Guiding Principle: Well-structured, intentional fluency practice supports students' ability to carry out procedures flexibly, accurately, efficiently, and appropriately.

What is fluency?

According to the National Research Council (2001), fluency allows students to carry out procedures flexibly, accurately, efficiently, and appropriately. It is a key component of mathematical proficiency, especially when combined with conceptual understanding, strategic competence, reasoning, and a productive disposition or the inclination to see oneself as able to learn mathematics.

Numerical fluency includes the ability to think flexibly about the value of a number, leading to robust understanding of equivalent representations of a number. Multiple experiences over time with composing and decomposing numbers in a variety of ways support the development of numerical fluency through connections to properties of operations, magnitude, and fact fluency. As numerical fluency increases, students' cognitive load is lightened, allowing for a greater focus on new or developing mathematics content.

A student demonstrates computational fluency, rooted in numerical fluency, through efficient and accurate methods for computing. Students choose computational methods based on the problem, understand and explain these methods, and use the chosen method to produce accurate solutions efficiently. This reflects number sense, skills, and performing operations.

Procedural fluency includes understanding of algorithms and procedures; when to use them; and skill in performing them. Experiences with comparing and contrasting various computation strategies contribute to the development of procedural fluency. Computation strategies may include the use of manipulatives, mental math, written procedures, and calculation devices. Procedural fluency with estimation supports students in determining the reasonableness of solutions. In this way, procedural skills complement the development of computational fluency.

Intentional fluency practice builds students' fluency with needed procedures while building on a foundation of conceptual understanding. Fluency contributes to learning and is neither a set of isolated skills nor compartmentalized ideas.