Understanding the Art and Science of STEP

An Examination of Research and Practice Related to the STEP Literacy Assessment

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STEP

Contents

Overview

This document has been created for our partners in response to commonly asked questions we receive regarding STEP, specifically its research base and how STEP practices connect to the Science of Reading (SOR). Please note that while you may read this document straight through from start to finish, each section may also be read in isolation from the others. This report specifically focuses on the early stages of formative, developmental literacy assessment; instructional practices closely tied to decoding; and how meaningful teacher preparation, such as that provided by STEP, supports teachers in learning how to interpret data to inform instruction.

STEP is a research-based formative literacy assessment, data management, and professional learning system proven to significantly increase student outcomes.

> 86% of students who reach STEP 12 by the end of third grade meet or exceed state standards.

The assessment provides a set of tools, tightly aligned with scientifically established reading development milestones, to follow students' progress from kindergarten through third grade. STEP provides educators with the requisite insight to tailor literacy instruction and meet the needs of all students. The Data Management System supports teachers with access to data, and expert STEP Trainers guide staff through the process of learning how to interpret results with reliability. By doing so, teachers become empowered to plan for and provide instruction that moves students toward reading proficiency.

STEP has supported over 3,000 teachers and 110,000 students across the country.

STEP is a system of support offered by UChicago Impact, a not-for-profit within the University of Chicago's Crown Family School of Social Work, Policy, and Practice's Urban Education Institute. All of UChicago Impact's systems are grounded in rigorous education research and fundamental education practices. UChicago Impact develops and distributes systems of support, including surveys, assessments, and professional learning, that are designed to foster improved school and student outcomes. UChicago Impact positions educators to use research and actionable data to inform and improve their practice in ways that promote student achievement.

What We Do

Empowering Educators to Improve Student Outcomes

Children enter school with a variety of strengths and challenges that impact their trajectory and rate of learning. Some arrive with a strong background in early literacy; others have had extremely limited exposure to books. Teachers and school staff have to identify, interpret, and respond to each student's needs in a strategic yet systematic way to provide the kind of instruction required to become successful readers and writers.

Establishing a strong foundation during the early elementary grades is crucial. Doing so ensures that as students progress into the middle and upper elementary grades, they can rely on these critical skills while strengthening and expanding both their content knowledge and reading ability. The diversity in students' entry points and their growth rate over time places considerable demands on teachers. Educators must understand how each child processes information so they can organize instruction that accelerates progress.[1]

STEP strives to alleviate the pressure and position educators for success by providing them with the information and skills needed to increase the number of students on track to reading proficiency. STEP empowers teachers to interpret and act on STEP data to improve and/or modify literacy practices to boost student achievement.

1 Paragraphs 1-2 in the section "Conclusion" derive from the STEP Technical Report (Kerbow & Bryk, 2005).

Theoretical Background from the STEP Technical Report

Researchers have proposed several related and distinct theories on the developmental reading trajectory over the last 40 years (Bear, 1991; Chall, 1983; Clay, 1991; Frith, 1985; Fountas & Pinnell, 1996). Although varied in their details, these seminal research findings share a common view of reading as a complex process in which children learn to combine and rely on multiple sources of information, including phonemic awareness, understanding of the alphabetic principle, word recognition, decoding, fluency, and comprehension. Each theory describes the skills and strategies that readers demonstrate at each of the developmental stages they pass through as they learn to read. In this tradition, David Kerbow, PhD, and Anthony Bryk, EdD, researchers formerly at the UChicago Consortium on School Research (UChicago Consortium), organized STEP around a map of how students grow as readers. The technical report and original guide to the STEP Assessment classified these stages as Emergent, Early, Transitional, and Self-Extending Readers. Today, we often use different, albeit similar terminology to represent the same continuum of growth and development: Emergent, Beginning, Developing, and Self-Extending.

STEP is grounded in the theoretical approaches of pragmatism, constructivism, social constructivism, and cognitive science. These frameworks are often observed in STEP partner schools as staff learn to interpret and respond to formative assessment data. This process reveals insights into students' development of concepts and their shaping by knowledgeable others (i.e., teachers) as guided by data-driven, research-based practices (Duke & Pearson, 2002; Fosnot, 1996; Jonassen, 1991; Kintsch, 2004; Piaget, 1959; Rosenblatt, 1978; Vygotsky, 1987). STEP empowers teachers to continue this work independently and effectively after receiving sufficient support, often two to three years of coaching.

Organization of the Assessment

STEP offers a continuum, closely aligned with scientifically established milestones in reading development, of component datasets that follow students' progress from Emergent to Self-Extending readers (growth typically represented from kindergarten through third grade). These components are organized into an incremental, increasingly rigorous, sequenced set of skills and concepts that help teachers understand the developmental status of individual readers and the class as a whole at any given point in time and across the academic year. STEP believes that practice and standards inform assessment, and assessment informs practice.

Central to the assessment design is a set of leveled texts that increase in difficulty across 13 distinct STEPs or levels. Each STEP, in conjunction with the leveled texts, includes assessment tasks that allow for a deeper understanding of performance and progress toward mastery of skills specific to that level. Listening to students read aloud from a leveled text provides direct information for understanding their reading skills and strategies, diagnosing strengths and weaknesses, and evaluating progress (Johnson et al., 1987). Leveled assessment texts aligned to key developmental milestones are used during assessment and help teachers identify and understand students' approaches to problem-solving unknown words (i.e., decoding) and making meaning (i.e., comprehension).

STEP combines the reading of authentic texts with an assessment approach that focuses on developmentally appropriate skills. A student's ability to read and demonstrate understanding of a text at each subsequent level represents the steps in a student's development toward becoming a Self-Extending reader. The following are all of the components represented across various STEP levels, each of which research has shown is an essential building block of the reading process[1]:

- Concepts about Print
- Letter Identification
- Letter-Sound Correspondence
- Phonological Awareness: onset-rime, matching first-sounds, & segmentation
- Developmental Spelling
- Reading Rate and Accuracy
- Comprehension (oral/silent and written)
- Overall Fluency

As noted above, one of the central premises of STEP is the assertion that practitioners should interconnect assessment data with both practice and the classroom experience. This notion is not only grounded in foundational research but also current practice and research. The following 2020 position statement by the National Council of Teachers of English entitled Expanding Formative Assessment for Equity and Agency summarizes STEP's asserted stance (Overview section, para. 1):

> True formative assessment depends on teachers assuming an inquiry stance, continually asking questions about what learners know and are ready to learn, viewing assessment as intertwined with learning, and practicing accountability with an ethic of care rather than one of consequences.

Not only is STEP standing on solid foundational research, but we have also gathered evidence of effective assessment reliability (Kerbow & Bryk, 2005). Psychometricians from UChicago Consortium indicate that text-level reading associated with STEP shows an overall sub-scale reliability of 0.82. UChicago Consortium derived this reliability amount from a composite score that combines information on accuracy, reading rate, and student responses with the comprehension questions that accompany each text. This reliability score of 0.82 is statistically significant.

STEP was originally validated over 15 years ago by the UChicago Consortium and continues to evaluate the effectiveness and reliability of STEP. Initial analysis of the 2018 STEP Revalidation Study, as analyzed by UChicago Consortium psychometricians, indicates continued support for the reliability and validity of the assessment as well as use of STEP's leveled texts.

The UChicago Consortium has distinguished itself as a unique organization, conducting research of high technical quality that is used broadly by the school reform community. They are viewed as an invaluable resource for education institutions and policymakers, specifically Chicago Public Schools (CPS), the third largest district in the nation. To maintain intellectual independence while carrying out research in collaboration with

1 Paragraphs 1-3 in the section "Organization of the Assessment" derive from the STEP Technical Report (Kerbow & Bryk, 2005).

partners, the UChicago Consortium relies on internal and external oversight and transparency of results.

When used to its full and intended extent, the STEP Data Management System further enables educators to analyze reading outcomes as shown in key demographic categories, such as race, gender, IEP status, SES status, EL status, and so forth. Such demographic filters further support STEP and our partner schools as we work to address achievement and growth in reading while also ensuring equitable support and positive outcomes for all students.

Instructional Best Practices

STEP firmly believes in the interrelationship between instruction and assessment. Therefore, when working with STEP through professional learning and leadership training, we support educators in modifying existing instructional frameworks or creating new systems and approaches to meet the needs of all learners. The STEP Literacy Team recommends literacy instruction that favors direct instruction, explicit modeling, guided practice, and independent application of skills. STEP further recommends an instructional design for literacy that integrates content instruction (i.e., science and social studies), along with a comprehensive approach to instruction in vocabulary and explicit phonemic awareness and phonics instruction.

STEP upholds that small group reading instruction, whether heterogeneous or homogeneous, must be structured around a specific and explicit focus, as well as driven by data. We recommend that practitioners link small group reading to an instructional skill set or concept that the student has not yet mastered. Until that group of learners masters the intended instructional skill, it merits additional practice and/or reteaching so that students may continue their path toward independence in reading (Fisher & Frey, 2007). Small group reading instruction ensures that students learn to comprehend written texts (Pearson & Fielding, 1991; Pressley, 1998) while also learning to use phonics skills to take words apart while reading for meaning (Pressley, 1998; Snow et al., 1998). Furthermore, teachers should design instruction to teach comprehension and vocabulary while also providing explicit instruction in reading fluency (Pinnell et al., 1995).

The STEP assessment data provide explicit insight into reading development. But, as we are an organization of researchers and practitioners, we also understand the critical interaction among language, reading, and writing development. We recommend that teachers should also provide regular and ongoing lessons on the skills and craft of writing. In turn, students should practice writing daily to apply critical principles that the teacher has taught to their own production of writing across genres. As students learn to hear the sounds in words (i.e., phonemic awareness) and learn to look at letters and words, both their reading and writing achievement will increase (Liberman et al., 1985; Lundberg et al., 1998; Vellutino & Scanlon, 1987, 1988). In addition, STEP recommends that students have choice and voice in writing assignments. Writing is a way of communicating understanding and connection. Thus, what students write about (e.g., meaningful content, connections to their own lives) is as important as how their writing skills develop. STEP can help educators navigate this complex puzzle by providing data-driven insights into the sequence of instruction proven to be most effective in supporting specific and precise reading and writing objectives.

Appropriate Texts for Reading Instruction

STEP recognizes that teachers utilize various instructional materials to support reading growth. The use of varied text types (e.g., fiction, nonfiction, leveled texts, high/low texts) increase students' opportunities for engagement. In turn, this exposure supports their ability to improve comprehension across diverse content. A text used for small group skill instruction should align with the available data to support a particular skill set's advancement. Ideally, instructional texts should not only be at the appropriate level based on data but also be grounded in content aligned to areas of focus in the classroom.

Informed text selection involves knowledge of student needs, along with the ability to identify appropriate material to support growth. "Any text designed to scaffold reading acquisition can be helpful only when accompanied by reflective, systematic, consistent and responsive teaching" (Mesmer, 1999, p. 140).

Effective use of decodable texts can support emergent readers in developing basic decoding strategies. Researchers agree that decodable texts help students when they are first learning to sound out words. However, decodable texts are not beneficial after students are proficient in this skill (Mesmer, 1999). STEP believes that regardless of text type, the selected text's content must be meaningful and engaging. Less effective decodable texts available from publishers tend to feature nonsense or disconnected stories.

Supporting Teachers in Selecting the Best Books for Their Readers

STEP provides an advanced training on text selection protocols. This professional learning helps educators become familiar with examining texts from a variety of publishers to determine the demands the texts offers the reader. Connections and trends between student data and text structures are identified and anticipated so that teachers feel more empowered to effectively select the best texts aligned to their identified instructional purpose.

As researchers have determined (Shanahan, 2019):

> Decodable texts, too, can be problematic as they tend to steer kids away from meaning, and at times even away from real words. Kids who are used to strong phonics support and decodable texts tend to try to sound words out more than do other kids (Cheatham & Allor, 2012). But when this doesn't work (and it doesn't always work), these kids end up producing nonsense words (mispronunciations based on the sounds they know) or they balk and don't even read words that they can't decode easily (Barr, 1975; Biemiller, 1978).

When choosing decodable texts, practitioners should look for meaningful content (i.e., stories that make sense) and books with consistent patterns. Decodables that are meaningful and lessons that are structured to allow for practice and discussion will support students not only in their phonics development but also reinforce the concept that to read is to make meaning. Additionally, pattern-based books with high-frequency words have proven effective for readers at emergent and beginning levels.

Decodable texts, predictable texts, controlled vocabulary, easy readers, multiple criteria,

and authentic literature are all examples of essential instructional materials. Researchers agree that early readers need to access a variety of texts (Mesmer, 1999; Shanahan, 2019). At STEP, we encourage this practice so that students can become familiar with the varied text types and structures they will encounter inside and outside of the classroom. The key for teachers is to select materials appropriate to students' instructional needs at any given point in time (Cunningham et al., 2012). Teachers must intentionally select texts to match ever-evolving needs.

Teacher Preparation

Over more than 20 years, the initially insignificant differences in state-level certification standards and various schools of education curricula have widened into a vast chasm. As experienced coaches and trainers, STEP has direct knowledge of how preparedness to teach reading and differentiate instruction varies within the context of each school we support. In 2020, the National Council on Teacher Quality shared their findings on graduate and undergraduate teacher preparation program effectiveness. They found that only 50% of programs cover most of the five components that research shows significantly impact student achievement in literacy. These components are phonemic awareness, phonics, fluency, vocabulary, and comprehension, all of which are core principles of the STEP assessment (National Reading Panel, 2000). Given this preparation gap, STEP professional learning effectively supports educators as they learn to implement this formative assessment.

STEP professional learning supports, develops, and guides teachers in cultivating foundational literacy practices that will empower them to implement the assessment and change their practices according to student needs. Only 50% of early-career teachers reported that they were prepared to differentiate instruction in the classroom (National Center for Educational Statistics, 2018). The combination of STEP data and comprehensive professional learning work in tandem to build staff capacity for providing instruction that promotes strong reading outcomes. 92% of surveyed school leadership teams agree that since implementing STEP, there has been an increase in teacher capacity to tailor literacy instruction to meet students' individual and small group needs (STEP Satisfaction Survey, 2018).

STEP recommends that professional learning is ongoing and most effective when led by a

The Learning Policy's "Elements of Effective Professional Development"
Content Focused Professional development that focuses on teaching strategies associated with specific curriculum content supports teacher learning within their classroom contexts.
Active Learning Active learning engages teachers directly in designing and trying out teaching strategies, providing them an opportunity to engage in the same style of learning they are designing for their students.
Collaboration High-quality professional development creates space for teachers to share ideas and collaborate in their learning, often in job-embedded contexts.
Models and Modeling of Effective Practice Curricular models and modeling of instruction provide teachers with a clear vision of what best practices look like.
Coaching and Expert Support Coaching and expert support involve one-on-one sharing of expertise about content and evidence-based practices, focused directly on teachers' individual needs.
Feedback and Reflection High-quality professional learning frequently provides built-in time for teachers to intentionally think about, receive input on, and make changes to their practice by facilitating reflection and soliciting feedback.
Sustained Duration Effective professional development provides teachers with adequate time to learn, practice, implement, and reflect upon new strategies that facilitate changes in their practice. Strong professional development initiatives typically engage teachers in learning over weeks, months, or even academic years, rather than in short, one-off workshops.

STEP expert.[1] Research shows that when teachers feel supported during their initial years of teaching, they are less likely to leave the profession. Additionally, a substantial research base supports the idea that teacher effectiveness improves in initial years with experience and support (Clotfelter et al., 2010; Goldhaber, 2007; Rice, 2003; Staiger & Rockoff, 2010). STEP's professional learning leads to a school-wide, systematic, and consistent approach to instruction, scoring, and collaborative planning practices.

Connections to the Science of Reading

Recent news articles and op-eds have sparked renewed public interest in the process of how students learn and are taught to read. Of late, the media has predominantly narrowed the intricate and complex process of reading down to two focal points (International Literacy Association, 2020):

1. The reading of words
2. The systematic use of phonics instruction to support reading development

Researchers and teacher practitioners alike know that learning to become a proficient reader is far more complex than the learning and application of these two components. Reading must not only encompass foundational skills but expand beyond them through "a complicated constellation of skills and knowledge that impact reading comprehension" (Cervetti et al., 202018, p. S161). Such concepts and skills include instruction in academic language, comprehension strategy, language interventions, explicit vocabulary, and text discussions. Moreover, literacy researchers often note the importance of the sociocultural, cognitive, and environmental factors at play in shaping this developmental process (John-Steiner & Mahn, 1996; Miller, 2011; Smagorinsky, 2011; Vygotsky, 1978; Wang et al., 2011).

Understandably, misinformation and misinterpretation surround the Science of Reading, both because of the reading process's complexity and the vast amount of related foundational research. It does not help that the media often positions researchers as being in one of only two polar opposite camps: phonics or whole language. Additionally, some reporters distill complex research into simplistic findings to make concepts fit within one particular side of the argument. For example, reporters routinely cite researcher Marilyn Jager Adams, PhD. Her detailed evaluation of the three-cueing system (Adams, 1998) is often reduced to the simplistic interpretation that the three-cueing is outright conceptually flawed.

In actuality, we find she highlights both positive and negative aspects of the three-cueing system depending on the usage. Adams notes that her "concerns with the cueing system relate not to the schematic, which [she finds] wholly sensible . . . [Her] concerns relate instead, and in two major ways, to the interpretations so broadly attached to the schematic" (Adams, 1998, p. 8). In essence, the problem she sees is with how practitioners often misapply the Venn diagram associated with this concept to instruction. Adams defends value in the three-cueing system schematic when each aspect is interpreted in conjunction with the other two to support readers in making meaning. Thus, Adams and STEP are aligned in believing that instructional practices should absolutely not encourage

1 See similar findings from Darling-Hammond et al. 2017, regarding the importance of expertise in connection to effective professional learning.

random guessing at words. Furthermore, both Adams and STEP concur that the three-cueing system has sometimes resulted in the misapplication of this research in certain instructional settings.

A Deeper Investigation of the Three-Cueing System

Three-cueing has become a divisive issue, both in the literacy research world and in daily news cycles. Given how important this topic is, the STEP Literacy Team is sharing our perspective on the value and limitations three-cueing affords those working to provide effective decoding and phonics instruction to developing readers. Like Adams (1998), STEP has also seen how the three-cueing schematic helps teachers understand the interplaying complexities among lexical, semantic, and syntactic variables encountered by readers. We also acknowledge that sometimes there can be a disconnect between how three-cueing is meant to inform and how some practitioners apply it to instruction.

STEP often supports teachers in analyzing reading records so they can understand the graphophonic, semantic, and syntactic strategies a student is or is not employing while reading. Teachers can then use that analysis to identify and prioritize the most relevant decoding strategies (i.e., word-solving and/or phonics skills) needed during whole and small-group classroom instruction. While the use of a systematic phonics program is also an essential aspect of instruction in the elementary grades, STEP contends that the analysis and identification of trends across reading records help teachers use data to fine-tune the order in which to teach these strategies. As many of us know, little in education works with a one-size-fits-all approach. For this reason, STEP suggests tailoring the sequence of instruction to align with each student's current trajectory of learning. We have observed many effective partner schools provide differentiated phonics lessons, in addition to whole class phonic instruction, to address all needs.

However, analyzing reading records through the three-cueing lens is not a requirement to partner with STEP. To support our partners who do not find this process valuable, STEP will enable schools to uniformly choose whether or not to electronically code reading records in steptool.org beginning in the fall of 2021. Currently, via Online Progress Monitoring, teachers can already choose to code or omit analysis of reading records.

If applied correctly, we know that reviewing a student's errors is a key piece of effective instructional analysis. Furthermore, analysis using the three-cueing system empowers teachers to prepare for targeted reading instruction. However, coding reading records does not impact a student's performance on a STEP assessment, and we acknowledge a running record is but one tool in a roster of many STEP Assessment data points that work in tandem to inform instructional planning. The STEP Assessment remains robust in available data even if used without coding informed by the reading record.

Conclusion

The Science of Reading, or how to best teach reading, is not a new discussion. Most researchers recognize a continuum of approaches that exist between systematic phonics and whole language instruction. We believe phonics is essential, and students must be able to solve decodable words. We also are aware that not all words are decodable. Therefore, students require a variety of strategies to assist them in both word

identification and meaning-making. Good readers attend both to the text and its meaning. Thus, students need to utilize phonics skills for word identification and context for comprehension.

Fundamentally, we believe that accurate reading and meaning are dependent on one another, and we support teaching various strategies that uphold this belief. We hope this document validates your choice in using STEP and confirms that it is grounded within the field of literacy research, which includes the Science of Reading.

We continuously strive towards improving outcomes with partner schools. We value you, your work with your students, and welcome feedback at any time. To connect with us, email step-partnerships@lists.uchicago.edu.

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