquisition of early reading skills. Using Simon S.I.O., students self-assess at each level as they are periodically given accuracy (Figure 4) and speed awards. The program’s personalized “tutor” constantly provides directions, hints, reinforcement, process data and corrective feedback. Simon S.I.O. activities incorporate visual graphics, and are interactive, often requiring timed motor responses followed by immediate feedback. Students work at their own pace, and can improve their time through repetition of the same activity.

Figure 4



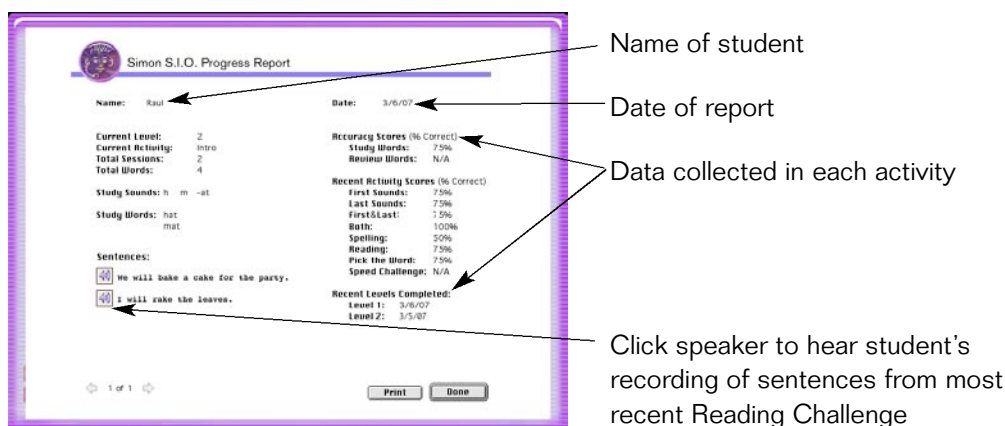
Evidence also exists that software-based instruction can be particularly effective for children at risk for learning problems (Macaruso et al, in press; Wise et al, 2000).

Simon S.I.O. and Special Needs Students

Hall, Hughes and Filbert (2000) investigated the effects of software-based instruction on reading for students with learning disabilities and found that the software used by the students who made significant gains was carefully designed to incorporate systematic instructional procedures found to be effective in reading instruction (i.e. explicit, strategic, and scaffolded instruction, engaged time, success rate, and corrective feedback). They also found that teacher-directed instruction supplemented with computer instruction produced superior outcomes to other supplemental interventions such as additional traditional teaching or workbooks. In addition to providing such (systematic) instruction, Simon S.I.O. supports special needs students with accessibility features such as single switch access for those who can’t use a keyboard and built-in scanning.

Data Collection and Reporting

Simon S.I.O. collects and reports extensive data for formative assessment and remediation. Detailed reports display student performance for each type of activity pertaining to the specific words and word families from each lesson. The student sentence recording activities are available for the teacher to listen to. This quantitative and qualitative data, taken as a whole, helps teachers identify specific areas for further instruction and intervention.



Simon S.I.O. and the National Reading Panel

Simon S.I.O. is an early assessment and intervention tool for struggling students. The program was designed to help emergent readers develop core word attack skills and developing readers learn familiar sounds and word families. Simon S.I.O. aligns with the five essential elements of reading instruction described by NRP. In addition to supporting the development of phonemic awareness and phonics skills, Simon S.I.O. helps children develop vocabulary, fluency and comprehension. Vocabulary development is supported as students increase their automatic recognition and recall of hundreds of high-frequency words taken from high-frequency lists including the Dolch Sight Word List. Students develop vocabulary and fluency as they build, hear and see words repeatedly, practice reading individual words and sentences and read words into a microphone and hear them read back. Finally, Simon S.I.O. builds comprehension by continually challenging students to transfer what they have learned in each lesson to new words through spelling and sorting activities.

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