



Key Skills: Phonics Mastery

Core Curriculum Reinforcement of
Lifelong Literacy Skills

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EXECUTIVE SUMMARY

This report demonstrates the benefits of teaching K-3 phonics using Sunburst's *Key Skills: Phonics Mastery* software, a part of the *Key Skills* Learning System.

Phonics is widely considered a crucial part of every total reading program (Chall, 1996). Research demonstrates that a comprehensive, high quality phonics education plays a critical role in developing young children's reading, writing, and spelling skills, and is one of the most powerful predictors of future success in verbal and written communication (Share et al, 1984).

The National Institute for Literacy's *Reading First* report states that the most vital years for reading instruction are between kindergarten and third grade (Armbruster, Lehr, & Osborn, 2000). Sunburst's *Key Skills: Phonics Mastery* specifically targets the K-3 years and supports schools' existing language arts curricula. Through exhaustive coverage of all aspects of phonics at each grade level, the software provides differentiated instruction and skills-based reinforcement for students during these all-important years.

The *Key Skills: Phonics Mastery* software was developed in conjunction with master teachers, and is grounded in a magnitude of educational research. By building a foundation in phoneme-grapheme correspondence and progressing sequentially to phonemic awareness skills and decoding, *Key Skills* adheres to recognized reading pedagogy. Research shows that programs concentrating on individual phoneme-grapheme correspondences, and encouraging children to analyze each grapheme in a word are most successful (Christensen & Bowey, 2005). Furthermore, programs focused on word recognition and decoding skills, central elements of *Key Skills: Phonics Mastery*, have been shown to improve reading comprehension (Adams, 1990; Chall, 1983, 1996, 2000; Perfetti, 1985; Stanovich, 1980, 1986).

The *Key Skills* software:

- Supports well-documented "best practices" in phonics instruction and reading pedagogy.
- Corresponds to the *Reading First* essential components of reading instruction.
- Correlates every activity directly to curriculum standards in all 50 states.
- Enables teachers and administrators to individualize instruction for each student.
- Facilitates formative assessment throughout the year to evaluate and demonstrate Adequate Yearly Progress (AYP) as part of *No Child Left Behind* [a Congressional Act that demands stronger accountability in our schools].

The robust pedagogical content and unique formative assessment and accountability capabilities of *Key Skills* will lead teachers and administrators to deeply value this software package.

This report presents:

- The scientific evidence behind phonics education as a proven method for teaching children to read, write, and spell.
- The need for well-researched phonics teaching tools in our schools and how *Key Skills: Phonics Mastery* addresses that need.
- The research bases on which *Key Skills: Phonics Mastery* was developed.
- The ways in which the software aligns with *Reading First* funding opportunities.

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INTRODUCTION

Reading is a lifelong skill essential for functioning in today's society. While the ability to develop skills to understand and produce *spoken* language is an inherent feature of the human brain, humans are born without the equipment for learning how to process and decode *written* language on their own (Ehri, 1998). It is for this reason that we, as adults, must teach children how to read.

Phonics is the method of teaching reading, writing, and spelling by making apparent the relationship between phonemes, the sounds of spoken language, and graphemes, the letters and spellings that represent those sounds (Armbruster, Lehr, & Osborn, 2000). Simply put, it is the relationship between the letters of written language and the sounds of spoken language – a sort of “code breaking” for unlocking language (Chall, 1996).

Early success in phonics fosters later success in reading, writing, and spelling—abilities crucial to success in middle school, high school, and beyond.

Teaching phonological awareness to children of all levels of ability is a key component to any early childhood curriculum. Extensive research demonstrates a strong association between successful phonics instruction and achievement in early reading, writing, and spelling (Armbruster, Lehr, & Osborn, 2000; Chall & Popp, 1996; Christensen & Bowey, 2005; Panel, 2000). This fact, coupled with evidence that children exhibiting an early interest in letters, words, and stories are better readers later in life (Chall & Popp, 1996), provides strong support for incorporating phonics into every early childhood curriculum.

CHALLENGES TO EFFECTIVE PHONICS INSTRUCTION

Kindergarten and elementary school teachers currently face a real gap in the performances of their students' literacy skills. *The Nation's Report Card, 2005 National Assessment of Educational Progress* indicates that while fourth grade reading rates did increase between 1992 to 2005, the average fourth grader's reading score is still only 219 out of a possible 500 (National Center for Educational Statistics, 2005). Fourth graders are, therefore, demonstrating **less than half** of the mastery determined to be fundamental to reading at their grade level (Otaiba, Kosanovich-Grek, Torgesen, Hassler, & Wahl, 2005). This indicates that something, most likely a number of things, are missing from their reading, writing, and spelling instruction that could improve learning and performance.

There are many challenges impacting the ability of teachers to provide more effective reading and writing instruction to their students. The increasing diversity in student populations is one such challenge. Teachers are presented with classrooms of students with a wide range of strengths and weaknesses that cannot be accommodated by one instructor. It is important that teachers have the ability to provide individualized instruction to these students; however, in most schools the resources for offering such instruction are lacking. This kind of differentiated instruction is especially important when teaching children to read because each child's previous exposure to letters, words, and stories varies broadly before entering school (Biemiller, 1999; Chall, 2000; Whitehurst & Lonigan, 1998).

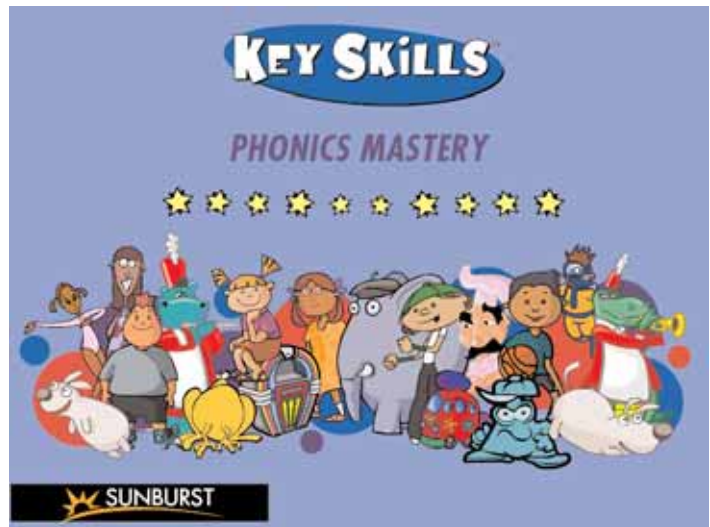
Additionally, standards outlined in recent years have created a new set of challenges for teachers. The *No Child Left Behind* act (NCLB) mandates that schools be evaluated as a whole and make no distinction among the achievements of individual students or specific groups of students. Schools and districts nationwide are now accountable for helping every student attain what the government deems Adequate Yearly Progress (AYP).

All fifty states have annual reading proficiency targets, with a goal of 100% demonstrated proficiency by the year 2014. Any school or district not meeting the target will be identified as "needing improvement," and, as a result, the school's reputation and funding opportunities will be at risk. This leaves teachers in the difficult position of helping students of diverse capacities and experiences develop the ability to read and write in order to meet state and district expectations, as well as continuing to teach all children grade-specific content in a supportive and fair learning environment.

If a school does not demonstrate 100% "reading proficiency" by 2014, its reputation and funding will be in jeopardy.

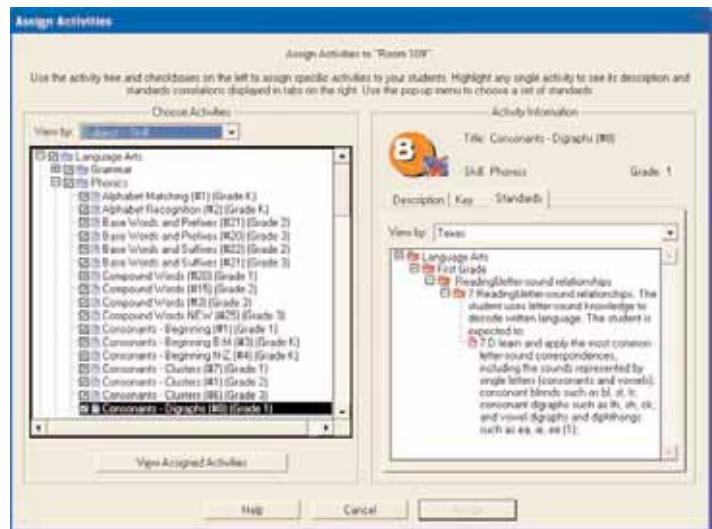
KEY SKILLS: PHONICS MASTERY MEETS THESE CHALLENGES

Sunburst's *Key Skills: Phonics Mastery* software was developed as an instructional aid for K-3 teachers to help meet the above challenges. As part of the larger *Key Skills Learning System*, a series of ten modules, *Phonics Mastery* belongs to a new class of solutions aimed at integrating technology into the classroom in order to provide the differentiated instruction and skills-based reinforcement crucial to helping students at various levels attain literacy competency. *Key Skills: Phonics Mastery* aligns with federal funding opportunities and employs proven, research-based instructional methods that adhere to educational standards in all fifty states.



Key Skills provides individualized instruction for every student and correlates with standards in all fifty states, as well as national standards.

This software package affords teachers the opportunity to offer each student personally tailored instruction through an engaging, interactive computer interface as well as view student and class progress reports, while assuring classes are meeting state and national standards. The *Phonics Mastery* module is intended for integration into a classroom's literacy block as reinforcement—not as a replacement—of the phonics taught through the district's basal series. The strategies, approaches, and interface design of the *Key Skills* software are all grounded in a magnitude of educational research.



RESEARCH BASES OF *KEY SKILLS: PHONICS MASTERY*

Phonics instruction is a proven method for helping children in preschool through sixth grade advance their reading skills (Hatcher, Hulme, & Snowling, 2004; National Institute of Child Health and Human Development, 2000; Panel, 2000; Torgesen, Wagner, & Rashotte, 1997). This group includes developing readers, children at risk of future reading problems, children with disabilities, and English language learners. Phonics instruction, when done well, provides children with the tools necessary to help them decode new words based on symbol-sound relationships, problem-solve, make discoveries about written and spoken language, and feel challenged and stimulated while learning to read, write, and spell (Christensen & Bowey, 2005; Hatcher, Hulme, & Snowling, 2004).

Phonics education has long been at the core of teaching reading and writing. Research suggests that early success with phonics is critical, as it guides reading achievement and competency in the later grades (Chall, 2000). Specifically, programs that focus on **word recognition** and **decoding skills**, two central elements of the *Key Skills: Phonics Mastery* software, have been shown to produce improved reading comprehension in elementary school children (Adams, 1990; Chall, 1983, 1996, 2000; Perfetti, 1985; Stanovich, 1980, 1986).

Other methods

Historically, some researchers have eschewed phonics instruction in favor of other methods to teach reading (e.g., the “whole language” approach). In the United States in the 1970s, children were exposed to a strong phonics component in the early elementary years, while in the 1980s more emphasis was placed on comprehension and word meaning (Chall, 2000; Mullis & Jenkins, 1990). Scores from the nation’s report cards show an upward trend in the 1970s of fourth graders’ reading comprehension, while a similar positive trend was absent from the scores of fourth graders in the 1980s (Mullis & Jenkins, 1990). It is possible that the score increases in the 1970s were due to the emphasis on letter-sound relationships, and the later decline in scores was related to the use of whole language and literature-based approaches to teaching reading **without** a strong emphasis on phonics. Many researchers now agree that any approach to teaching reading should incorporate a foundation in phonics skills (Chall & Popp, 1996; Chall, 2000).

Essential components of early literacy

There are five areas that *Reading First* [an ambitious national initiative to help every young child become a successful reader] deems essential for reading instruction (Armbruster, Lehr, & Osborn, 2000):

- Phonemic awareness
- Phonics
- Fluency
- Vocabulary
- Text comprehension

In order for children to comprehend what they read and improve their writing and spelling skills, they need to have a firm grasp on each of these components. *Key Skills: Phonics Mastery* provides comprehensive practice and reinforcement of precisely those essential phonics skills that *Reading First* discusses, providing students with engaging activities that are a break from traditional desk learning, and complementing classroom literacy instruction.

RESEARCH BASES OF *KEY SKILLS: PHONICS MASTERY*

How *Key Skills* teaches phonics: One step at a time

Beginning with the earliest readers, teachers need to focus on the most basic aspects of phonics in order to create a solid foundation for understanding more complex concepts. Programs that begin instruction by concentrating on individual **phoneme-grapheme** correspondences (e.g., hearing the sound /m/ and associating it with the letter “M”), and encouraging children to analyze each grapheme in a word, have been shown to be superior to those that focus primarily on larger orthographic units, specifically rimes (e.g., -at, -ick) (Christensen & Bowey, 2005).

Key Skills: Phonics Mastery introduces its youngest users to the alphabet through activities that prompt them to match upper-case and lower-case letters,



locate specific letters of the alphabet (e.g., Find the “Q”),



and match images to letters representing a depicted word’s initial, medial, or final consonant sounds, heard aloud when images are clicked.



RESEARCH BASES OF *KEY SKILLS: PHONICS MASTERY*

Research shows that children who are consistently taught grapheme-phoneme correspondence such as this more accurately read and spell words, more consistently spell transfer words (e.g., knowing “cat” enables a child to spell and pronounce words like “sat,” “fat,” and “mat”), and decode new words more quickly than children who are taught solely orthographic rimes (Christensen & Bowey, 2005). Therefore, by focusing first on the relationship between graphemes and phonemes, *Key Skills: Phonics Mastery* prepares students for success at the proceeding levels.

Research shows that beginning phonics study with grapheme-phoneme correspondence, as *Key Skills* does, is a critical foundation for future spelling and reading.



Once a child masters letter-sound association instruction, he or she can advance to more demanding skills, namely **phonemic awareness**. Phonemic awareness involves being able to isolate, identify, categorize, blend, segment, delete, and substitute individual sounds in a word. *Key Skills: Phonics Mastery* integrates these phonemic awareness skills into the arena of written letters and words in a variety of skill-specific activities reinforcing phoneme addition, ending phoneme substitution, and syllabication, among other skills. In one such activity, students turn a wheel of ending phonemes as they mix-and-match them to a stationary beginning phoneme, forming new words as they play.



Learning with *Key Skills: Phonics Mastery* enhances fluency in children’s reading and writing. In learning grapheme-phoneme correspondence and phonemic awareness, children naturally gain these abilities, but *Key Skills* provides many well-researched activities that promote these skills, as well. With the skills acquired during the first years of phonics instruction, children are able to spend more time working to identify unknown words, an activity that results in increased fluency of decoding and rehearsal of the spelling and meaning of words. The first grade decoding activity in *Key Skills: Phonics Mastery* is one example of how the software provides practice and reinforcement of decoding skills.

In the activity, students identify the correct written word to match a given image, which is read aloud when clicked. Such practice ultimately leads to better fluency, text comprehension, and an increased vocabulary (Connelly, Johnston, & Thompson, 2001).

As the National Institute for Literacy’s *Reading First* report explains, the crucial years of reading instruction are between kindergarten and third grade. Sunburst’s *Key Skills: Phonics Mastery* software, through targeted implementation of the *Reading First* core characteristics of instruction, helps K-3 children reach higher achievement levels in all aspects of reading – word identification, accuracy of oral reading, silent reading comprehension, spelling, and reading fluency (Torgesen, Wagner, & Rashotte, 1997).

PHONICS SOFTWARE AND *KEY SKILLS* IN THE CLASSROOM

Research indicates that the use of technology in the classroom enhances and supports the skills taught by core curricula (MacGregor, 2004). When implementing technology in the classroom, it is important to keep in mind that it is never intended to replace the teaching staff. In fact, some educators believe that if technology can replace a child's teacher, it probably *should*!

Research demonstrates that student test scores can increase when integrating high quality instructional software to support curriculum objectives for basic reading skills.

Experts suggest that an effective application of phonics instruction through software, such as *Key Skills: Phonics Mastery*, should take into account how the pedagogy conforms to what is considered best practice, as well as the student-appeal of the program itself, the marketability, and the additional opportunities it provides for teachers and schools (McKenna, 2002). Research demonstrates that student test scores can increase when integrating high quality instructional software to support curriculum objectives for basic

reading skills (Mann, Shakeshaft, Becker, & Kottkamp, 1999). In one study, scores on the SAT-9 test in West Virginia were attributed in part to targeting curriculum standards with software in the classroom (Mann et al, 1999). Software, particularly when it is research- and standards-based like *Key Skills: Phonics Mastery*, provides additional support and motivation that greatly benefit both teachers and students.

The following are several ways that *Key Skills: Phonics Mastery* is in accordance with the research regarding effective, engaging, and influential software in the classroom (McKenna & Watkins, 1996; Stahl, 1998; Wood, 2001) and guidelines for general phonics instruction (Chall, 1996; Cunningham, 2000; Gaskins, 1998; Rayner & Pollatsek, 1989; Stanovich, 1991).

- **Instruction should be systematic and direct, with a specific curriculum that provides practice at different levels** (McKenna, 2002). *Key Skills: Phonics Mastery* uses a color-coding and symbol system to identify each grade, subject, and skill. This makes it easier for a teacher to direct students to specific activities, as well as for students of all abilities to be self-starters when using the software. Through the use of the *Key Skills Management Tool*, a teacher is able to adjust levels and control the scope of each student's activities to meet individual needs. In addition, all activities are sequenced within each grade, providing a progression from "starter" phonics activities to more challenging activities.
- **Good phonics software facilitates teacher monitoring** (McKenna, 2002). The *Key Skills Management Tool* provides teachers with the ability to view and print reports that can be generated for a student, a class, or a state standard. A teacher can use the formative assessment tool to chart the progress of students, and the class as a whole, making the need for reteaching, if necessary, more visible. School administrators can assess the effectiveness of teachers through use of the reporting feature as well. (More information on *Key Skills'* assessment tools is provided in the next section.)

PHONICS SOFTWARE AND *KEY SKILLS* IN THE CLASSROOM

- **Good phonics software should present content in a stepwise progression by appropriately ordering instructional experiences. Specifically, it should move from alphabetic to orthographic decoding, employ onset-and-rime formats, examine the alphabetic principle by combining onsets and rimes and recombining them to form new words, progressing from monosyllabic to multi-syllabic words** (McKenna, 2002; Stahl, 1998; Wood, 2001). The K-1 and the 2-3 *Key Skills: Phonics Mastery* modules each have comprehensive coverage of grade-appropriate phonics skills that increase in difficulty as a child progresses through the activities. The K-1 activities focus on concrete skills such as alphabet recognition, consonant sounds, short and long vowels, diphthongs, digraphs, phoneme addition and substitution, syllabication, phoneme blending, sight words, compound words, and contractions. The 2-3 activities include advanced consonant and vowel sounds, letter/sound patterns, homophones, syllabication, decoding, word endings, compound words, contractions, as well as prefixes and suffixes.
- **Good educational software should be “flunk proof,” such that children who need extra practice can benefit from several repetitions using a variety of modalities** (McKenna, 2002). The *Key Skills: Phonics Mastery* modules enable students to practice the same skill repeatedly and through a variety of fun activities. Each activity has a vast amount of content, allowing a student to replay it multiple times and still receive fresh words and questions. In addition, the software provides comprehensive support when errors are made, in order to help students arrive at and understand the correct answer. Informative feedback is both auditory and visual—never solely a buzzer sound or silly animation. For example, when creating an incorrect word in a phoneme addition activity, the student is told, “That’s not a real word. Try a different beginning letter.” Such direction ensures that no student ever feels he or she “got the wrong answer,” but instead feels guided toward the correct one.
- **Good phonics software maximizes time spent “on task.” Effective program design ensures that the chief focus is on skill attainment while attractive features of the format (e.g., animation, characters, self-competitive elements) motivate the child** (McKenna, 2002; Rose, 1995; Wood, 2001). Each *Key Skills* activity has an attractive, yet clean, animated background that ensures learning is at center stage. Upon accurate completion of a task, there is a short animation celebrating the child’s answer. The animations provide a motivating affirmation of the student’s achievement, but are short enough that they do not distract from the flow of the activity. The *Student Report Card* feature is also a strong motivator for students. As students attain at least 60% correct on the first try of a new activity, he or she earns a sticker that is added to his or her *Report Card*. The report cards are very colorful and can be printed; students in this age group love the concrete recognition this type of feature provides.

FORMATIVE ASSESSMENT AND REPORTING IN *KEY SKILLS*

The *Key Skills Management Tool* affords school staff the ability to assign student activities and view printable assessment reports for classes and students.

For educators, one of the most valuable features of Sunburst's *Key Skills Learning System* is the formative assessment and reporting capabilities provided by the Management Tool. This portion of the software package affords teachers and administrators the ability to establish and manage class lists, assign student activities, and view printable assessment reports for classes and students.

Every *Key Skills* activity has been correlated to curriculum standards in all fifty states, plus the District of Columbia. The teacher or administrator simply selects the state in which they work to view activities meeting their standards. Reports can then be used to display progress over time, demonstrating whether or not students are attaining Adequate Yearly Progress (AYP). Adequate Yearly Progress can be assessed **at any point in the school year** for a particular student, entire class, or all classes taught by a teacher. Such reports can be generated for specific standards or skills. From an administrator's perspective, these reports help evaluate the competencies of teachers and demonstrate accomplishments of teachers and students. Further uses of the student reports provided by *Key Skills* include parent-teacher conferences as well as determining students who are in need of additional support or showing signs of learning disabilities.

This Management Tool is incredibly valuable in light of *No Child Left Behind*. Schools today must meet rigorous learning standards as determined by their state, establish formative assessment systems, and communicate results to parents and the community. Schools are expected to attain specific goals each year, with the expectation that student scores will continue to increase until reaching 100% proficiency in the year 2014.

The on-going formative assessment of *Key Skills* helps ensure sufficient progress is made and facilitates the individualization of instruction.

Opportunities for funding and maintaining school reputations both depend on the academic performances of the students. If performance declines or does not meet certain targets, the implications can negatively affect the future progress of students and the school. By tracking the growth of students' phonics skills and a school's reading performance overall, the *Key Skills Management Tool's* ongoing formative assessments help to ensure that progress is sufficient and facilitates teachers' adjustment and individualization of instruction as often as is necessary.

NO CHILD LEFT BEHIND **FUNDING OPPORTUNITIES**

The implementation of a research- and standards-based phonics solution, such as *Key Skills: Phonics Mastery*, can assist teachers and schools in attaining the standardized achievement levels determined by the government. The *Phonics Mastery* modules were developed on scientifically-based reading research that not only adheres to the standards necessary for accurately teaching children reading, writing, and spelling skills, but also supports a school's applications for receiving the following: *Title I Reading First* grant, *Title II Educational Technology State* grants, as well as *Title III Language Instruction for Limited Proficient and Immigrant Students* grant.

Key Skills: Phonics Mastery directly supports requirements for the *Title I Reading First* grant of No Child Left Behind (NCLB). Local educational agencies can provide funds to enable schools to improve reading and instruction. The amount of these funds is directly related to the percentage of students in kindergarten through third grade whose reading level is below average. *Key Skills: Phonics Mastery* fulfills each of the requirements for this grant.

Schools likely to receive grants are those that implement language and literacy activities supporting the development of the following, all of which the *Key Skills* software does (section 1221. Purposes; Definitions, NCLB):

- “(A) Recognition, leading to automatic recognition, of letters of the alphabet, knowledge of letters, sounds, blending of letter-sounds, and increasingly complex vocabulary;
- (B) Understanding that written language is composed of phonemes and letters each representing one or more speech sounds that in combination make up syllables, words, and sentences;
- (C) Spoken language, including vocabulary and oral comprehension abilities; and
- (D) Knowledge of the purposes and conventions of print.”

Additionally, *Key Skills* supports Part D of Title II of NCLB, the *Educational Technology Grants*, and Part A of Title III of NCLB, the *Language Instruction for Limited Proficient and Immigrant Students Grants*. First, the awarding of Educational Technology grants is intended to improve student achievement through the implementation of technology. The *Key Skills Learning System* is a research- and standards-based approach to providing instructional support via educational software to K-3 children, thereby correlating well with the guidelines for the Title II grant. Secondly, the use of phonics in teaching reading, writing, and spelling has been proven especially effective for English language learners (National Institute of Child Health and Human Development, 2000). The funding opportunities for *Key Skills: Phonics Mastery* provided by the Title III grant are an especially powerful way of supporting students with low English literacy at home.

CONCLUSION

The *Key Skills Learning System* eliminates many barriers to classroom instruction presented to teachers and administrators. In particular, *Key Skills: Phonics Mastery* offers supplemental support and differentiated instruction to students at the beginning stages of learning to read, which research demonstrates is the most critical period in a child's literacy development. *Key Skills* offers informative, helpful feedback and repeated practice when necessary, providing a comfortable forum for all students to practice and improve phonics and reading skills – including students with low self-esteem, those at risk for reading difficulties, and English language learners (Darter & Phelps, 1990). Reinforcing reading instruction with software has been found to provide an extra motivational force that encourages a positive attitude toward reading and learning in young children (Case & Truscott, 1999), as well as increased proficiency in reading, writing and spelling later in life. The *Key Skills: Phonics Mastery* product is a unique and valuable contributor to this type of learning.

The benefits to schools that use *Key Skills: Phonics Mastery* are deep and far-reaching. First, the software is rooted in exhaustive educational research as well as a keen eye toward what motivates and excites students of this age, so children gain vital phonics and reading skills at every turn while engaged in playful learning environments. Second, because the phonics material covered in the software has been directly correlated to standards in all fifty states, it can be smoothly integrated into any existing reading curriculum. In addition, the clean and easy-to-understand design of the interface makes implementation of the software in multiple classrooms very simple. Furthermore, the formative assessment provided by the *Management Tool* allows teachers and administrators to easily chart students' ongoing progress toward improved performance on high stakes tests. Finally, through its alignment with *No Child Left Behind* and *Reading First*, the software can aid schools and districts in attaining all-important educational grants.

As the evidence presented in this paper demonstrates, high quality early phonics education is greatly needed to significantly improve students' reading and writing skills, both in the early years and later in life, providing powerful benefits for speaking, reading, and writing success. Sunburst's *Key Skills: Phonics Mastery* is a prime example of high quality content that is relevant to the curriculum and supports the educational goals of advancing student achievement. *Key Skills: Phonics Mastery* from Sunburst provides teachers and administrators with a much needed research-based, standards-based phonics solution.

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