

Formative Assessment Overview: What the Research Says

If you have been in education for any period of time, you may have noticed the buzz around formative assessment getting louder with each passing school year. There are many reasons why formative assessment is considered critical in student learning and practical instruction. This chapter will spend some time diving into the research behind formative assessment to lay the groundwork for the rest of this book.

Like all good practitioners, we believe that the more time we spend on high-yield, research-based strategies, the better off our students will be as a result of our efforts. We spent a great deal of time reviewing the large body of research on the most effective educational practices and firmly believe that spending time and energy on formative assessment and feedback is time well spent.

Creating a Common Language

Before diving into all the types and forms of formative assessment, we must develop a shared understanding of what formative assessment is and a common language around this critical educational practice. Once we have completed that, we will dive into what the research tells us about why formative assessment matters.

This handbook defines formative assessment as

Any assessment task designed to promote students' learning. The purpose of these tasks is to provide feedback for teachers and students so that in-the-moment adjustments can be made to teaching and learning opportunities to more effectively enable students to reach proficiency.

It is important to note that for this conversation, there are two critical components of formative feedback:

- Formative feedback is an in-the-moment assessment that can provide immediate information to students and educators about the learning taking place in the classroom.
- This information must be used to make adjustments to and drive future instruction within the school.

If either of these elements is missing, an authentic formative assessment has yet to occur.

While we imagine the vast majority of readers have a highly developed understanding of assessment, it is crucial to take a moment and make sure we are all speaking the same language when we talk about assessment.

- Summative assessment—or *assessment of learning*—is exactly as it sounds. When teachers provide an assessment to the students at the end of a defined learning cycle, after which the material has been taught, re-taught, and mastery is expected, they engage in summative assessment. Common summative assessment examples include end-of-course exams, district benchmark testing, standard end-of-unit tests, and end-of-the-school-year statewide exams, which help create school grades and ratings.
- Formative assessment—or *assessment for learning*—is focused on identifying students' needs *and* responding to those learning needs. Formative assessment requires teachers to make frequent,

interactive, and feedback-driven assessments to better adjust their instruction to help *all* students reach high standards. The most effective formative assessments work to involve the students in the process actively and to take ownership of their learning.

One main reason that formative assessment has become an education “go-to” is that it can produce more significant results than many other current strategies. It is often more time and cost-effective than many other options to boost student achievement. Suppose a school leader on a tight budget has the option to reduce class size or provide solid professional development (PD) on formative assessment and work toward fidelity of implementation. In that case, I can tell you which one their budget would probably dictate needs to be selected.

A Brief Overview of the Research Supporting Formative Assessment

While the purpose of this book is not to complete an exhaustive research review, we feel that any time teaching methods are discussed, that conversation should be squarely framed around what the research tells us is best for student learning and performance. To that end, we will dive into a brief but essential overview of the research behind the formative assessment.

One of the main reasons that education has felt, at times, like a pendulum, shifting from one new idea to initiative to the next, is because the most recent “new idea” was just that—one person’s idea of what would work best with kids.

If John Hattie taught us anything in his work on effect sizes, it is that, by and large, what we are doing in education works. Over 95% of the 256 influences related to student achievement that he analyzed in his meta-analysis had a positive impact on student achievement, and those that did not were pretty obvious. No one is surprised by the idea that

bullying or moving harms student learning (Hattie, 2015). So *if* it can be said that, by and large, most of what we are doing in education works, it is incumbent upon us, the practitioners, to utilize data to determine what works *best*.

In his review of meta-analyses on classroom feedback, Hattie (2015) found that formative feedback can significantly contribute to students' achievements, averaging an effect size of .73 (or nearly two years' growth in one year). As a classroom teacher, you know that you cannot focus your time everywhere, so it makes sense to look at those strategies that have the most significant overall impact on student achievement. Formative assessment and feedback are two areas where student growth exceeds the expected annual growth of "one year's growth in one year" and instead falls into "the zone of desired effects," where influences significantly exceed anticipated annual growth expectations.

In addition to Hattie's work, many other researchers, educational organizations, and institutions have studied the impact of formative assessment on student learning outcomes. There is also a large body of past and present research that has served to remind all educators that education is both an art and a science.

According to a policy brief from the OECD Observer and the Centre for Educational Research and Innovation (CERI), *achievement gains* associated with formative assessment have been described as "among the largest ever reported for educational interventions" (OECD, 2005).

Furthermore, the study concluded that using formative assessments positively impacts equity. According to CERI, "formative assessment also improves equity of student outcomes. Schools that use formative assessment show not only general gains in academic achievement but also exceptionally high gains for previously underachieving students. Attendance and retention of learning are also improved, as well as the quality of students' work" (OECD, 2005).

In their article "Inside the Black Box: Raising Standards Through Classroom Assessment," Black and Wiliam conducted a thorough research

review. They determined that practical formative assessment includes teachers adjusting theory teaching in response to student learning and students receiving feedback with specific information about how they can improve their academic outcomes, including the integration of self-assessment. Their research review concluded that formative assessment can account for the largest ever reported gains as an educational intervention for lower-achieving students (Black and Wiliam, 1998).

Goertz, Olah, and Riggan, in their 2009 policy brief titled “Can Interim Assessments be Used for Instructional Change?” dove into a study of 45 elementary school teachers across nine schools and two districts. Their goal was to determine how well formalized formative assessments (specifically, interim assessments in math) impacted teachers’ use of data in a cycle of instructional improvement. The goal was to determine how teachers gathered or accessed evidence about student learning; next, how they analyzed and interpreted that evidence, and how they used evidence to plan instruction and carry out improved instruction. While they found interim assessments to be effective in guiding instruction, their main conclusion was that interim assessments designed for instructional purposes are helpful but insufficient to inform instructional change. Essentially, those quarterly assessments are not happening often enough, and the data is not utilized widely enough to guide classroom practices. This truly speaks to the need for real-time, moment formative assessment as the most effective way to meet the needs of all students and impact instructional practice.

Grant Wiggins and Jay McTighe (2005) reflect heavily on the importance of “beginning with the end in mind” and the critical role of both backward planning and authentic, timely, and specific feedback as key components of meaningful learning. In *Understanding by Design*, Wiggins and McTighe argue that backward design is focused primarily on student learning and understanding. When teachers are designing lessons, units, or courses, they often focus on the activities and instruction rather than the outputs of the instruction. They suggest instead that beginning

with the *know* and *show* output from the instruction allows for teachers to develop formative assessment, which helps build the level of student understanding and assists teachers in developing appropriate formative assessments throughout the learning sequence.

Renowned education researcher Robert Marzano dives deep into citing the significant impact that instructional feedback has on formative and summative assessment scores. Throughout this book, we will be referring to their work, as appropriate, to point out the places that it ties into the instructional practices that we present. In his 2010 work *Formative Assessment & Standards-Based Grading*, Marzano details specific benefits of formative assessment. He dives into the true importance of formative assessment as it relates to student performance, growth, and grading. He spends a large amount of time reminding his readers that formative scores are not an accurate way to determine student grades. Specifically, he shares that when a teacher tracks a student's formative scores for one unit, the student's scores will generally show a progression of learning and therefore a student's scores likely will be lower at the beginning of a unit than at the end. If a teacher averages a student's formative scores to calculate a summative score, the resulting summative score would be lower than the student's actual current level of skill, as it would give early scores the same weight as later scores. Marzano suggests instead that teachers should give more weight to scores at the end of the unit, which generally best reflect students' level of mastery. He also puts a lot of emphasis on the importance of oral responses and teachers' discussions as a form of formative assessment, a concept we dive into in our chapter on dialogic teaching and dialectic synergy.

While most of our educational research review was focused on the United States, it is essential to note that formative assessment is widely embraced nationally. While formative assessment has become so commonplace that it is used at schools in 25 U.S. states as an official policy (Altman et al., 2010), it is not simply a U.S. education phenomenon. Nations across the globe, including Scotland, England,

New Zealand, Canada, Finland, Germany, Singapore, Sweden, and Spain, have all encouraged teachers to use formative assessment in the teaching and learning process.

The Benefits of Formative Assessment in the Classroom and Across the District

We would not have written this book had we not seen the substantial benefits of formative assessment firsthand. We believe, and the research supports, that utilizing formative assessment can increase student learning and teachers' feelings of efficacy. We have seen firsthand how formative assessment has increased student outcomes, increased student engagement, and improved teachers' instructional practices in the following areas:

- **Response to Intervention (RTI) and Multi-Tiered Systems of Support (MTSS).** Teachers can gauge student learning continually, create intervention groups, differentiate instruction, re-teach as needed, and scaffold learning by utilizing daily, weekly, monthly, and quarterly formative assessment practices.
- **Small group rotations for individualized instruction.** Research supports using small groups to tailor learning based on student needs.
- **Student agency.** When formative assessment is coupled with frequent and authentic feedback, students are more engaged in their learning and feel a true sense of ownership.

While most districts are talking about formative assessment, and many districts claim to utilize formative assessment, a deep dive into classrooms across America would tell a different story. *By and large, formative assessment has not been adopted to the level it needs to be to impact student outcomes.* It seems formative assessment is sprinkled into the curriculum and across classrooms, but teachers still feel the pressure for grades in the grade book and are moving on to “cover” their material.

Table 1.1 might help give insight into what a “typical” classroom looks like now and what it *could* look like if the formative assessment truly were embraced across the nation.

Table 1.1 Average classroom with and without formative assessment.

Topic	Current “average” classroom	Potential “average classroom” if formative feedback were embraced widely
Tests	While students may engage in some pre-assessment reviews and games/activities, students are given formal summative assessments, roughly once per week to once per unit, in all content areas.	Formal summative assessments would be given on an as-needed basis and may occur for different groups at different times. Teachers could focus on instruction to mastery <i>even if</i> it meant fewer assignments were graded. By and large, daily in-the-moment formatives would guide instruction and provide informal data for re-teaching.
Grades	The frequent assessments help teachers to have plenty of grades to put in the grade book to provide precise feedback to parents on student progress.	Grade books would have far fewer grades, but the hope is that students would have a higher degree of mastery overall.
Engagement	Students have varying levels of engagement, from the authentically engaged to the ritual compliance and rebellion. Typically, these levels of engagement closely mirror academic performance.	All students have increased levels of engagement as they can begin to see how they can be successful in their learning and have a hand in their success.
Feedback	Feedback is provided regularly on assessments, although the frequency varies by teacher. Typically, when students receive feedback, it is on a summative assignment and a grade has been entered.	Feedback is provided regularly on low-stake activities. Students are pushed to learn and change, provided success criteria, and given a clear indication of what is needed to succeed when a grade is assigned.

Topic	Current “average” classroom	Potential “average classroom” if formative feedback were embraced widely
Instruction	Teachers begin each school year with a pacing guide and a set of lessons they intend to teach. As the year goes on, they make minor adjustments based on changes to the school calendar, but by and large, they closely align with the pacing guide.	While teachers begin each school year with a pacing guide and a set of lessons they intend to teach, they administer pre-assessments and formative assessments as the year progresses. They can adjust the pacing of their instruction based on student and classroom needs. Some content can be skipped over, while other content is given additional time so students reach mastery.
Differentiation	At the beginning of the school year, the teacher reviews testing data and creates groups based on a student’s overall academic profile. When and if students are provided small group instruction, they attend with a homogeneous group of students.	Rather than rely on the beginning-of-the-year assessments or previous test scores, teachers use in-the-moment formative data to create small intervention and enrichment groups based on student understanding of the specific content. These groups can change within each unit and vary from standard to standard.

The following are some key benefits of integrating formative assessment (with fidelity) into your everyday practice!

- **Clear expectations for student performance.** By implementing formative assessment regularly in your classroom, students have clear objectives, and teachers can intervene “at the moment” to clear up confusion and redirect student learning.
- **Frequent opportunities for feedback.** After setting clear expectations, the formative assessment process allows teachers to provide students with frequent, specific, and targeted feedback.
- **Improved student performance.** With clear expectations and the ability to receive regular, specific, and targeted feedback, this feedback

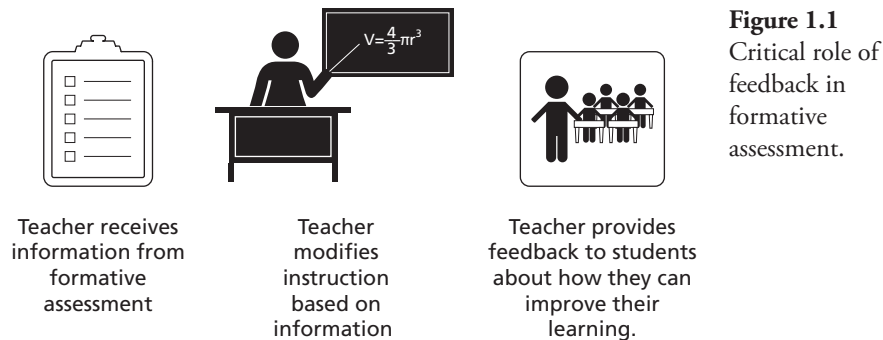
via formative assessment helps students narrow the divide between what they can do and the lesson expectations. By teaching students how to self-monitor (a key component of formative assessment), they can become self-regulated, independent, and autonomous in reviewing and correcting their work.

- **Increases in student engagement and agency.** Throughout the formative assessment process, students are called on to set their own learning goals and measure their progress; this directly impacts levels of student motivation and increases their agency in their learning.
- **More effective differentiation and scaffolding.** The formative assessment practice helps teachers better understand student needs. With this understanding, they can increase rigor and differentiate up or determine gaps and scaffold accordingly, which leads to more personalized learning opportunities.
- **Data-based instruction.** With formative assessment and multiple data points, teachers can better incorporate data in their decisions on how to re-teach, skip, and adjust their instruction.

Formative Assessment and Feedback

In his journal article “Formative Assessment and the Design of Instructional Systems,” D. Royce Sadler discussed the critical role of feedback in formative assessment. Sadler (1989) defined the formative assessment system as containing a feedback loop to minimize the gap between a learner’s current knowledge and the desired learning outcomes. He also clarified that information becomes valid only when a learner actively uses new information (feedback) to close any pre-existing gaps (p. 121).

Sadler’s model works as described in Figure 1.1.



Formative Assessment and the Ongoing Feedback Loop

The ongoing feedback loop and formative assessment are closely related, as they both focus on providing regular, ongoing feedback to students to help them improve their learning and progress. While formative assessment is a type of assessment that is designed to provide feedback to students and teachers throughout the learning process, to help students improve their learning and progress, the ongoing feedback loop is a key component of the formative assessment process. It involves regularly providing students with feedback on their learning and using that feedback to help them improve. This can take many forms, including teacher feedback on student work, peer feedback, and self-assessment. By providing regular feedback to students, teachers can help them understand what they are doing well and where they need to improve.

One of the key benefits of the ongoing feedback loop is that it allows students to receive regular feedback on their learning, which can help them stay on track and make progress. When students receive regular feedback, they are more likely to be engaged and motivated in their learning, and they are more likely to be successful. This is because regular feedback helps students to understand what they are doing well and where they need to focus their efforts to improve.

The ongoing feedback loop also helps teachers to understand their students' learning needs. By providing regular feedback to students, teachers can identify areas where students are struggling and provide targeted support and intervention. This can help to ensure that students receive the support they need to succeed and can help to prevent learning gaps from developing.

Overall, the ongoing feedback loop and formative assessment are closely related, and they both play an important role in helping students to learn and progress. By providing regular, ongoing feedback to students, teachers can help them to understand their learning needs, and provide the support they need to succeed. This, in turn, can help to improve student achievement and ensure that students are well prepared for the challenges of the future.

Summary

In this chapter, we began by creating a common language around formative assessment. We determined, for this book, formative assessment was any assessment task designed to promote students' learning. The purpose of these tasks is to provide feedback for both the teachers and the students so that "in-the-moment" adjustments can be made to teaching and learning opportunities to more effectively enable students to reach proficiency.

Next, we spent some time differentiating between summative assessment (assessment of learning) and formative assessment (assessment for learning). Finally, we did a shallow dive into some of the research supporting formative assessment, including work from John Hattie, The Centre for Educational Research and Innovation (CERI), Black and Wiliam, and Goertz, Olah, and Riggan (CERI, n.d.). Finally, we reviewed what a classroom looks like with and without authentically embedded formative

assessment and reviewed the overall benefits of a classroom that strategically embeds formative assessment throughout the learning sequence.

Key Takeaways

- I can define formative assessment.
- I can recognize the difference between formative and summative assessments.
- I understand some of the research supporting formative assessment and how utilizing formative assessment in my classroom can benefit my students in a variety of ways.
- I understand some of the research supporting formative assessment and how utilizing formative assessment in my classroom can benefit me as a teacher and my ability to gauge student progress.

