

Focus on FAME

What is the benefit of using the formative assessment process?

Formative assessment is increasingly recognized as an important part of the learning process. In this process, students and teachers work together to improve learning.

“Formative assessment is a process in which students and teachers work together to improve learning. Both students and teachers are active participants in the process as they generate, interpret, and use evidence of learning to 1) aim for learning goals, 2) apply criteria to the work they produce, and 3) decide on next steps” (Ryerse & Brookhart, 2018).

Black and Wiliam (1998) use the term “assessment” to refer to all of the activities that provide information that can be used as feedback to make adjustments to teaching and learning. They distinguish formative assessment as a process in which evidence of student learning is specifically used to adapt teaching to meet student needs. Formative assessment is a process focused on informing learning, rather than measuring learning. The focus is on learning as it is taking place with the purpose to move learning forward from the current status toward intended learning goals.

What does the research say about formative assessment?

Overall, research on formative assessment indicates:

- Formative assessment promotes the goals of lifelong learning, including higher levels of student achievement, greater equity of student outcomes, and improved learning to learn skills (OECD, 2005; Black & Wiliam, 1998).
- Teachers who engage in the formative assessment process report a changed classroom culture, increased clarity regarding goals, varied instructional practices, and positive interactions with students (OECD, 2005).
- Formative assessment produces greater increases in student achievement at a fraction of the cost of other programs, including reducing class size and increasing teachers’ content knowledge (NCTM, 2007).
- Formative assessment has been shown to improve students’ achievement when it occurs within and between lessons and instructional units (NCTM, 2007).



Focus on FAME is meant to help FAME program Leads, Coaches, and Learning Team members learn from the ideas and suggestions collected from their peers in the Formative Assessment for Michigan Educators (FAME) program. Each issue describes a specific set of findings and suggestions that result from the work of the Research and Development Team of the Michigan Assessment Consortium (MAC) FAME Project. *Focus on FAME* issues are archived in the FAME Resource Bank, available exclusively to FAME participants, at www.FAMEMichigan.org.

- In the classrooms where formative assessment was enacted within and between lessons and instructional units, teachers reported greater professional satisfaction and increased student engagement in learning (NCTM, 2007).
- Students in classes of teachers who participated in a professional development program on formative assessment outperformed students in a control group of teachers who did not (Andersson & Palm, 2017).

Research background

In their seminal study, *Inside the Black Box*, Black and Wiliam (1998) conducted an extensive survey of the research literature to answer the following questions:

- Is there evidence that improving formative assessment raises standards?
- Is there evidence that there is room for improvement?
- Is there evidence about how to improve formative assessment?

Their review, including material from 250 sources, indicated that the answer to each of the above questions was YES.

- Strengthening formative assessment practice results in significant, substantial learning gains (Black & Wiliam, 1998).
- Improved formative assessment helps the lowest achievers most (Black & Wiliam, 1998).

Table 1 displays examples of research on the effect size of formative assessment from several research initiatives.

Table 1: Examples of research on the effect size of formative assessment initiatives

Study	Standard Deviation Gains
Bloom (1984)	1.0 to 2.0 *
Black & Wiliam (1998)	0.5 to 1.0**
Meisels, et al. (2003)	0.7 to 1.5
Rodriguez (2004)	0.5 to 1.8**

* Rivals one-on-one tutorial instruction
 ** Largest gains for low achievers

To further clarify, the information in Figure 1 describes what +1 standard deviation gain score would be in various examples.

Figure 1: Examples of +1 standard deviation gain score in various assessment examples

1.0 Standard Deviation Score Gain Equals:
35 Percentile Points on ITBS (Iowa Test of Basic Skills)
2-4 Grade Level Equivalents
100 SAT Score Points
5 ACT Composite Score Points
US TIMSS would move from 23rd to top 5 (Third International Mathematics & Science Study)
Potential Elimination of Score Gaps

The study showed the largest effects occurred when teachers:

- increased the accuracy of formative assessment,
- enhanced the quality of formative assessment,
- increased descriptive feedback, and/or
- increased student involvement.

Every teacher needs to be getting better... better at something that will make a difference to their students....

— Dylan Wiliam

More recently, another meta-analysis estimated the effect size of formative assessment to be between 0.20 and 0.30 SD (Kingston & Nash, 2011). Regardless of the differences between studies, findings indicate a significant, positive level of impact of formative assessment.

It is important to note that there has been some criticism about research that combines all formative assessment together, because it is a complex process that often occurs amidst other changes to promote student centered learning (Bennett, 2011).

Scholars and practitioners are increasingly focusing on specific elements of formative assessment and the effects on student learning within content areas. One example is the extensive literature on the effects of the **use of feedback**—a key element in the formative assessment process.

One study on formative assessment and the effects on students who are learning to write indicated an average effect size for using feedback of 0.87 from adults, 0.62 from self, 0.58 from peers, and 0.38 from computers (Graham, Hiebert,

& Harris, 2015). One summary of meta-analyses on the effects of feedback found it was among the top influences on achievement, with an overall effect size of 0.79 (Hattie & Timperley, 2007)

The various findings, ranging from large-scale studies and policy briefs to specific research studies, demonstrate positive effects and benefits as students become active agents in the learning process through formative assessment.

“ We know of **NO OTHER WAY OF RAISING STANDARDS** for which such a strong case can be made on the basis of evidence of such large learning gains. **— Black & Wiliam, 1998** **”**

Findings from the Investigations by the MAC FAME Research and Development Team

Research on the FAME program shows the added impact of formative assessment professional development on coaches, learning teams, and students.

What do teachers report about the impact of formative assessment on students?

“The clearly-defined learning targets help them understand and focus on what they are learning. It also helps them to self-assess whether they are on target or not.” — FAME teacher

“Students seem to be placing more importance on their during-class learning and like knowing exactly what they are expected to learn. I have more and more students wanting to redo assignments to show their knowledge and explain their understanding the best way possible. There have been more one-on-one interactions and conversations about content between teacher/student and student/student when the descriptive feedback is given on assignments.” — FAME teacher

Figure 2 describes sources of data that were collected in the FAME program during one school year.

Teacher assessment practices

Table 2 depicts teacher assessment practices within the FAME program. In the left column, types of assessment practices are listed, including summative and formative assessment. The middle column shows the percent of teachers who engaged in each type of assessment as reported in the fall survey. The right column includes the percent of teachers who engaged in each type of assessment as reported in the spring survey. The results indicate that from the fall to the spring, teachers reported a decrease in using only summative assessment, a slight increase in using only formative assessment, and a large increase in the use of both summative and formative assessment, from 7% to 61%. Teachers reported a decrease in other types of assessment.

Figure 2: FAME program data sources collected during one school year

Coach and Learning Team (LT) Surveys:	
Fall Launch (beginning of school year):	Coach N=70; LT N=348
Winter (Middle of the School Year):	Coach N=37; LT=150
Spring (End of the School Year):	Coach N=34; LT=122
Video of Learning Team Meetings (10 Learning Teams)	
Interviews with coaches and learning team members	
Video of classroom teachers using formative-assessment strategies and tools (1-2 teachers per focal Learning Team)	

Table 2: Teacher assessment practices in the FAME program

Type of Assessment	Fall Survey	Spring Survey
Summative Assessment Only	43%	11%
Formative Assessment Only	20%	25%
Summative and Formative Assessment	7%	61%
Other (e.g., Generic Assessments)	31%	3%

Level of success in using formative assessment practices

Figure 3 depicts the reported level of success of FAME learning team member (LTM) use of formative assessment practices. The vertical axis represents the percent of success in using formative assessment practices as reported by the teacher. The horizontal axis represents various aspects of formative assessment practice. Overall, the greatest number of teachers reported moderate success in using formative assessment practices.

The research from the FAME program indicates that participating teachers are increasingly using both formative and summative assessment in the classroom. In addition, the majority of teachers report moderate success implementing the formative assessment process. These results suggest that teachers are increasingly engaging in the formative assessment process.



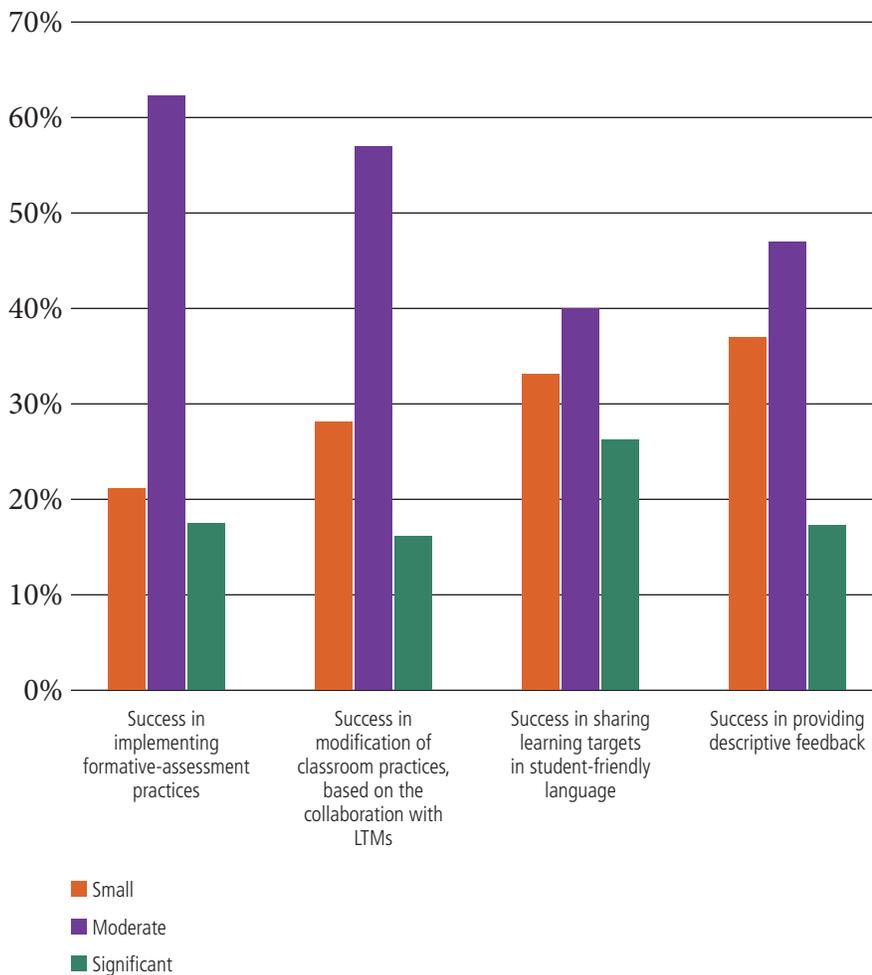
Summary

In summary, formative assessment has the potential to promote significant benefits for teachers and students. The research indicates that formative assessment is associated with increased student achievement, greater equity of learning outcomes, and improved lifelong learning skills for students. In addition, teachers report increased professional satisfaction, changed classroom culture, increased clarity of learning goals, varied instructional practices, and positive interactions with students. Studies have also shown that formative assessment is a cost-effective approach to increase student achievement, and it promotes student engagement in learning. Research from the FAME program has further demonstrated the positive benefits of the formative assessment process for students and teachers.

Learn more

Please visit the FAME website at FAMEMichigan.org to view videos and to learn more about formative assessment. The website offers resources, videos, and vignettes to support effective practice. Teachers may use these resources to engage in discussion and to analyze what contributes to formative assessment.

Figure 3: Level of success in using formative assessment practices reported by FAME project teachers



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What is Formative Assessment?

Formative assessment is a process that occurs during teaching and learning to improve student outcomes. The following definition of formative assessment from the Council of Chief State School Officers (CCSSO) is used by the Michigan Department of Education (MDE) in the Formative Assessment for Michigan Educators (FAME) professional learning program.

"Formative assessment is a planned, ongoing process used by all students and teachers during learning and teaching to elicit and use evidence of student learning to improve student understanding of intended disciplinary learning outcomes and support students to become more self-directed learners."

(CCSSO SCASS FAST, 2017)

What is FAME?

Formative Assessment for Michigan Educators (FAME) is a professional learning program in which teams of educators work on learning teams supported by coaches working collaboratively to learn about, implement, and reflect on the formative assessment process. The program involves educators in a multi-year commitment to promote significant change in professional practice, supported by internal and external resources. Since 2006, thousands of educators have participated in the FAME program to guide student learning and teachers' instructional practices across the state.



Resources to Learn More About Formative Assessment and FAME

- Heritage, M. (2007). Formative Assessment: What Do Teachers Need to Know and Do? Kappan, <http://tinyurl.com/Heritage-Kappan>
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