CAEP is creating this resource for EPPs to provide a basic resource on the science of reading. Many states have enacted literacy or SoR requirements as part of state requirements. Although SoR is not explicitly required in CAEP standards, a resource guide on standards alignment and possible evidence design can support EPPs in creating data efficiencies.

The Science of Reading: The Basics

a resource guide for educators

Literacy Alarm

There is currently a literacy crisis happening in the U.S. According to the National Literacy Institute, the United States currently ranks 36th in literacy - 54% of adults have literacy below the 6th grade level and 20% are below 5th grade level. These are alarming statistics that highlight a significant literacy challenge in the United States.

The National Assessment of Education Progress (NAEP 2022), "the nation's report card," showed that only 33% of fourth-grade students nationwide performed at or above the NAEP's "proficient" level for reading in 2022. This represents a decline from 2019 and is a significant concern for educators and policymakers. For marginalized students, the numbers are much worse: just 17% of Black students, 21% of Latino students, 11% of student with disabilities, and 10% of multilingual learners can read proficiently by fourth grade.

Research suggests that over 90% of children could learn to read if their teachers used instructional methods based on the science of reading. But in schools across the country, many students — especially students of color, students from low-income backgrounds, multilingual learners, and students with disabilities — are not yet skillful readers.

Literacy is one of the major civil rights issues of our time, and our children's future depends on us addressing it now. (The Education Trust)

National Conversation

Emily Hanford, a senior correspondent and producer for American Public Media, has reported on the subject of reading deficiencies among Americans for years.

Hanford's ***Sold a Story***, an investigative journalism project that delves into the crisis of reading instruction in the United States, sparked a national conversation about the importance of evidence-based reading instruction and inspired many educators, parents, and policymakers to demand change. The podcast, hosted by Emily Hanford, exposed how a flawed approach to teaching reading has been widely adopted in schools, leading to devastating consequences for millions of children.

The Nation's Report Card. NAEP Report Card: 2022 NAEP Reading Assessment. Retrieved July 30, 2024 from https://www.nationsreportcard.gov/highlights/reading/2022/

The Reading League. *Science of Reading Defining Guide* retrieved on July 30, 2024 from https://www.thereadingleague.org/wp-content/uploads/2022/03/Science-of-Reading-eBook-2022.pdf

National Literacy Institute. Literacy Statistics 2024-2025 (Where we are now). Retrieved July 30, 2024 from https://www.thenationalliteracyinstitute.com/post/literacy-statistics-2024-2025-where-we-are-now#:~:text=21%25%20of%20adults%20in%20the,below%205th%2Dgrade%20level

Want to listen to the Podcast?
Sold a Story: A Critical Look at Reading Instruction

Key findings and arguments from the podcast include:

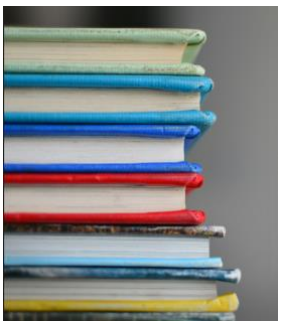
- **The science of reading is clear:** There's a strong body of scientific evidence supporting explicit phonics instruction as the foundation for teaching children to read.
- **A flawed approach:** Many schools have adopted methods that prioritize whole language and balanced literacy, which often lack the systematic phonics instruction necessary for struggling readers.
- **The impact on children:** Millions of children are not learning to read proficiently, and this has far-reaching consequences for their education, careers, and overall well-being.
- **The role of publishers:** The podcast also examines the role of educational publishers in promoting and profiting from ineffective reading programs.

Socol, Allison Rose. (2024, January 17). *The Literacy Crisis in the U.S. is Deeply Concerning and Totally Preventable.* Retrieved July 30, 2024 from The Literacy Crisis in the U.S. is Deeply Concerning—and Totally Preventable - The Education Trust (edtrust.org)

Maughan, Shanna. (2024, August 2) *Reading Reckoning: Inside the Debates Over Literacy Methods.* Retrieved July 30, 2024 from Reading Reckoning: Inside the Debates Over Literacy Methods (publishersweekly.com)

Learning to Read

Reading is a complex skill that requires explicit instruction. It involves decoding written symbols, understanding the relationship between



sounds and letters, and comprehending the meaning of the text. While exposure to books and language-rich environments are crucial for developing a love of reading, they **alone** are not enough to teach a child how to read.

While humans are naturally predisposed to language, reading is a learned skill that requires explicit instruction. Direct instruction in **phonics**, **phonemic awareness**, **vocabulary**, and **comprehension** strategies is crucial for most children to become proficient readers.

In adults, reading is automatized. We no longer realize how difficult it is. We have an illusion of whole-word reading. The brain, however, still processes every letter. Whole word reading is a myth. Children require slow, serial, letter by letter decoding. In time this goes away and gives the illusion of whole word reading.

How the Brain Learns to Read - Prof. Stanislas Dehaene.

Find out what brain science can bring to education by watching the first 15 minutes.

Breaking the Code

That phrase refers to the process of understanding the relationship between written symbols and spoken language. It might seem obvious to us as readers, but for someone learning to read, it's a complex puzzle to solve.

Here's why reading is like breaking a code:

- **Symbols and Sounds:** Letters on a page don't inherently represent sounds. We have to learn that the squiggly line "a" makes a particular sound, and the combination "b" "a" "t" makes a different sound entirely.

- **Mapping and Decoding:** Learning to read involves mapping those written symbols (letters) to the sounds they represent (phonics). This allows someone to decode new words they haven't seen before.

- **Unlocking Meaning:** Once the code is broken, the symbols become more than just squiggles – they unlock the meaning held within the text.

So, the "code" refers to the system that connects written symbols with spoken language. Learning to read is about figuring out this system and using it to gain meaning from written words.

Reading is Rocket Science

The phrase "reading is rocket science" is often used to emphasize the complexity and importance of understanding how to teach reading effectively. While it's not literally as complex as rocket science, it does require a sophisticated understanding of how children learn to read and the best practices for teaching it.

Here's why:

- **Decoding complexity:** Reading involves deciphering written symbols (letters) and connecting them to spoken sounds (phonemes). This process is not intuitive and needs to be taught. Learning to read involves a deep understanding of language, phonics, phonemic awareness, vocabulary, and comprehension. These interconnected skills require careful consideration and instruction.
- **Alphabetic principle:** Understanding that letters represent sounds and that these sounds combine to form words is a complex concept that must be learned.
- **Comprehension:** Even after decoding, readers must interpret the meaning of the text, which requires background knowledge and cognitive skills.
- **Importance:** Reading is a foundational skill for success in school and life. A strong foundation in reading is essential for learning in all subjects.

What is the Science of Reading?

The science of reading refers to a collection of research from various fields that explores how people learn to read, why some people might struggle with reading, and how to best teach reading. The science of reading is a vast, interdisciplinary body of scientifically-based research about reading and issues related to reading and writing.

The science of reading is basically a giant body of research on how people learn to read, informed by different fields like psychology, cognitive science, and even neuroscience. It isn't just one study, but a collection of evidence built up over decades and across many languages.

Video from The University of Florida Literacy Institute – **What is the Science of Reading**

The science of reading draws on various disciplines to uncover the cognitive and neurological processes involved in reading including -

- Education
- Cognitive Psychology
- Developmental Psychology
- Linguistics
- Neuroscience

The science of reading has culminated in a preponderance of evidence to inform how proficient reading and writing develop; why some have difficulty; and how we can most effectively assess and teach and therefore, improve student outcomes.

This research has helped to identify the critical skills and strategies that readers need to become proficient, including **phonemic awareness**, **phonics**, **vocabulary**, **fluency**, and **comprehension**.

Here are some key things to know about the science of reading:

- **Goal: Effective Reading Instruction:** The science of reading aims to identify the most effective methods to teach people how to read, including those with reading difficulties.

- **Focus on Foundational Skills:** This research highlights the importance of foundational skills like phonemic awareness, phonics, fluency, vocabulary, and comprehension for reading success.

- **Not a Specific Program:** It's important to remember that the science of reading isn't a single program you can buy, but rather a data-driven approach to teaching reading informed by research.

A Brief Dictionary

Phonemic Awareness: Phonemic awareness is the ability to recognize and manipulate the sounds, or phonemes, of spoken words. Phonemes are the smallest units of sound in a word, and are different from letters. For example, the word "cat" has three phonemes: /c/, /a/, and /t/.

Phonics: Phonics is a method for teaching reading and writing to beginners. Phonics involves matching the sounds of spoken English with individual letters or groups of letters. For example, the sound k can be spelled as c, k, ck or ch. Teaching children to blend the sounds of letters together helps them decode unfamiliar or unknown words by sounding them out. To use phonics is to teach the relationship between the sounds of the spoken language (phonemes) and the letters (graphemes) or groups of letters or syllables of the written language. Phonics is also known as the alphabetic principle or the *alphabetic code*.

Fluency: Fluency is the ability to read words, phrases, sentences, and stories correctly - with enough speed and expression. Text or passage reading fluency is generally defined as having three components: accuracy, rate, and prosody (or expression).

Vocabulary: Vocabulary is knowing what words mean and how to say and use them correctly. A vocabulary is the set of words in a given language that an individual knows and uses.

Comprehension: Comprehension is the ability to understand what you are reading. Reading comprehension is the ability to read text, process it, and understand its meaning.

The Science of Reading IS

- An approach to teaching reading based on decades of research and evidence that is ever evolving.
- Methods that confirm and disconfirm theories on how children best learn to read.
- Teaching based on these 5 big ideas or pillars:
    - Phonemic Awareness
    - Phonics
    - Fluency
    - Vocabulary
    - Comprehension

The Science of Reading IS NOT

- An ideology
- Philosophy
- Pendulum Swing
- A political agenda
- Fad or Trend
- A ones-size-fits-all approach
- A brand-new idea
- A single, specific component of instruction
- A program, an intervention, or a product you can buy

Examples of instructional practices aligned with findings from the scientific evidence base	Examples of instructional practices NOT supported by scientific evidence
○ Phonemic awareness and letter instruction: Instruction in the identification of phonemes in spoken words and how they link to letters.	○ Emphasis on larger units of speech (syllables, rhyme, onset-rime) rather than individual phonemes.
○ Explicit and systematic instruction in how to decode (read) and encode (spell) words, including word part analysis (e.g., syllables, morphemes).	○ Implicit and incidental instruction in word reading, visual memorization of whole words, guessing from context, and picture cues.
○ Connected text reading to build reading accuracy, automaticity, fluency, and comprehension.	○ Emphasis on speed or words per minute over accuracy when reading texts (practiced with reading of patterned texts or sustained silent reading for all students)
○ Read-alouds from a variety of complex texts to build knowledge and vocabulary.	○ Read-alouds from leveled texts that students will be reading so that text is not sufficiently complex
○ Robust conversations to develop students' academic language (e.g., narrative and inferential language).	○ A lack of explicit instruction of morphology, memorization of isolated words and definitions out of context, and a lack of strategic and intentional instruction.
○ Explicit instruction in grammatical structures and academic vocabulary within the context of other reading activities	○ Implicit instruction of grammatical structures.

Science of Reading State Legislation

As of April 2024, thirty-eight (**38**) states and the District of Columbia have passed laws and policies on evidence-based reading practices in schools. These include requirements regarding instructional materials, coaching and professional development, teacher certifications, and assessments and interventions.

The legislative movement gained steam after Mississippi passed a series of laws, starting in 2013, that overhauled the state's approach to teaching reading and preparing future reading teachers. In 2019, Mississippi saw its students' reading scores improve on the National Assessment of Educational Progress. The goal is to improve reading outcomes for students, particularly those at risk of reading difficulties.

Here's a brief overview of common legislative actions:

- **Teacher Training:** Mandating professional development for teachers in the science of reading, ensuring they have the knowledge to implement effective instruction
- **Mandated coursework**: Requiring specific coursework in the science of reading for teacher candidates.
- **Professional development**: Mandating ongoing professional development for faculty in teacher preparation programs regarding the science of reading
- **Program review**: Implementing processes to review and potentially revise existing teacher preparation programs to incorporate the science of reading.
- **Curriculum alignment**: Ensuring teacher preparation programs adopt curricula aligned with evidence-based reading instruction. Legislation often requires schools to adopt evidence-based reading programs and materials aligned with the science of reading principles.

Sources

Schwartz, Sarah. (2024, January 24). *Which States Have Passed 'Science of Reading' Laws? What's in Them? Education*Week. Retrieved July 30, 2024 from **https://www.edweek.org/teaching-learning/which-states-have-passed-science-of-reading-laws-whats-in-them/2022/07**

Here you can find an **Interactive State Map** to find descriptions of state-level policy adoption, guidance, and practices related to the science of reading. State policy may include legislation incorporating training or practices related to the science of reading or state education agency guidance regarding policy, professional development, curricula, instruction, or assessment.

The Reading League. Policymakers and State Education Agencies. Retrieved July 30, 2024 from **https://www.thereadingleague.org/compass/policymakers-and-state-education-agencies/**

- **Instructional Materials**: Requiring schools to adopt instructional materials that are explicitly aligned with the Science of Reading.
- **Intervention:** Focusing on early identification of reading difficulties (screening) and providing targeted Early support for struggling readers.
- **Accountability:** Including measures to assess the effectiveness of reading instruction and hold schools accountable for student outcomes.

Education Commission of the States (ECS) State Policy Database, retrieved [date]July 30. 2024 from State Legislation: Reading/Literacy

The Role of the Science of Reading on Teacher Preparation

Teacher preparation programs can play a pivotal role in ensuring that all children have the opportunity to become proficient readers.

Teacher preparation programs can equip future teachers with the knowledge and skills necessary to effectively teach reading and address the needs of all students.

Preparation programs need to ensure that:

- All teacher candidates possess a deep understanding of the science of reading.
- Birth to K and Elementary teacher candidates have a thorough grasp of the five essential components: **phonemic awareness**, **phonics**, **fluency**, **vocabulary**, and **comprehension**.
- Teacher candidates learn the impact of explicit, systematic instruction in foundational subjects like reading.
- Teachers are equipped to address the diverse needs of learners, including those with dyslexia or other learning differences.
- Teachers understand how to use assessments to inform instruction, monitor student progress, and make data-driven decisions.
- Teachers need practical experience applying science of reading principles in real classrooms.

Challenges

- **Curriculum Gaps:** Research suggests that a gap exists between what teachers are learning and the most effective methods for teaching reading. Updating teacher prep programs to incorporate the science of reading may require significant curriculum revisions and faculty training.
- **Shifting Practices:** Integrating the science of reading may require changes to how teachers are prepared. There is a need to focus on explicit phonics instruction and the foundational skills for reading success.
- **Faculty Training:** Some teacher educators may not be fully versed in the science of reading. This creates a need for professional development to ensure that they can effectively train future teachers.
- **Legislation:** Implementing science of reading legislation presents a complex set of challenges for preparation programs, school districts, and educators.

Opportunities

- **Collaboration with schools:** Partnerships between teacher preparation programs and schools can provide valuable opportunities for student teaching and mentoring.
- **Improved Instruction:** Teacher preparation programs can equip educators with the knowledge and skills to deliver evidence-based reading instruction. This can lead to better outcomes for students.
- **Improved Student Outcomes:** Teachers equipped with knowledge of effective reading practices can lead to better outcomes for students, particularly struggling readers. A focus on foundational skills can create a more solid base for all students.
- **Targeted Supports:** Understanding the science of reading allows teachers to tailor their instruction to meet the individual needs of their students, ensuring they receive the most effective support.
- **Continuing education:** Offering ongoing professional development for teachers to stay current on research and best practices is essential.

Sources:

The Reading League. *The Role of Educator Preparation Programs in Preparing Teachers in THE SCIENCE OF READING*. Retrieved July 30, 2024 from **https://www.thereadingleague.org/wp-content/uploads/2023/09/TRLC-EPP-The-Role-of-Educator-Preparation-Programs-in-Preparing-Teachers-in-The-Science-of-Reading.pdf**

National Council on Teacher Quality. Teacher Prep Review: Reading Foundations. Retrieved on July 30, 2024 from **https://www.nctq.org/review/standard/Reading-Foundations**

EPP Approval Review

InTASC Standards

The INTASC standards outline the knowledge and skills expected of effective teachers across various grade levels and subjects.

The science of reading and the INTASC standards (Model Core Teaching Standards) for teachers actually complement each other quite well. The science of reading provides a strong foundation for several INTASC standards, particularly those related to planning, instruction, content knowledge, and assessment. By understanding the science of reading, teachers can:

- **Design effective instruction:** Use research-proven methods to teach foundational skills like phonemic awareness, phonics, fluency, vocabulary, and comprehension.
- **Meet diverse learner needs:** Tailor instruction to address the specific needs of struggling readers or advanced readers.
- **Continuously improve their practice:** Stay informed about the latest research on reading acquisition and adapt their teaching accordingly.

When undergoing an approval review, teacher preparation providers can demonstrate that their programs are aligned with the science of reading. This requires presenting compelling evidence that their graduates are well-prepared to teach reading effectively.

Here are some key areas of evidence that can be considered:

- **Learner Development and Learner Differences (Standards 1 and 2):** Understanding how students learn, including the different ways children acquire reading skills.
    - Evidence that courses on reading development incorporate research from the science of reading.
    - Demonstration of how the program prepares teachers to provide differentiated instruction to meet the needs of diverse learners.
    - Evidence that teacher candidates tailor instruction to address the specific needs of struggling readers or advanced readers.
    - Evidence that teacher candidates understand the purposes, strengths, limitations, reliability/validity, and appropriateness of various types of informal

and formal assessments, including screening, progress monitoring, diagnostic, and outcome assessments, for gathering evidence on students' language acquisition and literacy development.

- **Content Knowledge (Standard 4):** Having a deep understanding of the subject matter, in this case, the science of reading and its principles.
    - Courses on reading development, methods, and assessment that incorporate research from the science of reading.
    - Evidence that the curriculum includes explicit and systematic instruction in phonemic awareness, phonics, fluency, vocabulary, and comprehension.
    - Analysis of teacher candidate reading assessment data (e.g., PRAXIS) if reading is a key assessment.
- **Application of Content (Standard 5):** Being able to translate that knowledge into effective teaching practices, like using explicit phonics instruction.
    - Evidence that teacher candidates use research-proven methods to teach foundational skills like phonemic awareness, phonics, fluency, vocabulary, and comprehension.
    - Evidence that field experiences provide opportunities for teacher candidates to observe and practice teaching reading using science of reading principles.
    - Documentation of mentorship programs that support candidates in developing their reading instruction skills.
- **Assessment (Standard 6):** Understanding and using multiple methods of assessment to engage learners in their own reading growth, to monitor learner progress, and to guide the teacher's and learner's decision making.
    - Evidence that teacher candidates understand the purposes, strengths, limitations, reliability/validity, and appropriateness of various types of informal and formal assessments, including screening, progress monitoring, diagnostic, and outcome assessments, for gathering evidence on students' language acquisition and literacy development.
    - Evidence that teacher candidates can use assessment data to identify struggling readers.

- Evidence that teacher candidates can use reading assessment data to monitor student progress, inform instruction, and develop support strategies for struggling readers.

- Evidence that teacher candidates can use data to evaluate reading program effectiveness.

- **Planning for Instruction (Standard 7):** Designing lessons that are aligned with the science of reading and target specific reading skills.

    - Documentation that teacher candidates use research-proven methods to design lessons that teach foundational skills like phonemic awareness, phonics, fluency, vocabulary, and comprehension.

    - Documentation of the use of research-based reading strategies and interventions in lesson planning, instruction, and observations.

    - Evidence that teacher candidates can use data on student outcomes, including reading assessments, to evaluate the effectiveness of their curriculum and make adjustments based on research from the science of reading.

- **Instructional Strategies (Standard 8):** Implementing a variety of evidence-based strategies based on the science of reading, such as phonemic awareness activities and fluency practice.

    - Documentation of the use of research-based reading strategies and interventions.
        - Lesson Plans
        - Notebook of strategies
        - Evaluations/ Observations
        - Videotapes of small group reading instruction
        - Portfolio
        - Reading assessment data

- **Professional Learning and Ethical Practice (Standard 9): Staying** up-to-date on research like the science of reading and incorporating it into teaching practice.

    - Evidence that teacher candidates can evaluate the effectiveness of curriculum.

    - Documentation of school-based reading professional development for candidates during student teaching.

    - Documentation that teacher candidates stay informed about the latest research on reading acquisition and adapt their teaching accordingly.

- Offering ongoing professional development for teachers (and faculty) to stay current on research and best practices.

The Takeaway:

Overall, the science of reading is driving a positive shift in teacher preparation program standards. By focusing on evidence-based practices and foundational skills, programs can equip future teachers with the tools they need to ensure all students become successful readers.

- **Emphasis on Foundational Skills:** Standards are increasingly emphasizing the importance of preparing teachers to explicitly teach foundational skills like phonemic awareness, phonics, fluency, vocabulary, and comprehension. These skills are recognized as crucial building blocks for reading success according to the science of reading.

- **Evidence-Based Practices:** Standards are calling for teacher prep programs to ensure graduates have a strong understanding of research-based practices aligned with the science of reading. This might include methods for explicit phonics instruction, differentiated instruction for struggling readers, and effective assessment practices.

- **Alignment with Assessments**: Some states are developing reading assessments that align with the science of reading. Teacher preparation programs may need to adjust their curriculum to ensure graduates can effectively teach the skills assessed on these tests.

The 2018 CAEP Standards for K-6 Elementary Teacher Preparation Programs for Initial Licensure

The Council for Accreditation of Educator Preparation offers this set of educator preparation standards to outline what completers graduating from a K-6 elementary educator preparation program should know and be able to do by the end of their preparation program. *The Council for the Accreditation of Educator Preparation (CAEP) 2018 K-6 Elementary Teacher Preparation Standards* provide a framework for effective teacher education programs. Aligning these standards with the science of reading is necessary to prepare teachers who can help students develop strong literacy skills.

The complete document including standard statements, component statements, supporting explanations for each standard and component, rubrics for each component, and assessment evidence guidelines for the standards and components can be found **HERE**.

STANDARD 1 – Understanding and Addressing Each Child's Developmental and Learning Needs

Candidates use their understanding of child growth and development, individual differences, and diverse families, cultures and communities to plan and implement inclusive learning environments that provide each child with equitable access to high quality learning experiences that engage and create learning opportunities for them to meet high standards. They work collaboratively with families to gain a holistic perspective on children's strengths and needs and how to motivate their learning.

Components

1.a – Candidates use their understanding of how children grow, develop and learn to plan and implement developmentally appropriate and challenging learning experiences within environments that take into account the individual strengths and needs of children.

1.b – Candidates use their understanding of individual differences and diverse families, cultures, and communities to plan and implement inclusive learning experiences and environments that build on children's strengths and address their individual needs.

1.c – Candidates work respectfully and reciprocally with families to gain insight into each child in order to maximize his/her development, learning and motivation.

- **Alignment to SOR:** The science of reading emphasizes the importance of understanding how children learn to read. This standard requires teachers to have knowledge of child development, including cognitive, social, and emotional factors that influence learning (InTASC Standard 1). The science of reading recognizes that students come from diverse backgrounds and may have varying needs. This standard requires teachers to be aware of individual differences and to create inclusive learning environments.
- **Implementation:** Teacher preparation programs should ensure that candidates understand the stages of reading development, including phonological awareness, phonics, fluency, vocabulary, and comprehension. Programs should emphasize the importance of differentiated instruction and culturally responsive teaching practices.
- **Questions:**
    - Do teacher candidates have the ability to tailor instruction to address the needs of struggling or advanced readers?
    - Can teacher candidates identify and address the needs of struggling readers including those with dyslexia and other learning disabilities?

STANDARD 2 – Understanding and Applying Content and Curricular Knowledge for Teaching

Candidates demonstrate and apply understandings of major concepts, skills, and practices, as they interpret disciplinary curricular standards and related expectations within and across literacy, mathematics, science, and social studies.

Components

2.a – Candidates demonstrate and apply understandings of the elements of literacy critical for purposeful oral, print, and digital communication.

2.b - Candidates demonstrate and apply understandings of major mathematics concepts, algorithms, procedures, applications and mathematical practices in varied contexts, and connections within and among mathematical domains.

2.c – Candidates demonstrate and apply understandings and integration of the three dimensions of science and engineering practices, cross-cutting concepts, and major disciplinary core ideas, within the major content areas of science.

2.d - Candidates demonstrate understandings, capabilities, and practices associated with the central concepts and tools in Civics, Economics, Geography, and History, within a framework of informed inquiry.

- **Alignment to SOR:** Teacher preparation programs ensure that candidates understand the stages of reading development, including phonological awareness, phonics, fluency, vocabulary, and comprehension. Teacher candidates develop a deep understanding of how children learn to read. This standard requires teachers to have a deep understanding of the subject matter, in this case, the science of reading and its principles (InTASC Standard 4).

- **Implementation:** Teacher preparation programs ensure that candidates understand the stages of reading development, including phonological awareness, phonics, fluency, vocabulary, and comprehension.

- **Questions:**
    - Do teacher candidates understand the principles and practices of SOR?
    - Can teacher candidates apply their knowledge of SOR to examine and evaluate literacy curriculum?
    - Can teacher candidates demonstrate that learning to read requires explicit and structured instruction?
    - Can teacher candidates integrate literacy skills across subject areas?

STANDARD 3 – Assessing, Planning, and Designing Contexts for Learning

Candidates assess students, plan instruction and design classroom contexts for learning. Candidates use formative and summative assessment to monitor students' learning and guide instruction. Candidates plan learning activities to promote a full range of competencies for each student. They differentiate instructional materials and activities to address learners' diversity. Candidates foster engagement in learning by establishing and maintaining social norms for classrooms. They build interpersonal relationships with students that generate motivation, and promote students social and emotional development.

Components

3.a – Candidates administer formative and summative assessments regularly to determine students' competencies and learning needs.

3.b – Candidates use assessment results to improve instruction and monitor learning.

3.c – Candidates plan instruction including goals, materials, learning activities and assessments.

3.d – Candidates differentiate instructional plans to meet the needs of diverse students in the classroom.

3.e – Candidates manage the classroom by establishing and maintaining social norms and behavioral expectations.

3.f – Candidates explicitly support motivation and engagement in learning through diverse evidence-based practices.

- **Alignment to SOR:** The science of reading emphasizes the importance of ongoing assessment to monitor student progress and adjust instruction accordingly (InTASC Standard 6). This standard requires teachers to be skilled in assessment and instructional planning.

- **Implementation:** Teacher preparation programs can provide candidates with training in formative and summative assessment techniques. Candidates also learn how to develop and implement effective reading instruction plans that are aligned with the science of reading.

- **Questions:**
    - Do teacher candidates understand the purposes, strengths, limitations, reliability/validity, and appropriateness of various types of informal and formal assessments, including screening, progress monitoring, diagnostic, and outcome assessments, for gathering evidence on students' language acquisition and literacy development?

- Can teachers use student data to offer personalized interventions and accommodations to help struggling readers overcome challenges and achieve success?
- Do teacher candidates have the ability to tailor instruction to address the needs of struggling or advanced readers?

Standard 4 – Supporting Each Child's Learning Using Effective Instruction.

Candidates make informed decisions about instruction guided by knowledge of children and assessment of children's learning that result in the use of a variety of effective instructional practices that employ print, and digital appropriate resources. Instruction is delivered using a cohesive sequence of lessons and employing effective instructional practices. Candidates use explicit instruction and effective feedback as appropriate, and use whole class discussions to support and enhance children's learning. Candidates use flexible grouping arrangements, including small group and individual instruction to support effective instruction and improved learning for every child.

Components

4.a – Candidates use a variety of instructional practices that support the learning of every child.

4.b – Candidates teach a cohesive sequence of lessons to ensure sequential and appropriate learning opportunities for each child.

4.c – Candidates explicitly teach concepts, strategies, and skills, as appropriate, to guide learners as they think about and learn academic content.

4.d – Candidates provide constructive feedback to guide children's learning, increase motivation, and improve student engagement.

4.e – Candidates lead whole class discussions to investigate specific content, strategies, or skills, and ensure the equitable participation of every child in the classroom.

4.f – Candidates effectively organize and manage small group instruction to provide more focused, intensive instruction and differentiate teaching to meet the learning needs of each child.

4.g – Candidates effectively organize and manage individual instruction to provide targeted, focused, intensive instruction that improves or enhances each child's learning.

- **Alignment to SOR:** Research from the science of reading emphasizes that reading is a complex skill that requires explicit instruction. Direct instruction in **phonics**, **phonemic awareness**, **vocabulary**, and **comprehension** strategies is crucial for most children to

become proficient readers. This standard requires teachers to use their knowledge of SOR to plan and deliver explicit reading instruction (InTASC Standards 7 and 8).

- **Implementation:** Teacher preparation programs can provide candidates with training in research based best practices in SOR. Teacher candidates are skilled in planning and delivering a cohesive sequence of lessons that are aligned with the science of reading. This standard requires teachers to Explicit and systematic instruction in how to decode (read) and encode (spell) words, including word part analysis.

    - **Questions:**
        - Are teacher candidates skilled in planning and delivering a cohesive sequence of lessons?
        - Do teacher candidates know and use a variety of instructional practices that support the learning of every child?

STANDARD 5- Developing as a Professional

Candidates promote learning and development of every child through participation in collaborative learning environments, reflective self-study and professional learning, and involvement in their professional community.

Components

5.a – Candidates work collaboratively with colleagues, mentors, and other school personnel to work toward common goals that directly influence every learner's development and growth.

5.b – Candidates design and implement professional learning activities based on ongoing analysis of student learning; self-reflection; professional standards, research and contemporary practices; and standards of ethical professional practice.

5.c - Candidates participate in peer and professional learning communities to enhance student learning.

- **Alignment to SOR:** The science of reading is a constantly evolving field. This standard requires teachers to be engaged in ongoing professional development to stay current with best practices (InTASC Standards 9 and 10).

- **Implementation:** Teacher preparation programs encourage candidates to participate in professional development activities related to the science of reading. Candidates also have opportunities to collaborate with experienced teachers and literacy experts.

- **Questions:**
    - Do teachers understand that the science of reading is a constantly evolving field?

- Will completers seek ongoing professional development and membership in their professional communities in order to improve their practice and advance the profession?

Cross-walk. The matrix below demonstrates a cross-walk where each X represents a potential source of direct assessment evidence of candidate ability to meet that K-6 Elementary Standard component. Multiple sources of evidence from different settings and grade levels provide stronger evidence that candidates meet the standard component.

	Assessment of Content	Assessment of Planning	Assessment of Student Teaching	Assessment of Impact on Learners	Assessments related to Families	Assessment of Professional Learning	Unspecified Assessment as needed
Standard 1 – Understanding and Addressing Each Child's Developmental and Learning Needs							
1.a		X	X	X			
1.b		X	X	X			
1.c			X		X		
Standard 2 – Understanding and Applying Content and Curricular Knowledge for Teaching							
2.a	X						
2.b	X						
2.c	X						
2.d	X						
Standard 3 – Assessing, Planning, and Designing Contexts for Learning							
3.a		X	X	X			
3.b		X	X	X			
3.c		X	X	X			
3.d		X	X	X			
3.e		X	X	X			
3.f		X	X	X			
Standard 4 – Supporting Each Child's Learning Using Effective Instruction							
4.a		X	X	X			
4.b		X	X	X			
4.c		X	X	X			
4.d		X	X	X			
4.e		X	X	X			
4.f		X	X	X			
4.g		X	X	X			
Standard 5 – Developing as a Professional							
5.a			X			X	
5.b						X	
5.d						X	

The Council for the Accreditation of Educator Preparation (CAEP)

CAEP does not explicitly mandate the science of reading in its EPP standards. However, teacher preparation programs can address the science of reading within the existing standards.

While CAEP doesn't dictate curriculum …….

- **Integrating Research:** Courses on reading development, methods, and assessment can incorporate research from the science of reading.

- **Modeling Effective Instruction:** Clinical placements can showcase teachers who effectively use evidence-based practices aligned with the science of reading.

- **Data-Driven Decisions**: Programs can use data on student outcomes, including reading assessments, to evaluate the effectiveness of their curriculum and make adjustments based on research from the science of reading.

CAEP Standards and Evidence-Based Practices:

By providing robust evidence in these areas, teacher preparation providers can demonstrate that their programs are effectively preparing teachers to implement evidence-based reading instruction and ensure that students develop strong literacy skills.

- **Standard 1: Content and Pedagogical Knowledge:** This standard requires programs to ensure completers have strong knowledge of the subject matter they will teach, which can include the science of reading for reading specialists and elementary teachers.

    - Teacher preparation programs can equip educators with the knowledge and skills to deliver evidence-based reading instruction. This can lead to better outcomes for students.

- **Standard 2: Clinical Partnerships and Practice:** This standard emphasizes providing teacher candidates with opportunities to practice effective instructional strategies during their clinical experiences. These strategies could be aligned with the science of reading.

    - Partnerships between teacher preparation programs and schools can provide valuable opportunities for student teaching and mentoring.

    - Partnerships between teacher preparation programs and schools can ensure that teacher candidates are ready to deliver evidence-based reading instruction.

    - Teachers equipped with knowledge of effective reading practices can lead to better outcomes for students, particularly struggling readers. A focus on foundational skills can create a more solid base for all students.

- **Standard 4: Program Impact:** This standard encourages programs to demonstrate the effectiveness of their graduates in improving student learning. Research on the science of reading can inform program design and assessment to ensure graduates are prepared to positively impact student reading outcomes.

    - Evidence of pre- and post-assessments that measure student progress in reading skills.

    - Data demonstrating student achievement in reading on standardized assessments and other measures.

    - Feedback from graduates on their preparedness to teach reading using evidence-based practices.

    - Feedback from school-based partners on candidate preparedness to teach reading using evidence-based practices.

Faculty Qualifications and Expertise
Faculty qualifications are a key component of program quality. Faculty play a crucial role in supervising and supporting candidate.

- **Specialized Knowledge:** Evidence that faculty members have specialized knowledge in the science of reading, including familiarity with key research studies and theories.

- **Professional Development:** Documentation of faculty participation in professional development related to the science of reading.

Program Evaluation and Improvement
Continuous improvement is a central theme throughout the CAEP standards.

- **Continuous Improvement:** Evidence of ongoing evaluation and improvement processes to ensure the program is aligned with the latest research and best practices in the science of reading.

- **Feedback Mechanisms:** Systems for gathering feedback from candidates, completers, faculty, and field supervisors to inform program improvements.

CAEP Advanced Standards

Leaders and support personnel play a crucial role in the success of Science of Reading (SoR) implementation. They provide the necessary infrastructure, resources, and guidance for teachers to effectively implement evidence-based practices. By working together, leaders and support personnel can create a supportive environment that enables teachers to effectively implement SoR principles and improve student outcomes. CAEP does not explicitly mandate the science of reading in the advanced standards. However, advanced preparation programs can address the science of reading within the CAEP Advanced-Level Standards.

Standard RA.1 Content and Pedagogical Knowledge

The provider ensures that candidates for professional specialties develop an understanding of the critical concepts and principles of their discipline and facilitates candidates' reflection of their personal biases to increase their understanding and practice of equity, diversity, and inclusion. The provider is intentional in the development of their curriculum for candidates to demonstrate their ability to effectively work with diverse P-12 students and their families.

Standard RA.2 Clinical Partnerships and Practice

The provider ensures that effective partnerships and high-quality clinical practice are central to preparation so that candidates develop the knowledge, skills, and professional dispositions appropriate for their professional specialty field.

Standard RA.3 Candidate Quality and Selectivity

The provider demonstrates that the quality of advanced program candidates is an ongoing and intentional focus so that completers are prepared to perform effectively and can be recommended for certification where applicable

Standard RA.4 Satisfaction with Preparation

The provider documents the satisfaction of its completers and their employers with the relevance and effectiveness of their preparation.

Standard RA.5 Quality Assurance System and Continuous Improvement

The provider maintains a quality assurance system that consists of valid data from multiple measures and supports continuous improvement that is sustained and evidence-based. The system is developed and maintained with input from internal and external stakeholders. The provider uses the results of inquiry and data collection to establish priorities, enhance program elements, and highlight innovations.

Leadership programs ensure that completers:

- Develop a clear vision for SoR implementation. Leaders have the ability to create a supportive culture that values professional development and evidence-based practices.
- Allocate the necessary resources, including time, budget, and materials, to support SoR initiatives. This may involve securing funding for professional development, purchasing high-quality instructional materials, and providing adequate staffing.

- Make certain that teachers and staff receive ongoing professional development in SoR principles and practices. This includes providing opportunities for training, coaching, and mentoring.
- Support the use of data to monitor student progress and inform instructional decisions. Leaders help teachers analyze assessment data to identify areas of need and adjust instruction accordingly.
- Foster collaboration among teachers, administrators, and other stakeholders to ensure effective communication and shared understanding of SoR principles.

Advanced programs ensure that support personnel can:

- Provide expertise in developing and implementing SoR-aligned curricula. They assist teachers in selecting appropriate instructional materials and designing effective lesson plans.
- Provide individualized support to teachers, offering guidance on classroom instruction, assessment, and differentiation. They can model effective teaching practices and provide feedback on classroom observations.
- Work with students who require additional support in reading and language skills. They provide targeted interventions to help students develop the foundational skills necessary for reading success.

Sources and Resources

The science of reading is a constantly evolving field. Staying up to date with the latest research is important. The resources below can give educators a good foundation for understanding its importance and how it can improve reading outcomes for all children.

Podcasts

At a Loss for Words: What's wrong with how schools teach reading? **https://www.apmreports.org/episode/2019/08/22/whats-wrong-how-schools-teach-reading**

Sold a Story: How Teaching Kids to Read Went So Wrong – An investigative podcast by Emily Hanford that explores how many children in the United States struggle to read proficiently despite years of schooling. This podcast has been influential in raising awareness about the importance of the science of reading in improving literacy education.

Books/Videos

Reading in the Brain: The New Science of How We Read by Stanislas Dehaene

Find out what brain science can bring to education by watching the first 15 minutes of: **How the Brain Learns to Read** - Prof. Stanislas Dehaene.

Speech to Print: Language Essentials for Teachers by Louisa Moats

Video from The University of Florida Literacy Institute – **What is the Science of Reading**

The Right to Read – this film shares the stories of an NAACP activist, a teacher, and two American families who fight to provide our youngest generation with the most foundational indicator of life-long success: the ability to read. The theme of the film promotes that "The Right to Read" is the greatest civil right issue of our time.

Websites

Reading Rockets – Reading Rockets is a national public media literacy initiative offering free, research-based information and resources on how young kids learn to read, why so many struggle, and how caring adults can help. This website offers practical advice and resources for educators on a variety of literacy topics, with a strong focus on the science of reading. There is a section

Reports/Guides

National Reading Panel *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction*

Teaching IS Rocket Science - This report, written by Louisa C. Moats (a teacher, psychologist, researcher, and professor who has been at the forefront of science-based reading instruction for five decades),

containing **reading and literacy research** available from the U.S. Department of Education including journals, associations, and education databases.

The Reading League is a nonprofit organization that promotes and supports evidence-aligned reading instruction for all educators and students. The Reading League **Resource page** provides books, resources, Curriculum Evaluation Guidelines, Decodable Text Sources, Science of Reading Defining Guide, Syllabi Refinement Consultants, Podcasts. **The Science of Reading: Defining Guide** (free ebook) provides a firm definition of what the science of reading is, what it is not, and how all stakeholders can understand its potential to transform reading instruction. The Reading League offers a free tool to evaluate your **school's reading curriculum**

National Center for Improving Literacy - This website offers a comprehensive overview of the science of reading, including its core principles, research findings, and implementation guides. The "**Science of Reading Basics**" section offers a great starting point for educators new to the topic.

The University of Florida Literacy Institute - The University of Florida Literacy Institute (UFLI – pronounced "you fly") is an ongoing effort by UF faculty and students to improve literacy outcomes for struggling students by addressing two key areas: reader development and teacher development.

National Council on Teacher Quality (NCTQ) Teacher Prep Review Standard – Reading Foundations updated September 2023 **https://www.nctq.org/review/standard/Reading-Foundations**

translates the latest reading research into

accessible language so that those of us who are not steeped in the pedagogy of reading can apply it to our own teaching and learning. It details what expert teachers of reading should know and be able to do.

The Science of Reading: The Basics This comprehensive overview from the National Center for Improving Literacy outlines the five key components of reading instruction based on the science of reading and provides resources for teachers.

National Council on Teacher Quality (NCTQ) **Five policy actions to strengthen implementation of the science of reading**

Journals:

Reading Research Quarterly: **Wiley Online Library** This is a peer-reviewed academic journal that publishes research on all aspects of reading development, including the science of reading. While some articles may be more technical, they offer valuable insights for educators interested in staying up-to-date on the latest research.

The Reading Teacher: **Wiley Online Library** This journal is published by the International Reading Association (IRA) and is a great resource for practical applications of the science of reading in the classroom. They often feature articles on evidence-based practices and classroom implementation.

Blogs:

Shanahan on Literacy - Dr. Timothy Shanahan is a prominent literacy researcher. His research emphasizes the connections between reading and writing, literacy in the disciplines, and improvement of reading achievement. You can find his blog **here**.

Free Coursework for Educators

Reading 101 Modules - Self Paced Learning Modules from Reading Rockets

THE COX CAMPUS Founded in 2014 following a generous grant from the James M. Cox Foundation, the Cox Campus online adult learning platform aims to provide free and open access to equity-based, IACET-accredited Science of Reading coursework, content, and professional learning across the learning continuum – prenatal through literacy. Cox Campus provides language and literacy resources to 280,000 members across all 50 states and in more than 80 countries globally at no cost.

The Rollins Center – a program of the Atlanta Speech School – develops expertise with educators, system leaders, families, and advocates in the sciences of healthy brain development, language, and literacy. **Cox Campus**, the Center's free, online learning community, offers accredited coursework, content, and community-building to educators, families, and healthcare providers.

- Interactive, video-based courses
- Hundreds of free printable resources
- Implementation guides & coaching
- Literacy resources for all child-facing professionals
- Tailored content for birth to 3rd grade teachers & families
- Tested and research-based practices
- Exclusive classroom and real-world scenario videos
- Certificates for completed training

Amplify

Amplify (**https://amplify.com**) is a company that creates high-quality programs for teaching and learning in STEM and literacy. Their **FREE Science of Reading principles download** offers a roadmap of the basic components required to develop a learning environment that supports each student's unique linguistic needs and nurtures early literacy.

Amplify – **The Science of Reading Podcasts**. These podcasts offers interviews with researchers and educators on the science of reading. There is also a YouTube channel - **https://www.youtube.com/user/Amplifyeducation/videos**

YouTube Channels

Amplify – **https://www.youtube.com/user/Amplifyeducation/videos**

Reading Rockets - **https://www.youtube.com/@ReadingRocketsLiteracy**

The Reading League - **https://www.youtube.com/c/TheReadingLeague**

The University of Florida Literacy Institute – **https://www.youtube.com/channel/UCxzUU3RmTSIYw_4Ylp_FWTg**

Leadership

Lexia. *Shifting to the Science of Reading: 5 Tips for Effective Instructional Leadership* Retrieved October 22, 2024 from https://www.lexialearning.com/blog/shifting-to-the-science-of-reading-5-tips-for-effective-instructional-leadership

Lexia. *How District Leaders Can Identify and Plan for Science of Reading District Solutions (Part 2)* Retrieved October 22, 2024 from https://www.lexialearning.com/blog/how-district-leaders-can-identify-and-plan-for-science-of-reading-district-solutions-part-2#:~:text=These%20experts%20can%20work%20one,reading%20into%20practical%20classroom%20strategies.

Churchill, Aaron. (2024, August 8) *Seven ways state leaders can rigorously implement the science of reading*. Retrieved October 22, 2024 from https://fordhaminstitute.org/national/commentary/seven-ways-state-leaders-can-rigorously-implement-science-reading#:~:text=3.,purchase%20of%20high%2Dquality%20materials.

Rhyne, Linda. (2024, April 9) *Why Leaders Must Learn the Science of Reading* Retrieved October 22, 2024 from ASCD Blog https://ascd.org/blogs/why-leaders-must-learn-the-science-of-reading

11/21/24