Overview of Science of Reading

Background and Rationale:
From the Indiana Department of Education: "During the 2023 legislative session the Indiana General Assembly enacted extensive legislation in HEA 1558 regarding implementation of curriculum and instructional practices grounded in the science of reading for students in grades pre-kindergarten through fifth grade" (IN DOE, January 2024).

Science of reading as defined in the state law HEA 1558:

SECTION 1. IC 20-18-2-17.5 IS ADDED TO THE INDIANA CODE AS A NEW SECTION TO READ AS FOLLOWS [EFFECTIVE JULY 1, 2023]: Sec. 17.5.
"Science of reading" means a vast, interdisciplinary body of scientifically based research that:
(1) requires the explicit, systematic inclusion of the following five (5) essential components:
(A) Phonemic awareness.
(B) Phonics.
(C) Fluency.
(D) Vocabulary.
(E) Comprehension;
(2) is supported by evidence that informs:
(A) how proficient reading and writing develop;
(B) why some students have difficulty with reading and writing; and
(C) how to effectively assess and teach reading and writing to improve outcomes for all students; and
(3) has a demonstrated record of success, and when implemented, leads to increased student competency in the areas of:
(A) phonemic awareness;
(B) phonics
(C) reading fluency;
(D) vocabulary development;
(E) oral language skills;
(F) reading comprehension; and
(G) writing and spelling.

Although IUB teacher education literacy courses have always provided comprehensive reading content (i.e., reading foundations knowledge and skills in phonemic awareness, phonics, fluency, vocabulary, and comprehension), in the past the science of reading content was integrated throughout the courses and was not presented in the required fixed sequence and for the prescribed amounts of time devoted to the five separate skill areas, as required by the new legislation. Additionally, in January 2024, the IN DOE adopted the Praxis Teaching Reading: Elementary 5205 test, which contains advanced foundational content that previously was only offered to reading addition students training to be reading specialists.

All Indiana University literacy and special education courses, field experiences, and student teaching must teach only state-approved science of reading methods.

- Teacher candidates' abilities to teach phonemic awareness, phonics, fluency, vocabulary, comprehension, writing, and assessment will be tested on the reading test that teachers must pass to be licensed in the state of Indiana.
- IUB programs will be evaluated through classroom observations of student teachers during an on-site campus visit by TPI-US, the state-appointed science of reading company conducting the science of reading evaluations.

State-Prohibited Content Contrary to Science of Reading

Under the new legislation, IUB instructors and supervisors cannot refer to or recommend the following methods which have been specifically prohibited in the HEA 1558 state law:

- Three-cueing systems
- Running records
- Miscue analysis
- Balanced literacy models
- Guided reading
- Reading workshop
- Leveled texts
- Embedded/implicit phonics
- Developmental Reading Assessment (DRA), Informal Reading Inventory (IRI), or Qualitative Reading Inventory (QRI)

Teaching Science of Reading

As of Fall 2024, all IUB literacy and special education coursework is aligned with the science of reading. Courses provide intensive preparation on science of reading features*:

* The following descriptors are excerpted from Indiana Department of Education High-Quality Curricular Materials criteria. These curriculum selection criteria provide descriptors for systematic and data-based instruction as well as Science of Reading components content knowledge. https://www.in.gov/doe/students/high-quality-curricular-materials-advisory-lists/

Systematic and Sequential Explicit Direct Instruction

All grade levels (or comprehensively within the school system) include a clear and consistent instructional framework that is **systematic and sequential.** The framework has a comprehensive **scope and sequence** and content that includes a direct order in which skills are presented and allow for continued practice to build automaticity, skills building from the simple to more complex, and how knowledge and skills build and connect across grade levels.

Explicit teacher language…, including concise and specific teacher language to introduce, define, or explain new skills through demonstration and modeling before students are asked to practice new skills.

Support for Multilingual Learners and Special Reading Needs

Includes Dylexia and Team-based Decision-Making in Multiple Tiers Systems of Support

Differentiated support to meet the needs of all students including, but not limited to, students with special learning needs and English learners (e.g., linguistic scaffolds).

Data-based Assessment to Drive Instruction

Formative assessments (e.g., classroom-based assessments, unit assessments, lesson-based summative) are included within the instructional framework to continuously monitor progress and identify the skill level and needs of each student (e.g., assessments in students' home language when possible).

Five Essential Components, Plus Writing

Based on research in the **five essential components** for reading instruction: phonemic awareness, phonics, fluency, vocabulary, and comprehension.

Note: Materials cannot encourage three-cueing. MSV[1] cues or visual memory for word recognition or curriculum will be disqualified for approval.*

[1] MSV refers to the three-cueing model of reading that uses meaning drawn from the context, pictures, or syntax as the primary basis for teaching word recognition.

Science of Reading Essential Components

(1) Phonemic Awareness

Instruction provides practical application of taught skills and is provided in a systematic, explicit, and teacher-directed model, including simple and complex phonological awareness tasks (e.g., recognizing rhyming words, clapping syllables, and blending and segmenting); conversations include the way sounds are made in the mouth (i.e., how the articulatory gestures of air flow, tongue and lip placement, vocal cord voicing are happening).

(2) Phonics

Specific lessons include the following features within the comprehensive curriculum across grade levels: explicit, systematic, and sequential instruction progresses from simple to more complex sound–spelling patterns and word analysis skills. Lessons include repeated modeling and opportunities for students to hear, say, write, and read sound and spelling patterns (e.g., sounds, words, sentences, reading within text); letter-sound correspondences are taught from simple to complex; phonics skills are practiced by applying phoneme-grapheme knowledge in decodable texts that match the phonics elements taught, securing phonic decoding; instruction focuses students' attention to the structure of the word; the sequence of **advanced word study includes** all six syllable types, morphemes, and etymological influences (i.e., word origins); decoding and encoding high-frequency words is taught by attending to sound-symbol associations and not by memorizing whole words; and phonetically irregular high-frequency words are taught by identifying the regularly-spelled part and the irregularly-spelled part explicitly taught through decoding and encoding.
Note: …cannot encourage three-cueing, MSV cues, or visual memory for word recognition.

(3) Fluency

Specific lessons include the following features within the comprehensive curriculum across grade levels: instruction includes teacher-led modeling, oral reading by students, and immediate feedback; opportunities exist for students to practice reading fluency using controlled texts; fluency emphasizes reading accuracy and automaticity; skills are practiced in a variety of texts (e.g., narrative, informational, poetry, lists); and instruction explicitly acknowledges that automaticity with decoding is a necessary foundation for effective reading comprehension.

(4) Vocabulary

Specific lessons align to **oral language development and oral language use** and include the following features within the comprehensive curriculum across grade levels: demonstrate knowledge through analysis and synthesis of texts, present claims and clear information using grade-level language and conventions and draw on textual evidence to support valid inferences from a text; emphasize the relationship between oral language and written language through explicit instruction that progress from speech to print through a focus on phonetics and phonology,

orthography, (e.g., decoding and encoding based on predictable word patterns) syllables, morphology, semantics, syntax, and pragmatics; the development of oral comprehension and oral language is provided as a foundational skill; and activities support the foundation for reading comprehension built through rich read-aloud experiences (for students who are still learning decoding).

Specific lessons align to **vocabulary** and include the following features within the comprehensive curriculum across grade levels: …frequent opportunities and protocols for evidence-based discussions (e.g., small group, peer-to-peer, whole class) that encourage the modeling and use of academic vocabulary; lessons are organized around a topic or topics to build students' vocabulary and support students' ability to comprehend complex texts independently and proficiently; instruction is explicit and includes vocabulary for Tier 2 and 3 words, as well as instruction in the context of texts (most Tier 1 words); instruction emphasizes robust conversations to support an understanding of literal and inferential comprehension of word knowledge within a text; and explicit instruction in morphology is provided; activities are provided that make connections between a new word or concept and other known words or concepts, relating ideas to experiences.

(5) Comprehension

Specific lessons align to **reading comprehension** and include the following features within the comprehensive curriculum across grade levels: activities are provided that make connections between a new word or concept and other known words or concepts, relating ideas to experiences; texts are organized around a topic or topics to build students' knowledge; a progression of focused research and writing projects are included to develop knowledge and understanding of a topic using texts and other source materials; and inferencing is explicitly taught within text, including opportunities for metacognition and use of appropriate and accurate background knowledge.

Specific lessons align to **reading comprehension** and include the following features within the comprehensive curriculum across grade levels: a foundation for reading comprehension is built through rich read-aloud experiences to develop background knowledge and vocabulary in subject areas (e.g., science and history); texts that are **appropriately complex** for the identified grade level according to the requirements outlined in the Indiana Academic standards are provided; a **text analysis** that provides complexity information is included; measures for determining complexity include quantitative and qualitative analysis, as well as reader and task considerations; include **read-aloud** texts that allow sufficient opportunity for engagement with more complex texts than students could read themselves; texts are organized around a topic or topics to build students' knowledge; a progression of focused research and writing projects are included to develop knowledge and understanding of a topic using texts and other source materials; and inferencing is explicitly taught within text, including opportunities for metacognition and use of appropriate and accurate background knowledge instruction and activities include questions that are **text dependent** in order to build knowledge and include opportunities for both written and spoken responses; tasks are designed to **build, apply, and integrate** knowledge and skills in reading, writing, speaking, listening,

and language through **quality, grade-level complex texts**; and explicit instruction using a variety of genre types and features to **support comprehension** and/or build content knowledge is included.

(6) Writing

Address the grammar and language conventions specified by the standards at each grade level and build on those standards from previous grade levels through the application and practice of those skills in the context of reading and writing about unit texts; instruction and activities support students to develop composition skills across multiple text types for a variety of purposes and audiences; materials include a clear scope and sequence for teaching conventions of print, grammar, and syntax (sentence structure) in reading and writing; materials are taught explicitly through a gradual release of responsibility (i.e., I do, we do, you do) and include sufficient time for modeling, planning, and brainstorming ideas orally before drafting; instruction is structured; and models and graphic organizers are provided frequently to support composition.