Selecting Evidence-Based Practices and Learning Concepts for ESSA and Beyond

Thank you!

The previous version of this document was developed through the Department of Education to support schools in responding to student COVID related needs. This version was developed with feedback and input from the Network and ESSA designated schools during the 2022-23 Pilot Year.

Table of Contents

I. Introduction

OVERVIEW

Schools are required to engage in evidence-based activities, strategies, or interventions across a variety of different programs, funding sources, and improvement efforts, including but not limited to the Individuals with Disability Education Act, the Every Student Succeeds Act (ESSA), and the Elementary and Secondary School Emergency Relief (ESSER) Fund. This resource is intended to support schools in selecting evidence-based approaches that best meet their school and student needs. Approaches in this guide primarily support Universal, Supplemental and Intensive Tiers. In some cases action steps for Leadership, Infrastructure, Assessment, and Data-Based Decision-Making are included in select resources.

ESSA Requirements for Selecting Evidence-Based Practices
All ESSA designated schools are required to use evidence-based practices in their ESSA action plan. Schools designated as Extended Comprehensive are required to implement a state-approved evidence-based approach (activity, strategy, or intervention) that aligns with district and building needs and the recommendations set-out by the Department of Education. Schools designated as Targeted Comprehensive are highly encouraged to implement a state-approved evidence-based approach. State-approved evidence-based approaches are found in Appendices B-G. An Extended Comprehensive school may select an alternative evidence-based approach in collaboration with the Department as long as they provide the rationale aligned to their district need and evidence that the activity, strategy, or intervention is a strong, moderate, or promising approach according to ESSA's Levels of Evidence.

ADDITIONAL SUPPORTS

Building/district leadership teams selecting evidence-based practices may use the following resources to engage in selecting evidence-based practices:

- Selecting Evidence-Based Practices: Learning and Facilitation (Optional)
- Selecting Evidence-Based Practices: Workbook (Optional)

Building/district leadership teams who do not select evidence-based approaches from those provided through this resource may find the following resources helpful in choosing evidence-based approaches. All practices included in a building's ESSA action plan must be evidence-based.

- What Works Clearinghouse: IES Practice Guides: A selection of evidence-based practices reviewed for effectiveness. When selecting practices, be sure to prioritize practices with the best evidence:

- Reviewed List of Nationally Peer-Reviewed Clearinghouses of Evidence-Based Interventions: Provides a source of reviewed clearinghouses of evidence-based practices. For the details of the review process, see the Evidence-Based Practice Clearinghouse Review Process.
- Evidence-Based Interventions to Accelerate Learning/Address Learning Loss. Guidance on the requirements of the ESSER III Fund.

II. What is Evidence-Based?

While evidence-based approaches in ESSA, IDEA, and ESSER go by different names (scientifically-based, research-based, peer-reviewed, evidence-based), they refer back to the same definition as outlined in ESSA.

> *Evidence-based activities, strategies, or interventions are those that demonstrate a statistically significant effect on improving student outcomes or other relevant outcomes based on the listed criteria.*

ESSA Levels of Evidence

ESSA's definition requires schools to select activities/strategies or interventions that have the best evidence that they will impact student outcomes. Interventions can be selected as long as they have evidence that falls into one of the following categories.

Strong evidence: Interventions that impact outcomes as evidenced by at least 1 well designed and well implemented experimental study.

Moderate evidence: Interventions that impact outcomes as evidenced by at least 1 well designed and well implemented quasi-experimental study.

Promising evidence: Interventions that impact outcomes as evidenced by at least 1 well designed and well implemented correlational study with statistical controls for selection bias.

Meaningful Impact on Student Outcomes

Not only is the level of evidence important, but it is also important that interventions have a meaningful impact on student outcomes. This impact is often referred to as effect size. Effect size is a simple way of comparing two groups: one group who received the intervention and one who did not. While a significance test tells you if the effect was due to chance, effect size gives you the best estimate of how much the intervention will impact student outcomes. Well established interventions typically have an effect size for each well designed study and with information about the effects on various student groups. Therefore, it's important to understand the range of effect sizes, average effect sizes, and effect sizes for groups of students similar to your own (e.g., FRL, IEP, EL, etc.).

While there is some debate about meaningful effect sizes, this graphic shows general agreed upon meaningful effect sizes.

The Best Evidence

While schools should aim to select evidence-based approaches that have Strong (I) evidence and the largest effect sizes, this may not always be possible.

> *As a best practice, it is recommended that schools engage in activities, strategies, or interventions that have the best evidence available for the problem they are trying to solve.*

For additional information, please see What Is "Evidence-Based" As Defined By The Every Student Succeeds Act? and ESSA Tiers of Evidence: What You Need to Know.

III. Review Process

This resource includes reviewed evidence-based practices, evidence-based learning concepts, and in some cases, evidence-based programs.

Evidence-Based Instructional Practice	**Evidence-Based Learning Concept**	**Evidence-Based Program**
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. *For example:* • Feedback, • Explicit Instruction, • Formative Assessment Process	The learning expectations that are essential for grade-level learning and have evidence for particular student outcomes when they are an instructional focus. *For example:* • Phonological Awareness • Fractions • Adult-Student Connectedness	A set of defined curricular resources or services that, when implemented with fidelity as a whole, has been validated by some form of scientific evidence. *For example:* • Check & Connect • PRESS Path to Reading Excellence in School Sites

Each reviewed evidence-based instructional practice and learning concept:

- Meets ESSA requirements for levels of evidence with most having strong or moderate evidence,
- Has statistically significant meaningful effects on student outcomes, and

- Is repeatedly cited as an evidence-based approach by What Works Clearinghouse (WWC) Practice Guides, and/or systematic review or meta-analysis, and r*eviewed upon suggestion by the Iowa Department of Education in collaboration with ESSA Network members.*

Evidence-based *programs* are included in this resource when there is substantial evidence the program is tied to one or more evidence-based practices or learning concepts or when the program meets ESSA's definition of evidence-based and only if the program is supported by Iowa's ESSA Network through such means as ongoing statewide/regional training/professional learning.

Note: *This list of reviewed resources is not exhaustive of all evidence-based approaches. The absence of information about an approach'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.*

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

IV. Selecting Evidence-Based Approaches

It is important that districts consider their local context when selecting evidence-based approaches, as they are only effective if aligned to student needs and implemented with fidelity. Districts are responsible for using data to select interventions that match local needs, as well as developing and implementing a plan to deploy the selected interventions.

It is important for schools to work through the following big ideas in their process of selecting evidence-based approaches.

A. UNDERSTANDING THE PURPOSE AND BENEFITS OF EVIDENCE-BASED APPROACHES

When schools work to understand the purpose and benefits of selecting evidence-based approaches, they increase investment in the process, which increases the likelihood that approaches will be supported, implemented, and make a difference in student outcomes.

There are several reasons beyond the legislated requirements to engage in evidence-based interventions.

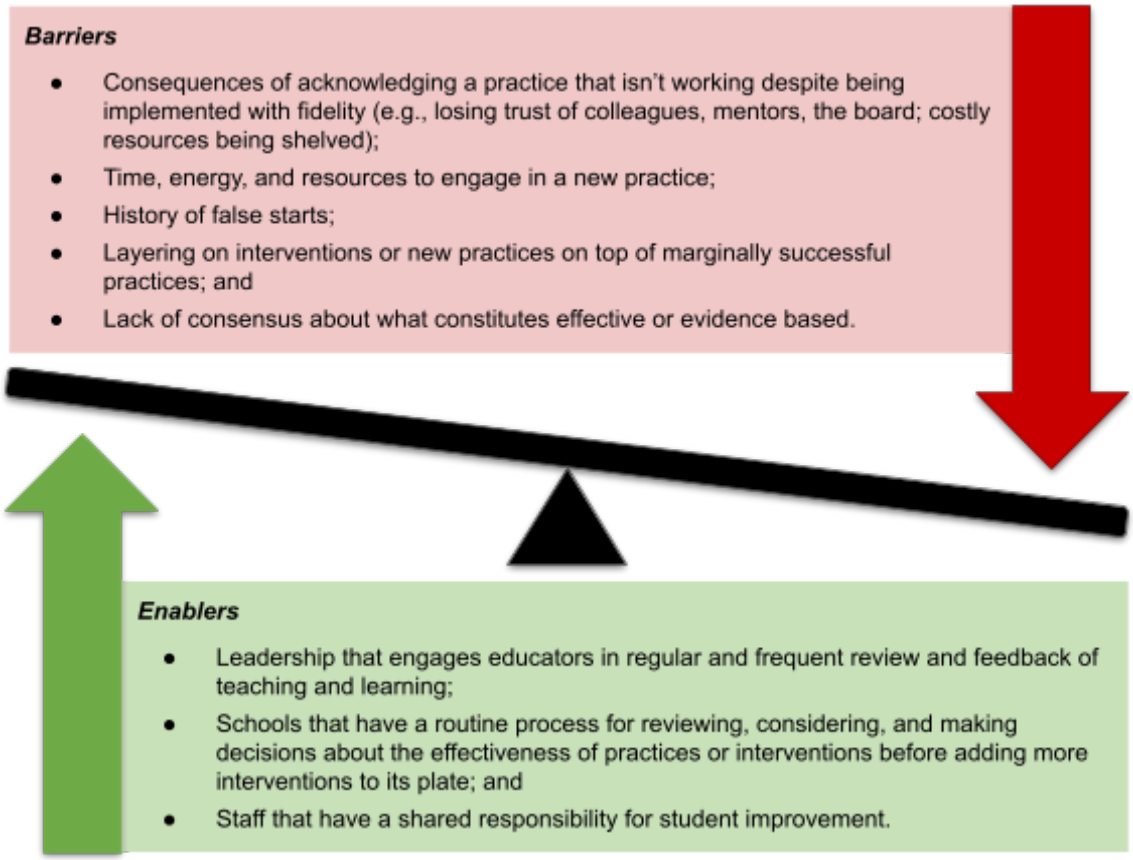
These include:

- Increased likelihood of positive child or student outcomes;
- Increased accountability because there are data to back up the selection of a practice or program, which in turn facilitates support from administrators, parents, and others;
- Less wasted time and fewer wasted resources because educators start with an effective practice or program and are not forced to find one that works through trial and error;
- Increased likelihood of being responsive to learners' needs; and
- Increased likelihood of selecting practices that best fit your local needs.

B. IDENTIFYING AND ADDRESSING ENABLERS AND BARRIERS TO SUCCESSFUL SELECTION AND IMPLEMENTATION

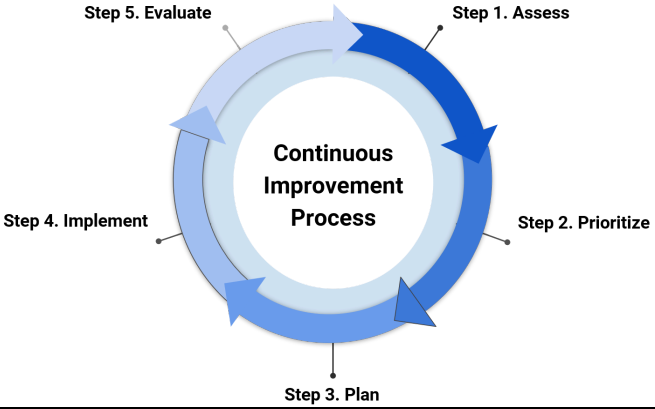
Districts and schools need to be adaptable to the needs of their students. An intervention effective in one school may not be effective in another for a number of reasons. To develop such adaptability to engage in the evidence-based interventions that meet student needs, successful schools are aware of the enablers and barriers to implementing effective evidence-based practices and develop actions that encourage enablers and address barriers.

Barriers & Enablers to Successful Implementation



C. HAVING A PROCESS FOR SELECTING EVIDENCE-BASED APPROACHES

The process for selecting evidence-based interventions follows the Continuous Improvement Process (CIP), which includes five steps. Each step as it relates to selecting and implementing evidence-based approaches is outlined in the following table.



Step	Description

1. Assess	**Reflect on a wide range of school data, questions you have about the data, and determine the area of greatest concern.** Identify local needs by engaging stakeholders (including specific engagement of historically underserved students and families) and examining data to understand pressing needs. Use/include data statements from such things as ESSA targeted areas, Data Review, Resource Allocation Review, SAMI discussions and results.
2. Prioritize	**Use data to determine the most likely reason why the prioritized greatest concern exists and develop a goal to address the concern.** Identify the most likely reason why the prioritized student related concern exists by considering summary statements from your Data Review, Resource Allocation Review, SAMI discussions, and results and other local data. See Appendix A to consider how the same concern can occur for a variety of reasons.
3. Plan	**Select relevant, evidence-based interventions most likely to be effective at addressing the concern. In doing so, consider:** ● **Effectiveness:** What is the ESSA level of evidence for this strategy? How much impact (effect size) does it typically have? ● **Population:** Is there evidence the strategy is successful for student populations similar to yours? (e.g., age/grade, student group, etc.) ● **Local Capacity:** What is your local capacity to implement the strategy? (e.g., staff skills, AEA supports, community/family supports, buy-in, sustainability.) **Consider current practices and develop action steps to implement the evidence-based approach/es.** See also Appendix A and B and other relevant Appendices to support decision-making.
4. Implement	**Focus on the status and quality of implementation to ensure the work is progressing as anticipated. This includes reviewing implementation regularly, putting in the infrastructure necessary to support implementation and making just-in-time adjustments.**
5. Evaluate	**At least annually evaluate the impact of your evidence-based approaches/strategies/interventions on teaching and learning. This includes:** ● **Preparing Impact Data:** Develop an overview of the plan, including highlights, celebrations, just-in-time adjustments, challenges, and upcoming needs. ● **Reflect and Adjust:** Present the overview to the leadership team allowing time for reflection, the opportunity for feedback, and the development of supports/actions to move the plan into the next year. ● **Communicate Impact:** Create an annual report to share with work teams, building staff, students, families, and community members.

Adapted from Non-Regulatory Guidance: Using Evidence to Strengthen Education Investments

V. Appendices

Appendix A: Matching Evidence-Based Practices to Your School/District Needs

Prior to selecting evidence-based approaches, it is important to engage as a team to identify the most likely reason why your school/district's concern exists.

The evidence-based approaches you use to develop your action plan are dependent on "why" the concern exists. As you can see in the below example, an achievement concern can occur because of a variety of different reasons and the actions your school/district take are dependent on this most likely reason. The below provides an example of how the same concern, "Literacy Achievement of Students Receiving Free and Reduced Lunch", can have different solutions depending on the data uncovered about the most likely reason why the concern exists.

Example	**Greatest Concern**	**Most Likely Reason Why the Concern Exists**	
Example 1	Literacy Achievement of Students Receiving Free and Reduced Lunch	Absenteeism - High rates of chronic absenteeism	Attendance
Example 2	Literacy Achievement of Students Receiving Free and Reduced Lunch	Conditions for Learning - Low scores on: ● Physical safety ● Emotional safety ● Adult-student relationships ● Student-student relationships	Conditions for Learning
Example 3	Literacy Achievement of Students Receiving Free and Reduced Lunch	Concerns with Universal Instruction - knowledge, resources, or implementation of one or more universal building blocks for SEBH, reading, or mathematics.	Universal Literacy
Example 4	Literacy Achievement of Students Receiving Free and Reduced Lunch	Concerns with implementing new curricular materials due to limited opportunity for professional learning and coaching.	Professional Learning & Coaching (Consider SAMI items from Infrastructure in developing your action plan.)

Decide What to Focus on First

There are no hard and fast rules about selecting your greatest concern. However it is suggested that if chronic absenteeism, behavior incidents or conditions for learning are school-wide concerns or specific concerns for your student groups that these are prioritized first.

Improving attendance and the school culture and climate to support engaged children and youth is an essential strategy for reducing achievement gaps. When absences are reduced and when climate and culture improve, students make academic gains.

Decide if the Focus is Universal/School-wide vs Supplemental and Intensive

When a concern is occurring for more than about 20% of students it is suggested that schools engage in schoolwide/universal approaches.

Type of Intervention	**Attendance**	**Behavior Expectations & Routines & Conditions for Learning**	**Achievement**
Schoolwide (all students)	>20% of students chronically absent Note: Attendance interventions also often include work around Conditions for Learning.	>20% of students with ODRs ≥3% of days of attendance Building level Conditions for Learning below state average or decreasing in one or more constructs.	>20% of students not meeting grade level expectations
Supplemental & Intensive (≤20% of students)	≤20% of students chronically absent	≤20% of students with ODRs ≥3% of days of attendance	≤20% of students not meeting grade level expectations

Appendix B: Evidence-Based Practice Briefs

The following Evidence-Based Practice Briefs outline the most essential evidence-based approaches to address common school concerns.

Most Likely Reason Why the Concern Exists	Impact Areas	Evidence-Based Practice Briefs
Absenteeism High rates of: ● Chronic absenteeism ● Dropout	Student attendance matters for academic performance. Missing 3 or more days per month (about 15% of days) is associated with scores more than a full grade below those who attend school. Poor attendance in the first month of school predicts chronic absence for the year and middle and high school absenteeism predicts dropout. Students chronically absent in any year between 8th and 12th grade are about 7 more times likely to drop out.[1]	Attendance
Conditions for Learning Low scores on: ● Physical safety ● Emotional safety, ● Adult-student relationships ● Student-student relationships	Students thrive academically when they feel safe, actively engaged in their learning, and when they have positive relationships with adults and other students at school. Positive and sustained school climate is associated with and/or predictive of positive youth development, effective risk prevention and health promotion efforts, student learning and academic achievement, increased student graduation rates, and teacher retention.[2] See also Behavior Concerns.	Conditions for Learning
Behavior Concerns ● High incidence of: ○ Suspensions and/or expulsions ○ Office discipline referrals ○ Bullying ● Low scores on CfL Boundaries and Expectations	Behavior concerns, including in and out of school suspensions, office discipline referrals, bullying, and substance use can interfere with the climate and culture necessary for effective teaching and learning. Addressing behavioral expectations and routines and teaching skills for learning can impact academic performance, rates of suspensions, office referrals, and bullying. Improved behaviors improve teacher outcomes including teacher efficacy, school safety, and school climate.[3,4]	Behavior Expectations & Routines & Skills for Learning

[1] Absences Add Up: How School Attendance Influences Student Success; Imperfect Attendance: Toward a Fair Measure of Student Absenteeism
[2] Iowa Conditions for Learning Guide
[3] Center on Positive Behavior Intervention Supports
[4] Clarke et al., 2021; Durlak et al., 2011; Epstein et al., 2008; Mahoney et al., 2018; Taylor et al., 2017

Concerns with Universal Instruction Includes knowledge, resources, or implementation of one or more universal building blocks for skills for learning, reading or mathematics. (See your SAMI results)	Improved academic achievement and skills for learning (classroom behavior; ability to manage emotions; attitudes about self, others, and school) through improved: ● Instructional Time and Opportunity ● Instructional Materials ● Assessment for Learning ● Standards, Competencies & Intended Curriculum ● Instructional Practices	Universal Tier **Content Specific Briefs** ● Literacy ○ Foundational Reading ○ Language Comprehension ● Mathematics ● Science ● Skills for Learning ● Social Studies
Concerns with Supplemental and Intensive Instruction - knowledge, resources or implementation of supplemental and intensive supports for SEBH, reading or mathematics. (See your SAMI results)	Improved academic achievement and SEBH through improved: ● Identification of evidence-based interventions ● School process to assign and implement interventions ● Supports for intensification ● Progress monitoring and decision-making ● Continuum of supports	Supplemental & Intensive Tiers

Appendix C: Cross-Content Evidence-Based Practices

All evidence-based practices provided in the following 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 not exhaustive.

Cross-Content Evidence-Based Practices

Impact Areas: (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.

Item	Evidence-Based Practice	Description	Impact Area(s)*	Select Implementation Resources
1	Scaffolds and Supports to Access Grade Level Learning	Creating lessons, assignments, tasks that are accessible to all students regardless of prior experience, their disability or other factors increases their engagement and opportunity to learn grade level content.	A, SEBH	K-12 ● About UDL (Resource 1; Resource 2; Resource 3) ● UDL Tools (Resource 1; Resource 2; Resource 3; ● Accessibility Strategies (Resource 1; Resource 2) ● Accessibility for English Learners ● Accessibility for Math (Resource 1; Resource 2)
2	Career/Work-Based Program/Course[5]	Courses/programs that connect school with career/work increase student engagement, attendance, academic outcomes, relationships, and sense of belonging in school.	D	Secondary ● Dropout Prevention ● Iowa Work-Based Learning Guide
3	Cognitive/Meta-Cognitive Strategies[6,7]	Explicitly teach cognitive and meta-cognitive processing strategies to	A, L, M	Preschool

[5] Rumberger et al., 2017
[6] Fuchs et al., 2021; Kamil et al., 2008; Shanahan et al., 2010; Woodward et al., 2018
[7] Felver et al., 2015 The research on effectiveness of school-based mindfulness interventions (stress-reduction; cognitive therapy) is in its infancy.

		support memory, attention, and self-regulation of learning.		• Executive Skills (Resource 1; Resource 2) • Mathematical Language Elementary • Comprehension • Problem Solving Interventions Secondary • Comprehension • Helping Your Students Become Self-Regulated Readers • Problem Solving Preschool-12 • Activities Guide: Executive Functioning (Harvard) • SDI Framework for Executive Functioning (GWAEA) • Math Effective Teaching Practices • Mathematical Language • Metacognitive Strategies • Select Resources from Make it Stick ○ Interleaving ○ Feedback-driven metacognition ○ Retrieval Practice ○ Spacing
4	Cooperative Learning	Two or more learners collaborate to achieve a common goal. Includes shared responsibility and social integration and is effective for advanced and struggling learners.	A, SEBH	K-12 • Teaching the Whole Child: Instructional Practices That Integrate Equity-Centered Social, Emotional, and Academic Learning (pdf) page 20

				• An Overview of Cooperative Learning -Cooperative Learning Institute • Cooperative Learning Roles (video) -Edutopia • Group work: Using cooperative learning groups effectively -Center for Teaching | Vanderbilt University
5	Explicit/Explicit and Systematic Instruction[8]	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 concepts in an incremental and intentional way with supports for student learning.	L, M, SEBH, W	Preschool • Emergent Literacy Elementary • Foundational Literacy • Math Intervention • Teaching and Reinforcing New Skills • Vocabulary for English Learners • Writing Secondary • Comprehension • Vocabulary • Writing K-12 • Math Problem Solving • Reading: Collaborative Strategic Reading • Vocabulary Instruction
6	Formative Assessment Process	Formative assessment is a process that engages teachers and students in gathering, interpreting, and using evidence about what and how students are learning in order to facilitate further	A, SEBH, L,M,W	K-12 • Advancing Formative Assessment in every Classroom

[8] See evidence in the Select Resources column.

		student learning during a short period of time. It is most effective when it includes: a. Clear learning goals and success criteria; b. Eliciting and analyzing evidence of student thinking; c. Engaging in self-assessment and peer feedback; d. Providing actionable feedback; e. Using evidence and feedback to move learning forward by adjusting learning strategies, goals and instructional steps.		• A Teacher Clarity Playbook, Grades K-12 • Embedded Formative Assessment • Embedding Formative Assessment: Practical Techniques for K-12 Classrooms • Formative Assessment (CCSSO) • Transformative Assessment • Formative Assessment for Literacy, Grades K-6 • The Success Criteria Playbook • Peer Assessment • Using the Formative Assessment Rubrics See also Iowa's MTSS Universal Tier Practice Brief.
7	High Quality/Dose Tutoring[9]	Tutoring in 1:1 and small groups (no more than 1:4) that includes 3 or more sessions per week for at least 30 minutes per session by trained teachers/professional tutors supervised by school staff.	L,M	K-12 • Accelerating Student Learning with High-Dosage Tutoring • High-Quality Tutoring: An Evidence-Based Strategy to Tackle Learning Loss • High-Quality Tutoring to Accelerate Learning Webinar Series
8	Inquiry Based Teaching[10]	An educational practice in which students are called upon to generate questions and develop answers through the	A	K-12 • Brief: Eliciting and Interpreting Student Thinking in Inquiry-Based

[9] Dietrichson et al., 2017; Nickow et al., 2020
[10] Visible Learning

		accumulation of evidence. This could include asking questions and solving problems and often includes procedures such as small-scale investigations and practical projects. ● Argumentation, reasoning and evidence-based writing improve when taught in an inquiry-based classroom.[11] ● Scaffolding is necessary to support students in historical investigations.[12]		Classrooms ● Question Formulation Technique ● Inquiry in Social Studies ● Social Studies Inquiry Design Model
9	Parent School Community Partnerships[13,14]	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	Preschool-12 ● Engaging Families and Communities in K–12 Education (infographic) ● Handbook on Family & Community Engagement ● Practices to Promote Family Engagement (infographic) ● PBIS: Family Engagement
10	Quizzing to Promote Learning[15]	Quizzing has moderate effects on student outcomes. It is a method for re-exposing students to key course content which aids memory. This method is particularly effective when constructed response is required, when quizzing occurs in the	A	K-12 ● Use Quizzes

[11] Monte-Sano , C. (2008) Qualities of historical writing instruction: A comparative case study of two teachers 'practices . American Educational Research Journal, 45 , 1045 – 1079 . doi:10.3102/0002831208319733
[12] Bain , R. B. (2005) . "They thought the world was flat?"Applying the principles of How people learn in teaching high school history. In M. S. Donovan & J. Brandsford (Eds.) How students learn: History in the classroom (pp. 179 – 213). Washington, DC: National Academies Press .
[13] Jeynes, 2003
[14] Hanover, 2018
[15] Yang et al., 2021

		classroom and correct-answer feedback is provided.		
11	Substantive Conversations (Student Generated Questions)[16]	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	Preschool ● Build vocabulary and language K-12 ● Facilitate meaningful math discourse ● Helping Students Build Complex Understanding ● Iowa Reading Research Center (IRRC) Series on Higher-Order Questions ● Promote mathematical language use and development ● Classroom Discussion ○ Brief: Implementing norms and routines for discourse ○ Brief: Leading a Discussion ○ Discussion strategies in social studies ○ Discussion protocols[17] ● Arguing from Evidence[18] Argumentation ○ Read, Inquire, Write ○ Claim, Evidence, Reasoning Checklist
12	Visuals Supports and Representations[19]	Visuals support student understanding of concepts. Examples include number lines, graphs, tables, diagrams, percent bars, schematic diagrams, graphic	A, L, M	Elementary ● Math representations Elementary-Middle School

[16] Pashler et al., 2007
[17] Harvard Teaching and Learning Lab
[18] Akas, Y., Sahin, I., & Meral, E., 2019
[19] Dexter & Hughes, 2011; Nesbit & Adesope, 2006

		organizers, videos, Elkonin boxes, and schedules.		● 4th - 8th Math Problem Solving ● Elementary - Middle School English Learners K-12 ● Use and connect math representations ● Visual Supports for Autism ● Concept Mapping[20] ○ Concept-based instruction in social studies ○ Hexagonal thinking ● Summarization[21] and Notetaking[22] ○ Cornell Notes ■ Template ○ Other instructional strategies

[20] Effect size .64, Fisher, Frey & Hattie, 2016
[21] Effect size .74 Hattie, 2021
[22] Effect size .51, Hattie 2021

Appendix D: Social-Emotional-Behavioral Health - Learning Concepts

All of the reviewed learning concepts in the following table are effective at improving student outcomes for SEBH. Many of the learning concepts are also effective at improving academic engagement and progress in school.

Social-Emotional-Behavioral Health: Learning Concepts

Item	Critical Learning Concept	Description	Select Implementation Resources
1	Consistent, Organized, and Respectful Learning Environments[23]	To build and foster positive relationships, teachers should establish age-appropriate and culturally responsive expectations, routines, and procedures within their classrooms. *Effective as part of universal instruction.	Preschool ● High Quality Environments Practice Checklist ● Pyramid Model Practices Implementation Checklist ● Routines & Schedules (CSEFEL Training Kits) Elementary ● Classroom Management K-12 ● A Guide to Creating Trauma-Sensitive Schools ● Classroom Behavior Management (IRIS) ● Instructional Practices That Integrate Equity-Centered Social, Emotional, and Academic Learning ● Iowa's Conditions for Learning (CfL) Practice Brief ● Midwest PBIS Network Resources ○ Classroom Practices ○ Classroom Practices Observation Tool ○ Installation and Coaching of Classroom Practices (slidedeck) ● PBIS Cultural Responsiveness Field Guide: Resources for Trainers and Coaches

[23] Epstein et al., 2008; Korpershoek et al., 2016; Long, Miller, & Upright, 2019; Simonsen et al., 2008

			• Strategies for Trauma-Informed Distance Learning • Supporting and Responding to Students' Social, Emotional, and Behavioral Needs: Evidence-Based Practices for Educators • The Classroom Check-Up
2	Connectedness, Adult-Student, Student-Student Relationships[24]	Extensive correlational research points to relationships as a key to wellbeing, resilience, progress in school, and staying in school. Programs that nurture developmental relationships and connectedness show outcomes for staying and progressing in school.[25] *Effective as part of universal instruction and intervention supports.	Preschool • Pyramid Model Practices Implementation Checklist Preschool-12 • Building Relationships as a Foundation of Trauma-Informed Practices in Schools • Character Strong S.E.R.V.E Model • Check & Connect • Peer Mediated Instruction Module (Free sign-in) • Prevent Dropout by Connecting Students with a Trained Adult Advocate to Provide Individualized Support. • Relationship-Building Strategies for the Classroom • Relationships First: Creating Connections that Help Young People Thrive
3	Individualized Cognitive-Based and Problem-solving Interventions[26]	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	Secondary • Cognitive Behavioral Intervention for Trauma in Schools (CBITS) • CBT Express (book) • Mental Health: Targeted School-Based Cognitive Behavioral Therapy Programs to Reduce Depression and Anxiety Symptoms

[24] Roorda et al., 2011; Rumberger et al., 2017; WWC, 2015
[25] Sinclair et al., 1998; Sinclair, Christenson, & Thurlow, 2005
[26] Das et al., 2016; Simpson, Peterson, & Smith, 2010

		emotions, and establish helpful patterns of thought and behavior. *Effective as part of community-based mental health intervention supports, as the research on effectiveness of school-based mindfulness interventions (stress-reduction; cognitive therapy) is in its infancy.[27]	• Resilience Education Program • TRAILS 3-Tiered Mental Health Model
4	Teacher Provided and Integrated Targeted Skill Development and Contingency Management[28]	For students at-risk for or having mental health symptoms and externalizing concerns, to provide targeted skill development and contingency management integrated into the normal academic curriculum/day daily or multiple times per week. *Effective as part of school-based intervention supports.	Preschool-K • Preparing Young Children for School • Pyramid Model Practices Implementation Checklist K-12 • Addressing Disruptive and Noncompliant Behaviors (Part 1): Understanding the Acting-Out Cycle • Addressing Disruptive and Noncompliant Behaviors (Part 2): Behavioral Interventions • Behavioral Contracting • Midwest PBIS Network Check-in Check-out (CICO) Intervention (Tier 2) • Midwest PBIS Network Tier 2 Continuum of Interventions Beyond CICO • Integration Approach for Classroom Educators
5	Teach Skills for Learning[29]	Actively teach students socially and behaviorally appropriate skills using strategies focused on both individual students and the whole classroom.	Preschool • Embedded Instruction Practice (and Checklist) • Regularly provide intentional, engaging instruction and practice focused on social-emotional skills

[27] Felver et al., 2015; Wearner-Seidler et al., 2017
[28] Sanchez et al., 2018
[29] Clarke et al., 2021; Durlak et al., 2011; Epstein et al., 2008; Mahoney et al., 2018; Taylor et al., 2017

		*Effective as part of school-based universal instruction and intervention supports.	Elementary ● Teach and reinforce new skills to increase appropriate behavior and preserve a positive classroom climate K-12 ● Skills for Learning EBP Brief ● A Comprehensive Guide to 21st Century Skills ● Explore Non-Academic Skills for Learning (Harvard) ● Instructional Practices That Integrate Equity-Centered Social, Emotional, and Academic Learning ● Positive Behavioral Interventions & Supports: Practice Guide 1 & Practice Guide 2
6	Function Based Interventions	Function based interventions ensure a student's plan centers on why a student behaves the way they do. FBA allows teams to identify which interventions are most likely to be useful for an individual student. Plans resulting from a formal FBA process will include strategies for: ● Preventing unwanted behavior ● Teaching appropriate behavior ● Positively reinforcing appropriate behavior ● Reducing rewards for unwanted behavior ● Ensuring student safety	Preschool ● Individualized Intensive Interventions: Determining the Meaning of Challenging Behavior (Module 3a) ● Pyramid Model Practices Implementation Checklist Preschool-12 ● Functional Behavior Assessment and Intervention Module ● FBA Guides You may also contact your AEA for possible Functional Behavior Assessment and Behavior Intervention Planning resources.

Appendix E: Literacy - Learning Concepts

All of the reviewed learning concepts in the following table effectively improve student learning outcomes for literacy. The learning concepts are also effective as part of universal instruction and intervention supports across various 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.

Deep knowledge of the science of reading is necessary to teach the skills needed to master the fundamentals of reading instruction: phonological awareness, phonics, fluency, vocabulary, comprehension, writing, and language. Schools are encouraged to support teachers in learning about the science of reading. Educators are more likely to turn knowledge into practice that impacts student outcomes when they have sufficient practice, including coaching/feedback during practical experience[30]. Districts can contact the local AEA for possible professional learning offerings focused on the science of reading.

Literacy: Learning Concepts

Item	Learning Concept	Description	Select Implementation Resources
1	Comprehension	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 fluency building and gradual release.	Elementary • eLearning Using Text Structures to Understand and Summarize Text Module (IRRC - Third-Fifth) • eLearning Varied Practice Reading Module (First-Fifth; IRRC) • High-Priority Milestones for K-3 Literacy Development • Teach students how to use reading comprehension strategies. Upper Elementary - Secondary • Build students' decoding skills so they can read complex multisyllabic words. (Fourth-Ninth) • Helping Your Students Become Self-Regulated Readers (Fourth-Twelfth) • Provide direct and explicit comprehension strategy instruction. (Secondary) • Provide purposeful fluency-building activities to help students read effortlessly. (Fourth-Ninth)

[30] Moats, 2009; Martinussen et al., 2015; Brady et al., 2009

			• Provide students with opportunities to practice making sense of stretch text (i.e., challenging text) that will expose them to complex ideas and information. (Fourth-Ninth) • Routinely use a set of comprehension-building practices to help students make sense of the text. (Fourth-Ninth) • Teaching Students to Get the Gist: Toolkit (Middle School) See also Explicit/Explicit and Systematic Instruction in Appendix C.
2	Decoding	Teach students to decode words, analyze word parts, and write and recognize words, including understanding morphology from less to more complex words.	K-Third • eLearning Teaching Students to Map Phonemes to Graphemes Module (IRRC) • High-Priority Milestones for K-3 Literacy Development • Teach students to decode words, analyze word parts, and write and recognize words. Middle School • How Can I Help My Middle Schooler Read Multisyllabic Words? Fourth-Ninth • Build students' decoding skills so they can read complex multisyllabic words. • Provide purposeful fluency-building activities to help students read effortlessly.
3	Emergent Literacy[31]	Teach young children about print knowledge, phonological awareness, vocabulary, and oral language through interactions, conversations, experiences, and relationships with caring adults in their lives.	Preschool • Build children's knowledge of letters and sounds • Use shared book reading to develop language, knowledge of print features and knowledge of the world • Foundations in Emergent Literacy Instruction ○ Professional Learning Community (PLC) Materials

[31] WWC, 2006

			○ Snapshot ● What does 20 years of research say about teaching language and literacy in preschool? Preschool-K ● eLearning Interactive Reading Module (IRRC) ● Preparing Young Children for School
4	Intensive Intervention in Critical Reading Concepts (Intended Primarily for Intervention-Type Supports)	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. ● Foundational skills ● Text reading fluency ● Vocabulary building ● Strategies for understanding and using text features for different genres ● Self-regulated use of comprehension strategies	Elementary English Learners ● Provide intensive small-group reading interventions. Upper Elementary ● Word Recognition and Fluency: Effective Upper-Elementary Interventions for Students With Reading Difficulties Fourth-Ninth ● Build students' decoding skills so they can read complex multisyllabic words. ● Provide purposeful fluency-building activities to help students read effortlessly. ● Provide students with opportunities to practice making sense of stretch text (i.e., challenging text) that will expose them to complex ideas and information. ● Routinely use a set of comprehension-building practices to help students make sense of the text. Secondary ● Make available intensive and individualized interventions for struggling readers that can be provided by trained specialists.
5	Phonological Awareness and Alphabetic Principle	Teach students to recognize and manipulate the segments of sounds in words and to link those sounds to letters in preparation for reading words and comprehending text. This	K-3 ● Develop awareness of the segments of sound in speech and how they link to letters. ● High-Priority Milestones for K-3 Literacy Development

		supports students in reading nearly 70% of regular monosyllabic words.	
6	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.	Elementary • High-Priority Milestones for K-3 Literacy Development • Mathematical Language • Vocabulary for English Learners Secondary • Provide explicit vocabulary instruction K-12 • eLearning Effective Vocabulary Instruction After Reading: Frayer Model Modulelan (IRRC) See also Explicit/Explicit and Systematic in Appendix C.
7	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.	K-12 • Evidence-Based Practices for Writing Instruction (CEEDAR Center) Elementary • High-Priority Milestones for K-3 Literacy Development • Implementing the Writing Process • Teach students to use the writing process for a variety of purposes. Secondary • Developing Evidence-Based Arguments from Texts • Developing Persuasive Writing Strategies • Explicitly teach appropriate writing strategies using a Model-Practice-Reflect instructional cycle • Writing Next: Effective Strategies to Improve Writing of Adolescents in Middle and High Schools

Appendix F: Mathematics - Learning Concepts

All of the reviewed learning concepts in the following table are effective at improving student learning outcomes for mathematics. The learning concepts are also effective as part of both universal instruction and intervention supports across a range of grades unless indicated otherwise.

It is important to recognize that implementing high quality, standards aligned instructional materials is one of the most important decisions educators can make. What students learn in the classrooms is heavily influenced by instructional materials. Schools are encouraged to select high quality instructional materials as a starting place in addressing cluster proficiencies, fluencies and the Major Work of the Grade. One such set of curricular materials is Illustrative Mathematics (IM). IM is an open education resource and is the highest rated by EdReports for its alignment to the standards with respect to the Mathematics Shifts: Focus, Coherence, Rigor, the Standards of Mathematical Practices and usability. This version is available from Kendall Hunt and will be available through Iowa e-Learning Central. See also Curriculum Materials Matter: Evaluating the Evaluation Process.

An additional resource that supports learning across a range of elementary and secondary math content is Derivita. Derivita is an online math teaching application that allows educators to create assignments and assessments that offer immediate student feedback, that support students in their problem-solving process, and provide scaffolds for access to core instruction.

Mathematics: Learning Concepts

***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.*

Item	Learning Concept	Description	Select Implementation Resources
1	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.	Secondary ● Algebra Talks: Teach students to intentionally choose from alternative algebraic strategies when solving problems
2	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.	Elementary-Middle School ● Number Talks ○ Help students recognize that fractions are numbers and that they expand the number system beyond whole numbers

			○ Help students understand why procedures for computations with fractions make sense
3	Numbers and Operations**	Number and operations is a foundation content area for children's 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.	Preschool-Kindergarten ● Learning & Teaching with Learning Trajectories ● Provide intentional instruction to build children's understanding of mathematical ideas and skills ● Teach number and operations using developmental progression. Elementary ● Flexibility Formula for K-2 Grades ● Flexibility Formula for 3rd-5th Grades Preschool-Eighth ● McGraw Hill Number Worlds (Intervention)
4	Interventions in Elementary Grades	Engaging in systematic intentionally planned instruction that incrementally develops understanding over time through these recommendations has consistent evidence for improved outcomes for diverse student populations.	Elementary Number Talks - Whole Numbers ● Mathematical Language: Teach clear and concise mathematical language ● Number Lines: Use the number line to facilitate the learning of math ● Provide systematic instruction during math intervention ● Representations: Use a well-chosen set of concrete and semi-concrete representations to support math concepts and procedures ● Use learning trajectories to support sequential instruction ● Word Problems: Provide deliberate instruction on word problems

			• Timed Activities: Regularly include timed activities as one way to build fluency in mathematics.
5	Problem Solving: Word Problems	Provide deliberate instruction on word problems to deepen students' mathematical understanding and support their capacity to apply mathematical ideas. *While this practice may be effective for universal instruction, evidence-base is for intervention-type supports.	Elementary • Provide deliberate instruction on word problems • Provide instruction on common underlying structures of word problems K-Secondary • Promote mathematical language use and development
6	Problem Solving	Provide opportunities for students to think through or reflect on the problem-solving process. Provide questions, prompts, and model monitoring and reflecting.	Intermediate - Middle School • Assist students in monitoring and reflecting on the problem-solving process.
7	Representing Real Numbers: Number Line	Use the number line to teach representation of whole numbers, fractions, decimals and an understanding of magnitude and operations. *While this practice may be effective for universal instruction, evidence-base is for intervention-type supports.	Elementary • Use the number line to facilitate learning of math concepts and procedures
8	Vocabulary: Essential Content Words	Teach clear and concise mathematical language and support students' use of the language to communicate understanding of mathematics concepts. *Effective as part of universal instruction and intervention supports.	Elementary • Teach clear and concise mathematical language and support students to communicate their understanding

Appendix G: Mathematics - Major Work of the Grade

Introduction

Unlike other reviewed practices or concepts in this resource, the recommendations in the following table 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.

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, 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

Additional Resources

- Accelerated Learning from TNTP
- Achieve the Core Coherence Map
- Common Core State Standards for Mathematics - Appendix A: Designing High School Mathematics Courses Based on the Common Core State Standards
- PARCC Model Content Frameworks: Mathematics Grades 3-11. Version 5.0

Mathematics: Major Work of the Grade

(All Major Work of the Grade resources can be found at Achieve the Core's Mathematics: Focus by Grade Level)

Item	Major Work of the Grade	Description	Select Implementation Resources
1	K-2nd Grade	Addition and subtraction – concepts, skills, and problem solving; place value and	• Kindergarten Major Work • 1st Grade Major Work

		required fluencies for addition and subtraction.	• 2nd Grade Major Work
2	3rd-5th Grade	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving and required fluencies.	• 3rd Grade Major Work • 4th Grade Major Work • 5th Grade Major Work
3	6th Grade	Ratios and proportional relationships; early expressions and equations and fluencies for division and decimal operations.	• 6th Grade Major Work
4	7th Grade	Ratios and proportional relationships; arithmetic of rational numbers.	• 7th Grade Major Work
5	8th Grade	Linear algebra and linear functions.	• 8th Grade Major Work
6	High School: Widely Applicable Prerequisites	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: • Number and Quantity • Algebra • Functions • Geometry • Statistics and Probability • Applications from Grades 6-8	• High School Content from Common Core State Standards for Mathematics (CCSSM) Widely Applicable as Prerequisites for a Range of College Majors, Postsecondary Programs and Careers*