



Introduction

Students come to school with a wide range of experiences, knowledge, and learning styles. Some of these students have language or learning disabilities and are receiving special education services, and some of them are in general education, but they are not performing at “basic” levels. Meeting the needs of all students is a challenge for educators and administrators. Classroom teachers struggle to keep up with the demands of complex students and the expectation of meeting new educational standards. Administrators are challenged to help teachers meet the needs of individual students but they also have to monitor the implementation and success of programs in their school(s). With an estimated 100% of public schools reported as having one or more instructional computers with internet access (Gray, Thomas, & Lewis, 2010), technology can serve as a useful resource to help teachers meet and monitor the needs of individual students in today’s diverse classrooms while assisting administrators to monitor individual students, subgroups of students, classes, and schools.

What is the *HearBuilder*® Collection?

The *HearBuilder Collection* is a suite of software for PreK to eighth-grade students that provides systematic instruction in basic concepts, following directions, phonological awareness, sequencing, and auditory memory. Available online or on CD-ROM, it includes four award-winning software titles: *HearBuilder Following Directions*, *HearBuilder Phonological Awareness*, *HearBuilder Sequencing*, and *HearBuilder Auditory Memory*.

The *HearBuilder Collection* online edition gives students access to research-based, interactive programs via any internet-connected computer enabling students to use the software in the classroom, media center, computer lab, and at home. Each title in the collection offers multi-level activities with progress monitoring reports for educators and administrators to track individual student progress and to track usage and progress across grades, subgroups, or schools.

HearBuilder Meets the Three Principles of Universal Design for Learning (UDL)

The Center for Applied Special Technology (CAST) created the Universal Design for Learning (UDL), which is a framework for curriculum development to give all students equal opportunities to learn. The *HearBuilder Collection* was developed in accordance with these three principles (National Center on Universal Design for Learning, 2011).

- **Provide Multiple Means of Representation (perception, language/expressions/symbols, comprehension)**

The *HearBuilder* software titles gradually increase the difficulty of tasks from visual with auditory to auditory alone to auditory with more challenges (i.e., faster presentation, added background noise, etc.). The level of difficulty increases incrementally from easier tasks with multiple cues to more challenging tasks with fewer cues. Educators may customize the software

for individual students to begin and/or end at different points with auditory, picture, or text cues as appropriate to meet the needs of each student.

- **Provide Multiple Means of Action and Expression (physical action, expressions/communication, executive function)**

The *HearBuilder Collection* is compatible with a computer mouse, touch pad, touch screen, and electronic whiteboards. Download apps to enable iPad® access to the online edition.

- **Provide Multiple Means of Engagement (recruiting interest, sustaining effort and persistence, self-regulation)**

Each of the titles in the *HearBuilder Collection* begins with an enticing premise or story to pique the interest of students. In *HearBuilder Following Directions*, students are working to become master toy makers and earn rooms for their own virtual toy factories. For *HearBuilder Phonological Awareness*, students are working to earn instruments for the band members to use to perform on the stage. With *HearBuilder Sequencing*, students earn tokens to take to the arcade. And in *HearBuilder Auditory Memory*, students are trying to thwart the crazy Dr. Forgetsit as they earn their secret agent badges. When students complete all the activities assigned in a software title, they earn a personalized certificate of completion.

Research Basis & Empirical Evidence

The *HearBuilder Collection* is based on the latest theory and research in auditory processing, language, and reading development. Research studies using the software in the *HearBuilder Collection* have shown that students have made statistically significant improvements when using the software regularly (15 to 20 minutes per day, two to three times per week) for at least six weeks. Visit www.hearbuilder.com to read the detailed research study reports.

HearBuilder Following Directions

Research Basis

Verbal directions are a part of everyday life for adults and children. Appropriate behavior, social interaction, and academic success are all dependent on the ability to give and carry out verbal directions. Basic concepts are words that individuals need to comprehend to perform everyday tasks such as following directions, participating in classroom routines, and engaging in conversation. Basic concepts are typically the foundation of verbal directions and may include but are not limited to basic colors (e.g., red, blue, green), directions (e.g., through, around), quantities (e.g., few, many), sequences (e.g., first, next, last), shapes (e.g., round, square), size (e.g., big, little), social/emotional states (e.g., happy, sad), characteristics (e.g., old, new), textures (e.g., rough, smooth), time (e.g., early, late), and spatial relationships and positions (e.g., front, behind, top, bottom). Auditory comprehension, the ability to understand more complex verbal messages, includes tasks such as following multi-level directions (Bellis, 2003; Johnson et al., 1997; Roeser & Downs, 2004; Stredler-Brown & Johnson, 2004), which is essential for a child to follow classroom instructions and benefit from the teacher's lessons.

Evidence Basis

Fifty-four PreK to fifth-grade general and special education students in Clark County Schools in Las Vegas, Nevada, used the *HearBuilder Following Directions* software two to three times per week for a minimum of eight weeks. Students were pre- and posttested with the *Webber HearBuilder Following*

Directions Computerized Screener. Participating students demonstrated a statistically significant improvement ($p < .001$) in scores with a pretest average of 24.74 to a posttest average of 34.54. These results indicate *HearBuilder Following Directions* is an effective instructional component for improving specific auditory processing skills of students in general and special education programs.

HearBuilder Phonological Awareness

Research Basis

Phonological awareness, or auditory analysis, is the ability to hear and judge the structure of spoken language (Roeser & Downs, 2004; Torgesen, 2002; Torgesen et al., 1994). It includes the ability to identify, blend, segment, and manipulate sounds (Catts, 1991; Schuele & Boudreau, 2008; Sterling-Orth, 2004). Spoken language can be divided into words, words can be divided into syllables, syllables can be divided into sounds, and sounds can be rearranged and substituted to make new words (Catts, 1991; Roeser & Downs, 2004; Schuele & Boudreau, 2008; Sterling-Orth, 2004; Torgesen, 2002). Although some children may develop shallow levels of phonological awareness without direct instruction, research shows that children with auditory processing difficulties, language difficulties, learning difficulties, and/or low literacy achievement demonstrate lower performance in phonological awareness tasks (Catts et al., 2002; Sharma et al., 2009; Schuele & Boudreau, 2008; Torgesen et al., 1994). Poor phonological awareness is indicative of early reading difficulties (Catts, 1991; Schuele & Boudreau, 2008; Torgesen, 2009; Torgesen et al., 1994), and there is agreement among researchers that phonological awareness, letter identification, and oral language ability are strong indicators of future reading ability (Catts et al., 2002; Scarborough, 1998; Torgesen et al., 1994).

Evidence Basis

In Clark County School District in Nevada, 68 general and special education PreK to fifth-grade students who were deemed at-risk for reading disabilities used the *HearBuilder Phonological Awareness* software two to three times per week for at least eight weeks. They were pre- and posttested with section 1 of the *Emerging Literacy & Language Assessment*® (*ELLA*®). The students showed statistically significant improvement ($p < .001$) from pretest to posttest with a pretest mean of 52.97 and a posttest mean of 83.04. These results indicate that *HearBuilder Phonological Awareness* is an effective instructional component for improving the phonemic and phonological awareness skills of students in general and special education programs.

HearBuilder Sequencing

Research Basis

Sequencing refers to students' abilities to put events in a chronological or causal order. These events may be familiar (e.g., making the bed, washing hands) or unfamiliar (e.g., crossing a drawbridge, snowboarding), depending on students' prior knowledge. Sequencing is necessary for understanding and telling narratives, problem solving, reading comprehension, performing daily routines, interacting appropriately with peers and adults, and achieving academic success.

In order to sequence events correctly, a student has to understand cause and effect, make predictions, use and understand time and transition words (e.g., first, next, and last), and have knowledge of the critical elements in a story (e.g., setting, character, beginning, middle, end, etc.). A student also needs adequate reasoning and planning skills. Students with specific language impairments, learning disabilities, autism, and other neurological deficits may have difficulty sequencing events and consequently retelling the events of a narrative (Candler & Hildreth, 1990; Jarvella & Lubinsky, 1975;

Montgomery, 2002; Mesibov, 2004; Miles & Chapman, 2002; "Executive Function," 2009; Singer & Bashir, 1999; Tinaz et al., 2005; Wright & Newhoff, 2001). In order to sequence, students must be able to plan and prioritize, organize, shift attention, and remember the details of the pictures seen or the information read or heard. Sequencing activities benefits students by helping them to remember a process, to learn the names of the steps in a process, to know the tools used to complete the process, and to understand and use the specific vocabulary associated with a process (Marr & Morgan, 2005).

Evidence Basis

Twenty-nine kindergarten to fifth-grade students in a southern suburban school district used the *HearBuilder Sequencing* software two to three times per week for a minimum of eight weeks. They were pre- and posttested with the Story Retell subtest of the *Emerging Literacy & Language Assessment (ELLA)*. The students showed statistically significant improvement ($p < .001$) from pretest to posttest with a pretest mean of 4.08 and a posttest mean of 6.20. Students were also pre- and posttested with the online *HearBuilder Sequencing Inventory* (a 10-item sequencing screener in which students sequenced three-, four-, and five-step picture sequences). The group earned a pretest mean of 4.3 and a posttest mean of 6.17 showing statistically significant improvement ($p = .005$). Results on these two measures indicate students improved their narrative retell and sequencing skills after using the *HearBuilder Sequencing* software as part of their language arts program.

Twenty-four kindergarten to fifth-grade students in another southern suburban school district used the *HearBuilder Sequencing* software two to three times per week for a minimum of eight weeks. Statistically significant results were obtained when students were pre- and posttested using the Story Retell subtest of the *ELLA* (pretest mean 3.08, posttest mean 5.71, $p < .001$) and the online *HearBuilder Sequencing Inventory* (pretest mean 3.17, posttest mean 5.50, $p < .001$). The results of the study with this group of students also indicated improvement in sequencing and story retell skills after using *HearBuilder Sequencing* as part of the district language arts program.

HearBuilder Auditory Memory

Research Basis

Auditory memory is the ability to take in information that is presented orally, process it, retain it in one's mind, and then recall it (Bellis, 2003; Roeser & Downs, 2004; Stredler-Brown & Johnson, 2004). Auditory memory requires working memory and also involves the skills of attending, listening, processing, storing, and recalling (Cusimano, 2011). There is a strong relationship between working memory and overall learning rate; greater memory span is related to faster learning (Radvansky & Copeland, 2006; Dehn, 2008); therefore, memory and achievement are highly correlated (Swanson, 1996). Working memory has significant relationships with reading decoding, language comprehension, spelling, following directions, vocabulary development, note taking, reasoning, complex learning, and grade point average (Engle, 1996; Engle et al., 1999). In the classroom, memory is heavily taxed by everyday activities such as remembering multi-step directions, relating new information to prior knowledge, oral language comprehension, taking notes while listening, verbal fluid reasoning, written expression, and oral expression, and even for a student with normal working memory function, these activities can overwhelm memory operation. Since working memory is known to affect nearly every aspect of academic learning, interventions are very appropriate in an educational environment (Dehn, 2008). The teaching of rehearsal strategies, mnemonics, and other working memory strategies can improve the efficiency of working memory, and therefore augment academic learning and performance (Torgesen & Goldman, 1977).

Evidence Basis

Ninety kindergarten to eighth-grade students in a southern suburban school district used the *HearBuilder Auditory Memory* software two to three times per week for a minimum of eight weeks. They were pre- and posttested with five subtests (Number Memory Forward, Number Memory Reversed, Word Memory, Sentence Memory, Auditory Comprehension) of the *Test of Auditory Processing Skills-3 (TAPS-3)*. The students showed statistically significant improvement ($p < .001$) with a pretest mean of 62.43 and posttest mean of 75.22. Students were also pre- and posttested with the online *HearBuilder Auditory Memory Inventory* (an 82-item screener in which students recall numbers, recall words, complete sentences with one missing word, recall details, and answer questions about 2 to 3 orally-presented sentences). The group showed statistically significant improvement ($p < .001$) with a pretest mean of 35.59 and a posttest mean of 41.32. These results suggest that the use of *HearBuilder Auditory Memory* had an overall significant effect on students' auditory memory skills.

Forty-eight kindergarten to eighth-grade students in another southern suburban school district used the *HearBuilder Auditory Memory* software two to three times per week for a minimum of eight weeks. Statistically significant results were obtained when students were pre- and posttested with the online *HearBuilder Auditory Memory Inventory* (pretest mean 33.67, posttest mean 38.73, $p = .007$). Results of the study with this group of students also indicated improvement in auditory memory skills after using *HearBuilder Auditory Memory*.

Audience

The *HearBuilder Collection* is appropriate for general and special education students in grades PreK to eighth grade. Each of the software titles may be customized to individual student's needs.

- General education students benefit from the additional practice with foundational language arts skills.
- Students in need of tier 2 or 3 Response to Intervention (RTI) services receive the intensive, customized practice they need to make gains in areas preventing them from achieving in the general education program.
- Students receiving Title 1 support receive additional intensive instruction to supplement gaps in their language skills.
- English Language Learners receive customized reinforcement and practice with the perception of English phonemes as well as basic concepts/vocabulary, auditory processing, and listening comprehension in English.
- Students with Individualized Education Programs (IEPs) for special education services benefit from the customizable activities and adaptive skill training within the software.

The internet connectivity of the *HearBuilder Collection* online edition provides flexibility to the educator to provide these services in a variety of settings across the school day from a computer lab, a computer center in the classroom, a computer in a special educator's therapy room, to the home for additional practice. This permits all the educators involved in a student's academic program to work together to support that student's educational goals and monitor the student's progress.

The software is easy to use and intuitive; students from preschool through middle school are able to use the programs with minimal introduction or instruction.

Supporting the Common Core State Standards

The federal government's *Common Core State Standards* for English Language Arts include the key areas addressed by the *HearBuilder* software titles. Elementary students are expected to demonstrate phonological and phonemic awareness skills, listen to and recall information presented orally, recognize and use basic concepts, follow directions, and sequence events. Specific correlations between the *HearBuilder Collection* software titles and the *Common Core State Standards* for English Language Arts are available at www.hearbuilder.com.

Training & Support

Super Duper Publications provides support to assist educators in implementing the *HearBuilder Collection*.

- Quick Start Guide: This is built into the online edition of the *HearBuilder Collection*. If an educator has a question, they simply click on the Quick Start Guide to view information on getting started.
- Instruction Manual: This is built into the online edition of the *HearBuilder Collection* and a print manual is included with the CD-ROM edition.
- Online webinars: Super Duper Publications provides free online webinars to educators implementing the *HearBuilder Collection* online edition. These recorded courses are available 24-hours per day via any internet-connected computer.
- Site-based training: For an additional fee, site-based training is available to schools. A Super Duper Publications representative will come to your site to assist with program set-up and train your teachers on integrating either the online or CD-ROM *HearBuilder Collection* into your academic program.
- Ongoing technical support: Dedicated *HearBuilder Collection* technical support specialists are available via phone from 8 a.m. to 5 p.m. eastern time Monday through Friday.

Monitoring Program Implementation

Monitoring student progress is crucial to all educators, and *the HearBuilder Collection* provides information for teachers and administrators.

Classroom teachers and specialists

With the online edition, classroom teachers and educational specialists, including speech-language pathologists and special educators, have the ability to view data on their students from any internet-connected computer. Within the *HearBuilder Collection* online, educators may view overall progress of all students on particular titles, progress of each student by activities within a software title, and specific detailed reports by session indicating the specific score a student earned on each level of an activity within that software title. Data is also provided to alert teachers to students who are struggling to improve.

Educators may select overview data of how all their students are doing within *HearBuilder Collection* online. From this information, teachers see how much of each program title has been completed, the last date on which a student has worked on that title, and whether or not the student is struggling to

pass a particular level. Session reports are also available to show detailed data including percentage correct for every task each student has worked on.

With the online edition, group summary reports permit teachers to see overview data for a teacher-specified group of students. From this summary page, the teacher may drill down to a specific session report to see exactly how a student in that group performed on specific program tasks.

The student summary report provides information by student showing how much (percentage) and what levels of each task the student has worked on in each software program.

The CD-ROM edition of the *HearBuilder Collection* provided *Student Progress Reports* with detailed information about each session a student has completed. These reports may be viewed from the computer on which the students used the CD-ROM and may be printed for sharing with parents or placement in the students' files.

Administrators

Administrators also have specific reports available with the online edition of the *HearBuilder Collection*. School administrators may look at the performance of a specific student as well as the overall usage of a software title by grade level within their school and by subgroups within their school. A district-level administrator may generate overall usage reports, school performance reports, and reports by and/or comparing specified demographics. These reporting features enable the administrator to monitor utilization of their purchased software as well as data tracking for RTI, Title 1, or other district/school-specific initiatives.

Conclusion – Benefits of the *HearBuilder Collection*

The *HearBuilder Collection*, available online or via CD-ROM, is comprised of the award-winning *HearBuilder Following Directions*, *HearBuilder Phonological Awareness*, *HearBuilder Sequencing*, and *HearBuilder Auditory Memory*. All of the software titles are customizable to meet the individual needs of each student. The online edition is delivered via the internet allowing students to utilize the program on any internet-connected computer. When implemented online, educators can view students' progress reports from any internet-connected computer and can generate customized reports to see how much a student has completed, exactly what the student has worked on, and review data for a group of students. The online edition enables administrators to view data from any internet-connected computer and generate reports by school, by grades, or by specific demographics to track progress as related to school improvement plans.

To learn more about the *HearBuilder Collection*, visit www.hearbuilder.com.

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