



## Reviewed Evidence-Based Practices and Critical Learning Concepts

### Introduction

The American Rescue Plan Elementary and Secondary School Emergency Relief (ARP ESSER or ESSER III) Fund includes several evidence-based requirements. The fund requires districts to:

- Reserve a minimum of 20% of funds to address unfinished learning (federally referred to as "learning loss") caused by the COVID-19 pandemic through the implementation of evidence-based interventions;
- Ensure selected interventions respond to students social, emotional, and academic needs;
- Ensure selected interventions address the disproportionate impact of COVID-19 on underrepresented students; and
- Use evidence-based practices (EBPs) when the remaining 80% is used to address unfinished learning or to provide mental health services and supports.

The following reviewed EBPs and critical learning concepts (CLCs) meet the ESSER III requirements for evidence-based and are all considered practices with Tier 1 (i.e., strong) evidence according to the [Every Student Succeeds Act \(ESSA\) levels of evidence document](#).

### Selection Criteria and Process

Each reviewed EBP and CLC:

- Falls into the "strong" category of the ESSA levels of evidence,
- Has statistically significant meaningful effects on student outcomes, and
- It is repeatedly cited as having "strong evidence" (or in some rare situations "moderate evidence") in [What Works Clearinghouse \(WWC\) Practice Guides](#) or has meta-analysis showing convergent evidence of statistically significant meaningful effects on student outcomes.

For more information about how strong and moderate WWC ratings meet ESSA levels of evidence, please see the [Using the WWC to Find ESSA Tiers of Evidence document](#).

### Guidance on Selection of Evidence-Based Practices/Interventions

When using ESSER III funds as previously noted, districts are required to either:

- Select instructional materials, strategies, or interventions from the following list of EBPs OR
- Demonstrate the intervention(s) they have selected:
  - Meet ESSER III requirements according to a nationally published, peer-reviewed clearinghouse of EBPs AND
  - Are locally validated for positive student outcomes by engaging in the continuous improvement process (CIP).

For more information, see the [Reviewed List of Nationally Peer-Reviewed Clearinghouses of Evidence-Based Interventions guidance](#).

## Evidence-Based Practices and Critical Learning Concepts

The following tables include a set of reviewed EBPs and evidence-based CLCs. EBPs are instructional actions, approaches, applications, and routines that fuel effective and efficient classroom interactions. They are the practices that highly effective teachers have been observed using in their classrooms and have evidence that they are effective at improving student outcomes. CLCs are those learning expectations essential for grade-level learning and have evidence for particular student outcomes when they are an instructional focus.

The reviewed practices and learning concepts are grouped around the following areas:

- [Cross-Content Evidence-Based Practices](#),
- [Social-Emotional-Behavioral Health: Critical Learning Concepts](#),
- [Literacy: Critical Learning Concepts](#), and
- [Mathematics: Critical Learning Concepts and Major Work of the Grade](#).

Select resources are provided as examples to support implementation. Districts that focus on these practices and learning concepts may choose other aligned resources as needed.

### Cautions

The set of reviewed EBPs and CLCs is not exhaustive of all EBPs and concepts. It is important to note that the absence of information about an EBP's effectiveness for a certain grade or content area does not mean it is not effective for that grade or content area; it has simply not yet been reviewed for this resource's purposes.

The following tables list practices and CLCs that have been found to be routinely effective at addressing student needs. However, it is important that districts consider their local context when selecting EBPs, as they are only effective if aligned to student needs and implemented with fidelity.

### Related Guidance and Webinar

For further guidance on the requirements of the ESSER III Fund and in selecting evidence-based practices and interventions, see the [ESSER III](#) and [ESSER III and Evidence-Based Interventions](#) guidance documents and the [July 29 webinar](#).

Additional ESSER III guidance, such as guidance on district plan requirements and content, is available in the ARP Act of 2021 section of the Department's [Emergency Relief for PK-12 Schools webpage](#).

## Cross-Content Evidence-Based Practices

All EBPs provided in Table 1 are effective for improving the outcomes of underserved students. They all also have evidence for being effective as part of both universal instruction and intervention support across a range of grades and content areas.

Evidence for each practice is noted by footnotes, and the areas of highest impact are noted for each practice. The impact areas are focused on those areas most closely associated with ESSER III requirements and are not exhaustive.

\*The following impact areas are reported: (A) General Academic Improvement, (D) Dropout Prevention, (L) Literacy, (M) Mathematics, (SEBH) Social-Emotional-Behavior Health, and (W) Writing. Practices may be effective for other domains not reviewed.

Table 1. Cross-Content Evidence-Based Practices

EBP	Description	Impact Area(s)*	Select Resources
Career/Work-Based Program/Course <sup>1</sup>	Courses/programs that connect school with career/work increase student engagement, attendance, academic outcomes, relationships, and sense of belonging in school.	D	<ul style="list-style-type: none"> <li>• Secondary               <ul style="list-style-type: none"> <li>○ <a href="#">Dropout Prevention</a></li> <li>○ <a href="#">Iowa Clearinghouse for Work-Based Learning</a></li> </ul> </li> </ul>
Cognitive/Meta-Cognitive Strategies <sup>2,3</sup>	Explicitly teach cognitive and meta-cognitive processing strategies to support memory, attention, and self-regulation of learning.	L, M	<ul style="list-style-type: none"> <li>• Elementary               <ul style="list-style-type: none"> <li>○ <a href="#">Comprehension</a></li> <li>○ <a href="#">Problem Solving Interventions</a></li> </ul> </li> <li>• Secondary               <ul style="list-style-type: none"> <li>○ <a href="#">Comprehension</a></li> <li>○ <a href="#">Problem Solving</a></li> </ul> </li> <li>• Kindergarten-12 (K-12)               <ul style="list-style-type: none"> <li>○ <a href="#">Metacognitive Strategies</a></li> <li>○ <a href="#">Math: Effective Teaching Practices</a></li> </ul> </li> </ul>
Explicit/Explicit & Systematic Instruction <sup>4</sup>	Explicit instruction provides models, verbalization of thought processes, guided practice, corrective feedback, and frequent cumulative review. Students benefit from this across a range of content areas. Systematic instruction introduces	L, M, SEBH, W	<ul style="list-style-type: none"> <li>• Preschool               <ul style="list-style-type: none"> <li>○ <a href="#">Emergent Literacy</a></li> </ul> </li> <li>• Elementary               <ul style="list-style-type: none"> <li>○ <a href="#">Foundational Literacy</a></li> </ul> </li> </ul>

<sup>1</sup> [Rumberger et al., 2017](#)

<sup>2</sup> [Fuchs et al., 2021](#); [Kamil et al., 2008](#); [Shanahan et al., 2010](#); [Woodward et al., 2018](#)

<sup>3</sup> [Felver et al., 2015](#) The research on effectiveness of school-based mindfulness interventions (stress-reduction; cognitive therapy) is in its infancy.

<sup>4</sup> See evidence in the Select Resources column.

EBP	Description	Impact Area(s)*	Select Resources
	concepts in an incremental and intentional way with supports for student learning.		<ul style="list-style-type: none"> <li>○ <a href="#">Writing</a></li> <li>○ <a href="#">Math Intervention</a></li> <li>○ <a href="#">Social-Emotional Learning</a></li> <li>○ <a href="#">Vocabulary for English Learners (ELs)</a></li> <li>● Secondary <ul style="list-style-type: none"> <li>○ <a href="#">Comprehension</a></li> <li>○ <a href="#">Vocabulary</a></li> <li>○ <a href="#">Writing</a></li> </ul> </li> <li>● K-12 <ul style="list-style-type: none"> <li>○ <a href="#">Collaborative Strategic Reading</a></li> <li>○ <a href="#">Vocabulary Instruction</a></li> <li>○ <a href="#">Math Problem Solving</a></li> </ul> </li> </ul>
Parent School-Community Partnerships <sup>5</sup>	Parent, family, and community involvement in education results in higher academic performance and school improvement for elementary and secondary levels regardless of race, family education, income, or background.	A, D, L, SEBH	<ul style="list-style-type: none"> <li>● Preschool-12 <ul style="list-style-type: none"> <li>○ <a href="#">Parent, Family, Community Involvement in Education</a></li> <li>○ <a href="#">Top Benefits of Family and Community Engagement</a></li> </ul> </li> </ul>
Quizzing to Promote Learning <sup>6</sup>	"Closed-book" quizzes are a method for re-exposing students to key course content, which aids memory. This method is particularly effective when a constructed response is required, and correct-answer feedback is provided.	A	<ul style="list-style-type: none"> <li>● K-12 <ul style="list-style-type: none"> <li>○ <a href="#">Use Quizzes</a></li> </ul> </li> </ul>
Substantive Conversations (Student-Generated Questions) <sup>7</sup>	Help students build explanations by asking and answering deep questions (including causation, well-reasoned arguments and logic, causes and consequences, motivations, and evidence justifications).	A, L, M	<ul style="list-style-type: none"> <li>● K-12 <ul style="list-style-type: none"> <li>○ <a href="#">Iowa Reading Research Center (IRRC) Series on Higher-Order Questions</a></li> <li>○ <a href="#">Helping Students Build Complex Understanding</a></li> <li>○ <a href="#">Math: Effective Teaching Practices</a></li> </ul> </li> </ul>

<sup>5</sup> [Jeynes, 2003](#)

<sup>6</sup> [Yang et al., 2021](#)

<sup>7</sup> [Pashler et al., 2007](#)

EBP	Description	Impact Area(s)*	Select Resources
Visuals Supports & Representations <sup>8</sup>	Visuals support student understanding of concepts. Examples include number lines, graphs, tables, diagrams, percent bars, schematic diagrams, graphic organizers, videos, Elkonin boxes, and schedules.	A, L, M	<ul style="list-style-type: none"> <li>• Elementary <ul style="list-style-type: none"> <li>○ <a href="#">Math Intervention</a></li> </ul> </li> <li>• Elementary-Middle School <ul style="list-style-type: none"> <li>○ <a href="#">4th - 8th Math Problem Solving</a></li> <li>○ <a href="#">Elementary-Middle School ELs</a></li> </ul> </li> <li>• Preschool-12 <ul style="list-style-type: none"> <li>○ <a href="#">Visual Supports for Autism</a></li> <li>○ <a href="#">Math: Effective Teaching Practices</a></li> </ul> </li> </ul>

## Social-Emotional-Behavioral Health: Critical Learning Concepts

All of the reviewed CLCs in Table 2 are effective at improving student outcomes for SEBH. Many of the CLCs are also effective at improving academic engagement and progress in school.

Table 2. Social-Emotional-Behavioral Health: Critical Learning Concepts

CLC	Description	Select Resources
Consistent, Organized, & Respectful Learning Environments <sup>9</sup>	<p>To build and foster positive relationships, teachers should establish age-appropriate and culturally responsive expectations, routines, and procedures within their classrooms.</p> <p>*Effective as part of universal instruction.</p>	<ul style="list-style-type: none"> <li>• Preschool <ul style="list-style-type: none"> <li>○ <a href="#">Routines &amp; Schedules</a></li> </ul> </li> <li>• Elementary <ul style="list-style-type: none"> <li>○ <a href="#">Classroom Management</a></li> </ul> </li> <li>• K-12 <ul style="list-style-type: none"> <li>○ <a href="#">Classroom Behavior Management</a></li> <li>○ <a href="#">Conditions for Learning (CfL) Toolkits</a></li> <li>○ <a href="#">Evidence-Based Classroom Strategies for Teachers</a></li> <li>○ <a href="#">Strategies for Trauma-Informed Distance Learning</a></li> </ul> </li> </ul>
Connectedness, Adult-Student,	Extensive correlational research points to relationships as a key to wellbeing, resilience, progress in school, and staying in school. Programs that nurture developmental	<ul style="list-style-type: none"> <li>• Preschool-12 <ul style="list-style-type: none"> <li>○ <a href="#">Building Relationships as a Foundation of Trauma-Informed Practices in Schools</a></li> <li>○ <a href="#">Check &amp; Connect</a></li> </ul> </li> </ul>

<sup>8</sup> [Dexter & Hughes, 2011](#); [Nesbit & Adesope, 2006](#)

<sup>9</sup> [Epstein et al., 2008](#); [Korpershoek et al., 2016](#); [Long, Miller, & Upright, 2019](#); [Simonsen et al., 2008](#)

CLC	Description	Select Resources
Student-Student Relationships <sup>10</sup>	relationships and connectedness show outcomes for staying and progressing in school. <sup>11</sup>  *Effective as part of universal instruction and intervention supports.	<ul style="list-style-type: none"> <li>○ <a href="#">Provide intensive, individualized support to students who have fallen off track and face significant challenges to success.</a></li> <li>○ <a href="#">Relationships First: Creating Connections That Help Young People Thrive</a></li> </ul>
Individualized Cognitive-Based & Problem-Solving Interventions <sup>12</sup>	For adolescents with social-emotional and/or mental health concerns (including anxiety and/or depression), collaborate with highly-trained practitioners to provide cognitive-based and problem-solving oriented interventions that focus on developing strategies to solve problems, regulate emotions, and establish helpful patterns of thought and behavior.  *Effective as part of community-based mental health intervention supports, as the research on the effectiveness of <u>school-based</u> mindfulness interventions (e.g., stress-reduction, cognitive therapy) is in its infancy. <sup>13</sup>	<ul style="list-style-type: none"> <li>● Secondary <ul style="list-style-type: none"> <li>○ <a href="#">Mental Health: Targeted School-Based Cognitive Behavioral Therapy Programs to Reduce Depression and Anxiety Symptoms</a></li> </ul> </li> </ul>
Teacher Provided & Integrated Targeted Social-Emotional Learning & Contingency Management <sup>14</sup>	For students at-risk for or having mental health symptoms and externalizing concerns, provide with targeted social-emotional learning and contingency management integrated into the normal academic curriculum/day daily or multiple times per week.  *Effective as part of school-based intervention supports.	<ul style="list-style-type: none"> <li>● K-12 <ul style="list-style-type: none"> <li>○ <a href="#">Behavioral Contracting</a></li> <li>○ <a href="#">Addressing Disruptive and Noncompliant Behaviors (Part 1): Understanding the Acting-Out Cycle</a></li> <li>○ <a href="#">Addressing Disruptive and Noncompliant Behaviors (Part 2): Behavioral Interventions</a></li> </ul> </li> </ul>

<sup>10</sup> [Roorda et al., 2011; Rumberger et al., 2017; WWC, 2015](#)

<sup>11</sup> [Sinclair et al., 1998; Sinclair, Christenson, & Thurlow, 2005](#)

<sup>12</sup> [Das et al., 2016; Simpson, Peterson, & Smith, 2010](#)

<sup>13</sup> [Felver et al., 2015; Wearner-Seidler et al., 2017](#)

<sup>14</sup> [Sanchez et al., 2018](#)

CLC	Description	Select Resources
Social-Emotional Competencies/ Skills <sup>15</sup>	Actively teach students socially- and behaviorally-appropriate skills using strategies focused on both individual students and the whole classroom.  *Effective as part of school-based universal instruction and intervention supports.	<ul style="list-style-type: none"> <li>Elementary <ul style="list-style-type: none"> <li><a href="#">Teach and reinforce new skills to increase appropriate behavior and preserve a positive classroom climate</a></li> </ul> </li> <li>Preschool-12 <ul style="list-style-type: none"> <li><a href="#">Iowa Social-Emotional Learning (SEL) Competencies</a></li> <li><a href="#">What Does Evidence-Based Instruction in SEL Actually Look Like in Practice?</a></li> </ul> </li> </ul>

## Literacy: Critical Learning Concepts

All of the reviewed CLCs in Table 3 are effective at improving student learning outcomes for literacy. They are also effective as part of both universal instruction and intervention supports across a range of grades unless indicated otherwise. Critical learning strategies for comprehension and vocabulary also have evidence for application and student outcomes when implemented as part of content area courses.

Table 3. Literacy: Critical Learning Concepts

CLC	Description	Select Resources
Comprehension Strategies	Explicitly teaching strategies and cognitive routines readers use to enhance understanding and difficulties in comprehension and compensate for imperfect knowledge about the text. Plan for independence through gradual release.	<ul style="list-style-type: none"> <li>Elementary <ul style="list-style-type: none"> <li><a href="#">Teach students how to use reading comprehension strategies</a></li> <li><a href="#">High-Priority Milestones for K-3 Literacy Development</a></li> </ul> </li> <li>Secondary <ul style="list-style-type: none"> <li><a href="#">Provide direct and explicit comprehension strategy instruction</a></li> </ul> </li> <li>See Explicit/Explicit &amp; Systematic Instruction in Table 1.</li> </ul>
Decoding	Teach students to decode words, analyze word parts, and write and recognize words, including understanding morphology from less to more complex words.	<ul style="list-style-type: none"> <li>K-3 <ul style="list-style-type: none"> <li><a href="#">Teach students to decode words, analyze word parts, and write and recognize words.</a></li> <li><a href="#">High-Priority Milestones for K-3 Literacy Development</a></li> </ul> </li> </ul>

<sup>15</sup> [Collaborative for Academic, Social, and Emotional Learning \(CASEL\), n.d.](#); [Durlak et al., 2011](#); [Epstein et al., 2008](#)

CLC	Description	Select Resources
Emergent Literacy <sup>16</sup>	Teach young children about print knowledge, phonological awareness, vocabulary, and oral language through interactions, conversations, experiences, and relationships with caring adults in their lives.	<ul style="list-style-type: none"> <li>• Preschool <ul style="list-style-type: none"> <li>○ Foundations in Emergent Literacy Instruction: <ul style="list-style-type: none"> <li>▪ <a href="#">Snapshot</a></li> <li>▪ <a href="#">Professional Learning Community Materials</a></li> </ul> </li> </ul> </li> </ul>
Intensive Intervention in Critical Reading Concepts (Intended Primarily for Intervention-Type Supports)	<p>Interventions should focus on explicit instruction of any of the critical elements of knowledge and skill required for comprehension of complex texts and aligned to student need.</p> <ul style="list-style-type: none"> <li>• Foundational skills</li> <li>• Text reading fluency</li> <li>• Vocabulary building</li> <li>• Strategies for understanding and using text features for different genres</li> <li>• Self-regulated use of comprehension strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Elementary ELs <ul style="list-style-type: none"> <li>○ <a href="#">Provide intensive small-group reading interventions</a></li> </ul> </li> <li>• Secondary <ul style="list-style-type: none"> <li>○ <a href="#">Make available intensive and individualized interventions for struggling readers that can be provided by trained specialists</a></li> </ul> </li> </ul>
Phonological Awareness & Alphabetic Principle	Teach students to recognize and manipulate the segments of sounds in words and to link those sounds to letters in preparation to read words and comprehend text. This supports students in reading nearly 70% of regular monosyllabic words.	<ul style="list-style-type: none"> <li>• K-3 <ul style="list-style-type: none"> <li>○ <a href="#">Develop awareness of the segments of sound in speech and how they link to letters</a></li> <li>○ <a href="#">High-Priority Milestones for K-3 Literacy Development</a></li> </ul> </li> </ul>
Vocabulary: Essential Content Words	Teachers should provide students with explicit vocabulary instruction both as part of English Language Arts (ELA) instruction and as part of content area classes and instruction in conveying mathematical ideas.	<ul style="list-style-type: none"> <li>• Elementary <ul style="list-style-type: none"> <li>○ <a href="#">Vocabulary for ELs</a></li> <li>○ <a href="#">High-Priority Milestones for K-3 Literacy Development</a></li> <li>○ <a href="#">Mathematical Language</a></li> </ul> </li> <li>• Secondary <ul style="list-style-type: none"> <li>○ <a href="#">Provide explicit vocabulary instruction</a></li> </ul> </li> <li>• See also Explicit/Explicit and Systematic in Table 1.</li> </ul>
Writing Process	Explicitly teach the writing process (plan, set goals, draft, evaluate, revise, and edit writing) and strategies for each part of the writing process. Plan for independence through gradual release.	<ul style="list-style-type: none"> <li>• Elementary <ul style="list-style-type: none"> <li>○ <a href="#">Teach students to use the writing process for a variety of purposes</a></li> </ul> </li> </ul>

<sup>16</sup> [WWC, 2006](#)



CLC	Description	Select Resources
		<ul style="list-style-type: none"> <li>○ <a href="#">High-Priority Milestones for K-3 Literacy Development</a></li> <li>● Secondary <ul style="list-style-type: none"> <li>○ <a href="#">Explicitly teach appropriate writing strategies using a Model-Practice-Reflect instructional cycle</a></li> </ul> </li> </ul>

## Mathematics: Critical Learning Concepts and Major Work of the Grade

Tables 4 and 5 provide concepts essential for improving outcomes in mathematics. Unlike other reviewed practices or concepts in this resource, the recommendations in Table 5 are not highly referenced for their effects on student outcomes but are grounded in coherent math progressions. That is, students must have mastery of the Major Work of the Grade to make progress on more complex math concepts in later grades.<sup>17</sup> While this is the case, interventions that focus on the Major Work of the Grade (and are taught with evidence-based instructional practices described within this resource) meet ESSER III requirements of evidence-based.

### MATHEMATICS: CRITICAL LEARNING CONCEPTS

All of the reviewed CLCs in Table 4 are effective at improving student learning outcomes for mathematics.

\*\*Denotes concepts with "moderate evidence" based on WWC criteria due to some ambiguity about whether improvement is the direct result of the practices or whether the findings can be replicated with a diverse population of students.

Table 4. Mathematics: Critical Learning Concepts

CLC	Description	Select Resources
Algebra Knowledge**	Teach students with some procedural knowledge of algebra to recognize and generate alternative strategies and encourage students to articulate reasoning and evaluate and compare strategies.	<ul style="list-style-type: none"> <li>● Secondary <ul style="list-style-type: none"> <li>○ <a href="#">Teach students to intentionally choose from alternative algebraic strategies when solving problems</a></li> </ul> </li> </ul>
Fractions**	Understanding fractions is foundational for algebra. Use number lines as a key representational tool to support student understanding of fractions. Use area models, number lines, visuals, and real-world contexts to support student understanding of procedures for computations with fractions.	<ul style="list-style-type: none"> <li>● Elementary-Middle School <ul style="list-style-type: none"> <li>○ <a href="#">Help students recognize that fractions are numbers and that they expand the number system beyond whole numbers</a></li> <li>○ <a href="#">Help students understand why procedures for computations with fractions make sense</a></li> </ul> </li> </ul>

<sup>17</sup> [Student Achievement Partners, n.d., 2020](#)

CLC	Description	Select Resources
Numbers & Operations**	<p>This content area is foundational for math learning. Teachers should provide opportunities for children to subitize small collections, practice counting, compare the magnitude of collections, use numerals to quantify collections, and then encourage children to solve simple math problems.</p>	<ul style="list-style-type: none"> <li>• Preschool-Kindergarten               <ul style="list-style-type: none"> <li>○ <a href="#">Teach number and operations using a developmental progression</a></li> </ul> </li> </ul>
Problem Solving: Word Problems	<p>Provide deliberate instruction on word problems to deepen students' mathematical understanding and support their capacity to apply mathematical ideas.</p> <p>*While this practice may be effective for universal instruction, the evidence base is for intervention-type supports.</p>	<ul style="list-style-type: none"> <li>• Elementary               <ul style="list-style-type: none"> <li>○ <a href="#">Provide deliberate instruction on word problems to deepen students' mathematical understanding and support their capacity to apply mathematical ideas</a></li> <li>○ <a href="#">Interventions should include instruction on solving word problems that are based on common underlying structures</a></li> </ul> </li> </ul>
Problem Solving	<p>Provide opportunities for students to think through or reflect on the problem-solving process. Provide questions, prompts, and model monitoring and reflecting.</p>	<ul style="list-style-type: none"> <li>• Intermediate-Middle School               <ul style="list-style-type: none"> <li>○ <a href="#">Assist students in monitoring and reflecting on the problem-solving process</a></li> </ul> </li> </ul>
Representing Real Numbers: Number Line	<p>Use the number line to teach representation of whole numbers, fractions, decimals, and an understanding of magnitude and operations.</p> <p>*While this practice may be effective for universal instruction, the evidence base is for intervention-type supports.</p>	<ul style="list-style-type: none"> <li>• Elementary               <ul style="list-style-type: none"> <li>○ <a href="#">Use the number line to facilitate the learning of mathematical concepts and procedures, build understanding of grade-level material, and prepare students for advanced mathematics</a></li> </ul> </li> </ul>
Vocabulary: Essential Content Words	<p>Teach clear and concise mathematical language and support students' use of the language to communicate their understanding of mathematics concepts.</p> <p>*Effective as part of universal instruction and intervention supports.</p>	<ul style="list-style-type: none"> <li>• Elementary               <ul style="list-style-type: none"> <li>○ <a href="#">Mathematical Language</a></li> </ul> </li> </ul>

## MATHEMATICS: MAJOR WORK OF THE GRADE

Rather than racing to cover topics to address unfinished learning and grade-level work, instruction should focus on the Major Work of the Grade. This requires a narrower and deeper approach where substantial time is spent on the Major Work of the Grade so students can gain:

- A solid conceptual understanding,
- A high degree of procedural skill and fluency, and
- An ability to apply math to solve problems.

### *Class Time Spent on Major Work of the Grade*

Grades K-2 should spend the majority (near the upper end of 65% to 85%) of class time on the Major Work of the Grade. Subsequent grades (3-12) should spend between 65% and 85% of class time on the Major Work of the Grade. If students have not mastered previous grade-level Major Work of the Grade, this may mean increased class time through classwide intervention and/or supplemental intervention supports.

Please see the following lessons to provide support for the Major Work of the Grade:

- [Mathematical Instructional Practice Toolkit](#) (select lessons with videos)
- [Supplemental Lesson Videos](#)
- [Mathematics Lessons](#)

*Table 5. Mathematics: Major Work of the Grade*

Major Work of the Grade	Description	Select Resources
K-2 <sup>nd</sup> Grade	Addition and subtraction – concepts, skills, and problem-solving; place value and required fluencies for addition and subtraction.	<ul style="list-style-type: none"><li>• <a href="#">Kindergarten Major Work</a></li><li>• <a href="#">1st Grade Major Work</a></li><li>• <a href="#">2nd Grade Major Work</a></li></ul>
3 <sup>rd</sup> -5 <sup>th</sup> Grade	Multiplication and division of whole numbers and fractions – concepts, skills, problem-solving, and required fluencies.	<ul style="list-style-type: none"><li>• <a href="#">3rd Grade Major Work</a></li><li>• <a href="#">4th Grade Major Work</a></li><li>• <a href="#">5th Grade Major Work</a></li></ul>
6 <sup>th</sup> Grade	Ratios and proportional relationships; early expressions and equations and fluencies for division and decimal operations.	<ul style="list-style-type: none"><li>• <a href="#">6th Grade Major Work</a></li></ul>
7 <sup>th</sup> Grade	Ratios and proportional relationships; arithmetic of rational numbers.	<ul style="list-style-type: none"><li>• <a href="#">7th Grade Major Work</a></li></ul>
8 <sup>th</sup> Grade	Linear algebra and linear functions.	<ul style="list-style-type: none"><li>• <a href="#">8th Grade Major Work</a></li></ul>

Major Work of the Grade	Description	Select Resources
High School: Widely Applicable Prerequisites	<p>To be college- and career-ready, high school instructional time should focus on content in essential prerequisite clusters and standards with relatively wide applicability across a range of postsecondary work. The majority of instructional time (65-85%) may be necessary for ALL students to attain proficiency in:</p> <ul style="list-style-type: none"> <li>• Number and Quantity</li> <li>• Algebra</li> <li>• Functions</li> <li>• Geometry</li> <li>• Statistics and Probability</li> <li>• Applications from Grades 6-8</li> </ul>	<ul style="list-style-type: none"> <li>• High School <a href="#">Content from Common Core State Standards for Mathematics (CCSSM) Widely Applicable as Prerequisites for a Range of College Majors, Postsecondary Programs and Careers</a></li> </ul>

## Questions and Additional Guidance

If you have questions about this list or would like to submit another EBP or CLC not listed here, please contact Kathy Bertsch at [kathy.bertsch@iowa.gov](mailto:kathy.bertsch@iowa.gov). For additional guidance on ESSER III evidence-based requirements, see the ARP Act for PK-12 Schools section of the [Emergency Relief for PK-12 Schools webpage](#).

## References

- Collaborative for Academic, Social, and Emotional Learning. (n.d.). Benefits of SEL. <https://casel.org/impact/>
- Das, J. K., Salam, R. A., Lassi, Z. S., Khan, M. N., Mahmood, W., Patel, V., & Bhutta, Z. A. (2016). Interventions for adolescent mental health: An overview of systematic reviews. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, 59(4S), S49–S60. <https://doi.org/10.1016/j.jadohealth.2016.06.020>
- Dexter, D. D., & Hughes, C. A. (2011). Graphic organizers and students with learning disabilities: A meta-analysis. *Learning Disability Quarterly*, 34(1), 51-72. <https://doi.org/10.1177/073194871103400104>
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82, 405-432. [10.1111/j.1467-8624.2010.01564.x](https://doi.org/10.1111/j.1467-8624.2010.01564.x)
- Epstein, M., Atkins, M., Cullinan, D., Kutash, K., and Weaver, R. (2008). Reducing behavior problems in the elementary school classroom: A practice guide (NCEE #2008-012). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. [https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/behavior\\_pg\\_092308.pdf](https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/behavior_pg_092308.pdf)
- Felver, J.C., Celis-de Hoyos, C.E., Tezanos, K. & Singh, N. N. (2015), A systematic review of mindfulness-based interventions for youth in school settings. *Mindfulness* 7, 34–45. <https://doi.org/10.1007/s12671-015-0389-4>
- Fuchs, L.S., Newman-Gonchar, R., Schumacher, R., Dougherty, B., Bucka, N., Karp, K.S., Woodward, J., Clarke, B., Jordan, N. C., Gersten, R., Jayanthi, M., Keating, B., and Morgan, S. (2021). Assisting students struggling with mathematics: Intervention in the elementary grades (WWC 2021006). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. <https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/WWC2021006-Math-PG.pdf>
- Jeynes, W. H. (2003). A meta-analysis: The effects of parental involvement on minority children's academic achievement. *Education and Urban Society*, 35(2), 202–218. <https://doi.org/10.1177/0013124502239392>
- Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., and Torgesen, J. (2008). Improving adolescent literacy: Effective classroom and intervention practices: A practice guide (NCEE #2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. [https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/adlit\\_pg\\_082608.pdf](https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/adlit_pg_082608.pdf)
- Korpershoek, H., Harms, T., de Boer, H., van Kuijk, M., & Doolaard, S. (2016). A meta-analysis of the effects of classroom management strategies and classroom management programs on students' academic, behavioral, emotional, and motivational outcomes. *Review of Educational Research*, 86(3), 643–680. <https://doi.org/10.3102/0034654315626799>
- Long, A., Miller, F. G., & Upright, J. J. (2019). Classroom management for ethnic-racial minority students: A meta-analysis of single-case design studies. *School Psychology Quarterly: The Official Journal of the Division of School Psychology, American Psychological Association*, 34(1), 1–13. <https://doi.org/10.1037/spq0000305>
- Nesbit, J. C., & Adesope, O. O. (2006). Learning with concept and knowledge maps: A meta-analysis. *Review of Educational Research*, 76(3), 413–448. <https://doi.org/10.3102/00346543076003413>
- Pashler, H., Bain, P., Bottge, B., Graesser, A., Koedinger, K., McDaniel, M., and Metcalfe, J. (2007) Organizing instruction and study to improve student learning (NCER 2007-2004). Washington, DC: National Center for Education Research, Institute of Education Sciences, U.S. Department of Education. <https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/20072004.pdf>

- Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research*, 81(4), 493–529. <https://doi.org/10.3102/0034654311421793>
- Rumberger, R., Addis, H., Allensworth, E., Balfanz, R., Bruch, J., Dillon, E., Duardo, D., Dynarski, M., Furgeson, J., Jayanthi, M., Newman-Gonchar, R., Place, K., & Tuttle, C. (2017). Preventing dropout in secondary schools (NCEE 2017-4028). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. [https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/wwc\\_dropout\\_092617.pdf](https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/wwc_dropout_092617.pdf)
- Sanchez, A. L., Cornacchio, D., Poznanski, B., Golik, A. M., Chou, T., & Comer, J. S. (2018). The effectiveness of school-based mental health services for elementary-aged children: A meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, 57(3), 153-165. <https://doi.org/10.1016/j.jaac.2017.11.022>
- Shanahan, T., Callison, K., Carriere, C., Duke, N. K., Pearson, P. D., Schatschneider, C., & Torgesen, J. (2010). Improving reading comprehension in kindergarten through 3rd grade: A practice guide (NCEE 2010-4038). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. [https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/readingcomp\\_pg\\_092810.pdf](https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/readingcomp_pg_092810.pdf)
- Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., & Sugai, G. (2008). Evidence-based practices in classroom management: Considerations for research to practice. *Education and Treatment of Children*, 31(3), 351-380. <http://www.jstor.org/stable/42899983>
- Simpson, R. L., Peterson, R. L., & Smith, C. R. (2011). Critical educational program components for students with emotional and behavioral disorders: Science, policy, and practice. *Remedial and Special Education*, 32(3), 230–242. <https://doi.org/10.1177/0741932510361269>
- Sinclair, M. F., Christenson, S. L., Evelo, D. L., & Hurley, C. M. (1998). Dropout prevention for youth with disabilities: Efficacy of a sustained school engagement procedure. *Exceptional Children*, 65(1), 7-21. <https://doi.org/10.1177/001440299806500101>
- Sinclair, M. F., Christenson, S. L., & Thurlow, M. L. (2005). Promoting school completion of urban secondary youth with emotional or behavioral disabilities. *Exceptional Children*, 71(4), 465–482. <https://doi.org/10.1177/001440290507100405>
- Student Achievement Partners. (n.d.). *Achieve the core: Mathematics focus by grade level*. <https://achievethecore.org/category/774/mathematics-focus-by-grade-level>
- Student Achievement Partners. (2020). *2020-2021 priority instructional content in English language arts/literacy and mathematics*. [https://achievethecore.org/content/upload/2020-21%20Priority%20Instructional%20Content%20in%20ELA%20Literacy%20and%20Mathematics\\_June%202020.pdf](https://achievethecore.org/content/upload/2020-21%20Priority%20Instructional%20Content%20in%20ELA%20Literacy%20and%20Mathematics_June%202020.pdf)
- What Works Clearinghouse. (2006, December). *Phonological awareness training: Early childhood education*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. <https://ies.ed.gov/ncee/wwc/EvidenceSnapshot/374#>
- What Works Clearinghouse. (2015). *Dropout prevention intervention report: Check & Connect*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. [https://ies.ed.gov/ncee/wwc/Docs/InterventionReports/wwc\\_checkconnect\\_050515.pdf](https://ies.ed.gov/ncee/wwc/Docs/InterventionReports/wwc_checkconnect_050515.pdf)

Werner-Seidler, A., Perry, Y., Cate, A. L., Newby, J. M., & Christensen, H. (2017). School-based depression and anxiety prevention programs for young people: A systematic review and meta-analysis. *Clinical Psychology Review, 51*, 30–47. <https://doi.org/10.1016/j.cpr.2016.10.005>

Woodward, J., Beckmann, S., Driscoll, M., Franke, M., Herzig, P., Jitendra, A., Koedinger, K. R., & Ogbuehi, P. (2012). Improving mathematical problem solving in grades 4 through 8: A practice guide (NCEE 2012-4055). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.  
[https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/MPS\\_PG\\_043012.pdf](https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/MPS_PG_043012.pdf)

Yang, C., Luo, L., Vadillo, M. A., Yu, R., & Shanks, D. R. (2021). Testing (quizzing) boosts classroom learning: A systematic and meta-analytic review. *Psychological Bulletin, 147*(4), 399–435.  
<https://doi.org/10.1037/bul0000309>