Developing Student Literacy Skills: How *Study Island* Aligns with Best Practice

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Introduction

Literacy proficiency leads to a wealth of positive outcomes, whereas illiteracy paves the way toward limited opportunities and potential welfare issues (e.g., poverty, health).[1] Research evidence highlights the need for improving literacy proficiency across the country. Results from the National Assessment of Educational Progress (NAEP) indicate that 66% of fourth and eighth grade students lack proficiency in reading, and at least 67% of fourth and eighth graders lack proficiency in writing.[2,3] United States students rank 18th internationally in elementary literacy performance and 17th internationally in high school reading performance.[4,5] One potential pathway toward realizing gains in student literacy proficiency involves the incorporation of research-based best practices in literacy instruction. By integrating research-based best practices on instructional strategies, progress monitoring, and writing support into the classroom, teachers can positively impact student literacy achievement.

The research base on strategies for literacy development indicates that programs that incorporate these best practices can positively influence student literacy achievement (see Appendix for effect sizes). This white paper highlights best practices in instructional strategies, progress monitoring, and writing support that impact student achievement and provides an example of how one online K-12 learning tool, *Study Island*, incorporates these best practices.

Instructional Strategies

To support the development of student literacy skills, teachers need to incorporate various instructional strategies, including using different methods of instructional delivery, enhancing student literacy motivation, and providing focused and distributed practice.

1. *Using different methods of instructional delivery*. Providing students with access to literacy content through different instructional modalities offers one way to enhance the learning environment. By acknowledging that each student has different learning styles and incorporating different instructional methods in the classroom, teachers promote student achievement gains and increases in positive attitudes.[6,7] One example of using different instructional methods involves the use of animations in instruction. Research suggests that animated lessons can lead to greater comprehension and learning gains compared to reading books with static images.[8,9] Animated lessons add a source of motivation for students, leading to increased engagement and interest, and may also

serve as a source of contextual support.[10] As a consequence, teachers should present information in a variety of formats to accommodate the learning styles of different students.

How *Study Island* Incorporates Research-Based Instructional Strategies

- Includes interactive activities and embedded animations within literacy lessons
- Allows students to complete lessons in any order, offers symbolic rewards for progress and includes goals and progress feedback to enhance student motivation
- Allows teachers to specify the amount and frequency of practice students receive and provides extra practice on difficult content by breaking concepts down for students at their respective levels.

2. *Enhancing student literacy motivation.* Before students can retain information, they need to be engaged in and motivated by the content. Research shows that when students are motivated to read, they read more and have higher reading achievement.[11,12] Additionally, elementary students who frequently read for fun have higher reading scores.[13] When students are not interested or motivated to read, they have lower levels of academic self-efficacy and are at risk of lower literacy achievement.[14]

Teachers can utilize several strategies to foster student motivation in the classroom. First, teachers can give students a choice in what they can read and provide challenging reading materials, resulting in higher student motivation. Second, teachers can demonstrate techniques for actively engaging with text (e.g., comprehension strategies) leading to greater reading achievement.[15] Finally, teachers can find ways to increase students' self-efficacy, which plays a key role in motivation. A few strategies for enhancing self-efficacy include allowing students to experience success, providing encouraging feedback, and implementing goal setting.[16] When teachers take steps to enhance student motivation and efficacy, students experience greater reading engagement and subsequent success.

3. *Distributing and providing focused practice.* Once students acquire information, review becomes important for retention. Research on the spacing of information suggests that learning is improved when students distribute review of material rather than learning content in one massed session (i.e., cramming).[17,18] In particular, studies suggest that separating learning by at least one day is helpful for the retention of material and that distributed learning can increase achievement by twenty-nine percent after eight to 30 days of learning content.[19] The effect of distributed learning is particularly beneficial for more complex learning, wherein greater spacing between learning periods leads to greater retention of material.[20]

In addition to spacing content, students need to have practice sessions with material to achieve high levels of competency. Research indicates that more difficult content might require focused practice. This allows students to break down material by focusing on

subskills within larger skills.[21] The concept of focused practice is similar to mastery learning, wherein teachers divide material into smaller units and students receive tailored support until they attain mastery of content. Previous research shows that when classrooms participate in mastery learning, students have higher achievement outcomes compared to classrooms using traditional instruction.[22]

By using different methods of instructional delivery, enhancing student literacy motivation, and providing distributed and focused practice, students can achieve literacy proficiency. The strength of research on instructional strategies is high, with effect sizes[1] ranging from 0.37 to 0.89, suggesting that the incorporation of these strategies in a classroom program can result in positive small to large impacts on literacy achievement.

Monitoring Progress in Literacy

One way to assess student performance in literacy is through regular progress monitoring. Several research-based strategies for progress monitoring include aligning literacy tests to standards, using test results to improve literacy instruction, providing students with goals and feedback on reading performance, offering individualized literacy remediation, and integrating the use of computers to monitor progress.

1. *Aligning classroom tests with state standards.* Since the enactment of No Child Left Behind in 2001, there has been a renewed focus on accountability resulting in yearly statewide assessments in reading. To accurately determine how students are progressing toward the achievement of state standards, researchers suggest that classrooms align tests with yearly state assessments.[23,24,25] Previous research suggests test alignment can lead to improved student and school outcomes and the use of different formative assessments throughout the year can serve as accurate predictors of student performance on standardized assessments.[26,27] Ultimately, the inclusion of such classroom assessments aligned with classroom instruction can serve as one way for teachers to accurately gauge student comprehension and progress.

2. *Using progress monitoring data to modify instruction.* Once assessment data is available, students and teachers can benefit from its use. Research indicates that students who are progress monitored in reading two times per week for eight weeks see growth, with students in later elementary grades showing more growth than earlier elementary.[28] Some examples of progress monitoring include keeping running records, assessing student comprehension, and collecting writing samples.[29] Ultimately, the use of progress monitoring at regular intervals and the incorporation of student results to modify instruction leads to higher achievement when compared to classrooms where

[1] See the Appendix for effect sizes on research-based practices presented in this white paper.

How *Study Island* Supports Progress Monitoring and Feedback

- Directly aligns with state and common core standards
- Provides diagnostic, formative, and summative assessment results and professional development resources as tools for modifying instruction based on student needs
- Provides students with continuous feedback and goals for assessment performance
- Students receive individualized and task-specific feedback on their progress in meeting standards
- Provides supplemental instruction and assessment on the computer, allowing for task-specific feedback and reduced data collection time

teachers have data on student performance but do not modify instruction.[30,31,32] In addition to student and teacher benefits of progress monitoring and repeated assessments, research suggests that frequent assessments are more cost effective at improving student outcomes compared to comprehensive reform efforts and reduced classroom size.[33]

3. *Providing students with reading goals and feedback.* Goals and feedback not only improve motivation but also achievement. When students are given specific suggestions for reading (e.g., here is what you should look for in this paragraph) and progress feedback (e.g., pay attention to this piece of the passage), they believe they have made more progress and see greater growth in reading achievement compared to when they are given less specific suggestions (e.g., read this paragraph and try to answer questions).[34] The dual inclusion of specific goals before reading and progress feedback during reading appear to have the greatest impact, as students in these conditions experience higher self-efficacy and greater reading skills compared to students who only receive goals for reading but no progress feedback.[35] The beneficial impact of specific feedback on student performance might also explain why being tested multiple times over the course of the year leads to greater student achievement and more positive student attitudes in classrooms compared to classrooms where students are tested less frequently.[36] Taken together, learning goals and feedback help students to hone their literacy confidence and skills.

4. *Providing individualized and task-specific feedback.* The content of specific feedback also influences student outcomes. For example, students who receive individually focused feedback that links internal attributions (e.g., student is doing well because of their own actions) to self-concept (e.g., student is encouraged to feel positive about their actions) have higher perceptions of self-concept over time and attribute their success more to effort over innate ability.[37] Students benefit from feedback directed to the task that avoids praise of generic qualities of the self (e.g., "You are such a good student").[38] Ultimately, students can benefit from the individualization of feedback that is ongoing and specific to the circumstance and task.

5. *Using computer programs to monitor progress.* In an era of technology, computer programs offer new ways to support classroom literacy development. Research on

computer-assisted instruction (i.e., computer programs that support instruction) shows a positive influence of digital programs on reading achievement.[39] Specifically, computer program feedback that focuses attention on specific tasks and provides information on correct answers leads to higher student achievement outcomes.[40] When classrooms use computer-assisted instruction, teachers have heightened satisfaction with progress monitoring and a reduced burden in the amount of time for data collection and management.[41]

How *Study Island* Supports Writing Practice

- Provides a online platform for writing practice and editing opportunities
- Incorporates the use of technology through an online e-platform
- Includes graphic organizers and standards-aligned rubrics to support student planning, writing, revising, editing, and assessment

Through the incorporation of research-based best practices in monitoring progress, teachers can positively influence literacy development. The effect sizes for studies on instructional methods are strong, ranging from 0.26 to 1.80, suggesting that the incorporation of these strategies in a program can have small to large positive effects on student literacy achievement.

Providing Writing Practice and Support

To improve writing achievement, teachers can integrate several research-based best practices into the classroom including providing more time for writing, incorporating technology in writing instruction, and using different writing–editing methods.

1. *Providing more time for writing.* Classrooms in the United States only spend an average of 21-25 minutes per day writing a paragraph or more in length and students only receive an average of 15 minutes per day in writing instruction.[42,43,44] This limited amount of instructional time has led some researchers to suggest spending 45 minutes to an hour on writing daily.[45,46,47,48] The additional time spent on writing would give students a chance to apply and practice writing skills and would provide teachers with more opportunities to apply evidence-based strategies.[49,50]

2. *Incorporating technology in the writing process.* Using technology-based tools during the writing process might offer one method for incorporating additional writing time into daily instruction. Previous research suggests computer-assisted instruction serves as a beneficial support for writing instruction.[51,52,53,54] Specifically, writing on a computer has positive effects on writing quality and writing amount compared to writing on paper.[55,56,57,58] Word processors allow students to easily edit or revise text and develop gains in proficiency.[59] Additionally, in an increasingly digital world, students gain additional practice in using current writing platforms.

3. *Including writing–editing tools in the classroom.* When it comes to writing instruction, teachers often spend more time on writing skills (e.g., handwriting) than writing–editing

(e.g., planning, revising), but the editing process can enhance student writing knowledge, motivation, and writing quality.[60] By having opportunities for review and establishing clear writing goals, students can see success in the classroom.[61] Specifically, the inclusion of tools such as rubrics and graphic organizers can benefit writing quality.

Rubrics allow students to understand how teachers assess them and offer one tool for self-reflection before, during, and after the writing process. Students who evaluate a model essay and use rubrics to review their writing have higher writing scores compared to students who do not view a model essay or receive rubrics.[62] Rubrics also serve as a source of support in helping students to become self-regulated learners. Clear rubrics can provide practice in planning and editing papers.[63] Ultimately, the inclusion of rubrics in the writing classroom can serve as one type of feedback and assessment measure for students, allowing for the opportunity to self-regulate performance.

Graphic organizers serve as a prewriting technique to support student planning and goal setting for writing. The use of prewriting techniques such as graphic organizers positively influences writing quality of elementary through high school students.[64] Additionally, graphic organizers can help students writing in a second language.[65] By focusing on editing skills, students gain additional confidence and experience in the writing process.

Providing more time for writing, incorporating technology to support writing, and using different writing editing methods are effective strategies for improving writing achievement, with effect sizes ranging from 0.27 to 0.55. As a result, programs that implement these best practices can hope to at least have a small to moderate positive effect on writing quality.

Study Island as a Tool for Developing Student Literacy Skills

Through different instructional strategies, methods for monitoring student progress and a platform for writing support, *Study Island* incorporates research-based practices to support the development of student literacy skills.

Study Island provides literacy instruction for students in grades K-12 through online learning modules in reading and writing that are aligned to state and common core standards.

The program provides differentiated instruction and review that goes beyond the textbook, including interactive activities and animations for students as they move through standards-based literacy lessons. To increase student motivation, the program allows students to complete lessons in any order, offers symbolic rewards for progress (i.e., students receive a blue ribbon when they achieve content mastery) and includes strategies to increase student self-efficacy (e.g., students experience gains in reading, goals are set for achieving specific standards).

Study Island allows for distributed practice of material and focused review of literacy content. Teachers can specify how much practice students receive on a topic and distribute practice of skills over multiple days. When students experience difficulty with content, the program cycles down to lower levels to provide students with practice on key building blocks for larger skills. Once students achieve mastery, *Study Island* moves students back up to a higher level of review and assessment.

Program developers aligned *Study Island* with state and common core standards so that teachers and students are continually informed of student and classroom progress toward state expectations in reading and writing. Teachers can use the variety of diagnostic, formative and summative assessment results and professional development resources available through the program to modify their literacy instruction. Assessment reports give teachers and administrators real-time feedback on specific areas where students require additional help or support and provide information on student progress and mastery of content.

The program provides students with continuous feedback on their performance. After each question, students receive feedback on whether or not their answer choice was correct and an explanation of the correct answer. Students can view in-depth progress reports on their performance relative to state standards. As such, all feedback on *Study Island* is specific to the task and provides immediate information and remediation to students. Additionally, by incorporating an online learning platform for instruction and assessment, many students receive individualized content and support simultaneously.

For writing practice and support, *Study Island* has an online learning platform that allows students to plan, edit, draft and submit assignments. Teachers can assign writing topics to their students and provide rubrics or graphic organizers to students, allowing for additional practice on writing and editing in the classroom. The program provides additional opportunities for writing practice, planning and revisions, while also providing a resource for viewing growth over time. Taken together, teachers can use *Study Island* to incorporate research-based strategies for developing student literacy.

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Appendix. Effect Sizes of Research-Based Practices

Effect sizes provide information on the relative strength of a set of findings. Effect sizes explain the standardized deviation in difference between two groups. In other words, an effect size of 1.00 means that an average person in the treatment group scored 1 standard deviation, or 32 percentile points, higher than the average person in the control group. The following table details information on the effect sizes of referenced studies when effect sizes were available or able to be calculated.

Table 1. Effect sizes for research-based practices in developing literacy

Component	Range of effect sizes	Components addressed
Instructional Strategies	0.37 to 0.89	• Different methods of instructional delivery[66,67,68,69] • Motivation in the classroom[70,71] • Distributed and focused practice[72,73]
Progress Monitoring	0.26 to 1.80	• Aligning classroom assessments with state standards[74] • Using assessment data to modify instruction[75,76,77] • Providing students with reading goals and feedback[78,79] • Providing individualized and task-specific feedback[80,81] • Using computers to monitor progress[82,83]
Writing Practice and Support	0.27 to 0.55	• Incorporating technology in the writing process[84,85,86] • Including writing–editing tools in the classroom[87,88]

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