

Examining Early Career Teachers' Formative Practices to Inform and Support Continuous Improvement in Educator Preparation Programs

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This year-long, multiple case study followed a small group ($N=6$) of graduates from an initial licensure Education Preparation Program (EPP) into their classrooms to observe their first year as licensed teachers in United States public schools. The study's purpose was twofold: 1) to explore the extent to which this group used formative assessments in their classrooms to positively impact student learning, and 2) to examine strengths and areas for improvement within our EPP based on our observations of the teacher participants' practice and impact on their students. Multiple data sources were collected and analyzed. Based on participant interviews, survey data, and observations, findings indicate that our EPP coursework and clinical experiences contribute to beginning teachers' effective use of formative assessments to impact student learning. However, findings support recommendations for EPP continuous improvement. This study highlights the importance of completing self-studies to determine strengths of an EPP and areas for improvement so EPPs, teachers, and K-12 students have greater success. To increase the effectiveness of teacher training, EPPs must continuously evaluate the efficacy of their educator preparation programs including evaluating their graduates' ability to transition from pre to in-service teachers and implement effective pedagogical practices that promote student success.

Keywords: formative assessment, educator preparation, continuous improvement

Introduction

Educator preparation programs (EPPs) are tasked with ensuring they graduate beginning teachers who have both pedagogical knowledge and instructional and managerial skills to effectively meet the needs of K-12 students (Worrell et al., 2014). To ensure that EPPs provide teacher candidates with relevant and high-quality preparation that positively impacts student learning, EPPs need to evaluate the quality and effectiveness of their preparation programs through various reliable measures and make adjustments based on data for continuous improvement (Feuer, Floden, Chudowsky, & Ahn, 2013; Worrel et al., 2014).

This multiple case study followed six first year public school teachers in the United States to explore the extent to which this group used formative assessments in their classrooms to positively impact student learning, and to examine strengths

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and areas for improvement within our EPP specifically related to formative assessment. The participants represented three licensure programs: undergraduate elementary/middle school, graduate elementary general education, and graduate special education. Multiple sources of data (e.g., observations, surveys, interviews, student work samples, assessment data) were used to understand the novice teachers' thoughts and practices related to implementing formative assessments and their impact on their students' academic growth. The authors of this paper are faculty who teach across the initial licensure programs. The findings from this research study were used to support continuous program improvement within the EPP preparing K-12 teachers in our initial licensure programs and for state and national accreditation reporting to document our effectiveness and plan for continual improvement in our initial licensure programs.

Literature Review

Formative Assessment

Formative assessment is the process by which teachers continually collect evidence of student understanding and skill, and provide students with specific and relevant feedback necessary to move forward and be more successful in their learning (Black & William, 1998; Heritage, 2007; Moss & Brookhart, 2019). The term 'formative assessment' has been defined and redefined over the decades starting with Scriven (1967) who used the term 'formative evaluation' to describe the role evaluation played in improving curriculum. Sadler (1989, p. 120) added a revised perception of formative assessment stating that, "[f]ormative assessment is concerned with how judgments about the quality of student responses (performances, pieces, or works) can be used to shape and improve student's competence by short-circuiting the randomness and inefficiency of trial-and-error learning". A decade later, Black and Williams (1998, p. 140) provided a more nuanced definition of formative assessment "to refer to all those activities undertaken by teachers-and by their students in assessing themselves-that provide information to be used as feedback to modify teaching and learning activities. Such assessment becomes formative assessment when the evidence is actually used to adapt the teaching to meet student needs".

Though the definition of formative assessment has morphed over the better half of a century, this essential, in-process, evaluation practice is seen as a linchpin of student success as it enables teachers to collect relevant student data that can be used to improve instruction to more effectively target students' needs. Included in formative assessment is the ability to clearly state learning goals, provide specific feedback, and understand how to move students through a progression of learning (Heritage, 2007). The element of providing specific, timely feedback is especially important as it has been tied to student outcomes (Hattie & Timberely, 2007).

Novice Teachers and Formative Assessment Practices

Teachers can impact student learning and achievement though the degree to which this can occur depends largely on a teacher's ability to skillfully use a range of teaching strategies (Darling-Hammond, 2000; Hattie, 2003; Holzberger, Praetorius, Seidel, & Kunter, 2019; Lekwa, Reddy, Dudek, & Hua, 2019; Stronge, 2002; Stronge, Tucker, & Hindman, 2004). There has been debate about teacher quality in relation to years of experience with some research indicating that novice teachers are less effective than more experienced teachers (Clotfelter, Ladd, & Vigdor, 2007). However, more current research posits that there is no evidence that teachers with 0-3 years of experience are less competent than their more veteran colleagues (Graham, White, Cologon, & Pianta, 2020).

Almost 50 years ago, Lortie (1975) stated that effective teachers continuously monitor their students' learning and use the information to improve their teaching. Research demonstrates that pre-service teachers gain a wide range of understanding of how to implement formative assessment practices during their time in clinical experiences and coursework during licensure programs (Cowan, 2009; DeLuca & Klinger, 2010). However, while preservice teachers recognize the value of formative assessment as a method for improving instructional practice (Bennett & Cunningham, 2009), understanding and effectively implementing formative assessment practices are two different things. Once in the classroom, novice teachers still desire more formative assessment knowledge and skills to better support their students and have a greater impact on student learning (Frey & Fisher, 2011; Furtak et al., 2015).

Even for experienced teachers, there are some aspects of formative assessment that are more easily achieved than others. For example, Johnson, Sondergeld, and Walton (2019) found that sharing learning goals, providing criteria for success, and providing feedback were all areas in which even master teachers needed more support. The researchers conclude that teacher education and professional development programs should focus more intentionally on these more difficult to implement aspects of formative assessment.

Since many novice, as well as experienced, teachers struggle to use formative assessment effectively to inform their instruction (Lamberg, Gillette-Koyen, & Moss, 2020; Saclarides & Gerardo, 2018), additional emphasis is being placed on formative assessment in both teacher preparation and professional development training. The goal is to help pre and in-service teachers develop and strengthen formative assessment skills and their ability to positively impact student learning (Darling-Hammond et al., 2009; Garet et al., 2011; Greenberg & Walsh, 2012; Taras, 2007). Pre and in-service training is essential because a challenge facing novice teachers is that even if their time as a teacher candidate provided some training and opportunities to implement formative assessment during clinical experiences, the demands and school culture of the beginning teacher's first job may not be conducive to the innovative and dynamic teaching required for formative assessment (Hamodi, López-Pastor, & López-Pastor, 2017). Furthermore, research suggests that from early career onwards, teachers and their students

benefit from ongoing professional development in the area of formative assessment (Kiemer, Seidel, Gröschner, & Pehmer, 2015; Furtak et al., 2015).

Continuous Improvement of Educator Preparation Programs

Research suggests that teacher quality is a significant factor in predicting, impacting, and improving student achievement (Aronson, Barrow, & Sander, 2007; Hattie, 2003; Holzberger, Praetorius, Seidel, & Kunter, 2019; Lekwa, Reddy, Dudek, & Hua, 2019; Rivkin, Hanushek, & Kain, 2005). As the effect of quality teaching on student achievement persists over several years, Konstantopoulos and Chung (2011) emphasized that producing high quality pre-service teachers is critical. Thus, EPPs need to understand the practices most likely to produce quality teachers and ensure they are providing the most efficient and effective teacher preparation to their candidates. Analyzing its programs' effectiveness allows EPPs to see areas of strength and areas that need improvement so adjustments can be made to programs, courses, and clinical placements. This practice of continually collecting, examining, and using data for decision-making, commonly known as continuous improvement, uses a problem-solving approach to study and improve education and systems to help ensure the cultivation of educators who are prepared to fulfill their future roles and responsibilities as teachers (Dean, Lauer, & Urquhart, 2005; Langley et al., 2009; White, Hirschboeck, Donahue, & Torre Gibney, 2020).

Given that teacher quality is crucial to student success and FA is one practice that contributes to that success, the research questions guiding this self-study are as follows:

1. How do early career teachers' formative assessment practices impact student learning?
2. How do the study's findings guide us as teacher educators to provide a more effective teacher preparation program for our teacher candidates so their students have greater success?

Method

Our study used a multiple case studies approach to investigate the research questions (Yin, 1994). We recruited participants via email stating that participation was voluntary and open to students graduating with initial teacher licensure who had secured employment as a teacher in a local school district. Participants that responded were selected based on the programs represented in this study which included elementary/middle school licensure undergraduates, and the elementary general education and special education graduate programs. Each program had two participants ($N=6$) represented in the study.

We collected data throughout one academic year including semi-structured interviews and observations, informal and formal assessments completed in school and through distance learning due to COVID-19 (e.g., state reading assessments,

curriculum-based measures (CBMs), individualized education plans, participant-completed surveys of teacher effectiveness based on Silver, Strong, & Associates survey) (Noell, Brownell, Buzick, & Jones, 2014). To ensure more accurate and robust findings, we conducted interim and sequential analysis of individual cases and across cases (Miles & Huberman, 1994). To answer the research questions under investigation, we triangulated the study's quantitative results and qualitative findings to form meta-inferences (Teddlie & Tashakkori, 2009) which guided our recommendations for continuous program improvement.

Data Collection

Semi-Structured Interviews. We created open-ended interview questions to solicit participants' perspectives related to formative assessment practices, factors that impact student achievement, participants' areas of pedagogical strength, and areas in need of improvement related to supporting student achievement, beliefs about- and recommendations for- their teacher preparation program. We developed the formative assessment related interview questions based on essential components of formative assessment (Wylie & Lyon, 2016) and sought to align additional questions to our national accreditation reporting needs. We interviewed each participant three times over the course of the study using the semi-structured interview protocol.

Observations. We observed each participant during the first months of their teaching using the Candidate Preservice Assessment of Student Teaching (CPAST). CPAST is a formative and summative evaluation tool used to measure teacher candidates' pedagogical knowledge/skills, including evaluation of formative assessment practices, and professional dispositions during the student teaching practicum. CPAST is a 21-row rubric with a 0-3 scale (does not meet, emerging, meets expectations, exceeds expectations). We selected the CPAST because it is a valid and reliable observation tool (Kaplan, Brownstein, & Graham-Day, 2017) and the teacher participants were familiar with the structure as this was the same evaluation tool used during participants' clinical experiences by their university supervisors.

Survey. At the beginning and end of the study, we administered a teacher effectiveness survey basing questions on the Silver Strong teacher effectiveness framework (2011). We selected questions from the teacher effectiveness survey that best aligned to our first research question and the focus of the study, modifying to better fit our focus, timeframe, and participants. The participants self-assessed their effectiveness for various indicators on a 1-4 rating scale (novice, developing, proficient, and expert). "The ultimate goal of this framework is to create a common language for talking about what constitutes high-quality teaching and how classroom practice can be improved" (Silver, Strong, & Associates, 2011, p. 1).

Informal and Formal Formative Assessments. We collected de-identified assessment data from all teacher participants. These assessments included universal screening data (e.g., state reading assessment (STAR), i-Ready, easyCBM), and teacher created-classroom assessments (e.g., quizzes, homework, exit tickets, worksheets, journal entries, Seesaw activities, Google Surveys, Google Doc assignments).

Evidence and Findings

Data analysis revealed that participants have a positive impact on student learning through their use of formative assessment practices. The following cases present multiple illustrative examples of teacher impact on student learning and share participants' formative assessment practices that positively influence student learning.

Case 1

This teacher participant is a sixth grade language arts teacher who teaches in an urban, linguistically and culturally diverse school setting. The classroom demographics include several students on individualized education programs, several English learners, and students identified as talented and gifted. To demonstrate this teacher's use of formative assessment practices, we provide data from Fall and Spring of the academic year (Table 1).

The teacher's goal was to measure student mastery of the English language arts standard, "Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text" (*CCSS 6RI.1*). To do this, students completed this formative assessment, "Describe one internal character trait of the protagonist in your reading book and provide evidence to support your answer". The teacher graded each response based on a rubric.

Table 1 illustrates the growth from Fall to Spring on the standard. For example, in the Fall, there were no students who demonstrated mastery (i.e., scoring a 4). In the Spring 25% of students demonstrated mastery. Additionally, in the Fall 66% of students could not cite textual evidence to support analysis of the text (i.e., scoring a 2). In the Spring, this number decreased by 43%, indicating that fewer students struggled with this skill. These examples illustrate that this teacher's instruction over time positively influenced most students' ability to meet the standard. The teacher used strategies such as informal daily assessments, sentence frames for writing and speaking, color-coding signal strategy for elaborating and citing evidence in writing to develop and strengthen students' initial skills related to the standard.

Table 1. Percentage of Sixth Grade Students who Demonstrated Learning on a Common Formative Assessment (CFA) in English Language Arts (CCSS 6RI.1)

Formative Assessment	Fall (n=47)	Spring (n=40)	Percentage Δ
4	0%	25%	+ 25%
3	0.2%	38%	+ 38%
2	66%	23%	- 43%
1	32%	15%	- 17%

Note. The highest score on the CFA was a 4. The lowest score on the CFA was a 1.

In semi-structured interviews, this sixth grade teacher explained that informal formative assessments guide instructional planning; “Formative assessments also provide me timely, specific, and important data to guide and direct my instruction”.

Case 2

In another instance, a fourth grade teacher participant, teaching in a rural community with a large percentage of economically disadvantaged students, shared results of this class’s performance on formative assessments in reading and mathematics. The proficiency benchmark in reading and math is earning a score of 70% or higher on each assessment. Table 2 provides math and reading class data. The math results show assessment results midway through two different modules and then, again, at the end of each module.

Table 2. Percentage of Whole Class (N=19) at/above Benchmark in Two Different Formative Assessment Cycles [Reading (R) and Math (M)]

	October	May	Percentage Δ
(R) Comprehension	65%	75%	+ 10%
(R) Vocabulary	70%	83%	+ 13%
(M) Module 3	Mid-47%	Post-63%	+ 16%
(M) Module 4	Mid-52%	Post-78%	+ 36%

Additionally, this teacher shared standardized STAR Assessment (Renaissance Learning, 2019) reports taken in September at the beginning of the academic year and again, six weeks later in mid-October for both math and reading. Reading assessment measures included: word knowledge and skills, comprehension strategies and constructing meaning, analyzing literary text, understanding author’s craft, and analyzing argument and evaluating text. Math assessment measures included numbers and operations, algebra, geometry, measurement, data analysis, statistics, and probability. This assessment data is typically collected five times over the course of the academic year; however, due to COVID-19 and the move to remote instruction, assessments were completed less frequently with no end of year data collection. Data from each round of assessment helped the teacher with planning and instruction for the whole class and in planning support for individual students (see Table 3). This teacher explained that:

When you're teaching 20+ students, it's easy for things to slip through the cracks; small gaps in student learning that you would never notice during whole group discussion or casual observation. Formative assessments give me a direct look at where my students stand and help me key in on specific aspects I need to focus on or review...Alternatively, I can identify strengths in my students and have the ability to either use those strengths in helping them, or understand that I may not have to spend as much time on certain concepts. Using formative assessments allows me to make the most of my time and my students' time in the classroom.

Table 3. Percentage of Whole Class Meeting Benchmark and Below Benchmark during Two Different Standardized Assessment Cycles of STAR Testing (N=19)

	Math- At/Above Benchmark	Math-Below Benchmark	Reading- At/Above Benchmark	Reading- BelowBenchmark
September	21%	79%	42%	58%
October	26%	74%	53%	47%
Percentage Δ	+ 5%	- 5%	+ 11%	- 11%

The teacher attributed growth to a variety of factors including purposeful planning and instruction as well as frequent formative assessments, feedback to support student learning, and opportunities for additional practice. More specifically, the participant shared that he used a variety of informal and formal formative assessment practices supporting development of skills in mathematics and reading. The teacher explained, "I've changed the way I approach things entirely. Earlier in the year I provided less opportunity for students to produce individual, concrete work, which made it more difficult for me to measure their levels of understanding. As I moved deeper into the year, I began providing more opportunities for students to demonstrate their understanding in a measurable way".

Most common informal practices used across subject areas include conferencing with students, conversations with the whole class and individual students, and observations. In the area of mathematics, additional informal formative assessment practices included asking students to write an answer on an erasable white board. In reading, informal formative assessment practices include fluency tests and weekly vocabulary activities. Formal formative assessment practices used by this teacher participant varied across subject areas. In math, the teacher commonly used exit tickets, homework/problem sets, weekly reviews, Reflex Math (fluency computer program), and STAR (state reading assessment). In reading, the teacher frequently used weekly vocabulary/comprehension quizzes, STAR Testing, and Freckle (comprehension computer program).

As a shift in teaching practices occurred mid project due to COVID-19, the teacher shared additional informal and formal formative assessment practices used during remote instruction. For math, students completed problem sets each week submitting responses electronically to the teacher for review. Then, the teacher sent individualized feedback to the student electronically. If the problem set met the proficiency standard, the student completed an exit ticket electronically, which was reviewed by the teacher. To offer additional support, the teacher conferenced

with students through Zoom three times per week using data from problem sets to promote student growth. In reading, students used iReady (an interactive storytelling software with prompts and quiz at the end) to complete their reading assignments. The teacher used iReady student data to adjust instruction and support learning.

Case 3

A special educator participant working in an elementary learning resource center shared how formative assessment was used to guide teaching and support students' learning in math and reading. During an observation of a math support session, the teacher participant worked one-on-one with a third grader on an individualized education program for a learning disability in math. The teacher used multiple formative assessments (e.g., white board activities, observation, academic games, frequent checks for understanding using verbal and physical responses, ended the lesson with an exit ticket, etc.). Based on the observation, participant self-analysis, student data, and the post observation interview, using formative assessment allowed the teacher participant to closely monitor student understanding and frequently adjust instruction during the math lesson.

The teacher participant shared how using formative assessment to monitor student performance and adjust instruction was a factor in helping students meet their individualized education program goals earlier than anticipated. This participant attributed student learning gains, in part, to the use of formative assessment to adjust instruction to meet each student's individual learning needs. For example, this teacher used a section of a completed assignment to collect baseline data and was intentional in monitoring student performance and tracking student progress toward goals. "Using formative assessments effectively forces the teacher to develop a sequence that meets the student's specific needs". For instance, in reading, to gauge fluency and accuracy, the teacher had students read a paragraph aloud while collecting data on speed, phrasing, and accuracy. In math, the teacher reviewed independent work on a math problem to determine if students were able to apply new skills. The teacher participant believes that reviewing student performance and conferencing with students is important stating that, "By increasing the opportunities for formative assessments, I am increasing opportunities for me to provide feedback". Additionally, the teacher explained that a benefit to students is that, "This gets them thinking more about their learning and hopefully increases engagement for the student".

During the teacher's final interview, the teacher participant stated, "We have relied a lot on informal formative assessments. My planning has become much more intentional. I have been looking for items to include in assignments that more easily meet the function of being a formative tool. I am trying to design assignments that have opportunities for formative assessments built into them. This makes it more natural for the student".

Common Formative Assessment Practices across Cases

The three cases above illustrate common formative assessment practices and demonstrate growth of their students over the academic year. Moreover, data from all six study participants show that there were common informal and formal formative assessment practices (see Table 4) used across a majority of our cases that permeated into remote learning.

Table 4. Types of Common Formative Assessment Practices Used Across Cases

Informal	checks for understanding (<i>fluency checks, read alouds, reading responses, cold calling, asking for oral elaboration or explanation, prompt responses</i>), warmups/bell ringers, discussion, conferencing, observation, pair-share, review of student work
Formal	quizzes, homework, presentations, individualized education programs, CBM, testing (<i>STAR, iReady, Reflex</i>), formal writing pieces (<i>paragraphs, 1-page responses, drafts of reports</i>), graphic organizers
Remote Learning	technology aided engagement, instruction and assessment (<i>Flipgrid, Kahoot, Padlet, Google Forms, Google Slides, Google Docs, Zoom</i>)

Discussion

These three cases illustrate how formative assessment is used to support student learning including how participants purposefully planned, fostered relationships and rapport with students, connected learning to student interest, and cultivated and maintained a positive learning environment.

Purposeful Planning

Purposeful planning lays the foundation for student learning and success. According to Fischer and Frey (2011), purposeful planning requires teachers to intentionally create lesson objectives and clearly communicate lesson objectives so students understand the learning expectations and specific learning goals. Study participants varied regarding their perceived ability to turn standards into clear learning goals and targets. Only three participants felt proficient, with one identifying as expert, one as developing, and one as only at a novice level. Another survey question related to planning asked about the ability to design, organize, and break down lessons into manageable segments. Participants rated themselves as proficient ($N=4$, 66.7%) and developing ($N=2$, 33.3%).

Relationships and Rapport

We also observed teacher/student conversations that demonstrated positive rapport which was also discussed during pre and mid-project interviews. Several

practices we noted included: learning about students and including personally relevant class examples, showing enthusiasm about teaching, being passionate about the subject matter, and calling students by name. Moreover, the teachers smiled, were respectful in verbal and non-verbal interactions, made eye contact, offered positive specific verbal praise, and created a collaborative culture of learning (Wylie & Lyon, 2016). Study participants answered several survey questions related to their relationships and rapport with students. In response to the question, *How would you rate yourself at getting to know your students and incorporating their interests, aspirations, and backgrounds into the curriculum?*, four of the six teachers in the study stated that they were proficient or expert. Another question asked participants to rate themselves at showing they care about their students. All six participants rated themselves as experts. Being skilled at rapport-building is important because rapport promotes student desire to listen, learn, and collaborate which then increases the likelihood for success on formative assessments and overall in school (Pianta & Stuhlman, 2004).

Connecting Learning to Student Interest

Student interest in a topic is a powerful motivator that energizes learning and increases academic success (Harackiewicz, Smith, & Priniski, 2016). In observations, we saw classroom materials reflecting students' interests such as incorporating technology that allowed for individualization and using student-selected materials. Survey results revealed that five of the six teachers in this study feel proficient or expert in regard to their ability to get to know their students and incorporate student interests into the curriculum. Beginning lessons with thought-provoking activities or asking questions that reflect student interest or activate prior knowledge helps teachers capture student interest. Study participants felt less confident in this area with three rating themselves as developing, two felt proficient, and only one teacher felt like an expert in this area.

Maintaining a Positive Learning Environment

Research supports that when teachers create and maintain a positive learning environment, student academic achievement increases (Ali & Siddiqui, 2016). Five of six teachers responded as proficient or expert in response to the survey question about their ability to establish a manageable set of classroom rules and procedures and communicate with students about them. This self-reported data is consistent with what was observed during our classroom observations of the study participants. During our observations, we witnessed teachers using a variety of effective classroom management practices such as posting rules and expectations, using positive verbal and non-verbal communication, and having and following consistent management procedures (Marzano, 2005). Creating a positive culture of learning (Wylie & Lyon, 2016) is a crucial component of making formative assessment work.

Implications and Recommendation for EPP Improvement

Implications

Critical to the practice of formative assessment is that teachers and students are continually engaged in three questions, “Where am I now?, Where am I headed?, and How do I close the gap?” (Wylie & Lyon, 2016). All teacher participants rated themselves on the survey as novice or developing in response to the question, *How would you rate yourself at helping students review learning goals and targets, assess their level of achievement, and “close the gap” when goals are unmet?* The novice and developing ratings signal a concern that early career teachers may need more support to answer these three essential questions related to formative assessment.

Based on multiple data sources, evidence exists to support that our EPP is mostly effective in preparing beginning teachers related to their ability to positively impact student learning through use of formative assessments. According to survey results and interviews, there were no areas that indicate poor preparation by our EPP. Teacher participants stated that pedagogical knowledge - planning, teaching, assessing - gained from their EPP is translating into their classroom practice in varying degrees based on the teacher and their environment. Also, the teacher participants shared they acquired knowledge and skills to cultivate and manage a positive learning environment for student success. However, responses in the final interview to the question, *What else would you have liked to learn or gain from your classes/course work and clinical experiences in your teacher training?* indicate a general desire for more practical application and explicit opportunities to provide feedback for students in a timely and efficient manner. Teacher participants stated that they would have benefitted from a more comprehensive plan for incorporating formative assessment into their teaching practice including in lesson plans and student data analysis. Lastly, there were varying strengths and weaknesses demonstrated by the three participants related to implementation of formative assessment and other variables that impact student learning. Participants were not equal in skills, knowledge, and confidence across the three initial licensure programs from which they came.

Recommendations

Recommendations for continuous improvement that arose from data collection include more intentional practices embedded in our EPP to help our candidates learn more effective ways to:

- Review learning goals and targets, assess student achievement levels, and close the academic gap through data analysis.
- Select more effective practices to help students meet learning goals.
- Exposure to a wide variety of formative assessment practices.

- Observation of more diverse, effective informal and formal formative assessment practices implemented in the clinical setting from a variety of skilled practitioners.
- Incorporate effective practices that engage students in diverse forms of thinking.
- Provide additional ways to differentiate learning and support for students at the ends of the learning continuum (e.g., Special Education, Talented and Gifted).
- Learn more effective ways to organize and manage the paperwork related to progress monitoring and use of assessment data.
- Providing individualized and specific feedback.

Limitations

This study only consists of six early career teachers, which is a small representation of the early career teachers who graduated from our programs. It is possible that their experiences may not fully represent other early career teachers' experiences. Further, all teachers in this study had varying experiences in their clinical sites during their programs. It is possible that these teachers gained differing knowledge during clinical practice. Additionally, early career teachers in a study may want to be perceived as being effective so they may not be as forthcoming or truthful in their impact on student achievement or may be overly critical of their practices and rate themselves lower (or less effective) than what is actually occurring. Lastly, this study was conducted during school closures resulting from COVID-19 which decreased the number of planned observations and reduced opportunities to observe practices that may have developed over the year which could have impacted student achievement.

Conclusion

Through the research question, *How do early career teachers' formative assessment practices impact student learning?*, we learned that teacher participants felt prepared in several areas to positively impact student learning through formative assessments. Teachers collected several types of formative assessment data to inform their teaching and led to student learning for most students. We also found that areas for continuous program improvement include increasing opportunities to provide specific feedback and increased guidance related to selecting effective instructional strategies that help students achieve learning goals. Moreover, teacher participants needed support in data collection, analysis, and implementation systems.

Further, while we followed six teachers who participated in three different licensure programs, we will need to consider the data and its implications for our EPP as a whole instead of individual programs that work in isolation. Feuer, Floden, Chudowsky, and Ahn (2013, p. 94) state that:

People will have to be guided to think about the program as a whole, rather than their own little piece of it. They will have to be encouraged to think outside of the box, be open to major changes that might be indicated, and not limit themselves to tinkering with minor details of the program as it currently exists.

EPPs need a better understanding of the practices most likely to produce effective beginning teachers, within and across programs, and seek to use data to make programmatic decisions that can lead to meaningful and continuous improvement. Self-studies, like this one, can prove useful to EPPs, the students they serve, and PK-12 students in the local school districts.

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