IES Institute of Education Sciences

Developing effective fractions instruction for kindergarten through 8th grade

Assessing district/school conditions for implementing the recommendations

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This tool is for leaders and administrators (including principals, assistant superintendents, and curriculum directors) to

- Self-assess and monitor district or school conditions for implementing the recommendations in the *Developing Effective Fractions Instruction for Kindergarten Through 8th Grade* practice guide.
- Engage in a collaborative process to reflect on, improve, and sustain conditions for effective fractions learning and teaching.

The conditions in this tool are not prerequisites; implementation can proceed simultaneously with improving the conditions to achieve optimal implementation of the practice guide recommendations.

Leaders and administrators are essential in building systemic approaches to improving teaching and learning and in providing supports for teacher success.[1] This tool is based on recommendations in the What Works Clearinghouse practice guide *Developing Effective Fractions Instruction for Kindergarten Through 8th Grade*.

Components of the tool

The checklist of district/school conditions is a rubric for leaders and administrators to self-assess which conditions (such as administrator support) for implementing the practice guide recommendations, including recommendations for professional development, exist within the district or a particular school. The checklist also provides space for notes and questions.

The reflection/discussion prompts following the checklist guide reflection and discussion about priorities and next steps related to current conditions, whom to include in conversations about these conditions, and what to discuss with mathematics leaders about implications for teacher professional development.

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Practice guide recommendations

The checklist of district/school conditions and the reflection/discussion prompts focus on optimizing the conditions for successful implementation of the following five practice guide recommendations.

Recommendation 1

Build on students' informal understanding of sharing and proportionality to develop initial fraction concepts.

Recommendation 2

Help students recognize that fractions are numbers and that they expand the number system beyond whole numbers. Use number lines as a central representational tool in teaching this and other fraction concepts from the early grades on.

Recommendation 3

Help students understand why procedures for computations with fractions make sense.

Recommendation 4

Develop students' conceptual understanding of strategies for solving ratio, rate, and proportion problems before exposing them to cross-multiplication as a procedure to use to solve such problems.

Recommendation 5

Professional development programs should place a high priority on improving teachers' understanding of fractions and of how to teach them.

Readers are encouraged to use the advice provided in ways that work best in their context. Users of this practice guide may decide to implement some or all recommendations. The complete practice guide is available on the What Works Clearinghouse website: https://ies.ed.gov/ncee/wwc/PracticeGuide/15

A. Instructions for the tool

Administrators or leaders should use this tool in their district/school to self-assess current conditions for implementing the practice guide recommendations at any of the following time points:

- When beginning to use the Teaching Fractions Toolkit to implement the recommendations in the practice guide.
- When planning for the Teaching Fractions Toolkit professional development for teachers, with a particular focus on the second section of the checklist. The second section of the checklist, which begins on question 8, focuses on grade 6 professional learning, but leaders could use the same items to consider professional learning at other grade levels in line with the practice guide recommendations.
- Periodically (for example, annually) thereafter to check in on current conditions.

Checklist ratings. Consider how well your district or school currently meets the conditions listed in each row of the checklist by asking yourself, "To what extent does this condition exist right now in my district or school?" Decide whether the condition is "not currently present," "partially present or in process," or "present" and put a mark in the corresponding column in the checklist.

Evidence for checklist ratings. To determine the rating for each condition, collect whatever evidence may help you determine the current state of that condition. Examples of evidence that may be helpful to review include current mathematics curriculum guides, existing professional development schedules, and attendance lists for professional development. Other data to support ratings could come through conversations or surveys with leaders or teachers. Evidence will vary based on the condition. An example of evidence that all instructional leaders understand the practice guide recommendations (item 1) could be a note that district mathematics coaches have reviewed and discussed the recommendations and identified ways to support teachers. Examples of evidence that teachers involved in mathematics instruction have opportunities to participate in professional learning (item 9) could include a professional learning calendar or link to a syllabus aligned with the practice guide recommendations combined with attendance records for that professional learning. If you cannot determine the degree to which a condition exists after reviewing available data, mark the "not sure" column and make plans to learn more about this condition in your district or school.

Checklist notes. In the far-right column, add notes about existing evidence to support the rating, any additional evidence needed, and/or what is necessary to optimize the conditions for implementing the practice guide recommendations.

Reflection/discussion prompts. After completing the checklist, reflect on and discuss the checklist ratings and their implications with other leaders in your district or school using the prompts found at the end of this tool. The first section of prompts is for general use of the checklist, and the second set of prompts will guide conversations with leaders who may be directly involved in leading the Teaching Fractions Toolkit professional development.

B. Checklist of district/school conditions

Conditions for implementing the practice guide recommendations	Not currently present	Partially present or in process	Present	Not sure	Evidence for this rating (or notes about what is needed)
1. All instructional leaders understand the practice guide recommendations so that they can support teachers. ***Possible sources of evidence:*** *survey of leader practice, mathematics leader professional development logs, observations.*	☐	☐	☐	☐	
2. Teachers have administrator support to implement the practice guide recommendations[a] within their regular classroom instruction. ***Possible sources of evidence:*** *interviews or surveys with educators.*	☐	☐	☐	☐	
3. Teachers have a curriculum aligned with implementing the practice guide recommendations within their regular classroom instruction. ***Possible sources of evidence:*** *district curriculum guides, grade level scope and sequence documents, teacher lesson plans.*	☐	☐	☐	☐	
4. Teachers have access to tools and resources that support student use of visual representations, such as fraction strips, technology, and curricular materials that include visual representations. ***Possible sources of evidence:*** *district curriculum guides, classroom resource inventories, sign-up logs for materials, technology resources.*	☐	☐	☐	☐	
5. Teachers have resources from their curricular materials to assess student misunderstandings about fractions. ***Possible sources of evidence:*** *reviews of mathematics curricula identifying embedded assessments, documentation of available digital and print mathematics formative assessments.*	☐	☐	☐	☐	
6. Teachers have coaching support from instructional leaders to analyze results from assessing student understandings and misunderstandings about fractions. ***Possible sources of evidence:*** *mathematics leader professional development and coaching logs and descriptions.*	☐	☐	☐	☐	
7. Teachers have support from coaches or leaders to understand their students' cultural and linguistic backgrounds as they plan their instruction. ***Possible sources of evidence:*** *district equity plans, coaching logs.*	☐	☐	☐	☐	

[a] Administrator support includes providing teachers with permission and authority to make decisions in line with the practice guide recommendations in their classrooms (for example, by being explicit about teachers drawing on their expertise when making instructional planning decisions and/or providing collaborative planning time opportunities).

Conditions for implementing professional learning in support of the practice guide recommendations	Not currently present	Partially present or in process	Present	Not sure	Evidence for this rating (that exists or is needed)
8. One or more instructional leaders or professional learning providers have been identified and are prepared and able to facilitate the implementation of professional learning about teaching fractions with sixth-grade teachers. ***Possible sources of evidence:*** *professional learning provider lists.*	☐	☐	☐	☐	
9. All teachers involved in sixth-grade mathematics instruction have opportunities to participate in professional learning. This includes mathematics classroom teachers, mathematics coaches, special education teachers, and teachers of multilingual learners and English learner students. ***Possible sources of evidence:*** *professional learning syllabi and attendance logs.*	☐	☐	☐	☐	
10. There is dedicated time in the school day or within contract hours for teachers to participate in professional learning focused on fractions teaching and learning. ***Possible sources of evidence:*** *professional learning schedules, late start, or early release schedules.*	☐	☐	☐	☐	
11. Structures and norms are in place for sharing and discussing student work during professional learning. ***Possible sources of evidence:*** *professional learning schedules and associated agendas, professional learning course syllabi, student work review protocols.*	☐	☐	☐	☐	
12. Teachers can earn meaningful certificates, credits, and/or micro-credentials for participation in professional learning. ***Possible sources of evidence:*** *policies supporting certificates, credits, and/or micro-credentials, professional learning* documentation.	☐	☐	☐	☐	
13. Appropriate spaces, technology, and internet access are available during professional learning for participating teachers to engage meaningfully, including within small groups, and to access, explore, and share materials. ***Possible sources of evidence:*** *resource inventories (including technology software and hardware), sign-up logs for resources.*	☐	☐	☐	☐	

C. Prompts for leader reflection and discussion

Use these prompts to support collaborative reflection and discussion among leaders and administrators in your district or school (including principals, assistant superintendents, and curriculum directors) about your self-assessment of school/district conditions and any next steps.

Leaders are encouraged to reflect on what was revealed about the district or school conditions by completing the checklist of district/school conditions. Use the questions in the following two sections.

- To prompt reflection and discussion about conditions based on the checklist ratings.
- To support follow-up discussions with mathematics leaders responsible for professional learning opportunities in the district or school.

Reflecting on the checklist of district/school conditions ratings

1. Review the checklist. What priority areas need follow-up?

2. What other data need to be gathered to understand or take action on any of the conditions in the checklist?

Reflecting on implications for professional development

3. How do plans for professional learning (including the Teaching Fractions Toolkit professional development modules) fit within the context of current mathematics learning, teaching, curriculum, and policy priorities in the district?

4. How is prioritizing fractions teaching and learning emphasized to teachers and leaders? (See Roadblock 5.1 in the practice guide for more information about the rationale for focusing professional learning on fractions.)

5. Who is participating or will participate in the professional learning opportunities? What student populations should teachers in the professional development keep in mind in your district or school context to ensure equitable participation in mathematics learning by all students?

6. What action steps are needed to maximize the success of professional learning? (Review your checklist of district/school conditions ratings and practice guide Recommendation 5 when considering this prompt.)

[1] Park, J.-H., Lee, I. H., & Cooc, N. (2019). The role of school-level mechanisms: How principal support, professional learning communities, collective responsibility, and group-level teacher expectations affect student achievement. *Educational Administration Quarterly, 55*(5), 742-780. https://eric.ed.gov/?id=EJ1232698