

Why ELS Works: Its Scientific, Theoretical, and Evaluation Research Base

Executive Summary

Chapter I: Introduction

Given the emphasis in No Child Left Behind (NCLB) on “scientifically-based research” (SBR), Creative Education Institute (CEI), publisher of Essential Learning Systems (ELS), commissioned this research report for its potential and current school partners. The legal definition of SBR was explored, concluding with interpretations from various sources, including the United States Department of Education. It is clear that a program is considered to be scientifically-based if its components have been verified through empirical research to be effective in improving student achievement.

ELS was, therefore, deconstructed to identify its components—the lesson phases, lesson models, content/skills, and instructional strategies used in each of the program’s 30+ tasks. Also listed were the program features that support effective implementation. The resulting list of topics became the research agenda that shaped the study to determine the scientific base for ELS and also its theoretical and program evaluation research base.

Chapter II: ELS as a Therapeutic Intervention for Struggling Learners

CEI has throughout its existence focused on the academic needs of “people with educational differences,” kindergarten through adult, including not only those with learning disabilities, but also those who are limited-English proficient, those who have difficulties resulting from economic disadvantages, and those who have acquired difficulties due to inadequate or inappropriate instruction. What is known from research is that the chief cause of learning difficulties and disabilities is faulty sensory processing. CEI’s treatment for the correction of those problems is ELS, which includes in all its instructional tasks the use of multi-sensory processing. Research from many diverse disciplines, including education, cognitive psychology, neurobiology, linguistics, optometry, and others verify the effectiveness of this type of treatment to move knowledge and skill into long-term memory. The study as a whole illustrates that ELS is, therefore, a “therapeutic intervention” because it provides diagnosis; individual prescriptions; scientifically-based treatment, differentiated according to the diagnosis; research-based content instructional strategies, and implementation support; careful monitoring of progress; and improved performance.

Chapter III: ELS Program Tasks, Lesson Phases, Lesson Models, and Content

Each of the 30+ tasks was coded to identify which phase of lessons it included— instruction, practice (guided or independent), or assessment. Then each task was coded to identify whether it used one or more steps in research-based direct instruction, mastery learning, or one-to-one tutoring lesson models. Individual studies on these models, as well as citations from research syntheses, verified that the use of such

models with at-risk learners was not only appropriate, but also predictive of gains in student learning.

To examine the appropriateness of the content and skills taught in ELS, the meta-analysis of hundreds of studies published in 2000 by the National Reading Panel (NRP) was closely studied. Not only did this report verify that ELS includes the five critical components of early reading identified by the NRP, but it also found substantial research evidence in support of other content included in the overall ELS program, such as the importance of basic writing skills.

Chapter IV: ELS Instructional Strategies

The research literature verifying the effects of several instructional strategies was also reviewed. Scores of studies were identified, for instance, on the efficacy of computer-assisted instruction in general, but also specifically in its power to develop fluency and vocabulary, as well as other specific areas. Scientific research verified, in addition, that the care that CEI has taken to use very simple, uncluttered screens in lesson presentation was exactly the right decision, not only for learning-disabled students, but also many others with difficulties in visual processing and focusing.

Individualized and differentiated instruction are other major strengths of ELS, according to the many studies reviewed. These strategies are realized with the use of computer-assisted instruction, to a great extent, and through the individually prescribed treatments using multi-sensory processing. No two learners in an ELS lab, regardless of its size, will necessarily be working on the same lesson, and if so, not with the same lesson parameters.

Scientific research was identified, as well, in support of the other key instructional strategies: active engagement and time-on-task, chunking or clustering, and practice or repetition. It is important to note that none of the lesson phases, models, content, skills, or instructional strategies operates in isolation from all the others. They are intricately intertwined and interrelated in their implementation, just as curriculum, instruction, and assessment become one in the regular classroom.

A major part of ELS's power is its inclusion of diverse kinds of assessments that are used to diagnose strengths and weaknesses, to identify deficits in student knowledge, for placement into the program at the appropriate level, to monitor progress on a daily and periodic base, and for pre-test to post-test gains for student evaluation, as well as program evaluation. The dynamic nature of the formative assessments allow the teacher/facilitator to ensure that the computer-delivered instruction is truly "informed" or "data-driven" on a daily basis. The scientific research behind the effectiveness of such uses of assessments and their data to improve student performance verified these strategies in ELS.

Chapter V: Additional ELS Program Features

There is growing evidence that many educational innovations declared by some to be failures perhaps were not. They just were never implemented according to the design and/or according to the professional development provided. CEI staff, aware of that research, focuses its entire service program on supporting implementation. It includes, therefore, several components to support student motivation to learn and parental

involvement. Major resources are devoted to ongoing professional development with follow-up coaching; online, telephone, and e-mail support; newsletters and webpage information that help to form a network among users; and technical support to keep the software enhanced, updated, and operational. An Implementation Toolkit is provided as a handbook for the principal or other instructional leader with information, suggestions, and encouragements to lead to an effective implementation. Scientific research, again, supports these and similar strategies.

Chapter VI: Additional Research Evidence of ELS Effectiveness

Educators rely not only on scientific evidence for decision-making, but also evidence of success in other districts or schools, so, although not strictly scientific, a case study of the Brazosport Independent School District's multiple-year experience in using ELS for its struggling readers was included. District officials point out that Brazosport did a number of things at once, so the success they demonstrated in closing their achievement gaps was not solely due to their implementation of ELS, but, in their words, "it was a primary player."

Finally, an analysis of many years of pre- and post-test scores collected by CEI from several different subgroups in thousands of labs across the country show that, on average, learners gain almost two years for a year of instruction. This kind of growth is exemplary of what an accelerated program should be. More than a third of the participating students gain two years or more.

Chapter VII: Summary and Conclusions

In conclusion, ELS is a scientifically-based program, not in just some of its components, but all—in its employment of multi-sensory processing as treatment for learners with difficulties or disabilities; in its use of lesson phases and models; in the content and skill included in its curriculum; in its inclusion of computer-assisted instruction and other instructional strategies; and in its rich use of assessments to provide data for diagnosis, monitoring, and program evaluation, but also, importantly, to inform the day-to-day instructional decisions to keep the program truly individualized and differentiated. The ELS program is further scientifically-based in its implementation of support programs: motivation for learning; parental involvement; and professional development with follow-up coaching.

On the basis of the scientific evidence provided, ELS is determined to be an effective therapeutic intervention for struggling learners. Its use with a diversity of students at risk of school failure predicts accelerated growth in student achievement, enabling those students, then, to access successfully the grade-level state standards and to perform at the proficient level.

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